STATE BOARD OF EDUCATION MEETING
February 27-28, 2024
Boise State University
Simplot Ballroom
1700 University Drive
Boise, ID 83725

Public Streaming https://www.boisestate.edu/btv/idaho-state-board-of-education-2024-february/

Tuesday, February 27, 2024 – 10:30 a.m. (Mountain Time)

BOARDWORK

1. Agenda Review and Approval – Action Item
2. Minutes Review and Approval – Action Item
3. Rolling Calendar – Action Item

CONSENT

BAHR

1. Boise State University – Strength of Youth Housing and Facility Contract for Summer Youth Campus 2024-2026 – Action Item
2. Boise State University – Eight (8) Undergraduate Certificates and One (1) Graduate Certificate Online Program Fees– Action Item
3. Idaho State University – Ground Lease Extension with Idaho Division of Veteran's Services – Action Item
4. University of Idaho – Amendments to Constitution of the University Faculty, FSH 1520 – Action Item
5. University of Idaho – Amendments to University Policy - Academic Ranks and Responsibilities, FSH 1565– Action Item
6. University of Idaho - Amendment to Ground Lease between University of Idaho and Palouse Mall LLC – Action Item
7. Lewis-Clark State College – Construction Cost Authorization – Clearwater Hall – Action Item

IDE

8. Emergency Provisional Certificates – Action Item
9. Adoption of Education Testing Service Paraprofessional Assessment Qualifying Score – Action Item

PLANNING, POLICY, AND GOVERNMENTAL AFFAIRS

1. Boise State University Annual Report – Information Item
2. BSU EPP Program Update – Information Item

STATE BOARD OF EDUCATION
650 W. State Street • P. O. Box 83720 • Boise, ID 83720-0037
208/334-2270 • FAX: 208/334-2632
www.boardofed.idaho.gov

INSTRUCTION, RESEARCH AND STUDENT AFFAIRS

1. Board Policy III.N. Statewide General Education – First Reading – Action Item
2. Board Policy III.Q. Admissions Standards – First Reading – Action Item
3. Board Policy III.L. Prior Learning and III.Y. Advanced Opportunities – Second Reading – Action Item
4. Boise State University – Ph.D., Engineering – Action Item
5. Lewis-Clark State College – MSN, Nursing Leadership in Healthcare – Action Item

IDAHO DEPARTMENT OF EDUCATION

1. Superintendent's Update
2. SY24-25 Amendment to the Elementary Secondary Education Act (ESEA) as amended by the Every Student Succeeds Act (ESSA) Consolidated State Plan – Action Item

WORK SESSION

INSTRUCTION, RESEARCH AND STUDENT AFFAIRS

A. Strategic Discussion of Board Policy III.Z. Planning and Delivery of Postsecondary Programs and Courses

Wednesday, February 28, 2024 - 10:00 a.m. (Mountain Time)

EXECUTIVE SESSION – (Closed to the Public) - Action Item to go into Executive Session - No action taken in Executive Session.

1. To go into Executive Session pursuant to Idaho Code § 74-206(1)(f) To communicate with legal counsel for the public agency to discuss the legal ramifications of and legal options for pending litigation, or controversies not yet being litigated but imminently likely to be litigated. The mere presence of legal counsel at an executive session does not satisfy this requirement.

Wednesday, February 28, 2024 – 10:30 a.m. (Mountain Time)

OPEN FORUM

PLANNING, POLICY, AND GOVERNMENTAL AFFAIRS

3. Association of Public and Land-Grant Universities (APLU) greeting – Information Item

BOARD OF TRUSTEES – BOISE STATE UNIVERSITY

1. Boise State University Students address the Board
2. Boise State University Employees address the Board

BUSINESS AFFAIRS AND HUMAN RESOURCES

1. Amendment to Board Policy – Section V.T. Fee Waivers – 2nd Reading
2. University of Idaho – IPv4 Litigation – Action Item

PLANNING, POLICY, AND GOVERNMENTAL AFFAIRS

4. Consideration of BYU-I - New EPP Literacy Endorsement Program – Action Item
5. Workforce Development Council LAUNCH Report – Information Item
6. Division of Career Technical Education Annual Report – Information Item
7. Middle Grade Math Work Group Recommendations – Action Item
8. Accountability Oversight Committee Recommendations re. Long Term Goals – Information Item
9. Accountability Oversight Committee Recommendation re. Trajectory Growth Model – Information Item
10. State Board of Education Strategic Plan Final Approval – Action Item
11. Legislative Session Update – Action Item

IDAHO DEPARTMENT OF EDUCATION

3. Idaho Teacher of the Year – Trent Van Leuven

INFORMATIONAL

IRSA

1. Higher Education Research Council Annual Report – Information Item
2. Semi-Annual Report of Approved Program Requests – Information Item

PPGA

3. Idaho School for the Deaf and Blind Annual Report
4. STEM Action Center Annual Report

WORK SESSION

INSTRUCTION, RESEARCH AND STUDENT AFFAIRS

B. Generative AI Workshop

If auxiliary aids or services are needed for individuals with disabilities, please contact the Board office at 208-332-1571. If you wish to speak at Open Forum the deadline to sign up to speak is 10:00 a.m. (MT), February 25, 2024. While the Board attempts to address items in the listed order, some items may be addressed by the Board prior to, or after the order listed.

STATE BOARD OF EDUCATION
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BOARDWORK
FEBRUARY 27-28, 2024

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1. Agenda Approval

Changes or additions to the agenda.

BOARD ACTION
I move to approve the agenda as posted.

2. Minutes Approval

BOARD ACTION
I move to approve the minutes for the December 13, 2023, Regular Board meeting, the December 14, 2023, Special Board meeting, the December 21, 2023, Special Board meeting and the January 9, 2024, Special Board meeting.

3. Rolling Calendar

BOARD ACTION
I move to set February 19-20, 2025, as the date and Boise State University as the location for the February 2025 regularly scheduled Board meeting.

DRAFT Minutes December 13, 2023

STATE BOARD OF EDUCATION MEETING
December 13, 2023
Office of the State Board of Education
650 West State Street, Suite 307
Boise, ID 83720

A regular meeting of the Idaho State Board of Education was held via zoom teleconference on December 13, 2023, with the call originating from the Office of the State Board of Education in Boise. Board President Dr. Linda Clark called the meeting to order at 10:00 a.m. (MT).

Present

Dr. Linda Clark, President	Kurt Liebich
William G. Gilbert, Jr., Vice-President	Shawn Keough
Superintendent Critchfield, Secretary	Cally Roach
Dr. David Hill	Cindy Siddoway

Absent
None

Wednesday, December 13, 2023 - 10:00 a.m. (Mountain Time)

BOARDWORK

1. Agenda Review and Approval – Action Item

Mr. Gilbert began the meeting by stating that the State Department of Education (SDE) had asked to remove item number 4, Assessment Item Review Committee Recommendation from their portion of the agenda. For consistency it was also recommended to move Planning, Policy, and Governmental Affairs (PPGA) item number 5. Educator Pipeline Report to precede PPGA agenda item number 4. Registered Teacher Apprenticeship Program Standards.

BOARD ACTION
M/S (Gilbert / Hill) I move to approve the agenda as amended. A roll call vote was taken, and the motion carried 8-0.

2. Minutes Review and Approval – Action Item

BOARD ACTION

DRAFT Minutes December 13, 2023

M/S (Gilbert / Critchfield) I move to approve the minutes for the October 18-19, 2023, Regular Board meeting, and the November 13, 2023, Special Board meeting. A roll call vote was taken, and the motion carried 8-0.

3. Rolling Calendar – Action Item

BOARD ACTION
M/S (Gilbert / Siddoway) I move to set December 18, 2024, as the date for the December 2024 regularly scheduled Board Meeting, to occur via videoconference originating from the Office of the State Board of Education in Boise. A roll call vote was taken, and the motion carried 8-0.

CONSENT

BAHR

1. Idaho State University – Men's Head Football Coach Contract – Action Item

BOARD ACTION
M/S (Gilbert / Hill) I move to approve the request by Idaho State University to enter into a five (5) employment agreement with Cody Hawkins, Head Football Coach, commencing on January 1, 2024, and terminating on January 26, 2029, at a base salary of $222,000 and supplemental compensation provisions, as submitted. A roll call vote was taken, and the motion carried 8-0.

2. Idaho State University – Men's Head Basketball Coach Contract - Action Item

BOARD ACTION
M/S (Gilbert / Hill) I move to approve the request by Idaho State University to enter into a 4-year 5-month employment agreement with Ryan Looney, Head Men's Basketball Coach, commencing on January 1, 2024, and terminating on May 7, 2028, at a base salary of $123,687 and supplemental compensation provisions, as submitted. A roll call vote was taken, and the motion carried 8-0.

PPGA

3. Accountability Oversight Committee Appointment – Action Item

BOARD ACTION
M/S (Gilbert / Hill) I move to approve the appointment of Geoff Penrose to the Accountability Oversight Committee, as the member with experience as a school principal or charter school administrator, for a term of 2 years commencing December 13, 2023, and ending on June 30, 2025. A roll call vote was taken, and the motion carried 8-0.

4. Idaho State Rehabilitation Council Appointments – Action Item

BOARD ACTION
M/S (Gilbert / Hill) I move to appoint Angie Tuft as a representative of Business, Labor, and Industry for a three-year term, effective immediately through December 12, 2026. A roll call vote was taken, and the motion carried 8-0.

AND

M/S (Gilbert / Hill) I move to appoint Jeff DeForest as a representative of Business, Labor, and Industry for a three-year term, effective immediately through December 12, 2026. A roll call vote was taken, and the motion carried 8-0.

AND

M/S (Gilbert / Hill) I move to appoint Lucas Rose as a representative of Business, Labor, and Industry for a three-year term, effective immediately through December 12, 2026. A roll call vote was taken, and the motion carried 8-0.

AND

M/S (Gilbert / Hill) I move to appoint Emily Flynn as a representative of VR Counselor General for a three-year term, effective immediately through December 12, 2026. A roll call vote was taken, and the motion carried 8-0.

AND

M/S (Gilbert / Hill)I move to appoint Kent Ireton as a representative of VR Counselor Pre-Employment Transition Services for a three-year term, effective immediately through December 12, 2026. A roll call vote was taken, and the motion carried 8-0.

5. Indian Education Committee Appointments – Action Item

BOARD ACTION
M/S (Gilbert / Hill) I move to appoint Mr. Justin Marsh, as the Coeur d'Alene Tribal Education Department representative to the Idaho Indian Education Committee ef2023,ive December 13, 2023, and expiring June 30, 2026. A roll call vote was taken, and the motion carried 8-0.

AND

M/S (Gilbert / Hill) I move to appoint Councilwoman Yvonne Powers, as the Shoshone-Paiute Tribes' chair designee to the Idaho Indian Education Committee effective August 23, 2023, and expiring June 30, 2028. A roll call vote was taken, and the motion carried 8-0.

AND

M/S (Gilbert / Hill) I move to appoint Ms. Lynn Manning John, as the Shoshone-Paiute Tribes' Tribal Education Department representative to the Idaho Indian Education Committee effective August 23, 2023, and expiring June 30, 2028. A roll call vote was taken, and the motion carried 8-0.

6. Empowering Parents Business Procedures – Action Item

BOARD ACTION
M/S (Gilbert / Hill) I move to approve the Empowering Parents Business Procedures as presented in Attachment 1. A roll call vote was taken, and the motion carried 8-0.

SDE

7. Curricular Materials Selection Committee Appointments – Action Item

BOARD ACTION
M/S (Gilbert / Hill) I move to approve the request by the State Department of Education to appoint Kristi Enger to the Curricular Materials Selection Committee for a five-year term, effective December 13, 2023, and ending December 13, 2028, representing Career Technical Education. A roll call vote was taken, and the motion carried 8-0.

AND

M/S (Gilbert / Hill) I move to approve the request by the State Department of Education to appoint Emalee Merrell to the Curricular Materials Selection Committee for a five-year term, effective December 13, 2023, and ending December 13, 2028, representing the State Department of Education. A roll call vote was taken, and the motion carried 8-0.

AND

M/S (Gilbert / Hill) I move to approve the request by the State Department of Education to appoint Bernadette Edwards to the Curricular Materials Selection Committee for a five-year term, effective December 13, 2023, and ending

December 13, 2028, representing local school board members. A roll call vote was taken, and the motion carried 8-0.

AND

M/S (Gilbert / Hill) I move to approve the request by the State Department of Education to appoint Jessica Geiger to the Curricular Materials Selection Committee for a five-year term, effective December 13, 2023, and ending December 13, 2028, representing parents. A roll call vote was taken, and the motion carried 8-0.

AND

M/S (Gilbert / Hill) I move to approve the request by the State Department of Education to appoint Kirsten Pomerantz to the Curricular Materials Selection Committee for a five-year term, effective December 13, 2023, and ending December 13, 2028, representing higher education. A roll call vote was taken, and the motion carried 8-0.

AND

M/S (Gilbert / Hill)I move to approve the request by the State Department of Education to appoint Lisa Olsen to the Curricular Materials Selection Committee for a five-year term, effective December 13, 2023, and ending December 13, 2028, representing Idaho certified educators. A roll call vote was taken, and the motion carried 8-0.

8. Emergency Provisional Certificates – Action Item

BOARD ACTION
M/S (Gilbert / Hill) I move to authorize the State Department of Education to issue emergency provisional standard instructional certificates for candidates 1-117 as presented above, effective for the 2023-2024 school year only, and pending a cleared background check. A roll call vote was taken, and the motion carried 8-0.

BOARD ACTION
M/S (Gilbert / Hill) I move to approve the consent agenda. A roll call vote was taken, and the motion carried 8-0.

INSTRUCTION, RESEARCH AND STUDENT AFFAIRS

1. Board Policy III.L. Prior Learning and III.Y. Advanced Opportunities – First Reading – Action Item

Tracie Bent, Chief Administrative Officer, Career Technical Education, recapped the item for the members of the Board. She shared that the Division of Career Technical Education is requesting amendments to Board Policy III.Y. Advanced Opportunities and III.L. Prior Learning. The amendments to Policy III.Y would replace what is now referred to as technical competency credit with microcredentials. The Board finalized amendments to Board Policy III.E. in December 2022, clarifying the definition of microcredentials and the platform that is used to track them. The platform used for tracking microcredentials was originally developed to, in part, track competencies students mastered through secondary programs eligible for technical competency credits.

Board policy III.L. Prior Learning currently allows institutions to award credit for prior learning based on non-credit courses, experiential learning, or portfolios, which could include microcredentials. The policy does not call out or identify microcredentials in the same way as it identifies exams like CLEP or AP. By adding the reference to microcredentials to Board policy III.L. it heightens awareness of microcredentials and the potential for stacking them to award not only credits but certificates and degrees.

In addition, proposed amendments to Board policies III.L and III.Y will provide clarification on how microcredentials can be used to show how students are meeting the same outcomes that were previously referred to in technical competency credit eligible programs and highlight their use for evaluating credit for prior learning.

BOARD ACTION
M/S (Hill / Gilbert) I move to approve the first reading of amendments to Board policies III.L and III.Y. as provided in attachments 1 and 2. A roll call vote was taken, and the motion carried 8-0.

Dr. Hill asked if each state is doing this work independently or is there a convergence happening where across the education system, they're standard definitions for like competency. Ms. Bent said career technical education looks at competencies and outcomes. There's similar work in other states because each of the programs work with business and industry within those different occupational areas, but it can be very different from state to state, depending on what their priorities are. As far as badging and microcredentialing, there isn't a standard across the nation in the sense of how each state is recognizing and using them at the statewide level, but there is work being done nationwide.

There were no further comments or questions from the Board.

2. College of Eastern Idaho – Bachelor of Applied Science, Digital Forensics and Analytics – Action Item

DRAFT Minutes December 13, 2023

Prior to the start of the discussion Dr. Hill gave the Board members the process to move forward with the next three action items. He said that the Board amended Policy III. Z recently setting out the criteria for acceptance of Bachelor of Science degrees via Idaho's community colleges. The three proposals before the Board will be taken one by one as they are audited in increasing complexity. In each case, the Board will have to decide whether, first, the proposed program meets the criteria. And if it does not, there will have to be a motion to waive the policy. And secondly, to approve the action item or not, subject to the first motion.

Josh Duersch, Cybersecurity and Technology Department Chair, College of Eastern Idaho, said the College of Eastern Idaho proposes a new Bachelor of Applied Science in digital forensics and analytics degree. This program aims to provide an upper division pathway for Associate of Applied Science graduates with advanced knowledge in digital forensics and analytics and the related concepts.

Mr. Duersch further shared that along with there being a growing demand for this course of study a careful review of offerings in the state showed that there are no digital forensics programs in the state offered by Idaho public institutions. For students, because this is a bachelor's program, student graduates can expect to see higher salaries upon graduation. This program does have a flexible program structure. It is designed to be an evening cohort accommodating working professionals.

BOARD ACTION
M/S (Hill / Siddoway) I move to approve the request by College of Eastern Idaho to create a new program that will award a Bachelor of Applied Science in Digital Forensics and Analytics in substantial conformance to the program proposal submitted as Attachment 1. A roll call vote was taken, and the motion carried 8-0.

AND

M/S (Hill / Siddoway) I move to direct the college to submit an annual financial and enrollment report of the program to the office of the State Board of Education for the first five years of the program. A roll call vote was taken, and the motion carried 8-0.

Board President Dr. Linda Clark asked about the funding model for offering this program and for a little more detail on the mechanics of getting the funding. Mr. Duersch said to start out they will use the upper division tuition differential, or $280 a credit which is in line with College of Southern Idaho's upper division tuition. If that funding model does not work, they will revert to CEI's tuition model which will need to be approved by CEI's local board of trustees.

Dr. Clark asked how CEI would make up the difference in funding if their local board did not approve the higher funding model. Mr. Duersch said CEI was very fortunate to have

a good working relationship with the Idaho National Lab and CEI would continue to have two INL instructors teach lower division cybersecurity courses.

Dr. Hill asked if CEI had thought about how many more of these proposals would they be bringing forward in the next few years. President Aman said the two proposals before the Board today represent the most immediate need in region 6 to support local industry partners. Dr. Hill then said knowing that it takes 3-5 years to get any new program up and running can the Board be assured that no new requests would be forthcoming until CEI was sure this program was a success. President Aman said conceivably if this program is a success CEI might bring forward another request for a Bachelor of Applied Science degree in 18 or 24 months. A lot will depend on the demand for these courses from the local community and from workforce partners.

Dr. Hill asked Dr. Bliss if the Board office gathers data on baccalaureate programs to verify if they have met their projections for enrollment along with other metrics. Dr. Bliss said yes; however, schools are only required to report back every 5 years, not annually, on how a program is doing. Dr. Bliss said perhaps with these programs a better review timeline would look at the financial outlay and the enrollments on an annual basis, which the institutions track yearly anyway. President Aman joined in and said that reporting these findings yearly was not a burden for CEI as they had to report these numbers to their own locally elected Board, so this request was an easy one to accommodate.

Lori Barber, Vice President, Academic and Student Affairs, College of Eastern Idaho, added to the discussion by saying that there are 34 learners majoring in operations and an additional 32 learners taking upper division courses for spring and they expect those numbers to continue to rise. CEI is anticipating having 40 students enroll in this course within a three-year timeframe. Implementation of this new program will begin in Fall of 2025 if the Board approves this motion today.

Dr. Bliss outlined for the Board the five specific criteria for evaluating proposed baccalaureate degrees by the community colleges:

- "Demand: Proposed offerings must be to meet an urgent, local need based on where students who complete the offering will be employed rather than on where the students reside.
- "Specialization: The proposed offering must be based on the unique capability at the institution, founded on specialized instructional expertise and any infrastructure necessary for program delivery.
- "Non-competitiveness: The proposed offering must be non-competitive with other institutions' offerings within the identified service area (whether regional or statewide) and supported by other institutions within the service area.
- "Collaboration: Alternative approaches to meeting the identified demand addressed by the proposed offering should be fully considered, including potential collaboration with other institutions.

- Resources: The institution must have sufficient resources to develop and deliver the proposed offering."

Dr. Bliss added that Policy III.Z. states all baccalaureate and graduate level programs approved by the board require a report on the program's progress in accordance with the timeframe and template developed by the executive director or designee. Dr. Bliss further shared with the Board that typically when a program such as this is on track, they do not bring reports to the full Board but to the Board subcommittees.

Patty Sanchez, Academic Affairs Program Manager, Idaho State Board of Education, shared that the Board office, in consultation with the institutions developed a template for reporting on these types of programs. This template consists of enrollment and graduation numbers. The Board office then compares those numbers with the original projections to see where the realities are. The institutions are then asked a series of questions such as what challenges did they face in offering the course and if they planned to continue the program or make adjustments to the curriculum. If after making curriculum changes the enrollment numbers are still not reached those reviews come to the full Board. Baccalaureate programs come to the Board for review after 6 years and 3-4 years for graduation programs.

Mrs. Roach said an overarching strategic goal for the state board is access and affordability for all students. In her opinion Board policy is a bit too restrictive. In this instance, we need to take into account the needs of the local communities. Local business and community members are supportive of this program. I think there is room in our system for something bigger. Let us embrace every student in their local environment with an affordable option.

Superintendent Critchfield shared that driving around the state and seeing the different communities has brought into focus for her that not everyone has access to a 4-year institution, but the community colleges can reach those populations and many people prefer in-person instruction over remote.

Dr. Hill amended the motion to include reporting mechanisms that would need to be brought back to the Board annually for the first 5 years. The metrics that need to be reported would include placement of graduating students, and employability, which should prove industry demand. He further said that this particular proposal meets the intent of Board Policy III.Z. as written and would not require a waiver.

There were no further comments or questions from the Board.

3. College of Eastern Idaho – Bachelor of Applied Science, Operations Management – Action Item

Ms. Barber led the discussion. She shared that the degree being presented today is the identical degree that has been implemented and approved with great success at the College of Southern Idaho. This operations management degree will allow students to transfer their credits from an applied associate degree such as welding or diesel technology directly into this applied bachelor's degree and allow them to complete that bachelor's degree in region 6. This course is really designed for those learners who want to start their own business or provide the skills they need to move into management with a degree that honors all of their applied credits, and then also honors previous experience in the form of credit for prior learning. The degree will be delivered in the evening to accommodate those who are working full-time without them having to travel outside the region.

Graduates would be able to go into living wage jobs and help meet the demand for various positions that are coming to the region through the INL Lab and other organizations in region 6.

The program will offer evening classes in Idaho Falls initially, and then face to face in remote outposts such as Drake, Rexburg, Arco, and Salmon, where there will be credentialed faculty and facilities.

BOARD ACTION
M/S (Hill / Critchfield) I move to waive Board Policy III.Z. 2. B. IV only as it relates to the College of Eastern Idaho's Bachelor of Applied Science Operations management degree. A roll call vote was taken, the motion carried 5-3. Dr. Linda Clark, William G. Gilbert, Jr., and Dr. David Hill voted nay.

AND

BOARD ACTION
M/S (Hill / Critchfield) I move to approve the request by College of Eastern Idaho to create a new program that will award a Bachelor of Applied Science in Operations Management in substantial conformance to the program proposals submitted in attachment one and to direct the college to submit an annual financial and enrollment report of the program to the Office of the State Board of Education for the first 5 years of the program. A roll call vote was taken, the motion carried 5-3. Dr. Linda Clark, William G. Gilbert, Jr., and Dr. David Hill voted nay.

Dr. Hill asked for a little more information on the requirements for CTE credits and specifically what that requirement was. Ms. Barber said CEI will take 60 credits of an applied associate degree that can be used for the first 2 years of this degree. It is in third and fourth year where they would get the upper division credits that would allow them to maybe start their own business or move into a management position. Industry partners have also stressed that turning years of experience into education credits is

something that needs to be defined. It will be up to faculty to validate this experience and turn it into credits.

Mr. Liebich asked for a clearer structure of how this program will work. Hypothetically, if I'm a student at CEI and I get my associate degree I can decide to continue at CEI to get my bachelor's degree which should be cheaper; where all 60 of my credits will be recognized and where CEI is more flexible in classroom meeting time. In addition, CEI will give me work experience credits that I can apply towards my degree. Or I can transfer to ISU to complete my degree but would be unsure if all 60 credits would transfer, no work experience credits would be applied, and courses would not be offered in as flexible an atmosphere. Ms. Barber said yes, that was accurate, adding that the cost for the upper division courses would be $285 a unit. And on the flip side it would be hard for a student to enter the program with a two-year degree that they earned elsewhere.

Dr. Adam Bradford, Provost, Idaho State University, supplied that ISU does take all 60 credits from an applied associate degree into their current business programming. ISU has multiple pathways through their business programming to accommodate BAS students and have been doing this for 20 years. ISU also gives credit for prior learning, and they can offer classes at the Idaho Falls campus in person if there were student demand. Dr. Bradford added that if industry partners had shared this need with ISU they would have stepped up and offered this program.

Dr. Hill then referenced the five specific criteria for evaluating proposed baccalaureate degrees by the community colleges that was discussed in agenda item number 2. This current request does not pass that review and there has been significant pushback from Idaho's 4-year Universities in moving this request forward. Dr. Bradford added that he would ask the Board members to be aware that the criteria they set up in terms of specialized instructional expertise was not being met with this degree. This proposed degree is a fairly generic operations management / business degree. ISU already offers a very similar degree with a strong operations management focus. As a result, this degree, as offered, fails the non-competitive benchmark. Students can essentially achieve a business degree that does not have the same kind of accreditation standard or demands that ISUs does, and it will be offered at a significantly lower price.

Further, Dr. Bradford shared that this request creates an incentive structure for those students to move away from accredited programming with a very long history of successful placement of students to a non-accredited degree program that will hamper ISUs ability to continue to draw students into their program. Also, according to the five criteria set forth in Board policy there was no discussion between ISU and CEI to talk about collaboration. If there had been ISU would have offered suggestions on the delivery of a program that would suit the needs of the students. As it stands this program being proposed by CEI is problematically duplicative and will result in wasteful duplication of resources.

Mrs. Roach said she was convinced that we are talking about different demographic groups. This program allows us to expand our offerings. Let's explore and move forward and test the theory with this program. The state of Florida has expanded into this model and degree completions have expanded.

Dr. Hill then synthesized the discussion saying that based on the discussions as presented he would need to add a motion to waive Policy III.Z. before voting on the proposal as presented because this proposal does not meet the criteria in III.Z. without the Board waiving policy. Dr. Hill said he takes waiving of policy very seriously because if you continue to waive policy, then you have no policy.

There were no further comments or questions from the Board.

At this time the Board took a 30-minute break returning at 12:15 p.m.

4. College of Western Idaho – Bachelor of Applied Science, Business Administration – Action Item

Gordon Jones, President, College of Western Idaho, presented the agenda item. He shared that this is about an applied degree that involves career technical education curriculum embedded in it. This proposal is unique and distinctive and a hallmark of how community colleges both teach and what they're known for. This degree proposal also targets the employment and workforce demands for the local community.

Denise Aberle-Cannata, Provost, College of Western Idaho, continued the discussion saying CWI engaged with a third party to do a feasibility study to help provide guidance and direction to also research who are the students that this degree would apply too. A recent survey showed that 56% of the community college students who went on to get a bachelor's degree stated they would not have done so because it would have been economically impossible if they wouldn't have had that pathway provided by their local community college. Initially CWI would launch this program with existing faculty and campus resources. CWI intends to fund this program initially with their own investment.

BOARD ACTION
M/S (Hill / Roach) I move to waive Board Policy III.Z. 2. B. IV only as it relates to the College of Western Idaho's Bachelor of Applied Science in Business Administration. A roll call vote was taken, the motion carried 5-3. Dr. Linda Clark, William G. Gilbert, Jr., and Dr. David Hill voted nay.

AND

BOARD ACTION
M/S (Hill / Siddoway) I move to approve the request by the College of Western Idaho to offer a Bachelor of Applied Science in Business Administration as

provided in Attachment 1 and direct the college to submit an annual financial and enrollment report of the program to the Office of the State Board of Education for the first 5 years of the program. A roll call vote was taken, the motion carried 5-3. Dr. Linda Clark, William G. Gilbert, Jr., and Dr. David Hill voted nay.

Board President Dr. Clark asked for an expansion of the comment that CWI was going to fund the initial startup of this program with their own resources, specifically asking what the cost per credit hour would be and how will they fund the excess costs the institution might incur over and above what the tuition will fund. Ms. Aberle-Cannata said lower-level courses will be $139 a unit, and $170 per credit hour for the upper division courses. CWI is using reserve funding to launch this program while they build enrollment. They will start the initial courses with 20-22 students. Preliminary research shows that there are over 6,000 students in the CTE program who graduated from CWI who would be a good fit to enroll in this particular program.

Board President Dr. Clark stated that the $170 per credit for upper division courses was significantly less than partner schools and was CWI confident that this amount was sufficient to meet cost projections. Ms. Aberle-Cannata said yes because their costs don't require them to recruit and hire additional faculty to start the program.

Board President Dr. Clark asked about the platform in offering this program; the documentation says 60% online, 20% hybrid, 20% face-to-face and CWI is going to 8-week classes to facilitate a fully online experience which is in direct contradiction with some of the testimony given today. Ms. Abele-Cannata said CWI's intent is to offer face-to-face courses with some hybrid options. There are two courses that students can take online but the degree itself is being designed to be fully online at this time. Because of the population CWI serves and the need for flexibility they felt it was better to design a program that had different options for students who may or may not be able to make the trek to campus 5 nights a week due to work schedules.

Mr. Gilbert asked for an assertion that adding this program to CWI will not take away enrollment from Boise State or other institutions and wanted more information on why CWI thinks this program will draw a distinct student population. Ms. Abele-Canata said this degree most likely will appeal to those students who would not go to BSU but who are on a pure business pathway. CWI transfers 54% of business students to BSU or ISU and that is not expected to change. This degree is for those CWI students who want to add on to their technical degree without transferring to another institution.

Mr. Liebich asked if CWI was familiar with Western Governor's University and how they offer an online bachelor's degree in business with a quoted cost of $8,000 year. Motivated students can get their degree in 2.5 years. Wouldn't it have been easier to create a transfer pathway to Western Governors University for students. President Jones said in his recent discussion with Scott Pulse, CEO of Western Governor's

University he admitted that WGU's focus is more nationally centric and does not connect to the local community for employment needs.

John Buckwalter, Provost, Boise State University, added to the conversation by stating that in reviewing the demand in the local area for this type of degree it is hard to see how BSU is not able to fill this gap since they already have this pathway in their curriculum. As far as the third criteria, non-competitiveness, in order to serve the local community, CWI will end up offering online courses which will directly compete with BSU as well as the other institutions in the state. CWI is also asking for the right to ask the state for money to support this degree which should bring to mind what are the long-term financial implications to the state.

Mr. Gilbert said he believes there is a need in the Treasure Valley for this type of program. However, he agreed with Dr. Hill that waiving policy to bring this forward was not good precedent. And the reality is we're not talking new dollars coming into the system to make this happen other than the tuition dollar, we have a fixed population that CWI will be drawing from. It would have been far better to place these proposals on hold until a more robust discussion about how to institutionalize this could take place.

Mrs. Roach said we have to think about the local board of trustees and honor their commitment. She will support this proposal because there is room in our market for another option. Our policy needs refinement, which we are working on by evaluating all of Policy III.Z. Sometimes interpreting policy in a manner that can be viewed differently is the best course.

Dr. Hill made the following statement for inclusion in the minutes. "Earlier we discussed how we would monitor progress on these programs. I'm advising two things. One, in policy III.G. it allows us to direct the executive director to report on any program. I therefore direct the executive director to require a report on these pilot programs progress in accordance with Board Policy III.G. post-secondary program review and approval. That is just a statement, and it doesn't require a motion. The second part of this is because requiring that report on the associate degrees that we've previously approved would constitute new business and we can't act on that today. We will have to ask staff to prepare something for a future meeting."

There were no further comments or questions from the Board.

5. Engineering and Computer Science Initiative Next Steps – Action Item

Scott Greco, Deputy Director, Idaho State Board of Education, started by saying after the October Board of Education meeting the Board tasked Board staff with developing a recommendation for how the State Board of Education might proceed given the findings from the Western Interstate Commission for Higher Education (WICHE) concerning the engineering and computer science needs assessment they completed.

Board staff then conducted two important meetings. First with the Idaho National Labs workforce and economic development programs, and with Boise State University's College of Engineering's industry advisory board. At these meetings a proposal by the Idaho Advanced Energy Consortium's workforce and education committee was made to request an executive order from the governor to form an engineering and computer science higher education steering committee. The consortium's vision is an industry-led steering committee with State Board of Education representation organized to address three of the most pressing challenges in production of engineering computer science focused graduates.

1. Facilitate convenings and work sessions between institutions to pinpoint breakdowns in matriculation pathways, specifically from community colleges to four-year institutions.
2. Map pathways from each community college and four-year institution across all engineering and computer science degree program.
3. Design a pilot pathway for recipients of associate of applied science degrees or intermediate technical certificate programming to progress into Bachelor of Applied Science, Bachelor of Arts, and/or Bachelor of Science degree programs.

The Board of Education's Chief Academic Officer, Dr. TJ Bliss and Mr. Greco participated in the first meeting of the workforce and education committee organized by Micron and Idaho's Workforce Development Council. This meeting validated those three priorities. The committee recommends that the State Board support the recommendation of the Idaho Advanced Energy Consortium's workforce and education subcommittee for the establishment of an engineering and computer science Higher education steering committee.

BOARD ACTION
M/S (Hill / Roach) I move to support the recommendation of the Idaho Advanced Energy Consortium's Workforce & Education Subcommittee for the establishment of an Engineering & Computer Science Higher Education Steering Committee. A roll call vote was taken, and the motion carried 8-0.

There were no comments or questions from the Board.

BUSINESS AFFAIRS AND HUMAN RESOURCES

1. Amendment to Board Policy – Section V.T. Fee Waivers – First Reading

Patrick Coulson, Chief Financial Officer, Idaho State Board of Education, said Institutions currently covered under this policy have identified situations in which some students lose eligibility for this waiver prior to degree completion, or due to gaps in their education due to medical events or other emergency circumstances.

The proposed modifications to the waiver policy as it applies to individuals initially covered by the Section 3679 (c) provide institutions the opportunity to extend the duration of the waiver through the duration of a student's program of study for up to three years for degree completion. If a student receiving a waiver under this section has an institution-approved gap in education for a medical or other emergency, the institution may exercise discretion to reinstate the waiver.

Institutions have reported situations in which eligible service members or dependents have exhausted their federal benefit or have had emergencies that have caused a gap in their education. By extending this waiver, students will be able to complete their degree. Institutions have reported situations in which eligible service members or dependents have exhausted their federal benefit or have had emergencies that have caused a gap in their education. By extending this waiver, students will be able to complete their degree. This policy change also streamlines the process.

BOARD ACTION
M/S (Gilbert / Hill) I move to approve the first reading of proposed amendments to Board Policy V.T. Fee Waivers, as presented. A roll call vote was taken, and the motion carried 8-0.

There were no comments or questions from the Board.

2. Boise State University – New Science Building – Planning and Design – Action Item

Mr. Coulson said the action item pertains to the new science research building project planning and design approval for Boise State University. The proposed new facility will have research, instructional and work space for those in interdisciplinary life sciences, with an emphasis on biological and biomedical research. Departments that will be partially or fully housed in the facility include Biology, Chemistry & Biochemistry, Physics, Biomolecular Sciences (BMOL), Neuroscience and other associated programs.

The new facility will include state-of-the-art laboratories, a mix of fixed and flexible faculty offices, graduate student and postdoc spaces, areas for collaboration, instruction and necessary support space. In addition, the building may provide some space for industry-university development and collaboration.

BSU's New Science Research Building has been a Board priority project for FY 24 and FY25 capital requests. The project was awarded $17,936,000 by the Permanent Building Fund Advisory Council (PBFAC) in FY24. The total project cost provided by BSU to complete this 100,000-110,000 GSF project is presently estimated to be approximately between $120M-$130M.

Adhering to Board Policy V.K.4, BSU is requesting the Board approve for a cost not to exceed $13,000,000.

Alicia Estey, Chief Financial Officer, Boise State University, asked to address the debt capacity related to construction costs for this project. BSU have intentionally reserved that capacity to help fund construction costs. BSU have a second major capital project request for 15 million dollars that's pending, and they will pursue grant funding for this facility. BSU is also prepared to finance up to 90 million dollars of the cost using very conservative revenue projections over the next 10 years. This will increase BSU's average debt service as a percent of their operating budget from 4.2 to 5.3%.

BOARD ACTION
M/S (Gilbert / Liebich) I move to approve the request by Boise State University to proceed with planning and design for the new science research building for a cost not to exceed $13M. A roll call vote was taken, and the motion carried 8-0.

There were no comments or questions from the Board.

3. University of Idaho - New Operating Agreement between the University and the University of Idaho Foundation, Inc. – Action Item

Mr. Gilbert said this item pertains to the new operating agreement between the University of Idaho and the University of Idaho Foundation. There are essentially 2 items in this request. Approval of the 2024 operating agreement between the University of Idaho and the University of Idaho Foundation, including authority for the president to execute the 2024 operating agreement in conformance to the terms that are in it.

In addition, and as a separate motion, the University seeks an extension of the temporary exception to Idaho State Board of Education Governing Policies and Procedures Section: V Financial Affairs, Subsection: E. Gifts and Affiliated Foundations 2.b.i.1 and 2.b.iii.3 granted by the Board in October 2023. The Loaned Employee Agreements are scheduled to terminate December 13, 2023. The 2024 Operating Agreement, if approved, will be effective July 1, 2024, with the implementation of the integration thereunder effective at that same time. Accordingly, the University seeks an extension of the temporary exception until the 2024 Operating Agreement is effective.

Integration of Advancement operations with the Foundation operations will result in a more positive donor experience and more secure donor data in keeping with industry standards. The financial model as implemented is cost neutral for the University and the Foundation, such that neither the Foundation nor the University will incur costs greater than those currently incurred.

BOARD ACTION

M/S (Gilbert / Roach) I move to approve the request by the University of Idaho to approve the 2024 Operating Agreement and to authorize the President of the University to execute the Operating Agreement in substantial conformance with Attachment 1, and to execute such other and further documents, including the ancillary documents as described in the Operating Agreement, as necessary to carry out the intention of the parties. A roll call vote was taken, and the motion carried 8-0.

AND

BOARD ACTION
M/S (Gilbert / Roach) I move to approve the request by the University of Idaho to extend the temporary waiver of Board Policy Section V. E. subsections 2.b.i.1 and 2.b.iii.3 granted at the August 23, 2023, Board meeting so as to allow the University to extend the temporary loaning of certain University employees to the University of Idaho Foundation until the Effective Date of the 2024 Operating Agreement approved above. A roll call vote was taken, and the motion carried 8-0.

There were no comments or questions from the Board.

RETIREMENT COMMITTEE

1. Optional Retirement Program – Defined Contribution Recordkeeping Services - Action Item

Mr. Gilbert shared that the Retirement Plan Committee (RPC) members and staff have worked closely with Multnomah to facilitate a thorough and deliberate RFP process. After careful consideration and extensive due diligence, the consensus of all committee members was to move forward with Fidelity. This review ensured that the ORP continues to meet industry best standards and practices, while saving plan participants money and providing more transparent investment and fee information.

Fidelity is being proposed by the RPC based on their commitment to participant solutions and services, lower and more transparent costs, best in class technology, and simplified administration. RPC members included Board members and staff, campus representatives from all eight (8) colleges and universities, as well as the Public Employee Retirement System of Idaho (PERSI).

The fees going forward with Fidelity will be 25% less than current recordkeeping fees being paid by participants. Once transition occurs to Fidelity, all participants will pay $37 per year for the recordkeeping fee, reflected as a $9.25 per quarter charge on participant statements. The savings that will be achieved by this transition only apply to participant accounts.

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BOARD ACTION
M/S (Gilbert / Siddoway) I move to approve Fidelity as the Idaho State Board of Education 401(a) Optional Retirement Plan's sole provider of Defined Contribution Recordkeeping Services effective December 2, 2024. A roll call vote was taken, and the motion carried 8-0.

There were no comments or questions from the Board.

PLANNING, POLICY, AND GOVERNMENTAL AFFAIRS

1. Board Policy IV.D – Educator Preparation, Certification, and Standards - Second Reading – Action Item

Jenn Thompson, Chief Policy and Government Affairs Officer, Idaho State Board of Education said attachment 1 proposes revisions to Board Policy IV.D. that aligns the language in policy pertaining to content standards review committees with the existing language in IDAPA 08.02.03.128 pertaining to curricular materials review committees.

In addition to this change, a technical correction is proposed in paragraph 2.ff. of Board Policy IV.D. for the purpose of removing a no longer relevant reference to grades 5-9.

If the Board approves the second reading of the proposed changes the State Department of Education can begin utilizing the updated requirements for content standard review committees working through the spring of 2024.

Updating Section 1.a.i of Board Policy IV.D. to materially align with IDAPA 02.02.03.128, would provide the State Department of Education with the necessary flexibility to establish effective content review committees. This change would also further align administrative rule and Board policy and would serve to streamline the workload for the SDE staff that facilitates both Content Standards and Curricular Materials committees.

No changes have been made to the proposed language since the first reading was approved in October.

BOARD ACTION
M/S (Liebich / Hill) I move to approve the second reading of proposed revisions to Board Policy IV.D. as presented in Attachment 1. A roll call vote was taken, and the motion carried 8-0.

There were no comments or questions from the Board.

2. STEM Action Center School Designation Standards Revision – Action Item

Ms. Thompson shared that the current Board-approved STEM School Designation Standards are out of-date and require action. The STEM Action Center saw reason to revisit their alignment with the legislative requirements. The Professional Learning Community (PLC) of Idaho STEM designated schools has expressed concern that Cognia's most up-to-date STEM standards have gaps in alignment with the requirements for STEM Designation laid out in Idaho Code. Additionally, they conveyed that the frequent revisions of Cognia's STEM Certification framework (and subsequent amendments of the Board-approved standards) make it difficult to have a consistent target to aim for when developing their programs. As such, since Fall 2022, the STEM AC has collaborated with administrators from the STEM School PLC to develop a new set of Idaho-specific STEM Designation Standards that are explicitly aligned to the expectations laid out in Idaho Code § 33-4701. These standards can be found in Attachment 1.

STEM Action Center staff have worked collaboratively with stakeholders to conduct a thorough review of the standards and have sought to develop a cost-saving plan for achieving STEM school designation for Idaho schools. The STEM Action Center advisory board reviewed the updated standards and the implementation plan and voted to bring this forward to the Board for approval.

If the Board approves the revised Idaho Standards for STEM School Designation, the STEM Action Center will begin evaluating schools for this designation using the updated standards and will require any external reviewers to demonstrate full alignment to the updated standards when making recommendations.

BOARD ACTION
M/S (Liebich / Hill) I move to approve the revised Idaho Standards for STEM School Designation as presented in Attachment 1. A roll call vote was taken, and the motion carried 8-0.

There were no comments or questions from the Board.

3. Alternative Paraprofessional Assessment – Action Item

Ms. Thompson shared that a paraprofessional is a non-certificated individual who is employed by a school district or charter school to support educational programming. Paraprofessionals must work under the direct supervision of a properly certificated staff member for the areas they are providing support. Paraprofessionals cannot serve as the teacher of record and may not provide direct instruction to a student unless the paraprofessional is working under the direct supervision of a teacher.

The Board has previously approved an assessment, the Educational Testing Service (ETS) ParaPraxis exam. However, an alternative assessment has been requested by several districts.

Boise School District has developed an internal assessment and is requesting that the Board approve this assessment as an alternative to the ETS ParaPraxis exam.

School districts have communicated the need for an alternative assessment over the past few months. This includes phone calls and emails received by Board staff as well as a resolution proposed to the Idaho School Boards Association (ISBA), requesting that legislation be run to allow alternative assessments to be determined at the district level. On November 17, 2023, ISBA members voted to move forward with proposed legislation. If the Board approves this request, the need for related legislation would likely be mitigated.

The proposed assessment request was also reviewed by the Professional Standards Commission on December 7, 2023.

BOARD ACTION
M/S (Liebich / Keough) I move to approve the Paraprofessional Alternative Academic Assessment and cut score to be used as a State Board approved Academic Assessment for qualifying paraprofessionals, as submitted in Attachment 1. A roll call vote was taken, and the motion carried 8-0.

There were no comments or questions from the Board.

5. Educator Pipeline Report - Information Item

Ms. Thompson shared that the 2022-2023 Educator Pipeline Report examines data on teacher supply, demand, and retention. A selection of the key findings from the report are listed in the executive summary. The report concludes with a recap of relevant current projects and recommendations for future areas of focus.

Key findings include:

- Idaho is a state facing population growth. As the population is projected to continue to boom in coming years, the demand for educators to serve the increased population of students is also expected to grow. Preliminary estimates show an older population of residents moving to Idaho, but additional work will need to be done to identify how overall in-migration to Idaho affects public school student enrollment.
- New educators from Idaho's educator preparation programs and out-of-state transfers are hypothetically sufficient to fulfill the staffing needs of local education agencies across the state—yet most individuals who hold a valid Idaho certificate do not serve in Idaho public schools. Additionally, although the number of new educators accepting positions in Idaho schools has steadily increased over time, the current rate of growth is unlikely to address the projected demand unless

Idaho dramatically improves its ability to retain the qualified educators it already has.

- There are strong indications that the increases in base compensation associated with the career ladder have had a positive impact on this front. The retention rate among educators in their first seven years of service has seen meaningful improvement, and local education agencies along the state's border no longer seem to face more serious retention issues than their interior counterparts. However, there are still substantial opportunities for improvement—especially when it comes to retaining the state's most experienced educators and those who teach in rural locales. Identifying policy mechanisms that can address those needs will be vital to avoiding a worsening shortage as an unusually large cohort of teachers with over 10 years of experience moves closer to retirement.

Board staff will be working with the Planning, Policy and Governmental Affairs Committee and education stakeholders to further identify strategies and policy amendments to help strengthen Idaho's educator pipeline.

Board staff recommends continued focus on initiatives to attract and recruit new teachers, including the development of varied pathways to certification as well as a new focus on initiatives to retain teachers, including the development of strong mentorship programs.

For a more in-depth review of the data please go to https://boardofed.idaho.gov/event/board-meeting-boise-17/ Planning, Policy and Governmental Affairs, Tab 5.

There were no comments or questions from the Board.

4. Registered Teacher Apprenticeship Program Standards – Action Item

Ms. Thompson reminded the Board that Senate Bill 1069 (2023) made administrative changes in the current certification requirements to allow individuals who complete a teacher apprenticeship program that is registered with the U.S. Department of Labor and approved by the State Board of Education to be eligible for certification. The amendments to Idaho Code §33-1201 allow for a student serving in a practicum, internship, or student-teaching position under the supervision of a certificated staff person to be paid. The amendments also allow individuals who successfully complete an approved registered apprenticeship program to be eligible for standard certification.

In July 2023, Board staff began facilitating work sessions to obtain recommendations for Idaho's first registered teacher apprenticeship. The discussions of the workgroup and the subgroups informed the proposed Registered Apprenticeship Program (RAP) presented to the Board for consideration.

In an apprenticeship model, the prospective teacher works fulltime in a classroom, under the supervision of a mentor, for one to three years while completing a personalized plan of formal training and demonstrating on-the-job and related technical instruction competencies. Upon completion of the RAP, the apprentice becomes a fully-certified teacher.

The structure of the RAP requires an approved apprentice to be employed and complete a minimum of 2,000 hours of on-the-job training and a minimum of 144 hours of related technical instruction training each year. An apprentice that enters the program with more experience and prior learning may take as little as one year to complete the apprenticeship. An apprentice entering the program with less experience and prior learning may take as many as three years to complete the apprenticeship.

The goal of an apprenticeship program is to create a pathway for candidates who do not have the opportunity to stop working full-time while they pursue certification through a more traditional pathway along with those who are place-bound. It provides a pathway for LEAs to select candidates they want to hire and whose development they are invested in, but who are not able to pursue certification through other pathways.

If the Board approves the registered teacher apprenticeship program standards as presented, the Office of the State Board of Education staff can submit the standards to the Idaho Department of Labor/U.S. Department of Labor for approval. Upon approval from the Idaho Department of Labor/U.S. Department of Labor, the program will be available for Idaho LEAs.

Board staff will then work with various stakeholders over the next few months to finalize implementation procedures and begin exploring funding mechanisms as well as a second RAP for special education teachers.

In addition, the Idaho Department of Labor will also proceed with hiring an Apprenticeship Program Specialist to be hosted in the OSBE office and tasked with supporting OSBE and IDCTE apprenticeship programs.

BOARD ACTION
M/S (Liebich / Critchfield) I move to approve the registered teacher apprenticeship standards, as submitted in Attachment 1. A roll call vote was taken, and the motion carried 8-0.

There were no comments or questions from the Board.

6. ARP ESSER SEA Set Aside Funds Designations Proposal – Action Item

Alison Henken, K-12 Accountability and Projects Program Manager, Idaho State Board of Education, summarized the data. She shared that the federal American Rescue Plan

(ARP) Act was enacted on March 11, 2021. It provided a third installment of funding for Elementary and Secondary Emergency Relief, referred to as ARP ESSER. Idaho's original allocation was $439,942,041; this was later adjusted to $440,131,920. Of the funds allocated to Idaho, 90% ($396,118,728) was required to be distributed directly to local education agencies based on the US Department of Education's Title I methodology and 10% ($44,013,192) could be set aside to be used by the state education agency (SEA).

Part one of this proposal is to designate all of the remaining learning loss funds ($236,596) to the Math Accelerated Learning Collaborative. Statewide data reviews have demonstrated that K-12 math achievement was more impacted by the pandemic and that recovery has been slower. The additional funds will be used by the Math Accelerated Learning Collaborative to address needs that have arisen during the work thus far, including serving additional schools and teachers, developing specific training for administrators, and establishing a teacher leader cohort.

Part two of this proposal is to designate all of the remaining $2,002,638 of summer learning and after school learning funds to the STEM Action Center and Idaho Out of-School Network. The funds will be spent to support additional rounds of grants for implementation of summer and after school programming and professional development for staff implementing the programs.

BOARD ACTION
M/S (Liebich / Hill) I move to approve the Math Accelerated Learning Collaborative request from Boise State University, Idaho State University, and University of Idaho to use ARP ESSER SEA Set Aside learning loss funds to provide math professional development support for Idaho educators for an amount not to exceed the $236,596. A roll call vote was taken, and the motion carried 8-0.

AND

BOARD ACTION
M/S (Liebich / Hill) I move to approve the After School and Summer Learning Collaborative request from the Idaho STEM Action Center and the Idaho Out-of-School Network to use ARP ESSER SEA Set Aside summer learning and after school learning funds to provide summer and after school program grants and professional development support for Idaho educators for an amount not to exceed the $2,002,638. A roll call vote was taken, and the motion carried 8-0.

There were no comments or questions from the Board.

At this time the Board took a 15-minute break returning at 2:30 p.m.

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STATE DEPARTMENT OF EDUCATION

1. Superintendent Update – Information Item

The Superintendent shared the following information with the other Board members.

- The 11-person council has been reviewing grant proposals to help spend the $45 million allocated for this grant. Meetings were held in August and October and to date $36 million has been allocated. This has been a lot of work for the council as requests for funding came in at over $100 million. The next meeting of the council will be February 2024.
- SDE staff have worked over the summer to draft the budget being presented to the Legislature when they convene in January. That budget is currently a 2.9 percent increase over last year's budget. However, enrollment numbers are projected to be flat with little to no growth in the state. Even though the Department of Labor estimates that new people are arriving in Idaho in large numbers they are not bringing in children and people are not having as many children as they did in past years.
- Graduation Requirements Update – Greg Wilson, Chief of Staff, State Department of Education, Jenn Thompson, and Dr. Linda Clark will be part of a working group to develop graduation requirements that will be brought back to the full Board in June. These requirements will then have to be brought to the Legislature in 2025 for approval so this project is a still a couple of years out from completion.

Board President Dr. Clark asked the Superintendent if CTE had been able to help with the allocation of funding from the $45 million dollars. Superintendent Critchfield said Dr. Clay Long, Chief Administrator, Career Technical Education was one of the 11 members of the council seeing to the distribution of funds. He has been instrumental in helping the various CTE programs see that by adding in a few more provisions in the courses they want to offer, it would allow them to ask for increased funding.

There were no further comments or questions from the Board.

2. Fall Idaho Reading Indicator (IRI) review – Information Item

Ryan Cantrell, Deputy Superintendent, State Department of Education, gave the IRI update to the Board.

- Fall's Idaho Reading Indicator (IRI) administration occurred between August 1, 2023, and September 29, 2023. By default, students participated in person, but the state again enabled a remote administration option to provide additional flexibility for schools and students. The Idaho Department of Education (Department) matches the IRI results to the October public school enrollment data to create a final dataset.

- The preliminary results show that Idaho schools continue to make progress in the fall IRI with a one or two percentage point increase in proficiency across grade levels.
- Students exhibited results from the "summer slide" effect that takes place. Summer slide" is the tendency for students to lose some of the achievement gains they made during the previous school year. This is due to three factors:
    - Lack of daily application of learned skills
    - Not reading at home
    - Little/no new learning
- Students therefore score lower on the IRI in the Fall than they do in the Spring. What the data hopes to show is that students are losing less and less as they go from grade to grade; they come into first grade with a higher score than they did in kindergarten for example.
- Data for current kindergarteners shows they are coming into the school year a little more prepared than in previous years. SDE will now spend time trying to find out why this is so.
- When a student enters second and third grade the testing scores flatten out. The students are not losing any knowledge, but they aren't gaining any either.

Mr. Cantrell was asked if the data collected was consistent with data from 5 or 10 years ago and was the data reviewed in the same way. Mr. Cantrell said no, the data was tracked back to 8 years ago and what can be seen is that when students take a week or two off from school for fall or spring break scores would dip a little but then rebound and the students would finish the school year strong.

Superintendent Critchfield said choosing the right curriculum that's founded in the science of reading is a focus for the upcoming school year using this curriculum to better prepare teachers in the art of teaching students to read. However as long as kindergarten is not legally mandated parents are going to opt in and out of kindergarten. This leads to many first graders not being as well prepared as those students who did attend kindergarten.

There were no further comments or questions from the Board.

3. Remote and Necessary, Athol Elementary – Action Item

Gideon Tolman, Chief Financial Officer, State Department of Education, shared that historically, Athol Elementary School has been treated as a "separate elementary school" as defined in Section 33-1001(26), Idaho Code. However, during a recent review of schools with separate school status, it was determined that Athol Elementary School is located 9.3 miles from the nearest elementary school or district office, meaning 0.7 miles less than the 10.0 miles required to be considered a separate elementary school.

If the Board approves the request to designate Athol Elementary School as a Remote School, the district's funding for FY24 "shall be allowed adequate funding within the support program for an acceptable educational program for the students of the school." Section 33-1103(3), Idaho Code.

BOARD ACTION
M/S (Critchfield / Keough) I move to grant Lakeland Joint School District's request for Athol Elementary School to be designated as a "Remote School" pursuant to Section 33-1003(3), Idaho Code, and, for funding purposes, to treat it as a "separate elementary school" as described in Section 33-1003(2)(a), Idaho Code. A roll call vote was taken, and the motion carried 8-0.

There were no comments or questions from the Board.

4. Assessment Item Review Committee Recommendations – Action Item – ***Removed from Agenda***

5. Federal Funds Request – Action Item

Mr. Cantrell shared that Board action here today would update the available use of the ARP ESSER SEA set aside funds and continue to fulfill the ongoing need for student behavioral health supports.

A November 2022 survey from Idaho's second largest school district found that 30% of junior high students and 44% of high schoolers are depressed at a moderate to severe level. The same survey found that about 29% of junior high students and 34% of high schoolers have struggled with suicide ideation at least once in the last six months and 22% of junior high students and 29% of high schoolers said they would not ask for help from anyone. According to the survey, stress and social isolation are the leading factors for both depression and suicidal ideation among students in this district.

To this end, the Superintendent convened a Student Behavioral Health working group that has been meeting since she took office in January 2023. The FY 2025 SDE budget includes a request to support this initiative.

BOARD ACTION
M/S (Critchfield / Keough) I move to authorize $120,000 of the ARP ESSER SEA Set-Aside funds for administrative costs to be allocated for a comprehensive suicide prevention and student wellness pilot tool for the remainder of the 2023-2024 school year. A roll call vote was taken, and the motion carried 8-0.

There were no comments or questions from the Board.

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INFORMATIONAL

BAHR

1. FY 2023 Financial Ratios - Information Item
2. FY 2023 Net Position Reports - Information Item

PPGA

3. State Review of Teacher Evaluations Annual Report – Information Item

SDE

4. English Learners Proficiency Annual Report – Information Item
5. Professional Standards Committee Annual Report – Information Item
6. FY 2023 K-12 Schools Accreditation Report – Information Item

WORK SESSION

IRSA

A. Open Education in Idaho

Dr. Bliss and Dr. Jonathan Lashley, Academic Technology Program Manager, Idaho State Board of Education led this workgroup session and said the purpose of this work session is threefold:

1. Update the Board on progress related to open education in Idaho, in connection with the Board's goal of increasing access and affordability of higher education for all Idahoans.
2. Apprise the Board of funding requests related to open education going to the Legislature in the upcoming session.
3. Request input from Board members regarding the nature and scope of Board staff presentations of outcomes to the Legislature.

Dr. Lashley shared the following.

- Board policy positions institutional support and recognition of Open Educational Resources (OER) as a key element of institutions' instructional materials access and affordability plans. Policy III.U. defines several required elements that must be included in institutional plans for course materials and identifies several optional elements that institutions may consider including. The policy also requires institutions to submit their plans to the Board office and provide annual reports related to implementation and outcomes.
- The four-year institutions submitted initial plans in summer 2022 and reported on progress toward implementation in June 2023. While not required to develop or submit plans under policy III.U., the community colleges electively adopted these requirements in response to the $1M in funding provided by the Legislature in FY2022 to support Project Z Degree. With this funding, the colleges have developed pathways that allow students to complete an associate degree while paying zero or very low instructional material cost.

- Over the past three years, the Board office has conducted a statewide survey of faculty to better understand their course-level efforts to increase access and affordability via instructional material choices.
- In 2024, the community colleges are requesting $400K in ongoing funding from the Legislature to continue and expand the Project Z Degree initiative. The Board office is requesting an additional $100K in ongoing funding to support open education initiatives across all institutions.
- Data from the self-reported Faculty Survey shows that many teachers are using required materials that cost $30 or less. In short teachers are finding low-cost ways to get materials to students other than using the OER system.
- Moving forward the institutions will summit data every June on how OER is impacting the student population and what their plans are moving forward.

Dr. Bliss asked the Board if this was the type of report they wanted to receive on this topic or should the data be presented to subcommittee Instruction, Research and Student Affairs committee instead. The Board members said this was definitely a topic they wanted to hear about in full committee meetings.

There were no further comments or questions from the Board.

To see a complete copy of this presentation please go to;
https://boardofed.idaho.gov/event/board-meeting-boise-17/ Work session, Tab A.

PPGA

B. Strategic Plan and Performance Measures Revision Recommendation – Information Item

Ms. Thompson led the discussion.

- The strategic planning process is a year-long cycle. In February the Board approves any updates or revisions to its five-year strategic plan.
- In April, institutions and agencies governed by the Board submit drafts of their strategic plans for review.
- In June all plans are finalized and submitted to the Division of Financial Management along with budget requests for the next fiscal year.
- In August, the Board begins reviewing data and information to help inform continuous improvement. This includes reviewing performance measure outcome reports and engaging in a work session to review recommendations from the Accountability Oversight Committee.
- In October, the Board engages in a second work session to review performance measure outcomes based on the K-20 strategic plan.
- In December of each year, the Board considers recommendations for strategic plan revisions in preparation for a February final approval.

DRAFT Minutes December 13, 2023

The question before the Board today is what are the top 10 measures the Board would like as part of their strategic plan since only 10 measures can be brought forward.

For example. Goal 1, Objective A's task is to Develop a single K-20 dashboard by end of FY24. That goal needs to be updated to say FY25. In order to accomplish this task Board staff will have to work with the IT team to develop an ISEE Modernization Update to be brought back to the PPGA Committee.

Discussion ensued on why the dashboard work has still not been completed even though it's been two years. It was said that having all of the K-20 data in one location would be helpful in being able to show student growth and student outcomes. Dr. Clark reminded everyone that the Board said they have three priorities: K-3 Literacy, K5-9 Math and Graduation Go-On Rates.

For Goal 2: Educational Readiness - it currently says to focus on ELA, Math and Science and the recommendation is to focus, as far as the strategic plan goes, more on Math proficiency.

For Goal 3: Educational Attainment - the recommendation was to move measure 3 to a different section of the strategic plan since it deals with timely completion.

Some of the changes outlined in the strategic plan need to be adjusted to work for 2 and 4-year institutions. Board staff will therefore work with our research team and institutional researchers to make sure we phrase that measure appropriately, so it works for all institutions.

For Goal 3: Access - it was recommended to remove measures 1-5 out of the strategic plan and have reporting done separately in a college affordability report and refocus the strategic plan on measures within our control.

For Goal 4: Workforce Readiness - a suggestion for FY23 is to add a new measure which will need a benchmark in measuring the percent of high school students participating in apprenticeships.

Ms. Thompson said currently there are 33 strategic measures in the plan. Her recommendation before today was to narrow that focus to 17 and then cut more from the report to get to the top 10 measures. Based on the discussion today Ms. Thompson will return to the office and redraft the strategic plan utilizing the suggestions heard during the discussion today and return with a revised strategic plan at a future Board meeting.

There were no further comments or questions from the Board.

To see a complete copy of this presentation please go to: https://boardofed.idaho.gov/event/board-meeting-boise-17/ Work session, Tab B.

There being no further business a motion to adjourn was entertained.

BOARD ACTION
M/S (Critchfield / Keough) I move to adjourn the meeting at 4:40 p.m. (MT). A roll call vote was taken, and the motion carried 8-0.

DRAFT Minutes December 14, 2023

SPECIAL BOARD OF EDUCATION MEETING
December 14, 2023 Minutes
Office of the State Board of Education
OSBE Conference Room
Suite 307
Boise, ID 83702

A special meeting of the Idaho State Board of Education was held at the offices of the Idaho State Board of Education on December 14, 2023. Board President Dr. Linda Clark called the meeting to order at 8:15 a.m.

Present

Dr. Linda Clark, President	Kurt Liebich
William G. Gilbert, Jr., Vice-President	Shawn Keough
Superintendent Critchfield, Secretary	Cally Roach
Dr. David Hill	Cindy Siddoway

Absent
None

Thursday, December 14, 2023 – 9:00 a.m. (Mountain Time)

EXECUTIVE SESSION – (Closed to the Public)
Action Item to go into Executive Session - No action taken in Executive Session. (Idaho State University)

BOARD ACTION
M/S (Gilbert / Hill) I move the Board go into Executive Session pursuant to Idaho Code Section 74-206(1)(a) "to consider hiring a public officer, employee, staff member or individual agent, wherein the respective qualities of individuals are to be evaluated in order to fill a particular vacancy or need." A roll call vote was taken, and the motion carried 8-0.

BOARD ACTION
M/S (Gilbert / Keough) I move to end executive session and reconvene in open session. A roll call vote was taken, and the motion carried 8-0.

DRAFT Minutes December 14, 2023

Post Executive Session Statement

The Board convened in Executive Session to consider personnel matters under Idaho Code Section 74-206(1)(a). The Board concluded its discussion and took no action on the matters discussed. If action is necessary in these matters it will occur at a meeting properly noticed under the Open Meeting Law.

There being no further business a motion to adjourn was entertained.

BOARD ACTION
M/S (Gilbert / Siddoway) I move to adjourn the meeting at 4:25 p.m. A roll call vote was taken, and the motion carried 8-0.

DRAFT Minutes December 21, 2023

SPECIAL BOARD MEETING
December 21, 2023
Idaho State University
ICCU Bengal Alumni Center
1601 E. Bonneville Street
Pocatello, ID 83201

A special meeting of the Idaho State Board of Education was held via Zoom teleconference December 21, 2023, with the call originating from Idaho State University in Pocatello, ID. Board President Dr. Linda Clark called the meeting to order at 1:00 p.m. (MT).

Present

Dr. Linda Clark, President	Dr. David Hill
William G. Gilbert, Jr., Vice-President	Cindy Siddoway
Kurt Liebich	Shawn Keough
Superintendent Critchfield, Secretary	Cally Roach

Absent
None

Thursday, December 21, 2023 - 1:00 p.m. (Mountain Time)

Prior to the start of the meeting Dr. Clark asked for a moment of personal privilege. She thanked the co-chairs of the ISU President Search Committee; Board members Cally Roach and Cindy Siddoway for their very capable direction of the search committee and in going through more than 80 applicants to bring five outstanding candidates for the board's consideration. She also thanked Mr. Matt Freeman, Executive Director of the Idaho State Board of Education for the vast amount of time he spent supporting the search committee in these efforts.

BUSINESS AFFAIRS AND HUMAN RESOURCES

1. Idaho State University - Consideration of Acting President Appointment - Action Item

Mr. Gilbert said the first item on the agenda is consideration of filling an acting president appointment for ISU. Recognizing the need for continuity of executive leadership and to bridge the 28-day time period between retiring President Satterlee's last day on

December 30, 2023, and with the expected start date of the candidate to be considered being January 29, 2024, the Board recommends that Brian Sagendorf, current ISU Vice President of Operations, fill the interim period as acting president of ISU.

Mr. Sagendorf currently serves as ISU's Vice President of Operations. In that capacity he oversees Human Resources, Environmental Health, Safety and Sustainability, Public Safety, Facilities Services, and University Events. Prior to this role he served as ISU's Chief HR Officer for nine years. He has worked at ISU for over 20 years and is also an ISU alum. He is widely known and respected on campus as a thoughtful leader.

Following Board Policy 2 F, subsection 2 B.ii, it is recommended that the temporary salary for the 28-day interim period from January 1, 2024, through January 28, 2024, be $32,200. Board Policy II.F.2.b.ii. provides that "[a]ppointments to acting or interim positions shall be at base salary rates no greater than ten percent (10%) more than the appointees' salary rate immediately prior to accepting the interim appointment or ninety-five percent (95%) of the prior incumbent's rate, whichever is greater."

BOARD ACTION
M/S (Gilbert / Siddoway) I move to approve the appointment of Brian Sagendorf as Acting President of Idaho State University, for the period January 1, 2024, through January 28, 2024, dates inclusive, and to authorize a temporary salary for that period in the amount of $32,200. A roll call vote was taken, and the motion carried 6-0. Due to a technical difficulty votes were not recorded for Board members Roach and Superintendent Critchfield.

There were no comments or questions from the Board.

2. Idaho State University - Consideration of President Appointment - Action Item

Mr. Gilbert recapped the following for the Board members.

On June 12, 2023, President Kevin Satterlee announced his retirement effective December 31, 2023, after leading Idaho State University (ISU) for the past five and half years.

ISU engaged a search firm to manage the recruitment process. Board members Cally Roach and Cindy Siddoway were named as co-chairs of the ISU President Search Committee. Other members of the Committee included representatives from campus leadership, staff, faculty, students, athletics, ISU Foundation, Shoshone-Bannock Tribes, and the Pocatello business community.

The Committee screened over 80 candidates, narrowing the field to 12 semi-finalists. The Committee interviewed the 12 semi-finalists over two days and identified five finalists for the Board to interview and consider.

The Board met in executive session on December 14, 2023, to interview and evaluate the qualities of the five finalists.

The candidate being brought forth to be the next president of Idaho State University is Dr. Robert Wagner. Dr. Wagner comes to ISU after serving at Utah State University for 16 years. Most recently as Utah State's executive vice president and chief operating officer. His tenure at Utah State also included serving as vice president of academic and instruction services and executive vice provost and dean of academic and instructional services. This appointment would be effective January 29, 2024, for a term of two- and one-half years at an annual salary of $420,000.

BOARD ACTION
M/S (Gilbert / Liebich) I move to approve the appointment of Dr. Robert Wagner as President of Idaho State University, effective January 29, 2024, for a term of two and one half years, at an annual salary of $420,000, and to authorize the Board President to execute an employment agreement with Dr. Wagner. A roll call vote was taken, and the motion carried 6-0. *Due to a technical difficulty votes were not recorded for Board members Roach and Superintendent Critchfield.

Dr. Clark thanked the Board members and said that by your action, we have appointed Dr. Robert Wagner as the next president of Idaho State University. Congratulations to Dr. Wagner.

There were no further comments or questions from the Board.

There being no further business a motion to adjourn was entertained.

BOARD ACTION
M/S (Gilbert / Keough) I move to adjourn the meeting at 1:06 p.m. (MT). A roll call vote was taken, and the motion carried 6-0. *Due to a technical difficulty votes were not recorded for Board members Roach and Superintendent Critchfield.

Dr. Clark said thank you very much, this meeting is adjourned. As a reminder, additional activities are taking place at Idaho State University as announced in the media.

DRAFT Minutes January 9, 2024

Special Board of Education Meeting
January 9, 2024
Idaho State Board of Education
OSBE Conference Room
650 West State Street, Suite 307
Boise, ID 83720

A special meeting of the Idaho State Board of Education was held at the offices of the Idaho State Board of Education on January 9, 2024. Board President Dr. Linda Clark called the meeting to order at 1:00 p.m. (Mountain Time).

Present

Dr. Linda Clark, President	Kurt Liebich
Superintendent Critchfield, Secretary	Cally Roach
Shawn Keough	Cindy Siddoway

Absent

William G. Gilbert, Jr., Vice-President	Dr. David Hill

Tuesday, January 9, 2024 – 1:00 p.m. (Mountain Time)

PLANNING, POLICY, AND GOVERNMENTAL AFFAIRS

1. Idaho State University (ISU) SU Holt Arena Renaming – Action Item – Acting President Brian Sagendorf

Mr. Liebich introduced ISU acting President Brian Sagendorf who shared the following with the Board. He said that Idaho Central Credit Union (ICCU) has been a valued partner to Idaho State University and has provided philanthropic support to the University in many ways over the years. ICCU has committed a capital gift of $6 million in support of Idaho State University Athletics over the next 12 years.

Pauline Thiros, Director of Athletics, Idaho State University, shared how the renaming of the Arena would not replace Dubby Holt's legacy at ISU. In fact, ISU developed an initial and immediate plan to honor Dubby Holts legacy in Bengal Athletics and at the university in time for the fall season. Plans are underway to chronicle Dubby's contributions with a large mural in the north side concourse, as a permanent display in

what will be a very dramatic hall of champions currently being designed in the Alumni Center.

As work continues on the grounds and the exterior of the arena, development of additional ways to recognize Dubby and ensure that patrons well into the future understand the role he played in making the facility possible are under way.

The annual gift totaling $6 million dollars over 12 years represents timely and critical support for student athletes. This gift will help ISU meet the significant obligations facing them to comply with the requirements of the new Big Sky Conference strategic plan such as reaching maximum scholarship equivalencies, employing the NCAA maximum number of coaches, prioritizing the scheduling of home games to keep student athlete's home and in the classroom and not on the road for 5 or 6 weeks. It includes providing the cost of attendance assistance to our student athlete at a minimum threshold. And constructing fueling stations with increased nutritional resources. There will also be a nutritionist on staff as well as mental health counseling.

In addition, this gift will allow ISU to play two contractually arranged FBS games to generate approximately a million dollars that will go towards the athletics budget every year.

BOARD ACTION
M/S (Liebich / Roach) I move to approve the renaming of Holt Arena to the ICCU Dome in recognition of ICCU's charitable capital gifts to renovate the arena. A roll call vote was taken, and the motion carried 6-0. William G. Gilbert, Jr. and Dr. David Hill were absent from voting.

Mrs. Roach asked if any consideration was given when negotiating with ICCU in retaining or incorporating the whole name for the arena which included the mini dome from the original honor. Ms. Thiros said yes, many combinations of names were discussed with ICCU which would have combined all of the names but ultimately the decision was made to call it the ICCU dome.

Mrs. Roach said 12 years seems like a long time to be committed, and while this was a lot of money, was the time commitment also part of the negotiations. Ms. Thiros said it was. Many of these agreements can be anywhere from 10 to 20 years so the length of this commitment is pretty common.

Dr. Clark said she knew a lot of time and energy had gone into bringing this forward, and asked Ms. Thiros to elaborate a little bit on the process used to gain input from the various segments of the ISU community concerning this name change. Ms. Thiros said that the conversations took place largely inside the University community, with ICCU

executives and a lot of phone calls with various University stakeholders. Everyone was asked to share their feelings in moving forward with the name change.

Superintendent Critchfield asked if anyone had reached out to Dubby Holt's family to get their input on this issue. Ms. Thiros said she did speak with Dubby's great niece and his great nephew when they attended the Big Sky Conference Sports Hall of Fame that honored Dubby, and they were supportive. Even though they love seeing his name on the Arena he was first and foremost about doing what was best for the students and this deal would have tickled him as he was a big wheeler dealer.

There were no further comments or questions from the Board.

STATE DEPARTMENT OF EDUCATION

1. Assessment Item Review Committee Recommendations – Action Item

Superintendent Critchfield gave a short recap of why this agenda item has been brought forward. She said that around the state, parents to teachers, administrators, charters, and traditional public schools review test questions, which takes place every year. However, there's one particular passage that rose to a level of scrutiny and the committee asked that this be brought to the Board's attention.

Ryan Cantrell, Assistant Superintendent of Public Instruction, State Department of Education, continued the discussion. In accordance with Section 33-134, Idaho Code, a review committee of thirty (30) individuals from each of the six (6) educational regions in the state met in the fall to review computer adaptive test questions.

The committee is authorized to make recommendations to the State Board of Education and the State Department of Education to revise or eliminate summative computer adaptive test questions from the assessment forms.

After reviewing the questions, the Assessment Review Committee recommended the removal of one (1) Grade 11 ISAT ELA/Literacy stimulus set (reading passage and related questions) which was determined to not pass the Idaho Bias and Sensitivity guidelines. This stimulus set affected 14 total items.

Superintendent Critchfield stressed that the State Department of Education believes that we can still assess the information and the skill set of a student within the English Language Arts test with a different question.

BOARD ACTION

M/S (Liebich / Critchfield) I move to adopt the recommendation of the Assessment Review Committee for the removal of one (1) Grade 11 ISAT ELA/Literacy

stimulus set as submitted. A roll call vote was taken, and the motion carried 6-0. William G. Gilbert, Jr. and Dr. David Hill were absent from voting.

Mr. Liebich asked a clarifying question. He said in his pre-read he noticed that the cost of making this change would be in the realm of $57,000 and wondered at the high cost of making a change to just one question. Mr. Cantrell said the cost is to reconfigure the item bank. This includes psychometric services to ensure the testing form without the removed items continues to produce valid and reliable scores. The details of these psychometric services are outlined in the 200-page technical report produced by Cambium Assessment, Inc. annually. The actual cost will depend on the acceptance of the items by the Smarter Balance Assessment Consortium ("Consortium"). If the Consortium also decides to remove the item for all participating states, Idaho does not have to pay to reconfigure the item bank specific to Idaho.

There were no further comments or questions from the Board.

There being no further business a motion to adjourn was entertained.

BOARD ACTION
M/S (Critchfield / Keough) I move to adjourn the meeting at 1:32 p.m. (MT). A roll call vote was taken, and the motion carried 6-0. William G. Gilbert, Jr. and Dr. David Hill were absent from voting.

TAB	DESCRIPTION	ACTION
1	BAHR - BOISE STATE UNIVERSITY – LODGING AND CONFERENCE SERVICES AGREEMENT FOR THE STRENGTH OF YOUTH 2024-2026	Action Item
2	BAHR - BOISE STATE UNIVERSITY - ONLINE PROGRAM FEES	Action Item
3	BAHR - IDAHO STATE UNIVERSITY - GROUND LEASE EXTENSION WITH IDAHO DIVISION OF VETERANS SERVICES	Action Item
4	BAHR - UNIVERSITY OF IDAHO – CONSTITUTION OF THE UNIVERSITY OF IDAHO FACULTY FSH 1520	Action Item
5	BAHR - UNIVERSITY OF IDAHO – ACADEMIC RANKS AND RESPONSIBILITIES FSH 1565	Action Item
6	BAHR - UNIVERSITY OF IDAHO – AMENDMENT TO GROUND LEASE BETWEEN UNIVERSITY OF IDAHO AND PALOUSE MALL, LLC	Action Item
7	BAHR - LEWIS-CLARK – REQUEST FOR CONSTRUCTION AUTHORIZARION FOR CLEARWATER HALL CONSTRUCTION PROJECT	Action Item
8	SDE – EMERGENCY PROVISIONAL CERTIFICATES	Action Item
9	SDE – ADOPTION OF EDUCATION TESTING SERVICE PARAPROFESSIONAL ASSESSMENT QUALIFYING SCORE	Action Item

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BOISE STATE UNIVERSITY

SUBJECT
Lodging and Conference Services Agreement – For the Strength of Youth

APPLICABLE STATUTE, RULE, OR POLICY
Idaho State Board of Education Governing Policies & Procedures, Section V.I.2.a.

BACKGROUND/DISCUSSION
Boise State University (BSU) requests approval of a multi-year summer lodging and conference services agreement with Brigham Young University's For the Strength of Youth (FSY) program. The FSY program is a world-wide, week-long Church of Latter-Day Saints conference for high school students, held on college campuses across the world each summer.

This agreement is for three annual 5-week, 9 session summer programs for 3,750 students and staff; the agreement includes the use of university facilities as well as room and board. Boise State expects to generate approximately $6.5M from this agreement over three years.

IMPACT
The proposed agreement will generate approximately $6.5M in revenue over three years while creating the opportunity for participants to familiarize themselves with Boise State University.

ATTACHMENTS
Attachment 1 – Conference Agreement

STAFF COMMENTS AND RECOMMENDATIONS
The proposed agreement is for Boise State University (lessor) to enter into a multi-year lease of real property with Brigham Young University's For the Strength of Youth (FSY) program (lessee). The agreement provides all-inclusive costs for housing, dining, and space usage details within the three (3) year contractual period requested by the FSY program, which is estimated to total more than $6.5M.

According to Board Policy V.I., Section 2.a. any institutional lease of real property in excess of $2M, requires Board review and approval.

Staff recommends approval.

BOARD ACTION
I move to approve the request by Boise State University to enter into a 3-year agreement with the For the Strength of Youth program as outlined herein.

Moved by _____ Seconded by _____ Carried Yes _____ No _____

BOISE STATE UNIVERSITY

GUEST AND CONFERENCE HOUSING AGREEMENT

FSY, LLC; For the Strength of Youth Conference

This Agreement is made by and between Boise State University, a state of Idaho public institution of higher education (the "University"), by and through its University Events program, and FSY, LLC a Delaware nonprofit limited liability company which is contracted by The Church of Jesus Christ of Latter-day Saints to provide operational services in support of the Church's religious **For the Strength of Youth Conference ("FSY") Program** ("Sponsor").

SECTION ONE: LODGING AND EVENT SPACE RESERVATIONS

1.1 University coordinates conference services including housing, event space, dining, audio/visual, and other services as necessary for University units and authorized, external third parties, including Sponsor who seeks to utilize the University's housing for summer camps and/or conferences or similar engagement (sometimes referred herein as Sponsor's "Event"). Sponsor shall be responsible for the supervision and oversight of all of its camp or conference participants, counselors, employees, agents, or any other person on University property at Sponsor's express or implied invitation during Sponsor's Event (collectively, the Sponsor's "Group" and each individually an attendee, participant or Group member).

1.2 Sponsor acknowledges that it has reviewed, understands and agrees to abide by the applicable University policies, guidelines, and guest information published as of the date this Agreement is signed at https://www.boisestate.edu/guesthousing/ and https://www.boisestate.edu/events/office-of-university-events , each of which is incorporated herein by this reference. In the event of conflict between this Agreement and any University policies, guidelines, and guest information, this Agreement prevails. For clarity, the University acknowledges that although FSY activities includes group activities include religious speech and are likely to fall within the University Policy 1100 definitions of *3.5 Disruptive Noise* and 3.*11 Plainly Audible* sound, none of the standard FSY program activities constitute *3.4 Disruptive Activity*. For further clarity, Sponsor acknowledges and agrees to support University's Event Services endorsement/sponsorship guidelines, namely, that use of University space for FSY does not imply endorsement or sponsorship by Boise State University.

1.3 Reservations are confirmed and lodging and event space is guaranteed when Sponsor and University execute this Conference Agreement. University will reserve rooms and event space for summer 2024 based on the Proposal attached hereto as **Exhibit A** ("Proposal"). For subsequent annual summer programming to be governed by this Agreement, University will make best efforts to submit to Sponsor a similar form of proposal not later than October 31 of the year prior to such programming, which proposal must be accepted in writing by Sponsor in order to confirm reservations and guarantee lodging and event space. Each year,Sponsor may request changes to the count by communicating such changes to University sixty (60) days prior to the check-in date specified on the reservation request (or otherwise agreed to by

University). As of sixty (60) days prior to the check-in date, Sponsor shall be responsible for the reserved space and associated fees agreed to at that time regardless of the number actual attendees, unless other arrangements have been agreed to in writing by University. University may modify Sponsor's residence hall and/or lodging or event space assignments to accommodate changes in size or number of Sponsor's Group.

1.4 University will make hall and room assignments, and event space reservations, based on Sponsor's request, the availability of the residence hall or event space, the size of the Event, and the ratio of minors to adults. Sponsor is not guaranteed exclusive occupancy of any residence hall or event space. Unless otherwise agreed between Sponsor and University, University reserves the right to assign multiple camps or conferences to the same or several residence halls or event spaces.

1.5 The University seeks to create an environment free from undue noise. Quiet hours are daily from 10:00PM to 7:00AM. University reserves the right to terminate the Agreement or request removal of any Group member following excessive noise complaints (more than three per stay).

1.6 Unless alternative arrangements are agreed to by University, Sponsor must assure all attendees arrive no sooner than the check-in date and time, and depart no later than check-out date and time specified in Sponsor's reservation confirmation issued by University. Late departure is not permitted, however, in the event a late departure occurs, Sponsor will be charged the applicable nightly rate per person, per night, plus a two-hundred dollar ($200.00) holdover charge until proper check-out and departure is completed. Early arrivals without prior arrangements may be accommodated if space is available and will be charged the applicable nightly rate plus an additional charge of one-hundred-twenty-five ($125.00) per person. The space available or provided to an attendee in the event of early arrival or late departure may not be the same space the guest is or was assigned during their assigned visit.

1.7 Furnishings provided may vary based on type of housing assigned, and are more fully described on the Summer Guest Housing website, located at https://www.boisestate.edu/guesthousing/ and incorporated fully herein by this reference.

1.8 Sponsor shall advise University promptly of any issue of disrepair in the rooms, common areas of the residential halls, or reserved event spaces. Sponsor shall keep all sleeping rooms, common areas and reserved event spaces clean and free of debris.

1.9 Sleeping rooms must be locked when unoccupied. The University will issue one key and/or key card to each individual assigned a room and access cards for buildings as applicable. During the Event, Sponsor must report any lost key card or building access card to University immediately. Sponsor must return all keys and access cards during check-out. All keys and access cards not returned to the University by the agreed upon check out date and time will accrue a missing key or missing access card charge, as listed on the Guest Housing website. Sponsor is responsible for providing all guests with lanyards and access cardholders for their conference. Otherwise sponsors must purchase lanyards and or access cardholders from the University for a $2.00 fee per person.

1.10 Sponsor and Sponsor's Group must remove all camp or conference materials, trash, and any other personal belongings or property from all sleeping rooms, common areas and event spaces upon check-out. The residence halls should be left in neat and orderly condition and all linens collected and left atop the bed in each room. The rooms and floors should be free of debris and any trash cans should be emptied. If room configurations are altered during the camp or conference, the rooms must be returned to their original configuration by check-out. Sponsor is encouraged to participate in any pre and post-inspection of Sponsor's rooms. If Sponsor is unable to attend at the required time, sponsor may not dispute damage charges assessed during inspection. Pictures shall be provided for any large damage being charged to Sponsor.

1.11 Sponsor shall be responsible for any damage to residence hall, sleeping rooms, event space, or

other University property caused by Sponsor or Sponsor's Group. Sponsor shall pay for the costs of any repairs, cleaning, additional housekeeping, or supplemental maintenance charges that the University incurs because of misuse, abuse, or destruction of University property.

1.12 If any of Sponsor's Group fails to remove personal property, the University may remove and store such property at the Sponsor's expense for a period not to exceed thirty (30) days. If Sponsor has not claimed property within the time designated, the University may dispose of the property and shall not be liable to the Sponsor or any attendee from Sponsor's Group for any damages arising from this action. Sponsor further agrees to be financially responsible for the recovery of any such property and for any expenses incurred by the University associated with such, including a trash or property removal fee, if applicable.

1.13 The University respects the Sponsor and Sponsor's Group's right to privacy. However, the University reserves the right to enter the any member of Sponsor's Group's rooms (i) at any time without prior notice for health, safety, or welfare emergencies, or (ii) with reasonable notice and coordination with Sponsor's personnel, for routine or requested maintenance in or outside of the Sponsor's Group's rooms, and/or to ensure compliance with University policies. Sponsor agrees to cooperate fully with University personnel and understands that such inspection or maintenance may entail noise and/or inconvenience.

1.14 All University staff members are Boise State University officials. Guests are required to comply with lawful orders or reasonable requests from any University official. Verbal, physical, or emotional abuse directed at any staff member or guest will not be tolerated. The offender may be immediately removed from campus housing, in the University's reasonable discretion, in which event Sponsor will continue to be responsible for all charges and fees.

SECTION TWO: CHARGES AND PAYMENTS

2.1 Sponsor agrees to be responsible for all payments and any other costs and expenses, including room rates and incidental charges or additional services requested and incurred, as a result of or relating to Sponsor's Event or otherwise relating to Sponsor's Group. All guest rooms are subject to State and local taxes. All groups staying on campus for less than 30 consecutive days are required to pay these taxes. Organizations that are exempt from State and local taxes must submit an Idaho ST-101 tax exempt certificate prior to event quote being approved. This form must be approved by Boise State University and once approved tax will be removed from the quote for approval. All documentation will be attached to this agreement.

2.2 Unless otherwise agreed to in writing between Sponsor and University, Sponsor agrees to pay the applicable rates and charges listed on the Proposal.

2.3 Sponsor shall pay upon execution of this Agreement, or upon the anniversary thereof, a deposit equal to fifty percent (50%) the total estimated cost of Sponsor's annual booking to confirm booking minus the administrative fee provided above. Lodging and event space is not confirmed and reserved until the deposit and administrative fee have been paid.

2.4 Sponsor is responsible for damage other than normal wear and tear caused by Sponsor or its Group members to University facilities and property, as well as loss or damage to keys and access cards. In order to recoup University's costs for such damages, Sponsor will be charged $75.00 for each lost, broken, or bent key, and $40.00 for lost exterior/interior door access cards. In addition, lost or severely damaged linen will be replaced at $50.00 per bed and excessive cleaning will be charged at $150.00 per attendee requiring excessive cleaning services. Staff time spent addressing damages or substantial changes to requested services will be charged at the hourly rate of $25.00 per hour (with a minimum of two hours) plus the cost of any materials and supplies used or repairs made. If damages must be addressed outside regular business hours, an after-hours charge may also be assessed. These amounts will be itemized on the final invoice.

2.5 University will invoice Sponsor for all remaining costs, charges, or services, including any damages or substantial changes to requested services, within sixty (60) days' of the check-out date. Sponsor agrees

to pay all charges due within thirty (30) days' of the date of the invoice. Sponsor hereby acknowledges and agrees that, after this date, the Sponsor will incur and owe a late fee equal to $200.00 or 1% of the outstanding balance, whichever is greater, for each additional thirty-day period the invoice remains unpaid in whole or in part. Payments must be made in the form of check drawn within the United States, money order, wire transfer, or as otherwise directed by the University. Card transactions can be requested but all fees associated with these transactions are the responsibility of the Sponsor.

2.6 Sponsor must provide written notice of any cancellation of an Event. Cancellations received ninety (90) days or more before the first check-in date will incur no cancellation fee. Sponsor will incur a cancellation fee as provided in the table below for any subsequent cancellation. In the instance a cancellation fee is necessary, the paid deposit minus the non-refundable administrative fees will be applied before final billing. Sponsor is expected to pay the cancelation fee within 7 days' of its written notice of cancellation. If canceled prior to 90 days, their refundable deposit will be returned via check within sixty days of the date of cancellation notice, minus any non-refundable fees.

Cancellation Date	**Fee**
Cancellation within 90 days of May 15	$10,000
Cancellation within 60 days of May 15	30% of full cost
Cancellation within 30 days of May 15	50% of full cost

2.7 Notwithstanding the above, in the case the Event is or becomes prohibited or space is made unavailable because of a public health order, national or state declaration of emergency, or other unforeseen occurrence as reasonably determined by University, cancellation fees will not apply. In this instance, the non-refundable administration fee and deposit can be applied toward a rescheduled Event or refunded in entirety. Further, should any part of the University necessary to the Event be destroyed by fire or any other cause or should casualty or occurrence render the fulfillment of the Agreement by the University impossible, the Agreement shall terminate and the Sponsor shall pay for its use of said facilities and services, if any, only up to the time of said termination. Sponsor and its participants hereby waive any claim for damages should the Agreement be terminated by the University for any reason beyond the University's reasonable control.

SECTION THREE: ADDITIONAL SERVICES

3.1 Meals shall be provided to Guest members in accordance with the Proposal. The University has contracted dining service operations which provide board dining, retail food sales, catering, concessions, and vending. Unless otherwise agreed upon in advance, no food or beverages may be served or sold on campus unless provided by the University contracted dining services provider. Food and beverage for individual consumption is permitted. Other exceptions must be requested in advance. Please review the Catering Guidelines at https://www.boisestate.edu/diningservices/external-catering-nav/ and contact University Event Services to coordinate or request additional food and beverage services.

- The parties hereby agree in advance upon an exception to the above provisions and guidelines for pizza night: Sponsor has permission to bring in pizza from an approved third-party vendor. Purchased beverages brought onto campus must be Coca Cola products.
- Food allergies and/or dietary restrictions must be made known to University Dining Services at least seven days prior to the event.

3.2 Upon request, University shall arrange overnight parking needs, or other transportation options, through the Department of Public Safety for Group's stay on campus. Requests for parking arrangements or other transportation options should be made not less than ten (10) business days prior to the Event. The University has numerous options for parking on campus, which are more fully described on the Event Parking website, located at https://www.boisestate.edu/publicsafety-transportation/event-policies/ and incorporated herein by this reference. University shall submit the request for parking on behalf of Sponsor

and include the cost on Sponsor's final invoice. Final charges invoiced will be based on the number of parking permits ordered. Parking is subject to availability and prior approval by University's Department of Public Safety.

3.3 Upon request, University shall arrange for audio-visual services in reserved event spaces. Audio-visual equipment, personnel needs, and goals should be communicated to University at the time of the reservation request, and no later than fourteen (14) days prior to the Event. Sponsor may bring and use its own audio-visual equipment, provided, however, that University shall not be responsible for the care, operation, support or maintenance of Sponsor's equipment.

3.4 Custodial services will consist of cleaning private bathrooms prior to the start of the scheduled arrival and after Group's departure. Public areas will be cleaned weekly, with the exception of weekends and holidays. In addition, toilet paper will be provided in all public and private bathrooms; additional toilet paper is available at the front desk at no cost. Sponsor and its attendees are expected to keep all rooms reasonably kept and return all rooms in a same or similar condition, ordinary wear and tear excepted.

3.5 Unless otherwise agreed, Sponsor's participants shall bring their own linens. Neither linens nor linen service is included. In the event a participant wishes to separately rent linens, the package shall include two sheets, one blanket, one pillowcase, one pillow, one towel, one washcloth. Linen service will include placement of linens in the bedroom (or other designated area for pickup). Beds will not be made. A limited number of additional blankets will be made available to Sponsor upon request and subject to availability through the front desk. Group shall not remove any linen from any University facility.

3.6 Residence hall common spaces and exterior grounds immediately surrounding the halls may be scheduled for use at no cost depending on location and availability. These spaces cannot be secured. The University is not responsible for the loss or damage to any personal property as a result of using these spaces or exterior grounds and cannot guarantee exclusiveness. Noise restrictions still apply in all outdoor and indoor common areas and spaces.

3.7 The University has exclusive rights for retail operations on campus. All retail sales require prior written approval from the Director of the Bronco Shop. All written requests should be submitted in advance, no later than sixty (60) days prior to the date of the event. Contact University for the proper forms and documents. https://www.boisestate.edu/studentunion/retail-sales-exemption-request-form/

3.8 Additional services may be available from other units of the University and will be provided at the rates and charges provided by those units and may be subject to additional agreements or additional terms and conditions.

SECTION FOUR: SUPERVISION

4.1 Boise State University does not assume Custody and Control of minors and does not provide supervision services. Sponsor must assume all supervision and responsibility for Group members, including minors on campus, for purposes of Sponsor's Event. Any use of University's campus where the responsibility for Custody and Control of the Minor participant(s) is assumed by Sponsor requires Sponsor's compliance with University's Protection of Minors Policy (Policy 12060) (https://www.boisestate.edu/policy/campus-security-and-safety/protection-of-minors/). For purposes of the policy and this Agreement, "minor" is defined as "any person under the age of eighteen (18)" and the terms "Custody and Control" means that Sponsor retains custody and control of all minors by "accepting supervision over and responsibility for Minors in the absence of their parent(s) or other legal guardian(s)." Specifically, Sponsor shall abide by the following:

4.1.1 Conduct background verification on Sponsor's employees, volunteers, and representatives. These background verifications must be at least as stringent as those conducted by the University on individuals covered under University's Background Verifications Policy (Policy 7005). Background verifications and training must be completed at least forty-eight (48) hours prior to the start of Sponsor's Event. Sponsor must submit a certification of compliance with the background verification and training to University. University may request any additional information deemed necessary to meet the requirements of the Protection of Minors Policy.

4.1.2 Ensure Sponsor's employees, volunteers, and representatives complete Minor Abuse

prevention training that meets or exceeds the minimum requirements as outlined in Section 7.4 of University's Protection of Minors Policy. Further, Sponsor must report Minor Abuse immediately if suspected. Minor Abuse is defined as "the infliction of physical injury, sexual abuse or exploitation of a Minor (whether by an adult or another Minor); negligent treatment or maltreatment of a Minor; or abandonment of a Minor. This includes the failure to make reasonable efforts to prevent Minor Abuse as well as emotional injury." Minor Abuse should be reported to either law enforcement or the Idaho Department of Health and Welfare. See University's Protection of Minors Policy for details.

4.1.3 Have standards of conduct designed to prevent the Abuse of Minors, which standards shall be available to University upon request.

4.2 At least 14 days prior to the Event, Sponsor shall register the Event with the Office of Institutional Compliance and Ethics at https://www.boisestate.edu/compliance/non-university-program-activity-registration-form/.

4.3 Violations of Section Four of this Agreement, including any violations of University's Protection of Minors Policy, may result in exclusion from the University, termination of this Agreement, and/or other measures.

SECTION FIVE: HEALTH AND SAFETY, APPLICABLE POLICIES

5.1 The health and safety of all persons on University property is essential. Sponsor and Sponsor's Group shall abide by all applicable University policies (including any procedures, regulations, and guidelines), and all applicable local, state, and federal laws, regulations, and ordinances at all times. Sponsor hereby agrees to share any applicable information with all Group members, including Minors' parents or legal guardians, and agrees to abide by University Policies, available at https://www.boisestate.edu/guesthousing/guest-information/policies-2/, which are incorporated herein, as well as all Housing and Residence Life Community Standards (available here: https://www.boisestate.edu/housing/housing-help-center/policies-and-standards/community-standards/) which are incorporated herein. However, in the event of a conflict between these Policies and Standards and this Agreement, this Agreement shall take precedence.

5.2 In an effort to minimize risk of infection and help slow the spread of COVID-19 and other infectious illness, the University's Public Health Office has issued and will continue to issue campus-wide health guidance (the "Public Health Guidance") applicable to use of University's campus and facilities, including University housing. The Health Guidance is updated from time totime and available here: https://www.boisestate.edu/coronavirus-response/health-guidelines/. In addition, the University may advise Sponsor of additional guidelines applicable to Sponsor's use of University spaces at any time prior to or during the conference or camp ("Public Health Requirements"). Sponsor must, and must require all Group members, to comply fully with any and all Public Health Guidance or Public Health Requirements at all times Sponsor and any of Group Members are present on the campus or utilizing facilities of University.

5.3 All University Policies applicable to the use of University's campus and facilities are fully applicable to Sponsor and all Group members. University policies are available on the University's website, https://www.boisestate.edu/policy/ , and are incorporated into this Agreement.

5.4 Without limiting the foregoing, Sponsor and participants must comply with the following:

5.4.1 In accordance with the Smoke and Tobacco-Free Campus Policy (Policy 9110), the entire Boise State University campus is smoke-free. Smoking and use of tobacco products is prohibited on-campus and in University owned vehicles.

5.4.2 Under Idaho state law, firearms are prohibited in any residence hall, unless possessed by a qualified law enforcement officer or retired law enforcement officer. All other weapons are also generally prohibited on campus, subject to few exceptions. See University Possession of Firearms/Weapons on University-Owned or-Controlled Premises (Policy 12080). Included in the prohibition is weapons being stored in vehicles on University grounds. Weapons may be immediately confiscated by the Boise City Police Department, Campus Security Officers and/or other University employees. Individuals found in violation of this policy may be removed and

excluded from campus.

5.4.3 The possession, manufacturing, distribution, use or sale of drugs or drug paraphernalia is prohibited on University grounds and buildings. This includes illicit and misuse of prescription drugs. The odor of a drug that can be identified by two or more individuals is enough to reasonably determine use. Security or police may be involved and immediate termination of housing privileges may result for Sponsor and/or its participants.

5.4.4 Idaho state law prohibits the use and distribution of alcohol to any person under the age of 21. For the safety and welfare of all members of the community we expect responsible drinking behaviors of those of legal drinking age. Common sources of alcohol and/or devices intended for the rapid consumption of alcohol is prohibited at all times in all areas. Consumption of alcohol in public spaces is strictly prohibited. This includes, but is not limited to lawns, courtyards, parking lots, lounges, hallways, walkways, etc. Open containers are not allowed in public spaces. Consequences for violating the alcohol policies may include, but not limited to, disposal of all alcoholic products, removal from housing, and/or referral to Security and/or Police. Parental and/or guardian notification for those under the age of eighteen (18) may occur for those found in violation of this policy.

5.4.5 Participating in dangerous pranks, hanging or climbing outside of windows, balconies, roofs, or other conduct that creates unreasonable risk of harm to a person or property is strictly prohibited.

5.4.6 Tampering, damaging, or inhibiting the use of fire/safety equipment which includes blocking designated fire exits, smoke detectors, alarms, sprinklers, fire doors, and fire extinguishers, in addition to the intentional act of setting a fire is a violation of state law, and University regulations. All Group members MUST leave the facility immediately when a fire alarm sounds. Group members will not be permitted to reoccupy until the University or fire officials reauthorize occupancy. In addition, all occupancy standards set by the University and/or State are to be observed.

5.4.7 No sidewalks, doors, passages, or ways of access to or through facilities or to any other part of the University shall be obstructed or left unsecured by the Sponsor or Sponsor's Group. Propping of doors to avoid access card use is a security risk and not permitted.

5.4.8 The University operates its facilities in such a manner as to ensure that no individuals with disabilities are excluded from participation in programs, activities or services therein solely because of their disability. Sponsor shall timely identify and refer participants and potential participants who are individuals with disabilities to the appropriate University resources in accordance with Policy 1075 and Policy 2080.

5.5 Discrimination and harassment are prohibited by University policy. Any allegations of discrimination or harassment will be addressed in accordance with University's Non-Discrimination and Anti-Harassment Policy (Policy 1060), Nondiscrimination on the Basis of Disability Policy (Policy 1075), and/or Sexual Harassment, Sexual Misconduct, Dating Violence, Domestic Violence, and Stalking (Policy 1065), as applicable and may result in one or more Group member's removal from University housing, termination of Event participation, and/or potential legal action. Sponsor and/or any Group member found responsible for violation of these policies (or other applicable University policies) may have this Agreement and/or housing options terminated immediately and without warning, at discretion of the University.

5.6 Sponsor should report any emergencies by calling 911 or by activating a blue emergency phone around campus. Non-emergency suspicious behavior or criminal complaints should be reported to the Department of Public Safety, (208) 426-6911. In the event of any emergency within University housing, Sponsor must immediately notify University personnel. University staff will assume authority for response and will enact appropriate emergency procedures. The University will involve law enforcement, medical personnel, and/or chaperone's if applicable depending on the situation involved.

5.7 All applicable University policies, Public Health Guidance, Public Health Requirements, and other local, state, and federal, regulations concerning health, safety, and public order in the State of Idaho, the County of Ada, the City of Boise, and the University shall be observed, including without limitation those

specified in this Agreement. If Sponsor or any Group member fails to comply with the foregoing, the University may terminate this Agreement in whole or in part at any time. In the event of termination for failure to comply with said regulations, Sponsor shall be liable to the University for all charges and expenses incurred to date and the amount provided above under cancellation fee (utilizing the termination date in lieu of the cancellation date) shall be owed as liquidated damages.

SECTION SIX: LIABILITY RELEASE AND INDEMNIFICATION

6.1 Sponsor assumes all reasonable risks associated with its use of a University residence hall, University event spaces, or any other area of University's campus or property, as well as any dining or other services. Sponsor knowingly and voluntarily waives and releases the University, the Idaho State Board of Education, the State of Idaho, and each of their respective officers, agents, employees, and representatives (each a "University Party" and collectively, the "University Parties") from all past, present, and future claims of any type for any harm or loss, including but not limited to, economic loss, personal injury, disease, death, or property damage arising out of or related to this Agreement, Sponsor's Event, and Sponsor's use of a University residence hall, University event spaces, or any other area of the University's campus or property, as well as any dining or other services ("Losses") except to the extent that the Losses arise from the gross negligence, breach of this Agreement, violation of law, or willful misconduct of one or more of the University Parties. To the extent permitted by law, Sponsor agrees to indemnify, hold harmless, and forever covenant not to sue any University Party for any claims, liabilities, or expenses, including without limitation damages, personal injury, death, medical expenses, disability, lost wages, loss of capacity, property damage, court costs, attorneys' fees, or any other loss of any kind ("Claims"), except to the extent that the Claims arise from the gross negligence, breach of this Agreement, violation of law, or willful misconduct of one or more of the University Parties. Sponsor acknowledges and agrees that this assumption of risk, waiver and release, indemnification, and hold harmless shall be binding on Sponsor and its agents, representatives, heirs and assigns.

6.2 Sponsor shall maintain, or cause to be maintained, insurance policies or alternative policies, which may include a program of self-insurance or alternative risk transfer, of the types and in the amounts described below. Sponsor shall provide University with a certificate evidencing required insurance coverages and naming University as additional insured within thirty (30) days from execution of this Agreement. All policies, except Worker's Compensation, shall name the following Certificate Holder as an additional insured:

State of Idaho and Boise State
University Attn: Risk
Management
1910 University Drive
Boise, Idaho 83725

Should any of the above-described policies be canceled before the expiration date thereof, notice will be delivered in accordance with the policy provisions. Failure of Certificate Holder to demand a certificate or other evidence of full compliance with these insurance requirements or failure of Certificate Holder to identify a deficiency from evidence that is provided shall not be construed as a waiver of Sponsor's obligation to maintain such insurance. By requiring this insurance, University does not represent that coverage and limits will necessarily be adequate to protect University, and such coverage and limits shall not be deemed as a limitation on Sponsor's liability.

6.2.1 Commercial General Liability Insurance. Commercial general liability (CGL) with a limit of not less than $1,000,000 each occurrence and $2,000,000 aggregate.

6.2.2 Professional Liability. Left Blank Intentionally

6.2.3 Workers' Compensation and Employer's Liability. All statutorily required Workers' Compensation coverages and Employer's Liability at minimum limits of $1,000,000/$1,000,000/$1,000,000.

6.2.4 The requirements stated in this Section 6.2, may be waived or modified in a writing signed by the University's Risk Manager.

6.2.5 In the event Sponsor is a governmental entity as defined by the Idaho Tort Claims Act, Idaho Code, Title 6, Chapter 9, as may be modified from time to time (the "ITCA"), Sponsor's liability, if any, for any damages, losses, or costs arising out of related to acts performed by Sponsor or its employees acting within the scope of their employment is governed by ITCA, where applicable, and the insurance requirements provided in Sections 6.2.1 through 6.2.2, are not applicable. For sake of clarification, Sponsor shall still provide a certificate of insurance evidencing satisfactory insurance coverages to University as required above, but shall not be required to name University as an additional insured.

6.3 Reserved.

6.4 The University is a State of Idaho public institution of higher education and as such, maintains a program of self-insurance pursuant to the ITCA. Through the program of self-insurance, the University maintains liability coverage for its maximum exposure under ITCA of $500,000. The University's liability, if any, for any damages, losses, or costs arising out of related to acts performed by University or its employees acting within the scope of their employment is governed by ITCA, where applicable. Nothing in this Agreement shall be deemed a waiver of any defense, protection or limitation of liability afforded the University under ITCA. Nothing in this agreement shall be construed as a waiver of University's sovereign immunity or any other immunity, defense, damages, remedy or claim the University may assert because of its status as a State of Idaho institution of education. The University assumes no liability for any act or omission of Sponsor, Sponsor's Event, or any of Sponsor's Group. The University assumes no liability for the theft, destruction, or loss of any of Sponsors or Sponsor's Group's personal property, whether left secured or unsecured in a residential hall or other area of campus.

SECTION SEVEN: MISCELLANEOUS PROVISIONS

7.1 This Agreement shall commence effective as of the last date signed by a party hereto ("Commencement Date") and shall continue for a period of twelve calendar months (the "Initial Term") unless sooner terminated by either Party as specified in this section. The Parties may renew this Agreement for additional terms upon mutual written agreement specifying the renewal term (each, a "Renewal Term" and together with the Initial Term, the "Term"). This Agreement may be terminated by either Party, with or without cause, upon thirty (30) days' written notice, subject to the cancellation provisions hereof in the event of a cancelation of an Event.

7.2 Sponsor must conform to University's Brand Standards, available at https://www.boisestate.edu/communicationsandmarketing/brand-standards/, with regard to any use of University's name or logo ("University Marks"). Sponsor shall be permitted to utilize University Marks, as provided in University's brand standards, for purpose of such advertising or informing potential conference attendees of the Event and its location. Any other use of University's Marks is subject to prior written approval by University.

7.3 This Agreement shall be construed in accordance with and governed by the laws of the State of Idaho without regard to its conflict of laws principles. Any action to enforce the provisions of this Agreement shall be brought in State district court in Ada County, Boise, Idaho. Each party hereby consents to personal jurisdiction and service in such State courts.

7.4 The Parties are independent contractors. Nothing in this Agreement shall create an agency, partnership, employment relationship, fiduciary or special relationship, joint venture, or any other form of joint enterprise between Sponsor and the University.

7.5 If any provision of this Agreement is declared invalid or unenforceable by judicial determination or otherwise, such provision shall not invalidate or render unenforceable the entire Agreement; rather, the Agreement shall be construed as if not containing the particular invalid or unenforceable provision or provisions and the rights and obligations of the parties shall be construed and enforced accordingly.

7.6 No delay or failure by either party to exercise any right, remedy or power herein shall impair such party's right to exercise such right, remedy or power or be construed to be a waiver of any default or

an acquiescence therein, and any single or partial exercise of any such right, remedy or power shall not preclude any other or further exercise thereof or the exercise of any other right, remedy or power. No waiver hereunder shall be valid unless set forth in writing and executed by the waiving party.

7.7 Nothing in this Agreement, express or implied, is intended to or shall confer upon any person or entity other than the Parties any right, benefit or remedy or any nature whatsoever under or by reason of this Agreement.

7.8 Neither party may assign this Agreement, or any of its interests or obligations in connection with this Agreement, without the prior written consent of the other party. This Agreement shall apply to and bind the successors and permitted assigns of the parties.

7.9 This Agreement, and the published policies, guidelines and information referenced and incorporated herein, constitutes the complete and entire agreement of the parties relating to the subject matter hereof, and supersedes any and all prior written and oral agreements or understandings relating to such subject matter, including any conflicting terms set forth in any exhibits hereto. This Agreement may be modified or amended only by a writing executed by both parties.

7.10 Neither party will be in default or otherwise liable for any delay in or failure of its performance under this Agreement if such delay or failure arises by any reason beyond its reasonable control, including any act of God, any act of warfare or terrorism, earthquakes, floods, fires, epidemics, riots, or failures or delays in transportation or communications. The parties agree to promptly inform and consult with each other to the extent reasonable possible as to any of the above causes which, in the judgment of either party, could be or is the cause of a delay or failure of performance of this Agreement.

7.11 University is a government entity and this Agreement shall in no way or manner be construed so as to bind or obligate the State of Idaho or University beyond the term of any particular appropriation of funds by the Idaho State Legislature as may exist from time to time. University reserves the right to terminate this Agreement in whole or in part (or any order placed under it) if, in its sole judgment, the Legislature of the State of Idaho fails, neglects, or refuses to appropriate sufficient funds as may be required for the Institution to continue such payments, or requires any return or "give-back" of funds required for the University to continue payments or operations necessary to perform this Agreement, or if the Executive Branch of the State of Idaho mandates any cuts or holdbacks in spending impacting University's ability to perform its obligations hereunder. All affected future rights and liabilities of the parties hereto shall thereupon cease within ten (10) calendar days after notice to Sponsor.

7.12 This Agreement may be executed in one or more counterparts, with signatures delivered by electronic signatures, fax or emailed PDF documents with subsequent delivery of original signatures, all of which counterparts when taken together will comprise one document.

7.13 Each party agrees that the electronic signatures, whether digital or encrypted, of the parties included in this Agreement are intended to authenticate this writing and to have the same force and effect as manual signatures. Electronic Signature, for this Agreement, means any electronic sound, symbol, or process attached to or logically associated with a record and executed and adopted by a party with the intent to sign such record, including facsimile or email electronic signatures.

7.14 **The University is prohibited by state law from entering into certain contractual agreements. Sponsor hereby certifies that (i) it is not currently engaged in, and will not for the duration of the Agreement engage in, a boycott of goods or services from Israel or territories under its control; (ii) it is not currently owned or operated by the government of China and will not for the duration of the Agreement be owned or operated by the government of China; and (iii) it is not an abortion provider or an affiliate of an abortion provider as defined by the No Public Funds for Abortion Act.**

Initials: _____

7.15 Any notices required to be sent to a party pursuant to this Agreement shall be delivered to the Party in person, or sent to the Party by certified or registered mail or by nationally recognized overnight courier to the Party at the Party's address specified below, or such other address as may from time to time be designated by such Party in writing.

If to Boise State University:

Heather Lile, Director, University Events
Boise State University
Address: 1910 University Drive, Boise, Idaho 83725
Phone: (208) 426-1642
Email: heatherlile@boisestate.com

With a copy to:

Office of the General Counsel
Boise State University
1910 University Drive
Boise, Idaho 83725-1203

If to Sponsor :

Tyler Hansen, Sr. Strategic Sourcing Supervisor
Address: 701 E. University Parkway, 103 HCEB,
Provo, UT 84602
Phone: 801-422-3472
Email: Tyler_hansen@byu.edu

[Remainder of Page Left Intentionally Blank – Signatures Follow]

:

IN WITNESS WHEREOF, the undersigned are duly authorized to execute this Agreement on behalf of the University or Sponsor.

SPONSOR

By:_____ Date _____
Tyler Hansen
Senior Strategic Sourcing Supervisor

BOISE STATE UNIVERSITY

By:_____ Date:_____
Alicia Estey
Chief Financial and Operating Officer and Vice President for Finance and Operations

EXHIBIT A

See Attached.

For the Strength of Youth (FSY) Summer 2023 Conference Proposal/Information for Contracting

Boise State University is pleased to provide the following draft proposal in response to your request to host multiple sessions of For the Strength of Youth (FSY) on campus during the summers of 2024, 2025, and 2026, for 3,750 participants annually. The proposed costs below reflect the costs per week, and varies based on location, assuming max capacity for all spaces.

For 2024, we have identified five weeks, with a total of nine individual sessions, with a capacity to serve 3,750 individuals (3,310 campers and 440 staff). For the remainder of the contract, Boise State will make every effort to accommodate the same number of participants annually.

ALL INCLUSIVE COST FOR HOUSING, DINING & SPACE USAGE			
Week #	**Venue**	**Capacity**	**Total Cost Per Week**
1	Student Union	1,000	$564,748.00
1	Stueckle Sky Center	350	$212,545.00
2	Stueckle Sky Center	350	$212,545.00
3	Stueckle Sky Center	350	$212,545.00
4	Student Union	1,000	$564,748.00
4	Stueckle Sky Center	350	$212,545.00
5	Stueckle Sky Center	350	$212,545.00
Average Session Cost		3,750	$243,579.00
Total 2024 Program Cost **This will vary based on the number of sessions in 2025 & 2026, but the costs for venue and Housing will remain constant. Dining will increase annually by the CPI Food Away From Home* **Does not include overall incidentals, linen packs for Housing, or AV tech support and equipment*			**$2,192,219.00**
Estimated Program Cost for 2024-2026			**$6,576,657**

Included (for each session)

- **Event space:** main session space large enough to accommodate all participants (5 days Monday - Friday); 2-3 additional, separate breakout spaces large enough to accommodate attendees simultaneously (5 days Monday - Friday); headquarters/training space for non-campers (7 days Saturday - Friday); dance location (2 days Tuesday and Friday); general use of grounds for dispersed meetings
    - **Event Equipment:** standard furnishings for all indoor meeting spaces (tables and chairs)

- **Accommodations:** each camper (5 nights, Monday check-in) and each staff member (7 nights, Saturday check-in) to be housed in shared double or greater occupancy rooms in on-campus residences. This does not include bedding packs, which would be an additional cost if campers elect not to bring their own (typically sleeping bags and pillows).

- **Meals:** each camper (4 breakfasts, 4 lunches, 5 dinners per FSY program schedule) and each staff member (6 breakfasts, 7 lunches, 7 dinners per FSY program schedule) in the campus dining hall or other identified event space with hot catered buffet; catered, bagged meals may be substituted during lunch periods.

  Conference and event space will generally be assigned within spaces designed to optimize the attendee experience, such as within the Student Union, Stueckle Sky Center and/or comparable spaces on campus. Facilities named in this draft proposal shall be confirmed closer to the program dates.

  Meals will be served in campus dining halls (Southfork or Buster's Kitchen) or appropriate indoor/outdoor spaces to be confirmed closer to the program dates.

  Exclusions

  This proposal excludes estimated costs for elective goods and services such as audiovisual equipment and services, parking, bedding packs, equipment delivery labor to outdoor spaces, holiday labor surcharges, technical support, taxes, and other a la carte charges. Such costs will be invoiced separately from the contracted amount.

  Pricing & Adjustments

  Prices in this proposal are for event space, meals, and accommodations only and reflect nonprofit discounting where offered, subject to receipt of the reserving party's 501(c)(3) documentation. Tax-exempt status will be honored where applicable, pending review of documentation and state tax law.

BOISE STATE UNIVERSITY

SUBJECT

Nine (9) Online Program Fees

APPLICABLE STATUTE, RULE, OR POLICY

Idaho State Board of Education Governing Policies & Procedures, Section III.G. and Section V.R.

BACKGROUND/DISCUSSION

Boise State University proposes to offer eight (8) online undergraduate certificates and one (1) online graduate certificate, utilizing an online program fee consistent with Board Policy V.R, Establishment of Fees. These certificates will operate under the guidelines of Board Policy V.R. as it pertains to wholly online programs. Descriptions of the certificates are included below.

The existing undergraduate **Esports** certificate provides graduates with a foundation of the esports industrial systems and how they interact with education, government and policy. Graduates of this program will be able to consider jobs as coaches, directors, marketers and promoters, journalists, researchers and data analysts, production professionals and content providers.

The existing undergraduate **Nonprofit Management** certificate enables students to pursue their interests in all manner of philanthropy and community development in a variety of policy areas.

Four (4) new public health related undergraduate certificates in **Health and Human Behavior, Foundations of Public Health, Evidence-Based Public Health, and Community-Driven Health Solutions** provide graduates with foundational skills in different areas of public health and healthcare systems, including health policy and interventions, environmental health, evidence-based public health, community assessment of public health needs and issues, and evaluation of the delivery of health programs. Graduates of these programs will be able to consider jobs such as Community Health Worker, Health Coach/Educator, Research Assistant, Public Health Adviser, Outreach Specialist or Public Health Coordinator.

Two (2) new undergraduate certificates in **Applied Emotional Intelligence and Well-being** and **Design Thinking for Professional Purpose and Personal Fulfillment** are designed to help students to develop a clear understanding of one's professional purpose, articulate unique contributions to the workplace, and create a plan to achieve career goals. With the latter certificate, students will apply design thinking principles and methods to solve complex problems in their career and the workplace. Graduates will be well-positioned for any career that requires

strong interpersonal skills, emotional intelligence, a commitment to wellness, and application of design thinking skills.

One (1) new graduate certificate in **Organizational Development** will enable students, in particular working professionals, to enhance their reskilling/upskilling effort. This program will provide students with a foundation in organizational development and related skills such as change management, leadership, data analysis, workplace performance improvement, and consulting.

IMPACT

The existing and new certificates provide the opportunity for students to gain valuable transferable and adaptable skills across various careers. Students will be empowered to navigate their careers with confidence and impact. The proposed fees are in accordance with the Online Program Fee as defined in Board Policy V.R.3.b.ii.

The price-point of $375 for the eight (8) undergraduate online certificates aligns with the majority of Boise State University's undergraduate online programs.

The undergraduate certificates in **Esports** and **Nonprofit Management** programs' overall size will be scaled to demand, with new instructional costs occurring when we reach the 30-student threshold in Esports and 40-student threshold in Nonprofit Management. Classes are currently available online, and no new instructional costs are expected to be incurred until fiscal year 2025. For students who need 12 credits to earn the certificate in Esports, the cost of the program would be $4,500 (12 credits at $375 per credit). For students who need 12 credits to earn the certificate in Nonprofit Management, the cost of the program would be $4,500 (12 credits at $375 per credit).

The four (4) new public health related undergraduate certificates in **Health and Human Behavior, Foundations of Public Health, Evidence-Based Public Health, and Community-Driven Health Solutions** program's overall size will be scaled to demand, with new instructional costs at the 31-student threshold. Classes are currently available online, and no new instructional costs are expected to be incurred until FY 25. For students who need 15 credits to earn each of these certificates, the cost of the program would be $5,625 (15 credits at $375 per credit).

The two (2) new undergraduate certificates in **Applied Emotional Intelligence and Well-being** and **Design Thinking for Professional Purpose and Personal Fulfillment** programs' overall size is projected to be 10-15 students in year 1; 20-25 students in year 2; and 30 or more students in year 3. There are no additional resources required. For students who need 8 credits to earn the certificate in Applied Emotional Intelligence and Well-being, the cost of the program would be $3000 (8 credits at $375 per credit). For students who need 7 credits to earn the certificate in Design Thinking for Professional Purpose and Personal Fulfillment, the cost of the program would be $2,625 (7 credits at $375 per credit).

Graduate certificate program in Organizational Development: The price-point of $560 for this certificate program aligns with the majority of Boise State University's graduate online programs. The program will be scaled to demand, with new instructional costs at the 31-student threshold. No new instructional costs are expected to be incurred. Current full-time and part-time faculty members are available to teach all the courses included in this new certificate program, within the current budget for hiring adjunct faculty. The price-point of $560 for the proposed online certificate aligns with the majority of Boise State University's graduate online programs. For students who need 16 credits to earn the certificate, the cost of the program would be $8,960 (16 credits at $560 per credit).

STAFF COMMENTS AND RECOMMENDATIONS

Pursuant to Board Policy V.R.3.b. an institutional online program fee may be charged, with prior Board approval, for any fully online undergraduate, graduate, and certificate program. An online program fee shall be in lieu of resident or non-resident tuition (as defined in Idaho Code § 33-3717B) and all other Board-approved fees. An online program is one in which all courses are offered and delivered via distance learning modalities (e.g. campus-supported learning management system, videoconferencing, etc.); provided however, that limited on-campus meetings may be allowed if necessary for accreditation purposes or to ensure the program is pedagogically sound.

This approval would allow BSU to assess an online program fee of $375 per credit for eight (8) undergraduate certificates in Esports, Nonprofit Management, Health and Human Behavior, Foundations of Public Health, Evidence-Based Public Health, and Community-Driven Health Solutions, Applied Emotional Intelligence and Well-being, and Design Thinking for Professional Purpose and Personal Fulfillment. Approval would also include a $560 per credit program fee for one (1) graduate certificate in Organizational Development.

The proposed fees were shared with the Business Affairs and Human Resources committee at their February 14, 2024, meeting. The proposed fees meet the criteria for online learning.

Staff recommends approval.

BOARD ACTION

I move to approve the request by Boise State University to charge an online program fee of $375 per credit for eight (8) undergraduate certificates in Esports, Nonprofit Management, Health and Human Behavior, Foundations of Public Health, Evidence-Based Public Health, and Community-Driven Health Solutions, Applied Emotional Intelligence and Well-being, and Design Thinking for

Professional Purpose and Personal Fulfillment, and $560 per credit for the graduate certificate in Organizational Development.

Moved by _____ Seconded by _____ Carried Yes _____ No _____

IDAHO STATE UNIVERSITY

SUBJECT

Ground Lease Extension with Idaho Division of Veterans Services

APPLICABLE STATUTE, RULE, OR POLICY

Idaho State Board of Education Governing Policies & Procedures, Section V.I.2.
Idaho Code § 33-107

BACKGROUND/DISCUSSION

Idaho State University (ISU) entered into a 25-year lease with the Department of Health and Welfare in 1990 for the long-term operation of a veteran's care facility for a rental rate of $1.00 for the 25-year lease period. This property is located at 1957 Alvin Ricken Drive in Pocatello. The lease was renewed in 2015 for a period of 4 years, and again in 2019 for a period of 5-years for nominal lease revenue. The current lease expires in June of 2024. Idaho State University and the Department of Veterans Services (DVS) would like to execute a long-term lease that will provide stability for continued operation, and construction planning of a 20,000 square foot addition to the existing Veterans Home. Construction is tentatively planned to begin in the summer of 2024.

In collaboration with State Leasing, the Division of Financial Management (DFM), and DVS, a proposed 25-year lease agreement was drafted that will allow for long-term continued operation of a Veterans Home while also providing reasonable lease revenue for the use of university property. DFM worked with DVS to adjust the agency budget in FY25 to account for the increased lease rate. Therefore, no negative financial impact will affect DVS.

State Leasing estimates the value of the ISU property to be approximately $249,240 per acre based on recent real estate transactions in the area. If approved, this lease extension applies to 8.59 acres of property for a total value of approximately $2,140,972. Following thorough discussion with DFM, DVS, and State Leasing, ISU negotiated an initial lease rate of $4,000 per month ($48,000 per year), which would be approximately 2.2% of the current property value. All parties agree that this lease rate falls below standard commercial leasing rates, and is reasonable for the long-term, ongoing operation of the Veterans Home on ISU ground. The lease rate includes escalations of 5% in 5-year increments throughout the course of the long-term lease.

The proposed lease extension has been reviewed and approved at the December 5, 2023, PBFAC meeting as presented by State Leasing.

IMPACT

The financial impact on DVS is negligible as DFM has agreed to adjust the agency budget moving forward to account for the monthly rental rate over a 25-year lease.

This lease will also provide DVS with long-term stability to proceed with construction projects to improve the existing facility.

ISU will receive monthly lease revenue of $4,000 over the course of the first 5 years. The lease rate will increase by 5% with each 5-year increment. Over the course of the 25-year lease, ISU will receive a total of $1,326,152 of new revenue.

ATTACHMENTS:

Attachment 1 - Draft Lease Amendment - 1957 Alvin Ricken Dr. Pocatello

BOARD STAFF COMMENTS AND RECOMMENDATIONS

Board Policy V.I.2 a. Institution Approval Authorization Limits requires Board approval for leases of real property under the control of an institution, if the lease revenue is "over $2M or if the term of the lease exceeds five (5) years."

Staff recommends approval.

BOARD ACTION

I move to approve the request by Idaho State University to execute a 25-year long-term lease with the Division of Veterans Services for the property located at 1957 Alvin Ricken Drive in Pocatello at a rate of $4,000 per month with a 5% increase at each 5-year increment of the lease period.

Moved by _____ Seconded by _____ Carried Yes _____ No _____

LAND LEASE AMENDMENT No. 1
BETWEEN THE STATE BOARD OF EDUCATION AS TRUSTEE FOR IDAHO STATE UNIVERSITY AND THE IDAHO DIVISION OF VETERANS SERVICES

THIS LAND LEASE AMENDMENT No. 1 ("Amendment"), is entered effective upon the date of the last required signature (the "Effective Date"), by and between the Idaho State University, 921 South 8th Avenue, Stop 8410, Pocatello, Idaho 83209, the Board of Education of the State of Idaho as trustee for Idaho State University, 650 West State Street, #307, Boise, Idaho 83720 ("Lessor") and the STATE OF IDAHO, by and through the Idaho Division of Veterans Services, 351 North Collins Road, Boise, Idaho 83702 ("Lessee"), is an amendment of the Land Lease Agreement between the Lessor and the Lessee entered into on July 8, 2019, for space located at 1957 Alvin Ricken Drive, Pocatello, Idaho 83201.

WITNESSETH

WHEREAS, Idaho State University, a body politic and corporate and an instrumentality of the State of Idaho, and the Board of Education of the State of Idaho as trustee for the Idaho State University, own real property known as the Idaho State University Research and Business Park;

WHEREAS, the Idaho Department of Health and Welfare and the Idaho Division of Veterans Services, each an agency of the State of Idaho, previously entered into a Land Lease Agreement with Idaho State University on February 13, 1991, for the purpose of developing an Idaho State Veterans Home;

WHEREAS, the Idaho Department of Health and Welfare and Idaho Division of Veterans Services developed and own an Idaho State Veterans Home on the Premises for the purpose of the treatment, after treatment, and care of eligible Idaho veterans;

WHEREAS, all rights, title and interest in property, real and personal, held by the Department of Health and Welfare for use in exercising the powers and duties on behalf of the Division of Veterans Services were transferred to and vested in the Division of Veterans Services in 2006;

WHEREAS, the Idaho Division of Veterans Services and Board of Education of the State of Idaho as trustee for the Idaho State University entered into a Land Lease Agreement on July 8, 2019;

WHEREAS, the Idaho Division of Veterans Services continues to improve, maintain, and own an Idaho State Veterans Home on the Premises for the purpose of the treatment, after treatment, and care of eligible Idaho veterans;

WHEREAS, the Lessee is legally authorized to enter in this amendment by power granted by Title 67, Chapter 57 of Idaho Code, with the approval of the Department of Administration;

WHEREAS, the parties desire to amend the Land Lease Agreement; and

NOW, THEREFORE, in consideration of the mutual covenants of the parties, the Land Lease Agreement is hereby amended as follows:

1. SECTION 2. TERM. Section 2 is hereby deleted and replaced with the following:

DRAFT

The term of this Amendment shall be Twenty Five (25) years and shall begin on June 26, 2024 and end at midnight on June 25, 2049. The Lessee may, at the expiration of the term of this Amendment and without the necessity of renewing said Lease Amendment, continue in its occupancy of the Premises on a month to month basis upon the terms and conditions set forth in this Amendment for a period not to exceed one (1) year. The Lessor may terminate the Lessee's month-to-month occupancy upon One Hundred Eighty (180) days prior written notice to the Lessee.

2. SECTION 3. PAYMENT. Section 3 is hereby deleted and replaced with the following:

The Lessee shall pay the Lessor lease payments based on the table below in this Section 3. The first year's lease payment shall be payable in monthly installments of four thousand dollars ($4,000.00) each or a lump sum first year payment of forty-eight thousand dollars ($48,000.00). The lease payments shall be paid pursuant to the Lessor's timely submission of invoices for payment. Upon receipt, Lessee shall forward Lessor's invoice to the State Controller for payment. Lessor specifically acknowledges that State vouchers are processed by the State Controller, not Lessee. Therefore, any payment that is made no later than sixty (60) days after it is actually due shall not be considered an event of default. Lessee shall use its best efforts to expedite payment. It is expressly covenanted and agreed that any prepayment of rent made by the Lessee under the terms of this Agreement shall be considered as an advance payment of rent only and no part thereof shall be considered as a security or cash deposit.

The lease payments shall increase according to the following schedule:

Year	Period			Rent/Year	Rent/Month	Rent Increase
1	06/26/2024	to	06/25/2025	$ 48,000.00	$ 4,000.00	
2	06/26/2025	to	06/25/2026	$ 48,000.00	$ 4,000.00	
3	06/26/2026	to	06/25/2027	$ 48,000.00	$ 4,000.00	
4	06/26/2027	to	06/25/2028	$ 48,000.00	$ 4,000.00	
5	06/26/2028		06/25/2029	$ 48,000.00	$ 4,000.00	
6	06/26/2029		06/25/2030	$ 50,400.00	$ 4,200.00	5.00%
7	06/26/2030		06/25/2031	$ 50,400.00	$ 4,200.00	
8	06/26/2031		06/25/2032	$ 50,400.00	$ 4,200.00	
9	06/26/2032		06/25/2033	$ 50,400.00	$ 4,200.00	
10	06/26/2033		06/25/2034	$ 50,400.00	$ 4,200.00	
11	06/26/2034		06/25/2035	$ 52,920.00	$ 4,410.00	5.00%
12	06/26/2035		06/25/2036	$ 52,920.00	$ 4,410.00	
13	06/26/2036		06/25/2037	$ 52,920.00	$ 4,410.00	
14	06/26/2037		06/25/2038	$ 52,920.00	$ 4,410.00	
15	06/26/2038		06/25/2039	$ 52,920.00	$ 4,410.00	
16	06/26/2039		06/25/2040	$ 55,566.00	$ 4,630.50	5.00%
17	06/26/2040		06/25/2041	$ 55,566.00	$ 4,630.50	
18	06/26/2041		06/25/2042	$ 55,566.00	$ 4,630.50	
19	06/26/2042		06/25/2043	$ 55,566.00	$ 4,630.50	
20	06/26/2043		06/25/2044	$ 55,566.00	$ 4,630.50	
21	06/26/2044		06/25/2045	$ 58,344.36	$ 4,862.03	5.00%
22	06/26/2045		06/25/2046	$ 58,344.36	$ 4,862.03	
23	06/26/2046		06/25/2047	$ 58,344.36	$ 4,862.03	
24	06/26/2047		06/25/2048	$ 58,344.36	$ 4,862.03	
25	06/26/2048		06/25/2049	$ 58,344.36	$ 4,862.03	

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3. TERMINATION. This Land Lease Agreement and all subsequent Amendments shall terminate upon Lessee's cessation of use of the above-described leased Premises as an Idaho State Veterans Home. During the term of this lease and subject to all laws and regulations of the state of Idaho, if an, the Lessor reserves the right to approve the sale of any building, facilities and fixtures to a third party to preserve the intended use of the property within the Research and Business Park. Upon termination of the Land Lease Agreement, the rights and obligations of the respective parties hereunder shall cease and the Lessor shall be entitled to reenter and take possession of the leased Premises, including, without payment, all structures and other improvements which Lessee may make on the Premises, excepting therefrom furniture and other fixtures.

4. COUNTERPARTS/ELECTRONIC SIGNATURES. This Amendment may be executed in exact counterparts and when so executed by the parties shall be effective in accordance with the terms hereof. This Amendment may be executed and delivered by electronic means and thereupon the Amendment shall be treated in each case and in all manner and respects and for all purposes as an original and shall be considered to have the same binding legal effect as if it were an original manually-signed counterpart thereof delivered in person.

5. NO ADDITIONAL PROVISIONS IN THIS AMENDMENT. The parties agree that all provisions of the original Land Lease Agreement, dated July 8, 2019, and all previous agreements, unless specifically hereby amended, shall remain in force during the period covered by the Amendment. No other understanding, whether oral or written, whether made prior to or contemporaneously with this Amendment, shall be deemed to enlarge, limit or otherwise affect the operation of the Land Lease Agreement or this Amendment No.1.

[Signature Page Follows]

DRAFT

IN WITNESS WHEREOF, the Parties have executed this Lease Amendment No.1 as set forth above.

LESSOR: Idaho State University

Signature: _____

Printed Name: _____

Title: _____

Date: _____

LESSEE: Idaho Division of Veterans Services

Signature: _____

Printed Name: _____

Title: _____

Date: _____

APPROVED BY:

_____ _____

Richard Brien, Statewide Leasing Manager Date
State Leasing Program, Division of Public Works, Department of Administration

DRAFT

UNIVERSITY OF IDAHO

SUBJECT
Constitution of the University of Idaho Faculty, FSH 1520

REFERENCE
Various	Adopted in 1968, this section underwent revisions in 2009, 2011, 2012, 2013, 2015, 2019, and 2022.

APPLICABLE STATUTE, RULE, OR POLICY
Idaho State Board of Education Governing Policies & Procedures, Section I.S.2.

BACKGROUND/DISCUSSION
Prior to this revision, Article II, Section 1 granted to all vice-presidents the right to vote in faculty meetings. This language is no longer appropriate because not all vice-presidents hold faculty rank. Accordingly, the section is revised to clarify that voting rights arise from faculty rank. The revision also changes the requirements for voting rights for visiting faculty and lecturers.

IMPACT
The changes to this policy reflect the current practice of appointing nonfaculty to some vice-president positions and clarify that only faculty may vote in faculty meetings. The changes also introduce a time-in-service requirement for visiting faculty and lecturers before gaining the right to vote in faculty meetings.

ATTACHMENTS
Attachment 1	2024 Jan FSH 1520 Clean (Faculty Staff Handbook 1520 Constitution of the University Faculty)
Attachment 2	2024 Jan FSH 1520 Redline (Faculty Staff Handbook 1520 Constitution of the University Faculty)

BOARD STAFF COMMENTS AND RECOMMENDATIONS
This action allows the University of Idaho staff to move forward in updating the Faculty-Staff Handbook. This requires Board approval because of Board Policy I.S.2 states the faculty may establish written bylaws, a constitution, or necessary procedures for making recommendations to the Chief Executive Officer as part of the decision-making process of the institution. Such procedures are subject to approval by the Chief Executive Officer. Written bylaws or constitution changes must be approved by the Board. All policies and procedures must be consistent with the Board's Governing Policies and Procedures.

Staff recommends approval.

BOARD ACTION

I move to approve the request by University of Idaho to execute the revisions to Faculty Staff Handbook 1520 Constitution of the University Faculty as noted in the documents attached to this motion.

Moved by _____ Seconded by _____ Carried Yes _____ No _____

UI FACULTY-STAFF HANDBOOK
CHAPTER ONE:
HISTORY, MISSION, GENERAL ORGANIZATION, AND GOVERNANCE

1520
CONSTITUTION OF THE UNIVERSITY FACULTY

OWNER
Faculty Secretary
Francesca Sammarucca
facsec@uidaho.edu

LAST REVISION: September 2022

CONTENTS:
Preamble
Article I. General Provisions
Article II. Faculty Classifications
Article III. Faculty Meetings
Article IV. Responsibilities of the University Faculty
Article V. Faculty Senate
Article VI. Rules of Order
Article VII. Amendments

PREAMBLE. The faculty of the University of Idaho, designated "university faculty," as defined in article II, section 1, in acknowledgement of the responsibilities entrusted to it for the immediate government of the university by article IX, section 10, of the constitution of the state of Idaho, has adopted and declared this constitution to be the basic document under which to discharge its responsibilities.

ARTICLE I--GENERAL PROVISIONS.

Section 1. Regents. The regents are vested by article IX, section 10, of the constitution of the state of Idaho with all powers necessary or convenient to govern the university in all its aspects. The regents are the authority for actions of the university faculty, and policy actions taken by the university faculty are subject to review and approval by the president and by the regents.

Section 2. President. The president of the university is both a member of and the president of the university faculty and is also the president of the other faculties referred to in section 4, below, and in article II. The president is the representative of the regents, the institution's chief executive officer, and the official leader and voice of the university.

Section 3. Faculty Senate. This senate is empowered to act for the university faculty in all matters pertaining to the immediate government of the university. The senate is responsible to and reports to the university faculty and, through the president, to the regents. The university faculty, president, and regents retain the authority to review policy actions taken by the senate.

Section 4. Constituent Faculties. The university faculty is composed of various constituent faculties, including the faculties of the several colleges and other units of the university. Faculty are entitled to speak or write freely on matters pertaining to university governance, programs and policies (see Article IV below and FSH 3160).

Clause A. College Faculties. The constituent faculty of each college or similar unit, meeting regularly and in accordance with bylaws adopted by a majority vote of the members of such faculty, is authorized to establish and to effect its own educational objectives, including matters of student admission and curriculum, and to participate in the selection of its own dean, other executive officers, and faculty members, subject only to the general rules and regulations of the university faculty and the authority of the president and the regents.

Clause B. Faculties of Subdivisions. If there are schools, intracollege divisions, departments, or separate disciplines within a college or similar unit, the constituent faculty of each such subdivision participates in decisions concerning its educational objectives, including matters of student admission and curriculum, the selection of its executive officers, and its faculty appointments, subject only to the general rules and regulations of the college faculty and the university faculty and the authority of the president and the regents.

Clause C. Interim Government. The Faculty Senate will provide for the establishment of bylaws for any college or similar unit that has not adopted its own bylaws.

Clause D. Matters of Mutual Concern. The Faculty Senate has the responsibility for resolving academic matters that concern more than one college or similar unit.

ARTICLE II--FACULTY CLASSIFICATIONS.

Section 1. University Faculty. The university faculty comprises the president, provost, and all faculty in the following ranks, including those serving in administrative positions: professors; associate professors; assistant professors; senior instructors; instructors (including those professors, associate professors, assistant professors, senior instructors, and instructors whose titles have distinguished, research, extension, or clinical designations, (e.g., "assistant research professor" and "assistant clinical professor")); visiting faculty on full-time appointment who have completed at least two consecutive semesters; and lecturers currently on at least half-time appointment who have completed two semesters, whether consecutive or not, on half-time appointment within the preceding three years. See FSH 1565 for definitions of faculty ranks. Those who qualify under this section have the privilege of participation with vote in meetings of the university faculty and the appropriate constituent faculties.

Section 2. Emeriti. Faculty members emeriti have the privilege of participation without vote in meetings of the university faculty and the appropriate constituent and associated faculties. Also, they may be appointed to serve with vote on UI committees. [See also 1565 E.]

Section 3. Associated Faculties.

Clause A. The adjunct faculty [see 1565 F-1] and the affiliate faculty [see 1565 F-2] are associated faculties. Other associated faculties may be established as needed with the approval of the university faculty, president, and regents.

Clause B. Members of the adjunct faculty have the privilege of participation without vote in meetings of the university faculty. Members of the affiliate faculty may participate with vote in meetings of the university faculty if they have status as university faculty in their home unit. Both adjunct and affiliate faculty members have the privilege of participating in meetings of their respective constituencies of the university faculty, and may participate with vote if the bylaws of their constituent faculty so provide; however, if authorized to vote, they are not counted among the full-time-equivalent faculty members when determining the basis for the

constituent faculty's representation on the Faculty Senate.

Section 4. General Faculty. "General faculty" is a collective description for the combined faculties referred to in sections 1, 2, and 3, above.

ARTICLE III--FACULTY MEETINGS. Meetings of the university faculty may be called at any time, with due notice, by the president. Procedure for meetings of the university faculty is governed by FSH 1540 Standing Rules of the University Faculty.

ARTICLE IV--RESPONSIBILITIES OF THE UNIVERSITY FACULTY. Subject to the authority of the president and the general supervision and ultimate authority of the regents, the university faculty accepts its responsibilities for the immediate government of the university, including, but not restricted to:

Section 1. Standards for Admission. The university faculty establishes minimum standards for admission to the university. Supplementary standards for admission to individual colleges or other units of the university that are recommended by the appropriate constituent faculties are subject to approval by the university faculty.

Section 2. Academic Standards. The university faculty establishes minimum academic standards to be maintained by all students in the university. Supplementary academic standards to be maintained by students in individual colleges or other units of the university that are recommended by the appropriate constituent faculties are subject to approval by the university faculty. [See I-4-D.]

Section 3. Courses, Curricula, Graduation Requirements, and Degrees. Courses of instruction, curricula, and degrees to be offered in, and the requirements for graduation from, the individual colleges or other units of the university, as recommended by the appropriate constituent faculties, are subject to approval by the university faculty. [See I-4-D.]

Section 4. Scholarships, Honors, Awards, and Financial Aid. The university faculty recommends general principles in accordance with which privileges such as scholarships, honors, awards, and financial aid are accepted and allocated. The university faculty may review the standards recommended by the individual constituent faculties for the acceptance and allocation of such privileges at the college or departmental levels.

Section 5. Conduct of Students. The faculty's responsibility for approving student disciplinary regulations and the rights guaranteed to students during disciplinary hearings and proceedings are as provided in the "Statement of Student Rights," the "Student Code of Conduct," and the "University Disciplinary Process for Alleged Violations of Student Code of Conduct." [See 2200, 2300, and 2400.]

Section 6. Student Participation. The university faculty provides an opportunity for students of the university to be heard in all matters pertaining to their welfare as students. To this end, the students are entrusted with their own student government organization and are represented on the Faculty Senate. If students so desire, they are represented on faculty committees that deal with matters affecting them.

Section 7. Selection of Officers. The university faculty assists the regents in the selection of the president and assists the president in the selection of the provost, vice presidents and other administrative officers of the university.

Section 8. Governance of Colleges and Subdivisions. The university faculty promulgates general standards to guarantee the right of faculty members to participate in the meetings of the appropriate constituent faculties and in the governance of their colleges, schools, intracollege divisions, departments, and other units of the university. [See 1540 A.]

Section 9. Faculty Welfare. The university faculty recommends general policies and procedures concerning the welfare of faculty members, including, but not limited to, appointment, reappointment, nonreappointment, academic freedom, tenure, working conditions, promotions, salaries, leaves, fringe benefits, periodic evaluations, performance reviews, reassignment, layoff, and dismissal or termination.

Section 10. The Budget. Members of the university faculty participate in budgetary deliberations, and it is expected that the president will seek faculty advice and counsel on budgetary priorities that could significantly affect existing units of the university. [See 1640.20, University Budget and Finance Committee.]

Section 11. Committee Structure. The university faculty, through the medium of its Faculty Senate, establishes and maintains all university-wide and interdivisional standing and special committees, subcommittees, councils, boards, and similar bodies necessary to the immediate government of the university and provides for the appointment or election of members of such bodies. This section does not apply to *ad hoc* advisory committees appointed by the president or committees made up primarily of administrators. [See 1620 and 1640]

Section 12. Organization of the University. The university faculty advises and assists the president and the regents in establishing, reorganizing, or discontinuing major academic and administrative units of the university, such as colleges, schools, intracollege divisions, departments, and similar functional organizations.

Section 13. Bylaws of the Faculty Senate. The bylaws under which the Faculty Senate discharges its responsibilities as the representative body of the university faculty are subject to review and approval by the university faculty. [See 1580.]

ARTICLE V--FACULTY SENATE.

Section 1. Function. The Faculty Senate functions as provided in this constitution and in accordance with its bylaws as approved by the university faculty. [See I-3 and 1580.]

Section 2. Structure. The senate is constituted as follows:

Clause A. Elected Members.

(1) College Faculties. The faculty of each college, except the College of Graduate Studies, elects one senator for each 50, or major fraction thereof, full-time-equivalent faculty members in the college, provided, however, that each college faculty elects at least one senator. If, because of a reduction in the membership of a college faculty, there is to be a corresponding reduction in the college's representation in the senate, the reduction does not take place until the expiration of the term of office of an elected senator from the college.

(2) University Centers. The resident faculty of the university centers in Boise, Coeur d'Alene and Idaho Falls each elects one senator from among its number. Senators elected to represent a center have a unique role on senate, which is to provide a voice and vote from the perspective of their centers. That perspective is not intended to be college or discipline specific.

(3) Faculty-at-Large. Members of the university faculty who are not affiliated with a college faculty constitute the faculty-at-large, and this constituent faculty, in accordance with procedures adopted by the faculty-at-large, elects senators to serve with vote in the senate on the same basis as provided above for college faculties.[1]

[1] The constitution of the university faculty originally provided that faculty status could be conferred by presidential designation on certain administrative and service officers who did not hold academic rank. When the faculty, on May 13, 1986, amended the constitution by, among other things, deleting that provision, it explicitly granted continuing membership, for the duration of their then current incumbencies, to those officers who on that date were members by virtue of presidential designation. These officers are members of the constituency known as the faculty-at-large.

(4) Dean. The academic deans elect one of their number to serve with vote in the senate.

(5) Staff. The representative body (Staff Council) of the university staff elects two employees who do not have faculty status to serve with vote in the senate.

(6) Students. Two undergraduate students, one graduate student, and one law student serve as voting members of the senate, and the senate provides regulations governing the qualifications, terms of office, and

election of student members, and procedures for filling vacancies in the student membership. [See 1580 VI.]

Clause B. Members *Ex Officiis*. The president or the president's designated representative and the secretary of the faculty are members *ex officiis* of the senate, with voice but without vote.

Section 3. Officers. Each year the senate elects a chair and a vice chair from among the elected faculty members of the senate.

Section 4. Terms of Office. Elected faculty members of the senate serve for three years. The academic dean shall serve one year, the staff representatives shall serve for staggered two year terms. The terms of office for student members are as established by the senate. [See 1580 VI.] Newly elected members take office each year on September 1 or on the official opening date of the academic year, whichever is earlier. To carry out the requirement that approximately one-third of the elected faculty members are to take office each year, the senate may shorten the initial term of office of faculty senators elected to fill new positions in the senate to conform to a balanced rotation plan. When members are elected to fill a vacancy, they take office at the first meeting after the election and serve for the unexpired term of the vacancy. A faculty member elected to the senate may serve two consecutive terms. After serving two consecutive terms the faculty senate member must wait one full year before they are again eligible for election [see also FSH 1580 III-3].

Section 5. Eligibility. Every member of the university faculty is eligible to vote for members of the senate representing his or her college or other unit. Every member of the university faculty is eligible to serve as an elected member of the Faculty Senate and to hold an elective or appointive office in the senate.

Section 6. Elections. Regular elections for senators in the senate are held before April 15 of each year in which an election is to be held. All elections for members of the senate are by secret ballot. Appropriate procedures for nominations and elections are developed and approved by a majority vote of the faculty of the college or other unit.

Section 7. Vacancies.

Clause A. If it is necessary for a member of the senate to be absent temporarily (more than a month, but less than four months), the candidate who received the next highest number of votes in the most recent election in the college or unit acts as his or her alternate in the senate with full vote. If it is necessary for a member to be absent for more than four months, but less than one year, a special election is held to fill the temporary vacancy. When the senate member returns, he or she resumes the position in the senate. If it is necessary for a member to be absent for more than one year, or if the member is unable to complete the term of office for any reason, a special election is held to fill the unexpired term. [See 1580 VI for procedures covering student vacancies.]

Clause B. The chair of the Faculty Senate must declare a position vacant if a member is absent from three consecutive meetings unless the member has informed the chair of the senate in writing that he or she intends to participate fully in the activities of the senate in the future. When a position is declared vacant, the chair must notify the constituency concerned.

Section 8. Recall. The recall of a member of the senate may be initiated by a petition bearing the signatures of at least 10 percent, or five members, whichever is greater, of the membership of the particular constituency represented. The petition must be delivered to the chair of the senate. On the receipt of a valid petition, the chair calls a meeting of the faculty of the college or other unit and appoints a chair. Charges against the member are presented in writing and the member is given adequate opportunity for his or her defense. A two-thirds majority vote by secret ballot of the members of the college or other unit present at the meeting is necessary for recall, providing the members present constitute a quorum as defined in the bylaws of the college or other unit. In the event that the vote is to recall the senator, the member may appeal the case to the senate within 10 days. If the case is appealed and the senate affirms the recall, or if the recall stands for 10 days without appeal, the members of the college or other unit elect another senator. Regular procedures are followed in replacing the recalled person, except that the chair of the senate appoints the chair of the election committee of the college or other unit. During the interval between recall and the election of a replacement, the candidate who received the next highest number of votes in the most recent election acts as the alternate in the senate with full vote.

ARTICLE VI--RULES OF ORDER. The rules contained in *Robert's Rules of Order Newly Revised* govern all meetings of the university faculty, other faculties, the Faculty Senate, and faculty committees in all cases to which they are applicable and in which they are not in conflict with this constitution, regents' policies, or any bylaws or rules adopted by any of those bodies for the conduct of their respective meetings. An action taken by the university faculty, a constituent or associated faculty, the Faculty Senate, or a faculty committee that conflicts with a previous action by that body takes precedence and, in effect, amends, in part or in full, the previous action.

ARTICLE VII--AMENDMENTS. This constitution may be amended by a two-thirds affirmative vote of the members of the university faculty, as defined in article II, section 1, in attendance at a regular meeting, a quorum being present. Proposed amendments must have been published in full in the agenda at least one week before the meeting or presented in writing at a meeting previous to the one at which the vote is to be taken. Amendments to this constitution are subject to review and approval by the president and by the regents.

Version History

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Amended July 1997. Editorial changes.

Amended 1986. Content of revision unknown.

Adopted 1968.

1520
CONSTITUTION OF THE UNIVERSITY FACULTY

OWNER
Faculty Secretary
Francesca Sammarucca
facsec@uidaho.edu

LAST REVISION: September 2022

CONTENTS:
Preamble
Article I. General Provisions
Article II. Faculty Classifications
Article III. Faculty Meetings
Article IV. Responsibilities of the University Faculty
Article V. Faculty Senate
Article VI. Rules of Order
Article VII. Amendments

PREAMBLE. The faculty of the University of Idaho, designated "university faculty," as defined in article II, section 1, in acknowledgement of the responsibilities entrusted to it for the immediate government of the university by article IX, section 10, of the constitution of the state of Idaho, has adopted and declared this constitution to be the basic document under which to discharge its responsibilities.

ARTICLE I--GENERAL PROVISIONS.

Section 1. Regents. The regents are vested by article IX, section 10, of the constitution of the state of Idaho with all powers necessary or convenient to govern the university in all its aspects. The regents are the authority for actions of the university faculty, and policy actions taken by the university faculty are subject to review and approval by the president and by the regents.

Section 2. President. The president of the university is both a member of and the president of the university faculty and is also the president of the other faculties referred to in section 4, below, and in article II. The president is the representative of the regents, the institution's chief executive officer, and the official leader and voice of the university.

Section 3. Faculty Senate. This senate is empowered to act for the university faculty in all matters pertaining to the immediate government of the university. The senate is responsible to and reports to the university faculty and, through the president, to the regents. The university faculty, president, and regents retain the authority to review policy actions taken by the senate.

Section 4. Constituent Faculties. The university faculty is composed of various constituent faculties, including the faculties of the several colleges and other units of the university. Faculty are entitled to speak or write freely on matters pertaining to university governance, programs and policies (see Article IV below and FSH 3160).

Clause A. College Faculties. The constituent faculty of each college or similar unit, meeting regularly and in accordance with bylaws adopted by a majority vote of the members of such faculty, is authorized to establish and to effect its own educational objectives, including matters of student admission and curriculum, and to participate in the selection of its own dean, other executive officers, and faculty members, subject only to the general rules and regulations of the university faculty and the authority of the president and the regents.

Clause B. Faculties of Subdivisions. If there are schools, intracollege divisions, departments, or separate disciplines within a college or similar unit, the constituent faculty of each such subdivision participates in decisions concerning its educational objectives, including matters of student admission and curriculum, the selection of its executive officers, and its faculty appointments, subject only to the general rules and regulations of the college faculty and the university faculty and the authority of the president and the regents.

Clause C. Interim Government. The Faculty Senate will provide for the establishment of bylaws for any college or similar unit that has not adopted its own bylaws.

Clause D. Matters of Mutual Concern. The Faculty Senate has the responsibility for resolving academic matters that concern more than one college or similar unit.

ARTICLE II--FACULTY CLASSIFICATIONS.

Section 1. University Faculty. The university faculty comprises the president, provost, ~~vice presidents, deans,~~ and all faculty in the following ranks, including those serving in administrative positions: professors~~,~~; associate professors~~,~~; assistant professors~~,~~; senior instructors~~,~~; instructors (including those professors, associate professors, assistant professors, senior instructors, and instructors whose titles have distinguished, research, extension, or clinical ~~or visiting~~ designations, ~~(~~e.g., "assistant research professor~~",~~" and "assistant clinical professor"~~))~~ ~~and "visiting associate professor;~~ ~~"), and~~ visiting faculty on full-time appointment who have completed at least two consecutive semesters; and lecturers currently on at least half-time appointment who have ~~served~~ completed ~~at least four~~ two semesters, whether consecutive or not, on ~~more than~~ half-time appointment within the preceding three years ~~[see 1565 G-1]~~. See FSH 1565 for definitions of faculty ranks. Those who qualify under this section have the privilege of participation with vote in meetings of the university faculty and the appropriate constituent faculties.

Section 2. Emeriti. Faculty members emeriti have the privilege of participation without vote in meetings of the university faculty and the appropriate constituent and associated faculties. Also, they may be appointed to serve with vote on UI committees. [See also 1565 E.]

Section 3. Associated Faculties.

Clause A. The adjunct faculty [see 1565 F-1] and the affiliate faculty [see 1565 F-2] are associated faculties. Other associated faculties may be established as needed with the approval of the university faculty, president, and regents.

Clause B. Members of the adjunct faculty have the privilege of participation without vote in meetings of the university faculty. Members of the affiliate faculty may participate with vote in meetings of the university faculty if they have status as university faculty in their home unit. Both adjunct and affiliate faculty members have the privilege of participating in meetings of their respective constituencies of the university faculty, and may participate with vote if the bylaws of their constituent faculty so provide; however, if authorized to vote,

they are not counted among the full-time-equivalent faculty members when determining the basis for the constituent faculty's representation on the Faculty Senate.

Section 4. General Faculty. "General faculty" is a collective description for the combined faculties referred to in sections 1, 2, and 3, above.

ARTICLE III--FACULTY MEETINGS. Meetings of the university faculty may be called at any time, with due notice, by the president. Procedure for meetings of the university faculty is governed by FSH 1540 Standing Rules of the University Faculty.

ARTICLE IV--RESPONSIBILITIES OF THE UNIVERSITY FACULTY. Subject to the authority of the president and the general supervision and ultimate authority of the regents, the university faculty accepts its responsibilities for the immediate government of the university, including, but not restricted to:

Section 1. Standards for Admission. The university faculty establishes minimum standards for admission to the university. Supplementary standards for admission to individual colleges or other units of the university that are recommended by the appropriate constituent faculties are subject to approval by the university faculty.

Section 2. Academic Standards. The university faculty establishes minimum academic standards to be maintained by all students in the university. Supplementary academic standards to be maintained by students in individual colleges or other units of the university that are recommended by the appropriate constituent faculties are subject to approval by the university faculty. [See I-4-D.]

Section 3. Courses, Curricula, Graduation Requirements, and Degrees. Courses of instruction, curricula, and degrees to be offered in, and the requirements for graduation from, the individual colleges or other units of the university, as recommended by the appropriate constituent faculties, are subject to approval by the university faculty. [See I-4-D.]

Section 4. Scholarships, Honors, Awards, and Financial Aid. The university faculty recommends general principles in accordance with which privileges such as scholarships, honors, awards, and financial aid are accepted and allocated. The university faculty may review the standards recommended by the individual constituent faculties for the acceptance and allocation of such privileges at the college or departmental levels.

Section 5. Conduct of Students. The faculty's responsibility for approving student disciplinary regulations and the rights guaranteed to students during disciplinary hearings and proceedings are as provided in the "Statement of Student Rights," the "Student Code of Conduct," and the "University Disciplinary Process for Alleged Violations of Student Code of Conduct." [See 2200, 2300, and 2400.]

Section 6. Student Participation. The university faculty provides an opportunity for students of the university to be heard in all matters pertaining to their welfare as students. To this end, the students are entrusted with their own student government organization and are represented on the Faculty Senate. If students so desire, they are represented on faculty committees that deal with matters affecting them.

Section 7. Selection of Officers. The university faculty assists the regents in the selection of the president and assists the president in the selection of the provost, vice presidents and other administrative officers of the university.

Section 8. Governance of Colleges and Subdivisions. The university faculty promulgates general standards to guarantee the right of faculty members to participate in the meetings of the appropriate constituent faculties and in the governance of their colleges, schools, intracollege divisions, departments, and other units of the university. [See 1540 A.]

Section 9. Faculty Welfare. The university faculty recommends general policies and procedures concerning the welfare of faculty members, including, but not limited to, appointment, reappointment, nonreappointment, academic freedom, tenure, working conditions, promotions, salaries, leaves, fringe benefits, periodic evaluations, performance reviews, reassignment, layoff, and dismissal or termination.

Section 10. The Budget. Members of the university faculty participate in budgetary deliberations, and it is expected that the president will seek faculty advice and counsel on budgetary priorities that could significantly affect existing units of the university. [See 1640.20, University Budget and Finance Committee.]

Section 11. Committee Structure. The university faculty, through the medium of its Faculty Senate, establishes and maintains all university-wide and interdivisional standing and special committees, subcommittees, councils, boards, and similar bodies necessary to the immediate government of the university and provides for the appointment or election of members of such bodies. This section does not apply to *ad hoc* advisory committees appointed by the president or committees made up primarily of administrators. [See 1620 and 1640]

Section 12. Organization of the University. The university faculty advises and assists the president and the regents in establishing, reorganizing, or discontinuing major academic and administrative units of the university, such as colleges, schools, intracollege divisions, departments, and similar functional organizations.

Section 13. Bylaws of the Faculty Senate. The bylaws under which the Faculty Senate discharges its responsibilities as the representative body of the university faculty are subject to review and approval by the university faculty. [See 1580.]

ARTICLE V--FACULTY SENATE.

Section 1. Function. The Faculty Senate functions as provided in this constitution and in accordance with its bylaws as approved by the university faculty. [See I-3 and 1580.]

Section 2. Structure. The senate is constituted as follows:

Clause A. Elected Members.

(1) College Faculties. The faculty of each college, except the College of Graduate Studies, elects one senator for each 50, or major fraction thereof, full-time-equivalent faculty members in the college, provided, however, that each college faculty elects at least one senator. If, because of a reduction in the membership of a college faculty, there is to be a corresponding reduction in the college's representation in the senate, the reduction does not take place until the expiration of the term of office of an elected senator from the college.

(2) University Centers. The resident faculty of the university centers in Boise, Coeur d'Alene and Idaho Falls each elects one senator from among its number. Senators elected to represent a center have a unique role on senate, which is to provide a voice and vote from the perspective of their centers. That perspective is not intended to be college or discipline specific.

(3) Faculty-at-Large. Members of the university faculty who are not affiliated with a college faculty constitute the faculty-at-large, and this constituent faculty, in accordance with procedures adopted by the faculty-at-large, elects senators to serve with vote in the senate on the same basis as provided above for college faculties.[1]

[1] The constitution of the university faculty originally provided that faculty status could be conferred by presidential designation on certain administrative and service officers who did not hold academic rank. When the faculty, on May 13, 1986, amended the constitution by, among other things, deleting that provision, it explicitly granted continuing membership, for the duration of their then current incumbencies, to those officers who on that date were members by virtue of presidential designation. These officers are members of the constituency known as the faculty-at-large.

(4) Dean. The academic deans elect one of their number to serve with vote in the senate.

(5) Staff. The representative body (Staff Council) of the university staff elects two employees who do not have faculty status to serve with vote in the senate.

(6) Students. Two undergraduate students, one graduate student, and one law student serve as voting

members of the senate, and the senate provides regulations governing the qualifications, terms of office, and election of student members, and procedures for filling vacancies in the student membership. [See 1580 VI.]

Clause B. Members *Ex Officiis*. The president or the president's designated representative and the secretary of the faculty are members *ex officiis* of the senate, with voice but without vote.

Section 3. Officers. Each year the senate elects a chair and a vice chair from among the elected faculty members of the senate.

Section 4. Terms of Office. Elected faculty members of the senate serve for three years. The academic dean shall serve one year, the staff representatives shall serve for staggered two year terms. The terms of office for student members are as established by the senate. [See 1580 VI.] Newly elected members take office each year on September 1 or on the official opening date of the academic year, whichever is earlier. To carry out the requirement that approximately one-third of the elected faculty members are to take office each year, the senate may shorten the initial term of office of faculty senators elected to fill new positions in the senate to conform to a balanced rotation plan. When members are elected to fill a vacancy, they take office at the first meeting after the election and serve for the unexpired term of the vacancy. A faculty member elected to the senate may serve two consecutive terms. After serving two consecutive terms the faculty senate member must wait one full year before they are again eligible for election [see also FSH 1580 III-3].

Section 5. Eligibility. Every member of the university faculty is eligible to vote for members of the senate representing his or her college or other unit. Every member of the university faculty is eligible to serve as an elected member of the Faculty Senate and to hold an elective or appointive office in the senate.

Section 6. Elections. Regular elections for senators in the senate are held before April 15 of each year in which an election is to be held. All elections for members of the senate are by secret ballot. Appropriate procedures for nominations and elections are developed and approved by a majority vote of the faculty of the college or other unit.

Section 7. Vacancies.

Clause A. If it is necessary for a member of the senate to be absent temporarily (more than a month, but less than four months), the candidate who received the next highest number of votes in the most recent election in the college or unit acts as his or her alternate in the senate with full vote. If it is necessary for a member to be absent for more than four months, but less than one year, a special election is held to fill the temporary vacancy. When the senate member returns, he or she resumes the position in the senate. If it is necessary for a member to be absent for more than one year, or if the member is unable to complete the term of office for any reason, a special election is held to fill the unexpired term. [See 1580 VI for procedures covering student vacancies.]

Clause B. The chair of the Faculty Senate must declare a position vacant if a member is absent from three consecutive meetings unless the member has informed the chair of the senate in writing that he or she intends to participate fully in the activities of the senate in the future. When a position is declared vacant, the chair must notify the constituency concerned.

Section 8. Recall. The recall of a member of the senate may be initiated by a petition bearing the signatures of at least 10 percent, or five members, whichever is greater, of the membership of the particular constituency represented. The petition must be delivered to the chair of the senate. On the receipt of a valid petition, the chair calls a meeting of the faculty of the college or other unit and appoints a chair. Charges against the member are presented in writing and the member is given adequate opportunity for his or her defense. A two-thirds majority vote by secret ballot of the members of the college or other unit present at the meeting is necessary for recall, providing the members present constitute a quorum as defined in the bylaws of the college or other unit. In the event that the vote is to recall the senator, the member may appeal the case to the senate within 10 days. If the case is appealed and the senate affirms the recall, or if the recall stands for 10 days without appeal, the members of the college or other unit elect another senator. Regular procedures are followed in replacing the recalled person, except that the chair of the senate appoints the chair of the election committee of the college or other unit. During the interval between recall and the election of a replacement, the candidate who received the next highest number of votes in the most recent election acts as the

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Amended 1986. Content of revision unknown.

Adopted 1968.

UNIVERSITY OF IDAHO

SUBJECT
Academic Ranks and Responsibilities, FSH 1565

REFERENCE
Various — Adopted in 1979, this section has undergone numerous revisions over the years as reflected in the extensive version history contained in the attachment.

APPLICABLE STATUTE, RULE, OR POLICY
Idaho State Board of Education Governing Policies & Procedures, Section I.S. and II.B.3.d.

BACKGROUND/DISCUSSION
Sections G-1 and G-2 are revised to align with changes to FSH 1520 Constitution of the University of Idaho Faculty and to remove superfluous and inaccurate information. D-8 is revised to correct the inadvertent omission of Extension faculty in eligibility for the rank of Distinguished Professor. C-2 is revised to clarify how advising is credited for evaluative purposes.

IMPACT
The changes to this policy ensure alignment with FSH 1520 Constitution of the University Faculty and remove superfluous and inaccurate information regarding Lecturers and Visiting Faculty; correct an unintended consequence of prior language regarding the rank of Distinguished Professor; and clarify how advising is credited for evaluative purposes.

ATTACHMENTS
Attachment 1 — 2024 Jan FSH 1565 Clean (Faculty Staff Handbook 1565 Academic Ranks and Responsibilities)
Attachment 2 — 2024 Jan FSH 1565 Redline (Faculty Staff Handbook 1565 Academic Ranks and Responsibilities)

BOARD STAFF COMMENTS AND RECOMMENDATIONS
This action allows the University of Idaho staff to move forward in updating the Faculty-Staff Handbook. Board Policy II.B.3.d requires Board approval for the criteria established by the institutions for initial appointment to faculty rank and for promotion in rank, as well as any additional faculty ranks and criteria as may be established by an institution other than those provided for in these policies.

Staff recommends approval.

BOARD ACTION

I move to approve the request by the University of Idaho to execute the revisions to Faculty Staff Handbook 1565 Academic Ranks and Responsibilities as noted in the documents attached to this motion.

Moved by _____ Seconded by _____ Carried Yes _____ No _____

FACULTY-STAFF HANDBOOK
CHAPTER ONE:
HISTORY, MISSION, GENERAL ORGANIZATION, AND GOVERNANCE

1565
ACADEMIC RANKS AND RESPONSIBILITIES

OWNER
Vice Provost for Faculty
Diane Kelly-Reilly
dkr@uidaho.edu

LAST REVISION: July 2022

CONTENTS:
A. Introduction
B. Definitions
C. Responsibility Areas
D. University Faculty
E. Emeriti
F. Associated Faculty
G. Temporary Faculty
H. Non-Faculty
I. Qualification of Non-faculty Members for Teaching UI Courses

A. INTRODUCTION.

A-1. The principal functions of a university are the preservation, advancement, synthesis, application, and transmission of knowledge. Its chief instrument for performing these functions is its faculty, and its success in doing so depends largely on the quality of its faculty. The University of Idaho, therefore, strives to recruit and retain distinguished faculty members with outstanding qualifications.

In order to carry out its functions and to serve most effectively its students and the public, the university supports the diversification of faculty roles. Such diversification ensures an optimal use of the university's faculty talents and resources.

Diversification is achieved through developing a wide range of faculty position descriptions that allow the faculty to meet the varying responsibilities placed upon the institution, both internally and externally. No more than 25 percent, or a lower limit as defined by the department or similar unit's by-laws, of the faculty positions in any department or similar unit may be held by instructors, senior instructors, and lecturers who have voting privileges under FSH 1520 II, Section 1. While the capabilities and interests of the individual faculty members are to be taken into account, it is essential that individual faculty position descriptions are consonant with carrying out the roles and mission of the university, the college, and the unit. Annual position descriptions are developed by the unit head in consultation with the unit faculty and with the incumbent or new faculty member. In each college, all position descriptions are subject to the approval of the dean and must be signed by both unit head and faculty member. If the faculty member, unit head, and dean are unable to reach agreement on the position description, the faculty member may appeal the unit head's decision to the Faculty Appeals Hearing Board [FSH 3840].

As indicated in Section 3320 A-1, faculty performance evaluations that are used for yearly, third-year and periodic reviews as well as for promotion, tenure, and post-tenure decisions are to be based on faculty members' annual position descriptions (FSH 3050). Each unit will develop substantive criteria in its bylaws for promotion and review of its faculty

Faculty members shall conduct themselves in a civil and professional manner (see FSH 4000 and 3170).

B. DEFINITIONS:

B-1. Advancement: focuses on fostering relationships, building partnerships, creating awareness and generating

support with alumni, donors, leaders, business partners, legislators and the community for the university's mission in academics, scholarship and outreach (see the office of University Advancement at http://www.uidaho.edu/givetoidaho/meetourpeople/universityadvancementvpoffice.aspx).

B-2. Cooperative education: a structured educational strategy that blends classroom studies with learning through productive work experiences. It provides progressive experiences for integrating theory and practice. Co-op education (including internships and externships) is a partnership between students, educational institutions and employers, with specified responsibilities for each party.

B-3. Distance education: the process through which learning occurs when teachers, students, and support services are separated by physical distance. Technology, sometimes in tandem with face-to-face communication, is used to bridge the distance gap.

B-4. Extension Service: Extension is an outreach activity that generally involves non-formal educational programs that transfer knowledge from the university to help improve people's lives through research in areas like agriculture and food, environment and natural resources, families and youth, health and nutrition, and community and economic development.

B-5. Extramural Professional Service: refers to activities that extend service beyond the university and can include elements of service, outreach, scholarship, and/or teaching.

B-6. Interdisciplinary: "an activity that involves teams or individuals that integrates information, data, techniques, tools, perspectives, concepts, and/or theories from two or more disciplines or bodies of specialized knowledge to advance fundamental understanding or to solve problems whose solutions are beyond the scope of a single discipline or field of research practice."[1]

B-7. Professional Development: a learning process that expands the capacity of the faculty member to advance in the responsibilities as defined in his/her position description and aligns with the university's goals. Examples include but are not limited to participation in conferences, continuing professional education (including credit and noncredit courses) and other activities that enhance a faculty member's expertise and ability.

B-8. Service learning: an activity that integrates student learning with service and civic engagement to meet real community needs and achieve learning outcomes. Service-learning can be used in curricular settings (i.e. academic courses) or co-curricular settings, (e.g. ASUI's volunteer/civic engagement programs).

B-9. Technology transfer: a process through which knowledge, technical information, and products developed through various kinds of scientific, business, and engineering research are provided to potential users. Technology transfer encourages and accelerates testing and using new knowledge, information and products. The benefit of technology transfer may occur either at the community (public) or firm (private) level.

B-10. Unit Administration: includes assisting higher administration in the assignment and in the evaluation of the services of each member of the unit's faculty and staff; promoting effective leadership of personnel and management of unit resources; providing leadership in the development and implementation of unit plans; providing for open communication with faculty and staff; fostering excellence in teaching, scholarship and outreach for faculty, students, and staff in the unit; effectively representing all constituents of the unit; and continuing personal professional development in areas of leadership.

C. RESPONSIBILITY AREAS: Faculty members are expected to contribute in each of the four major responsibility areas (C-1 through C-4 below). Expectations are more specifically defined in the individual position description and are consistent with unit by-laws. Each responsibility area may include activities in advancement, extramural professional service, interdisciplinary, and/or professional development.

C-1. TEACHING AND ADVISING: The university's goal is to engage students in a transformational experience of discovery, understanding and global citizenship. Faculty achieve this goal through effective instructing, advising

[1] National Academy of Science

and/or mentoring of students.

a. Teaching: Effective teaching is the foundation for both the advancement and transmission of knowledge. The educational function of the university requires the appointment of faculty members devoted to effective teaching. Teaching may take many different forms and any instruction must be judged according to its central purposes. Active participation in the assessment of learning outcomes is expected of all faculty at the course, program, and university-wide levels. Individual colleges and units have the responsibility to determine appropriate teaching loads for faculty position descriptions. Teaching appointments must be reflected by hours and level of effort spent in teaching activity, and justified in position descriptions. Any adjustments to a teaching appointment (e.g. teaching unusually large classes, team-teaching, teaching studios or laboratories, intensive graduate or undergraduate student mentoring, technology-enhanced teaching, and others) must be documented in the position description.

Evidence of teaching effectiveness shall include student feedback on teaching, and may include course design reviews, teaching observations, self-assessment, learning outcome assessment data, teaching recognition and awards, mid-term formative feedback on instruction (FSH 2700 B-6), or other documentation of effective teaching. Additional information about evidence of teaching effectiveness can be found through the Provost's Office.

b. Advising: For the purposes of this section, advising includes mentoring and student retention activities. These activities are an important faculty responsibility and a key function of academic citizenship, and may include: (1) overseeing course selection and scheduling; (2) seeking solutions to conflicts and academic problems; (3) working with students to develop career goals and identify employment opportunities; (4) making students aware of programs and sources for identifying employment opportunities, (5) facilitating undergraduate and graduate student participation in professional activities (e.g. conferences, workshops, demonstrations, applied research); and (6) serving as a faculty advisor to student organizations or clubs. Advising also includes attendance at sessions (e.g. workshops, training courses) sponsored by the university, college, unit, or professional organizations to enhance a faculty member's capacity to advise.

Effective advising performance may be documented by: (1) the evaluation of peers or other professionals in the unit or college; (2) undergraduate or graduate student advisees' evaluations; (3) level of activity and accomplishment of the student organization advised; (4) evaluations of persons being mentored by the candidate; (5) number of undergraduate and graduate students guided to completion; and (6) receiving awards for advising, especially those involving peer evaluation.

C-2. SCHOLARSHIP AND CREATIVE ACTIVITIES: Scholarship is creative intellectual work that is communicated and validated. The creative function of a university requires the appointment of faculty members devoted to scholarship and creative activities. The university promotes an environment that increases faculty engagement in interdisciplinary scholarship. The university's Carnegie designation as "research university high" fosters an emphasis on scholarly and creative activities.

Scholarship and creative activities take diverse forms and are characterized by originality and critical thought. Both must be validated through internal and external peer review or critique and disseminated in ways having a significant impact on the university community and/or publics beyond the university. Both are ongoing obligations of all members of the faculty.

The basic role of a faculty member at the University of Idaho is to demonstrate and validate continuing sound and effective scholarship in the areas of teaching and learning, artistic creativity, discovery, integration, and outreach/application/engagement. While these areas may overlap, these distinctions are made for purposes of defining position descriptions and for developing performance standards. Units and colleges shall adopt criteria for the evaluation of scholarship and creative activities. Undergraduate and graduate students advised may be credited to scholarship and creative activity or to teaching and advising for evaluative purposes, but not to both. Demonstrated excellence that is focused in only one of these scholarship and creative activity areas is acceptable if it is validated and judged to be in the best interests of the institution and the individual faculty member.

a. Scholarship in Teaching and Learning: can involve classroom action research (site-specific pedagogy),

qualitative or quantitative research, case studies, experimental design and other forms of teaching and learning research. It consists of the development, careful study, and validated communication of new teaching or curricular discoveries, observations, applications and integrated knowledge and continued scholarly growth. Evidence that demonstrates this form of scholarship might include: publications and/or professional presentations of a pedagogical nature; publication of textbooks, laboratory manuals, or educational software; advancing educational technology; presentation in workshops related to teaching and learning; development and dissemination of new curricula and other teaching materials to peers; and individual and/or collective efforts in securing and carrying out education grants.

The validation of scholarship in the area of teaching and learning is based in large measure on evaluation by the faculty member's peers both at the University and at other institutions of higher learning.

b. Scholarship in Artistic Creativity: involves validated communication and may be demonstrated by significant achievement in an art related to a faculty member's work, such as musical composition, artistic performance, creative writing, mass media activity, or original design.

The validation of scholarship in the area of artistic creativity is based in large part on the impact that the activity has on the discipline and/or related fields as determined by the peer review process. Many modes of dissemination are possible depending on the character of the art form or discipline. For example, a published novel or book chapter for an anthology or edited volume or similar creative work is regarded as scholarship. Each mode of dissemination has its own form of peer review that may include academic colleagues, practitioner or performance colleagues, editorial boards, and exhibition, performance, or competition juries.

c. Scholarship in Discovery: involves the generation and interpretation of new knowledge through individual or collaborative research. It may include: novel and innovative discovery; analyzing and synthesizing new and existing knowledge and/or research to develop new interpretations and new understanding; research of a basic or applied nature; individual and collaborative effort in securing and carrying out grants and research projects; membership on boards and commissions devoted to inquiry; and scholarly activities that support the mission of university research centers.

Evidence of scholarship in this area may include: publication of papers in refereed and peer reviewed journals; published books and chapters; published law reviews; citation of a faculty member's work by other professionals in the field; published reviews and commentary about a faculty member's work; invited presentations at professional meetings; seminar, symposia, and professional meeting papers and presentations; direction and contribution to originality and novelty in graduate student theses and dissertations; direction and contribution to undergraduate student research; awards, scholarships, or fellowships recognizing an achievement, body of work, or career potential based on prior work; appointment to editorial boards; and significant scholarly contributions to university research centers. The validation of scholarship in the area of discovery is based on evaluation by other professionals in the faculty member's discipline or sub-discipline.

d. Scholarship of Integration: often interdisciplinary and at the borders of converging fields, is the serious, disciplined work that seeks to synthesize, interpret, contextualize, critically review, and bring new insights into, the larger intellectual patterns of the original research. Similar to the scholarship of discovery, the scholarship of integration can also seek to investigate, consolidate, and synthesize new knowledge as it integrates the original work into a broader context. It often, but not necessarily, involves a team or teams of scholars from different backgrounds working together, and it can often be characterized by a multidisciplinary or interdisciplinary investigative approach. The consolidation of knowledge offered by the scholarship of integration has great value in advancing understanding and isolating unknowns. Beyond the differences, the scholarship of integration can include many of the activities of scholarship of discovery and thus may be rigorously demonstrated and validated in a similar manner.

e. Scholarship of Outreach/Application/Engagement: These activities apply faculty members' knowledge and expertise to issues that impact individuals, communities, businesses, government, or the environment. Examples may include economic development, environmental sustainability, stimulation of entrepreneurial activity, integration of arts and sciences into people's lives, enhancement of human well being, and resolution

of societal problems. Like other forms of scholarship and creative activities, the scholarship of outreach/application/engagement involves active communication and validation. Examples of validation may include (but are not limited to): peer reviewed or refereed publications and presentations; patents, copyrights, or commercial licensing; adoption or citation of techniques as standards of practice; invited presentation at a seminar, symposium or professional meeting; and citations of the faculty member's work.

C-3. OUTREACH and EXTENSION: Outreach activities are originated by every unit on UI's Moscow campus and from each of the University's physical locations around the state.

Outreach includes a wide variety of activities including, but not limited to, (a) extension (see 1565 B); (b) teaching, training, certification, and other dissemination of information to the general public, practitioner, and specialty audiences; (c) volunteer development and establishment/maintenance of relationships with private and public organizations; (d) unpaid extramural consultation and other professional services to individuals, organizations, and communities; and (e) undergraduate and graduate student recruiting activities. Delivery mechanisms include distance education, service learning, cooperative education, technology transfer, noncredit courses, workshops, presentations, and publications. Most of the examples provided, such as distance education, are not exclusively outreach. Instead, they lie at the intersection of outreach and teaching or research. Likewise, professional services may be associated with teaching, scholarship, or university service and leadership. A faculty member's position description specifies where his or her activities will be counted.

Evidence of effective outreach activities may include, but are not limited to, (1)documentation of the process by which needs were identified and what steps were taken to deliver carefully planned and implemented programs; (2) numbers of individuals and types of audiences affected; (3) evaluation by participants in outreach activities; (4) other measures of significance to the discipline/profession, state, nation, region and/or world; (5) quantity and quality of outreach publications and other mass-media outlets; (6) evaluation of the program's effects on participants and stakeholders; (7) awards, particularly those involving peer evaluation; (8) letters of commendation from individuals within organizations to whom service was provided; (9) service in a leadership role of a professional or scientific organization as an officer or other significant position; and (10) other evidence of professional service oriented projects/outputs.

C-4. UNIVERSITY SERVICE AND LEADERSHIP: The university seeks to create formal and informal organizational structures, policies, and processes that enable the university community to be effective, while also fostering a climate of participatory decision making and mutual respect.

a. Intramural service is an essential component of the University of Idaho mission and is the responsibility of faculty members in all units. Service by members of the faculty to the university in their special capacities as scholars should be a part of both the position description and annual performance review.

Within the university, intramural service includes participation in unit, college, and university committees, and any involvement in aspects of university governance and academic citizenship. University, college, and unit committee leadership roles are seen as more demanding than those of a committee member or just regularly attending faculty meetings. Because faculty members play an important role in the governance of the university and in the formulation of its policies, recognition should be given to faculty members who participate effectively in faculty and university governance. Intramural service can include clinical service, routine support, and application of specialized skills or interpretations, and expert consultancies. The beneficiaries of these forms of service can be colleagues and co-workers.

Effective performance in intramural service may be documented by a variety of means. Examples include: (1) letters of support from university clientele to whom your service was provided; (2) serving as a member or chairperson of university, college, or unit committees; and (3) receiving University service awards, especially those involving peer evaluation.

b. Administration:

(1) Unit Administration (see FSH 1565 B)**:** FSH 1420 E describes the responsibilities and the selection

and review procedures for unit administrators. Unit administration is not normally considered in tenure and promotion deliberations; it is accounted for insofar as expectations are proportionally adjusted in the other sections of the position description. For faculty in nonacademic units (e.g. faculty at large), administration may be considered in tenure and promotion deliberations.

(2) Other: Effective conduct of university programs requires administrative activities that support scholarship, outreach and teaching. Program support activities are to be noted in position descriptions and performance reviews. The role of the principal or co-investigator of a university program or project may include the following administrative responsibilities: (1) budgetary and contract management; (2) compliance with University purchasing and accounting standards; (3) supervision and annual review of support personnel; (4) purchasing and inventory management of goods; (5) graduate student and program personnel recruitment, training in University procedures/policies, and annual review; (6) collaborator coordination and communication; (7) management of proper hazardous waste disposal; (8) laboratory safety management; (9) authorization and management of proper research animal care and use; (10) authorization and management of human subjects in research; (11) funding agency reporting; (12) intellectual property reporting; and (13) compliance with local, state, and federal regulation as well as University research policy.

Demonstration of effective administration may be documented by a variety of means. Examples include: (1) compliance with applicable rules, standards, policies, and regulations; (2) successful initiation, conduct and closeout of research contracts and grants as evidenced by timely reporting and budget management; (3) completion of the research contract or proposal scope-of-work; organized program operations including personnel and property management. Documentation of effective university program operation, beyond scholarship, may also include input by graduate and undergraduate students participating in the university program; and input by collaborators, cooperators, funding agency and beneficiaries of the program. Documentation of effective administration may include evaluations by faculty and staff, as well as objective measures of performance under the incumbent's leadership.

D. UNIVERSITY FACULTY (FSH 1520 Article II):

D-1. INSTRUCTOR: Instructors may be appointed for the purpose of performing practicum, laboratory, or classroom teaching. Appointment to instructor constitutes a recognition of the appointee's scholarly contributions and professional accomplishments, and confers responsibilities and privileges as stated below. To avoid confusion over university faculty (those who have voting rights per FSH 1520 II, Section 1) the title of Instructor shall not be used in any other university position.

a. Instructor. Appointment to this rank requires proof of advanced study in the field in which the instructor will teach, the promise of teaching effectiveness, and satisfactory recommendations. Instructors have charge of instruction in assigned classes or laboratory sections under the general supervision of the departmental administrator. When they are engaged in teaching classes with multiple sections, the objectives, content, and teaching methods of the courses will normally be established by senior members of the faculty or by departmental committees. Instructors are expected to assist in the general work of the department and to make suggestions for innovations and improvements.

b. Senior Instructor. Appointment to this rank requires qualifications that correspond to those for the rank of instructor and evidence of outstanding teaching ability. Instructors are promotable to senior instructor. Effective teaching is the primary responsibility of anyone holding this rank and this primary responsibility is weighted accordingly in the annual performance evaluation and when a senior instructor is being considered for tenure. Except in very rare instances, this rank is considered terminal (i.e., it does not lead to promotion to the professorial ranks and there is no limitation on the number of reappointments). Prospective appointees to the rank of senior instructor must be fully informed of its terminal nature.

D-2. FACULTY:

a. Assistant Professor. Appointment to this rank normally requires the doctorate or appropriate terminal

degree. In some situations, however, persons in the final stages of completing doctoral dissertations or with outstanding talents or experience may be appointed to this rank. Evidence of potential effective teaching and potential scholarship in teaching and learning, artistic creativity, discovery, and outreach/application/engagement is a prerequisite to appointment to the rank of assistant professor. Appointees in this rank have charge of instruction in assigned classes or laboratories and independent or shared responsibility in the determination of course objectives, methods of teaching, and the subject matter to be covered. Assistant professors are expected to demonstrate the ability to conduct and direct scholarly activities, and to provide intramural and extramural professional service. [1565 C]

b. Associate Professor. Appointment or promotion to this rank normally requires the doctorate or appropriate terminal degree. In some situations, however, persons with outstanding talents or experience may be appointed or promoted to this rank. Associate professors must have demonstrated maturity and conclusive evidence of having fulfilled the requirements and expectations of the position description. An appointee to this rank will have demonstrated effective teaching or the potential for effective teaching, the ability to conduct and direct scholarly activities in his or her special field, and provide service to the university and/or his or her profession. Evidence of this ability includes quality publications or manuscripts of publishable merit; and/or unusually productive scholarship in teaching and learning; and/or significant artistic creativity; and/or major contributions to the scholarship of outreach/application/engagement. Associate professors generally have the same responsibilities as those of assistant professors, except that they are expected to play more significant roles in initiating, conducting, and directing scholarly activities, and in providing intramural and extramural professional service. [1565 C]

c. Professor. Appointment or promotion to this rank normally requires the doctorate or appropriate terminal degree. A professor should have intellectual and academic maturity, demonstrated effective teaching or the potential for effective teaching and the ability to organize, carry out, and direct significant scholarship in his or her major field. A professor will have made major scholarly contributions to his or her field as evidenced by several quality publications and/or highly productive scholarship in one or more of the areas of teaching and learning, discovery, artistic creativity, and outreach/application/ engagement. Professors have charge of courses and supervise research, and are expected to play a major role of leadership in the development of academic policy, and in providing intramural and extramural professional service. [1565 C]

D-3. RESEARCH FACULTY:

a. Assistant, Associate and Professor. Appointment to these ranks requires qualifications, except for teaching effectiveness, that correspond to their respective ranks as for faculty in D-2 above.

D-4. EXTENSION FACULTY:

a. Extension Faculty with Rank of Instructor. Appointment to this rank requires: sound educational background and experience for the specific position; satisfactory standard of scholarship; personal qualities that will contribute to success in an extension role; evidence of a potential for leadership, informal instruction, and the development of harmonious relations with others.

b. Extension Faculty with Rank of Assistant Professor. Appointment to this rank requires a master's degree along with the qualifications of extension faculty with rank of instructor and: demonstrated leadership ability in motivating people to analyze and solve their own problems and those of their communities; evidence of competence to plan and conduct an extension program; a record of effectiveness as an informal instructor and educational leader; proven ability in the field of responsibility; evidence of continued professional growth through study and participation in workshops or graduate training programs; acceptance of responsibility and participation in regional or national training conferences; membership in appropriate professional organizations, and scholarship in extension teaching or practical application of research; demonstrated ability to work in harmony with colleagues in the best interests of UI and of the people it serves.

c. Extension Faculty with Rank of Associate Professor. In addition to the qualifications required of extension faculty with rank of assistant professor, appointment or promotion to this rank requires: achievement of a higher degree of influence and leadership in the field; continued professional improvement demonstrated

by keeping up to date in subject matter, extension teaching methods, and organization procedures; progress toward an advanced degree if required in the position description; demonstrated further successful leadership in advancing extension educational programs; evidence of a high degree of insight into county and state problems of citizens and communities in which they live, and the contribution that education programs can make to their solution; an acceptance of greater responsibilities; a record of extension teaching or practical application of research resulting in publication or comparable productivity; a reputation among colleagues for stability, integrity, and capacity for further significant intellectual and professional achievement. These activities may occur in a domestic or international context.

d. Extension Faculty with Rank of Professor. In addition to the qualifications required of extension faculty with rank of associate professor, appointment or promotion to this rank requires: regional or national recognition in the special professional field or area of responsibility; a record of successful organization and direction of county, state, or national programs; an outstanding record of creative extension teaching or practical application of research resulting in significant publications or comparable scholarship; active membership and effective participation in professional committee assignments and other professional organization activities; demonstrated outstanding competence in the field of responsibility; achievement of full maturity as an effective informal teacher, wise counselor, leader of extension educational programs, and representative of the university. These activities may occur in a domestic or international context.

D-5. LIBRARIAN:

a. Librarian with Rank of Instructor. Appointment to this rank requires an advanced degree in library science from a library school accredited by the American Library Association or an equivalent terminal degree and relevant experience and: (a) evidence of potential for successful overall performance and for development as an academic librarian; (b) when required for specific positions (e.g., cataloger, assistant in a subject library), knowledge of one or more subject areas or pertinent successful experience in library work.

b. Librarian with Rank of Assistant Professor. Appointment to this rank requires the qualifications for librarian with rank of instructor and: (a) demonstrated ability, competence, and effectiveness in performing assigned supervisory-administrative, specialized public service, or technical service responsibilities; (b) demonstrated ability to establish and maintain harmonious working relationships with library colleagues and other members of the university community; (c) evidence of professional growth through study; creative activity; participation in workshops, conferences, seminars, etc.; participation in appropriate professional organizations; awareness of current developments in the profession and ability to apply them effectively in the area of responsibility; (d) service to the library, university, or community through committee work or equivalent activities.

c. Librarian with Rank of Associate Professor. Appointment or promotion to this rank requires the qualifications applicable to the lower ranks of librarians and: (a) acceptance of greater responsibilities, and conclusive evidence of success in the performance of them, e.g., bibliographical research performed in support of research activities of others; development of research collections; the preparation of internal administrative studies and reports; interpreting, and facilitating effective use of, the collections; effectively applying bibliographic techniques for organizing library collections; effective supervision of an administrative unit; (b) evidence of further professional growth, as demonstrated by keeping up to date in subject matter, methods, and procedures and by practical application of research resulting in significant improvement of library operations or in publication; effective participation in the work of appropriate professional organizations; and/or formal study, either in library science or in pertinent subject areas; (c) evaluation by colleagues as a person of demonstrated maturity, stability, and integrity, with the capacity for further significant intellectual and professional achievement. These activities may occur in a domestic or international context.

d. Librarian with Rank of Professor. Appointment or promotion to this rank requires the qualifications applicable to the lower ranks of librarians and: (a) demonstrated outstanding competence in the area of responsibility; (b) achievement of an outstanding record of creative librarianship, of effective administration, or of practical application of research resulting in significant publications or comparable productivity; (c) an additional degree in library science or in a pertinent subject area or equivalent achievement; (d) regional or

national recognition for contributions to the profession based on publications or active and effective participation in the activities of professional organizations; (e) evaluation by colleagues as an effective librarian who will continue to recognize that optimum productivity is a reasonable personal goal. These activities may occur in a domestic or international context.

D-6. PSYCHOLOGIST OR LICENSED PSYCHOLOGIST:

a. Psychologist with Rank of Instructor. Appointment to this rank requires: an advanced degree in counseling, counseling psychology, clinical psychology, or closely related field earned in a professional program accredited by the appropriate accrediting association; evidence of effective skills in counseling or therapy; and evidence of pursuit of a terminal degree.

b. Psychologist or Licensed Psychologist with Rank of Assistant Professor. Appointment to this rank requires the qualifications for psychologist with rank of instructor and: a doctoral or equivalent terminal degree; evidence of effective skills in counseling or therapy; awareness of current developments in the profession; and demonstrated potential for participation in appropriate professional organizations, service to the Counseling and Testing Center, the university, and the community through teaching, committee membership, or equivalent activities, and the development and execution of research projects or the development and execution of outreach services designed to benefit UI students.

c. Licensed Psychologist with Rank of Associate Professor. Appointment or promotion to this rank requires the qualifications applicable to the lower ranks of psychologists and: possession of a license as a psychologist in the state of Idaho; evidence of continued development of skills in counseling or therapy, as demonstrated by attendance at training workshops, personal study that leads to the presentation of workshops, classes, or seminars, or private study that leads to in-service training of personnel of the Counseling and Testing Center; evidence of continued professional development through service in professional organizations; evidence of effective teaching or training; completion of research that has resulted in quality publications or manuscripts of publishable merit, or the design and implementation of a continuing program in the Counseling and Testing Center that is of benefit to UI students and represents professional achievement of publishable merit; and continued service to the university and community through committee work or participation in community organizations. These activities may occur in a domestic or international context.

d. Licensed Psychologist with Rank of Professor. Appointment or promotion to this rank requires the qualifications applicable to the lower ranks of psychologists and: demonstration of outstanding competence in counseling or therapy; establishment of an outstanding record in research and publication or in development of continuing programs that contribute to the betterment of university students; continued professional improvement through private study, directed study, or attendance at workshops, conventions, etc.; regional or national recognition for contributions to the profession through publication, presentation of workshops, or active and effective participation in the activities of professional organizations; and recognition by colleagues as an effective psychologist who realizes that optimum productivity is a reasonable personal goal. These activities may occur in a domestic or international context.

D-7. OFFICER-EDUCATION: Appointment of persons to the faculties of the officer education programs was established for the purpose of ensuring the academic soundness of the programs. The dual role of these faculty members as military officers and academic instructors is recognized. The university expects the nominees to have demonstrated academic and intellectual capabilities and exemplary professional achievement. Specifically, UI expects:

a. Academic Preparation. It is desirable for officer education faculty members to have at least a master's degree. In his or her most recent education, the officer should have a superior academic record as demonstrated by such measures as high grade-point average in graduate school, being in the upper half of the class in graduate school, or superior graduate-level ability as attested in letters of recommendation from graduate-school professors.

b. Specialized Preparation. The officer must have significant education, experience, or formal preparation in

the subject areas in which he or she will teach.

c. Military Background and Preparation. A junior officer is expected to have had significant professional performance and experience. It is also desirable that the officer have some formal military education beyond commissioning. A senior officer should have broad experience with excellent performance. He or she is expected to have attended a junior or senior military college and to have made a distinguished record there.

d. Teaching. It is desirable for officers to have had some teaching experience. It is recognized that this is not always possible for junior officers. For such an officer, there should be some evidence that he or she will become a satisfactory teacher. Heads of officer education programs are expected to be experienced instructors.

e. Nominees who will pursue graduate studies at UI for one year before becoming an instructor will be given preliminary approval. In their last semester of full-time graduate enrollment, the service should submit the required information to the Officer Education Committee for regular, final approval. For preliminary approval, the officer should, in addition to the military requirement, show promise of being successful in graduate studies. This could be demonstrated by (a) a high score on the Graduate Record Examination, if taken, (b) full enrollment status as a graduate student at UI, (c) a high overall grade-point average in college (3.00 or above on a 4-point scale), (d) a high grade-point average in a major area, or (e) a good record in the final year of college and graduate-level ability as attested by letters of recommendation from college professors.

f. Appointment:

1. The following information is submitted by the nominee's service: (1) transcripts from undergraduate and graduate academic institutions; (2) transcripts or appropriate records from military schools and staff colleges; (3) at least three letters of recommendation from appropriate sources, such as former professors, military instructors, and supervisors or commanders. These letters should be concerned with matters such as the officer's civilian academic performance, military record and leadership ability, and actual or potential performance as a teacher. (Former supervisors or commanders could give their opinion based on the officer's demonstration of leadership ability and his or her experience as a training officer.); (4) a summary of the officer's duty assignments and military and teaching positions held; (5) copies of favorable communications from the officer's file.

2. The following is provided by the program unit concerned: (1) a description of the military schools attended and courses completed by the nominee; (2) a description of the positions held by the nominee; (3) an explanation of the appropriateness of the officer's experience and training to the courses he or she will teach.

3. Copies of the requested material are distributed by the local unit to the members of the Officer Education Committee at least 72 hours before the meeting at which the committee will consider the nominee. For appointments commencing in the fall, this information should normally be made available not later than the preceding May 1.

4. In the case of a person nominated to head an officer education program, UI may require a personal interview.

5. A minimum of two weeks, after receipt of all required information, is necessary for consideration of the nominee. UI notifies the nominee's service of its decision within one month.

D-8. UNIVERSITY DISTINGUISHED PROFESSOR: Acknowledgment of outstanding academic contributions to the university is appropriate and desirable. The rank of University Distinguished Professor[2] is bestowed upon University of Idaho faculty in recognition of sustained excellence in all of their areas of responsibility. The rank will be held for the remainder of the recipient's active service at the University; if the recipient leaves the

[2] As a result of Development Fund efforts, endowment support eventually may be obtained for many University Distinguished Fellowships, in which case a donor's name may be added to the title.

University and is eligible for emeritus status, the rank will change to University Distinguished Professor Emeritus. The rank is highly honorific and therefore will be conferred on no more than three faculty members university-wide in any given academic year. Selection of University Distinguished Professors will reflect the diversity of scholarly fields at the University. University Distinguished Faculty will receive a stipend of at least $5,000 per year for five years to be used to enhance salary or support professional activities (e.g., professional travel, student support, equipment, materials and supplies, etc.). Final discretion in conferring the rank of Distinguished Professor and the number of appointments in a given year resides with the President.

a. Selection Criteria: In general, University Distinguished Professors will have received national and usually international recognition. They will have brought distinction to the University through their work.

University Distinguished Professors will have achieved a superior record in at least three of the following areas: scholarly, creative, and artistic achievement; breadth and depth of teaching; excellence in extension or outreach; and University service and service involving the application of scholarship, creative, or artistic activities to addressing the needs of one or more external publics.

University Distinguished Professorships will be conferred on members of the University of Idaho Faculty who have attained the rank of Professor and have completed a minimum of seven years of service at the University, typically at the rank of Professor.

b. Selection Process: University Distinguished Professorships will be awarded by the president upon recommendation of The University Distinguished Professorship Advisory Committee a standing committee composed of four faculty members and three deans. The committee members should reflect all dimensions of diversity in the university community. They will be appointed by the Provost to serve three-year terms on a staggered basis. Nominations will be made by Faculty Senate and the Academic Deans, in consultation with faculty and administrators of units. Committee members must be tenured professors who themselves have outstanding records in all of their areas of responsibility.

1. The Provost will request nominations from faculty, deans, directors and unit administrators annually.
2. Written nominations will be submitted to the Provost and must include:
    a. A nominating letter with a brief summary of the candidate's achievements;
    b. The candidate's *curriculum vitae*, including a list of any significant previous awards;
    c. Letters of endorsement from the appropriate deans and unit administrators or director(s). The candidate may also include a maximum of three additional letters of support, as appropriate, from students, colleagues at the University of Idaho, or other institutions. Letters should describe the impact of the nominee on their field, evidence of external recognition, and the context of their work over the course of their employment.
3. The University Distinguished Professorship Advisory Committee reviews the nominations and makes recommendations to the Provost for transmittal to the President.
4. Because the rank of University Distinguished Professorship is intended to be highly honorific, it is possible that in a given year no candidates will be selected.
5. The applications of nominees who are not selected in the first year of nomination will remain active for a total of three years. Nominators will have the opportunity to update their nomination during subsequent years in which their candidate is under consideration.

D-9. CLINICAL FACULTY: Clinical faculty may be appointed for the purpose of performing practicum, laboratory, or classroom teaching. Clinical faculty is a non-tenure track position. Clinical faculty positions are appropriate for professional disciplines having strong applied and/or clinical elements or those serving university units or academic departments in a supporting capacity. Appointment to clinical-faculty status constitutes a recognition of the appointee's scholarly contributions and professional accomplishments, and confers responsibilities and privileges as stated in a below. Clinical faculty members may be appointed and/or promoted to the ranks of clinical assistant professor, clinical associate professor or clinical full professor.

a. Responsibilities, Privileges, and Rights. A clinical faculty member has a primary employment responsibility in a UI unit. The relationship of a clinical faculty member to UI is essentially that of a collaborator with a UI unit, program, or faculty member. The guarantees afforded by the principle of academic

freedom [see FSH 4000] are extended to members of the clinical faculty. They have the same responsibilities and privileges as university faculty (FSH 1520 II 1)

Clinical faculty members perform administrative, analytical, and research functions that complement UI's mission in teaching, research, and service.

1. Clinical faculty members may have teaching as a primary or major responsibility; in addition, they may advise students on their academic or professional programs, participate in research projects, serve on graduate students' supervisory committees, engage in outreach and engagement activities, and act as expert advisers to faculty members or groups.

2. The nature and extent of the services to be rendered are determined jointly by the clinical faculty member, his or her immediate supervisor, and the unit administrator(s) concerned.

b. Qualifications. Assignment to a clinical faculty position is based on demonstrated knowledge and experience, academic degrees, scholarly contributions, or other professional accomplishments comparable to those expected of faculty within the unit.

c. Conversion. Instructors and senior instructors who meet the qualifications for clinical faculty defined in D-9 b. may be considered for clinical faculty status upon the recommendation of the unit administrator and dean, subject to approval by the provost. Credit for prior equivalent experience may be granted by the provost up to a maximum of four years. Conversion of an existing tenure-track or tenure line in a unit to clinical status requires the approval of the dean and provost. A unit must demonstrate that a clinical position better advances the university's strategic goals than a tenure-track position.

E. EMERITUS STATUS. (FSH 1520 II.2)

E-1. PURPOSE. Emeritus status benefits both the university and emeriti by providing opportunities for emeriti to maintain ties with faculty members and continue service to the university and community.

E-2. ELIGIBILITY. A board-appointed, benefit-eligible member of the university faculty who holds one of the ranks described in 1565 D and who leaves the university and has a minimum of 8 years of service and attained the rule of 65 (age plus years of service is at least 65) is eligible for emeritus status.

E-3. APPOINTMENT.

1. Faculty must request consideration for emeritus status. This request may be made in the notice of resignation or in a request made directly to the provost. This request may be made along with or at any point following the submission of the letter of resignation. If a faculty member who is eligible for emeritus status under section E-2 does not request consideration for emeritus status in their resignation letter, then their college or department will send a notice to the faculty member asking if they wish to request emeritus status. The college or department will send a similar notice to any eligible faculty who receives a terminal contract due to program closure or similar circumstances.

2. In ordinary circumstances, the provost will grant emeritus status if the eligibility requirements specified in E-2 are satisfied. In exceptional circumstances, the provost may suspend the above eligibility rules and award, deny, or revoke a faculty member's emeritus status with a written notification to the faculty member stating the reasons for the decision and notifying them of the ability to appeal. A faculty member may appeal this decision to the Faculty Senate Chair, Faculty Senate Vice Chair, and Faculty Secretary, where the provost's decision must be upheld by a unanimous vote in order to be enacted§. Examples of exceptional circumstances include the reasons outlined in FSH 3910 A-1.

3. A list of emeriti is maintained by the Provost's office.

4. Emeriti are responsible for updating contact information with the university.

E-4. PRIVILEGES.

- **a. Access.** Emeriti continue to have access to research, library, and other UI facilities.
- **b. Participation.** UI encourages the voluntary continued participation of emeriti in the activities of the academic community. Emeriti may take an active role in the service and committee functions of their department, college, and the university as described in FSH 1520 II.2. Other activities are subject to approval by the provost.
- **c. Title.** Emeriti may use the title "professor emeritus/emerita," "research professor emeritus/emerita," or "extension professor emeritus/emerita," as applicable. A faculty member without such rank has the designation "emeritus" or "emerita," as applicable, added to the administrative or service title held at the time of retirement.
- **d. Mail.** Departmental mailboxes continue to be available to emeriti who reside locally. Emeriti who have departmental mailboxes receive full distribution of departmental notices unless otherwise requested.
- **e. Office supplies.** Office supplies are available under regular departmental procedures.
- **f. Postage.** Departmental postage may be used for professional mail.
- **g. Parking.** Emeriti receive one non-transferable gold parking permit annually.
- **h. Discount programs**. Emeriti receive any discounts available to other faculty members through various UI programs.
- **i. Functions**. Emeriti are invited to the same university, college, and departmental functions as active faculty.
- **j. Travel funding.** Travel funding may be used to support professional activities of emeriti in service to the university (e.g. guest lectures, research design, consultation, etc.). Emeriti may have a lower priority for travel funding than active faculty and such funding is at the discretion of the unit administrator or dean.
- **k. Office/lab space.** Offices and labs for emeriti are provided on a space-available basis as determined by the unit administrator or dean, giving higher priority to active faculty and unit needs. Office and lab space allocations to emeriti may be revoked upon 60 days' notice.
- ***l.*** **Information technology services.** Emeriti who elect to maintain an active computing account will retain access to services provided by Information Technology Services (ITS) including electronic communications (e.g., email, instant messaging, etc.), technical support, and offered software.

E-5. EMPLOYMENT OPPORTUNITIES.

a. Emeriti may hold a temporary or permanent part-time position (0.49 FTE or less) subject to regular employment procedures. It is the responsibility of emeriti to consult with HR regarding impact to benefits.
b. Emeriti shall not serve as supervisors of other employees unless they hold a position as outlined in E-5-a herein.

F. ASSOCIATED FACULTY: Associated faculty members (see FSH 1520 II-3) have access to the library and other UI facilities. Reimbursement for travel or for services to UI is at the unit's discretion. They are not eligible for sabbatical leave.

F-1. AFFILIATE FACULTY:

a. General. The affiliate faculty consists of professional personnel who serve academic departments in a supporting capacity. Appointment to affiliate-faculty status constitutes a recognition of the appointee's scholarly contributions and professional accomplishments, confers responsibilities and privileges as stated in subsection d below, and authorizes assignment of service functions as described in subsection d-2 below. It is also a means of encouraging greater cooperation between and among academic departments and other units. An affiliate faculty member holds a non-tenure-track faculty status in an appropriate academic discipline.

b. Employment Status. An affiliate faculty member may, by virtue of his or her employment, have either one of the following relationships with UI: (1) that of a UI employee, normally an exempt employee, who is [a] a member of the faculty or staff of a unit of the university other than the one in which he or she has affiliate-faculty status, or [b] a member of the professional support staff of the same unit of the university in which he or she has affiliate-faculty status; (2) that of an employee of a governmental or private agency who is assigned

by that agency to a UI unit or to one of the agency's units or programs that is officially associated with the university.

c. Distinction between Affiliate and Adjunct Faculties. Members of the affiliate faculty have a more direct relationship with UI than do members of the adjunct faculty [see 1565 F-2]. Members of the adjunct faculty are not UI employees. An adjunct faculty member's primary employment is with a unit or program that is not officially associated with UI. Thus, the relationship of a member of this faculty category to UI is essentially that of a collaborator with a UI unit, program, or faculty member. An affiliate faculty member, in contrast, has a primary employment responsibility in a UI unit or in a non-UI unit that is officially associated with UI. In addition, he or she has a secondary relationship to another unit in a supporting role, or has a secondary relationship to the academic program in the same unit in which he or she has a primary employment responsibility. These latter relationships are the kind that are recognized by the affiliate faculty membership.

d. Responsibilities, Privileges, and Rights. The guarantees afforded by the principle of academic freedom [see FSH 4000] are extended to members of the affiliate faculty. They have substantially the same responsibilities and privileges as do members of the university faculty; however, their right to vote in meetings of their constituent faculties is limited in accordance with the provisions of 1520 II-3-b. (Those who, in addition to their affiliate-faculty status, have status as members of the university faculty [e.g., psychologists in the Counseling and Testing Center and regular faculty members in other academic departments] have, of course, full rights of participation in meetings of the university faculty and of the constituent faculties to which they belong.)

Affiliate faculty members perform administrative, analytical, and research functions that complement UI's mission in teaching, research, and service.

1. Affiliate faculty members, as such, do not normally have teaching as a primary or major responsibility; however, with the approval of academic departments, they may teach classes, advise students on their academic or professional programs, participate in research projects, serve on graduate students' supervisory committees (with approval by the dean of graduate studies), or act as expert advisers to faculty members or groups.

2. The nature and extent of the services to be rendered are determined jointly by the affiliate faculty member, his or her immediate supervisor, and the departmental administrator(s) concerned.

3. Affiliate faculty qualify for the faculty-staff educational privilege [see 3740]

e. Qualifications. Assignment to an affiliate faculty position is based on demonstrating knowledge and experience, academic degrees, scholarly contributions, or other professional accomplishments comparable to what is expected of faculty within that unit.

f. Appointment.

1. Appointments to the affiliate faculty may be made at any time. They are reviewed by the dean of the college before publication of each issue of the *General Catalog*. No appointment should be continued unless the affiliate faculty member remains in UI employment or continues in his or her assignment to an entity that is officially associated with the university.

2. A recommendation for appointment to the affiliate faculty normally originates in the appropriate academic department and requires the concurrence of the nominee's immediate supervisor and the faculty of the appointing department. The appointment must be approved by the dean of the college, the president, and the regents.

3. An appointment, termination, or other change in affiliate-faculty status is made official by means of a "Personnel Action" form.

F-2. ADJUNCT FACULTY:

a. General. The adjunct faculty includes highly qualified persons who are not employed by UI but are closely associated with its programs. [For the distinction between the affiliate and the adjunct faculty categories, see 1565 F-1-c.]

b. Responsibilities. Members of the adjunct faculty have the same academic freedom and responsibility as do members of the university faculty; however, their right to vote in meetings of the university faculty and of their constituent faculties is limited in accordance with the provisions of 1520 II-3-b. Adjunct faculty members may be assigned to advise students on their academic or professional programs at any level; to work in cooperative research projects; to serve on committees, including graduate students' supervisory committees (with approval by the College of Graduate Studies); to act as expert advisers to faculty members or groups; and to teach courses in their branch of learning.

c. Qualifications. Adjunct faculty members must be highly qualified in their fields of specialization and should have exhibited positive interest in UI programs in the field of their appointment. Their qualifications should ordinarily be equivalent to those required of regular members of the faculty in the area and at the level of the adjunct faculty member's responsibility.

d. Adjunct faculty do not qualify for the faculty-staff educational privilege. (see 3740)

e. Appointment.

1. Appointments to the adjunct faculty may be made at any time. b. Appointments are for an indefinite period, but are to be reviewed by the dean of the college before publication of each issue of the *General Catalog*. No appointments should be continued unless the adjunct faculty member is actively engaged in the responsibilities for which he or she was appointed.

2. Recommendations for appointment to the adjunct faculty are normally developed at the departmental level and have the concurrence of the departmental faculty. For interdisciplinary degree programs, adjunct faculty may also be assigned responsibilities with respect to the degree programs with approval of the program faculty and of the program director. Appointments must be approved by the dean of the college, the provost, the president, and the regents.

3. Before formal appointment procedures are begun, the prospective adjunct faculty member must agree to serve under the provisions herein described. When necessary, the consent of the nominee's employer, if any, will be requested and recorded.

4. Appointment information is recorded on the regular "Personnel Action" form.

5. The appointment of adjunct faculty members to graduate students' supervisory committees requires approval by the dean of the College of Graduate Studies.

G. TEMPORARY FACULTY: Temporary faculty have access to the library and other UI facilities. Reimbursement for travel or for services to UI is at the unit's discretion. They are not eligible for sabbatical leave.

G-1. LECTURER. A teaching title that carries no specific connotation of rank among the professorial titles. This title is conferred on one who has special capabilities or a special instructional role. Lecturers are neither tenurable nor expected to progress through the professorial ranks.

G-2. VISITING FACULTY. A designation that indicates that the appointee holds a regular teaching or research position at another institution. A visiting appointee who does not hold a professorial rank elsewhere shall be subject to the requirements for lecturers to qualify for voting rights.

G-3. ACTING. Persons who are judged competent to perform particular duties may be appointed for temporary service as acting members of the faculty. An acting appointment may also be used to establish a probationary period for an initial appointment of a person who, while being considered for a regular position on the faculty, is completing the required credentials for a permanent appointment. Persons on acting status are not voting members of the university faculty or of constituent faculties.

G-4. ASSOCIATE. A title for a nonstudent with limited credentials who is assigned to a specialized teaching, research, or outreach position. Associates are exempt staff and are not members of the university faculty or of constituent faculties.

H. NON-FACULTY: Those within this category are not members of the faculty.

H-1. POSTDOCTORAL FELLOW. Postdoctoral fellows are persons who hold the doctoral degree or its equivalent at the time of their appointment and are continuing their career preparation by engaging in research or scholarly activity. Postdoctoral fellows are special exempt employees in the category of "temporary or special" (FSH 3080 D-2 a) employees recognized by the regents. [See also 3710 B-1.b.]

H-2. GRADUATE STUDENT APPOINTEES: The general nature of the following graduate assistantships is defined as an apprenticeship experience that consists of a work obligation partnered with educational and developmental activities, all of which are integrated with the graduate degree program of the student. All graduate assistants must be individually mentored by a faculty advisor and may receive additional mentoring from other faculty and/or staff on or off campus. All graduate assistant positions (H-2. a, b, c) are limited to twenty hours per week of work. All graduate student appointees must be academically qualified and registered. [See also 3080 D-2-a.]

a. Graduate Teaching Assistant. Graduate Teaching Assistants perform duties related to the instructional efforts of the unit in which they are employed under the supervision of a member of the university faculty, associated faculty, or temporary faculty (see FSH 1565 D, F, and G). These duties, which must be associated with academic credit instruction and constitute at least 50 percent of a Graduate Teaching Assistant's effort, may include, but not be limited to: primary teaching responsibilities; grading assignments; assisting with the delivery of instruction through technology; and providing other assistance related to instruction.

b. Graduate Research Assistant. Graduate Research Assistants develop competence in performing professional-level work in support of research, scholarship, or creative activity. These positions can only have duties within the scope of work permitted by the funding source.

c. Graduate Support Assistant. Graduate Support Assistants perform a wide range of duties and can have varying responsibilities in academic and non-academic campus departments and programs. The specific duties depend on the needs of the office or project and on the qualifications and experiences of the Graduate Support Assistant. Graduate Support Assistants may provide academic and/or non-academic instruction, and/or assist with research, or provide other support functions. The duties must be directly related to the Graduate Support Assistant's program of study. The College of Graduate Studies shall periodically publish standards governing the permissible scope of Graduate Support Assistant appointments on its website.

I. QUALIFICATIONS OF NONFACULTY MEMBERS FOR TEACHING UI COURSES. Persons who are not members of the university faculty but are selected to teach UI courses offered for university-level credit (including continuing-education courses and those offered by correspondence study) are required to have scholarly and professional qualifications equivalent to those required of faculty members.

Version History

Amended January 2024. Changes made to G-1 Lecturer and G-2 Visiting Faculty to align with revised FSH 1520. Revised D-8 University Distinguished Professor to make Extension faculty eligible and C-2 to clarify how advising is credited for evaluative purposes.

Amended July 2022. Revised and clarified section C-1.a. to expand and clarify the evidence that may be used in evaluating teaching effectiveness.

Amended July 2021. Editorial changes.

Amended July 2020. The policy on emeritus status was extensively revised to provide greater clarity, ensure conformity with labor law, and add the ability to revoke emeritus status in exceptional circumstances. Section D-5 Librarian was revised to provide more flexibility in recruiting efforts.

Amended January 2020. The policy on office hours was moved from FSH 3240 to C-1.c. Changes were made to sections C-1 and C-3 to ensure that faculty efforts in the areas of teaching, advising, and outreach and extension are properly credited.

Amended July 2018. A new category for graduate support assistants was added to address needs that are not covered under the role of a typical teaching or research assistant position.

Amended July 2014. The cap on non-tenure track faculty appointments in a unit was adjusted and promotion processes clarified and revised.

Amended January 2014. The time necessary to qualify for emeritus status was redefined.

Amended July 2013. Definitions for research and teaching assistants were more clearly defined.

Amended July 2012. Edits were made to the Distinguished Professor under D-8 and to the qualifications for Emeritus status and a search waiver under E.

Amended July 2011. Voting for associated faculty was clarified and Clinical Faculty under "G. Temporary Faculty" moved to "D. University Faculty" as D-9 and was revised.

Amended July 2010. The affiliate and adjunct terms were switched to conform to national norms and the rank of Distinguished Professor was added.

Amended January 2010. Changes to the faculty position description and evaluation forms integrating faculty interdisciplinary activities into the evaluation processes were incorporated into this policy. Ranks for Associated Faculty in F were removed because the promotion process as detailed in 3560 for faculty ranks was deemed excessive for associated faculty. Those currently holding a specific rank in adjunct or affiliate will retain that privilege.

Amended July 2008. The policy was reorganized to better reflect classifications as stated in FSH 1520 Article II.

Amended July 2006. Substantial revisions were made to Section A.

Amended July 2001. Section J-1, voting rights for lecturers, was changed.

Amended July 2000. Revisions were made to C-1, D-1, and E-1.

Amended 1998. Extensive revisions were made to B (entirely new), C, D, and E.

Amended July 1998. Section A underwent additional substantial revision.

Amended July 1996. The definitions of 'postdoctoral fellow' (J-5), 'graduate assistant' (K-3) and 'research fellow' (K-4) were revised.

Amended July 1994. Section A was substantially revised, so as to underline better the importance of both teaching and scholarship. The so-called "Voxman Amendment" (the addition of 'in the classroom and laboratory' to the list of possible venues wherein the evaluation of scholarship might take place) made its first appearance.

Amended 1987. The material in section I was added.

Adopted 1979.

FACULTY-STAFF HANDBOOK
CHAPTER ONE:
HISTORY, MISSION, GENERAL ORGANIZATION, AND GOVERNANCE

1565
ACADEMIC RANKS AND RESPONSIBILITIES

OWNER
Vice Provost for Faculty
Diane Kelly-Reilly
dkr@uidaho.edu

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A. INTRODUCTION.

A-1. The principal functions of a university are the preservation, advancement, synthesis, application, and transmission of knowledge. Its chief instrument for performing these functions is its faculty, and its success in doing so depends largely on the quality of its faculty. The University of Idaho, therefore, strives to recruit and retain distinguished faculty members with outstanding qualifications.

In order to carry out its functions and to serve most effectively its students and the public, the university supports the diversification of faculty roles. Such diversification ensures an optimal use of the university's faculty talents and resources.

Diversification is achieved through developing a wide range of faculty position descriptions that allow the faculty to meet the varying responsibilities placed upon the institution, both internally and externally. No more than 25 percent, or a lower limit as defined by the department or similar unit's by-laws, of the faculty positions in any department or similar unit may be held by instructors, senior instructors, and lecturers who have voting privileges under FSH 1520 II, Section 1. While the capabilities and interests of the individual faculty members are to be taken into account, it is essential that individual faculty position descriptions are consonant with carrying out the roles and mission of the university, the college, and the unit. Annual position descriptions are developed by the unit head in consultation with the unit faculty and with the incumbent or new faculty member. In each college, all position descriptions are subject to the approval of the dean and must be signed by both unit head and faculty member. If the faculty member, unit head, and dean are unable to reach agreement on the position description, the faculty member may appeal the unit head's decision to the Faculty Appeals Hearing Board [FSH 3840].

As indicated in Section 3320 A-1, faculty performance evaluations that are used for yearly, third-year and periodic reviews as well as for promotion, tenure, and post-tenure decisions are to be based on faculty members' annual position descriptions (FSH 3050). Each unit will develop substantive criteria in its bylaws for promotion and review of its faculty

Faculty members shall conduct themselves in a civil and professional manner (see FSH ~~3160~~ 4000 and 3170).

B. DEFINITIONS:

B-1. Advancement: focuses on fostering relationships, building partnerships, creating awareness and generating

support with alumni, donors, leaders, business partners, legislators and the community for the university's mission in academics, scholarship and outreach (see the office of University Advancement at http://www.uidaho.edu/givetoidaho/meetourpeople/universityadvancementvpoffice.aspx).

B-2. Cooperative education: a structured educational strategy that blends classroom studies with learning through productive work experiences. It provides progressive experiences for integrating theory and practice. Co-op education (including internships and externships) is a partnership between students, educational institutions and employers, with specified responsibilities for each party.

B-3. Distance education: the process through which learning occurs when teachers, students, and support services are separated by physical distance. Technology, sometimes in tandem with face-to-face communication, is used to bridge the distance gap.

B-4. Extension Service: Extension is an outreach activity that generally involves non-formal educational programs that transfer knowledge from the university to help improve people's lives through research in areas like agriculture and food, environment and natural resources, families and youth, health and nutrition, and community and economic development.

B-5. Extramural Professional Service: refers to activities that extend service beyond the university and can include elements of service, outreach, scholarship, and/or teaching.

B-6. Interdisciplinary: "an activity that involves teams or individuals that integrates information, data, techniques, tools, perspectives, concepts, and/or theories from two or more disciplines or bodies of specialized knowledge to advance fundamental understanding or to solve problems whose solutions are beyond the scope of a single discipline or field of research practice."[1]

B-7. Professional Development: a learning process that expands the capacity of the faculty member to advance in the responsibilities as defined in his/her position description and aligns with the university's goals. Examples include but are not limited to participation in conferences, continuing professional education (including credit and noncredit courses) and other activities that enhance a faculty member's expertise and ability.

B-8. Service learning: an activity that integrates student learning with service and civic engagement to meet real community needs and achieve learning outcomes. Service-learning can be used in curricular settings (i.e. academic courses) or co-curricular settings, (e.g. ASUI's volunteer/civic engagement programs).

B-9. Technology transfer: a process through which knowledge, technical information, and products developed through various kinds of scientific, business, and engineering research are provided to potential users. Technology transfer encourages and accelerates testing and using new knowledge, information and products. The benefit of technology transfer may occur either at the community (public) or firm (private) level.

B-10. Unit Administration: includes assisting higher administration in the assignment and in the evaluation of the services of each member of the unit's faculty and staff; promoting effective leadership of personnel and management of unit resources; providing leadership in the development and implementation of unit plans; providing for open communication with faculty and staff; fostering excellence in teaching, scholarship and outreach for faculty, students, and staff in the unit; effectively representing all constituents of the unit; and continuing personal professional development in areas of leadership.

C. RESPONSIBILITY AREAS: Faculty members are expected to contribute in each of the four major responsibility areas (C-1 through C-4 below). Expectations are more specifically defined in the individual position description and are consistent with unit by-laws. Each responsibility area may include activities in advancement, extramural professional service, interdisciplinary, and/or professional development.~~1~~

C-1. TEACHING AND ADVISING: The university's goal is to engage students in a transformational experience of discovery, understanding and global citizenship. Faculty achieve this goal through effective instructing, advising

[1] National Academy of Science

and/or mentoring of students.~~/~~

a. Teaching: Effective teaching is the foundation for both the advancement and transmission of knowledge. The educational function of the university requires the appointment of faculty members devoted to effective teaching. Teaching may take many different forms and any instruction must be judged according to its central purposes. Active participation in the assessment of learning outcomes is expected of all faculty at the course, program, and university-wide levels. Individual colleges and units have the responsibility to determine appropriate teaching loads for faculty position descriptions. Teaching appointments must be reflected by hours and level of effort spent in teaching activity, and justified in position descriptions. Any adjustments to a teaching appointment (e.g. teaching unusually large classes, team-teaching, teaching studios or laboratories, intensive graduate or undergraduate student mentoring, technology-enhanced teaching, and others) must be documented in the position description.

Evidence of teaching effectiveness shall include student feedback on teaching, and may include course design reviews, teaching observations, self-assessment, learning outcome assessment data, teaching recognition and awards, mid-term formative feedback on instruction (FSH 2700 B-6), or other documentation of effective teaching. Additional information about evidence of teaching effectiveness can be found through the Provost's Office.

b. Advising: For the purposes of this section, advising includes mentoring and student retention activities. These activities are an important faculty responsibility and a key function of academic citizenship, and may include: (1) overseeing course selection and scheduling; (2) seeking solutions to conflicts and academic problems; (3) working with students to develop career goals and identify employment opportunities; (4) making students aware of programs and sources for identifying employment opportunities, (5) facilitating undergraduate and graduate student participation in professional activities (e.g. conferences, workshops, demonstrations, applied research); and (6) serving as a faculty advisor to student organizations or clubs. Advising also includes attendance at sessions (e.g. workshops, training courses) sponsored by the university, college, unit, or professional organizations to enhance a faculty member's capacity to advise.

Effective advising performance may be documented by: (1) the evaluation of peers or other professionals in the unit or college; (2) undergraduate or graduate student advisees' evaluations; (3) level of activity and accomplishment of the student organization advised; (4) evaluations of persons being mentored by the candidate; (5) number of undergraduate and graduate students guided to completion; and (6) receiving awards for advising, especially those involving peer evaluation.

C-2. SCHOLARSHIP AND CREATIVE ACTIVITIES: Scholarship is creative intellectual work that is communicated and validated. The creative function of a university requires the appointment of faculty members devoted to scholarship and creative activities. The university promotes an environment that increases faculty engagement in interdisciplinary scholarship. The university's Carnegie designation as "research university high" fosters an emphasis on scholarly and creative activities.

Scholarship and creative activities take diverse forms and are characterized by originality and critical thought. Both must be validated through internal and external peer review or critique and disseminated in ways having a significant impact on the university community and/or publics beyond the university. Both are ongoing obligations of all members of the faculty.

The basic role of a faculty member at the University of Idaho is to demonstrate and validate continuing sound and effective scholarship in the areas of teaching and learning, artistic creativity, discovery, integration, and outreach/application/engagement. While these areas may overlap, these distinctions are made for purposes of defining position descriptions and for developing performance standards. Units and colleges shall adopt criteria for the evaluation of scholarship and creative activities. Undergraduate and graduate students advised may be credited to scholarship and creative activity or to teaching and advising for evaluative purposes, but not to both. Demonstrated excellence that is focused in only one of these scholarship and creative activity areas is acceptable if it is validated and judged to be in the best interests of the institution and the individual faculty member.

a. Scholarship in Teaching and Learning: can involve classroom action research (site-specific pedagogy),

qualitative or quantitative research, case studies, experimental design and other forms of teaching and learning research. It consists of the development, careful study, and validated communication of new teaching or curricular discoveries, observations, applications and integrated knowledge and continued scholarly growth. Evidence that demonstrates this form of scholarship might include: publications and/or professional presentations of a pedagogical nature; publication of textbooks, laboratory manuals, or educational software; advancing educational technology; presentation in workshops related to teaching and learning; development and dissemination of new curricula and other teaching materials to peers; and individual and/or collective efforts in securing and carrying out education grants.

The validation of scholarship in the area of teaching and learning is based in large measure on evaluation by the faculty member's peers both at the University and at other institutions of higher learning.

b. Scholarship in Artistic Creativity: involves validated communication and may be demonstrated by significant achievement in an art related to a faculty member's work, such as musical composition, artistic performance, creative writing, mass media activity, or original design.

The validation of scholarship in the area of artistic creativity is based in large part on the impact that the activity has on the discipline and/or related fields as determined by the peer review process. Many modes of dissemination are possible depending on the character of the art form or discipline. For example, a published novel or book chapter for an anthology or edited volume or similar creative work is regarded as scholarship. Each mode of dissemination has its own form of peer review that may include academic colleagues, practitioner or performance colleagues, editorial boards, and exhibition, performance, or competition juries.

c. Scholarship in Discovery: involves the generation and interpretation of new knowledge through individual or collaborative research. It may include: novel and innovative discovery; analyzing and synthesizing new and existing knowledge and/or research to develop new interpretations and new understanding; research of a basic or applied nature; individual and collaborative effort in securing and carrying out grants and research projects; membership on boards and commissions devoted to inquiry; and scholarly activities that support the mission of university research centers.

Evidence of scholarship in this area may include: publication of papers in refereed and peer reviewed journals; published books and chapters; published law reviews; citation of a faculty member's work by other professionals in the field; published reviews and commentary about a faculty member's work; invited presentations at professional meetings; seminar, symposia, and professional meeting papers and presentations; direction and contribution to originality and novelty in graduate student theses and dissertations; direction and contribution to undergraduate student research; awards, scholarships, or fellowships recognizing an achievement, body of work, or career potential based on prior work; appointment to editorial boards; and significant scholarly contributions to university research centers. The validation of scholarship in the area of discovery is based on evaluation by other professionals in the faculty member's discipline or sub-discipline.

d. Scholarship of Integration: often interdisciplinary and at the borders of converging fields, is the serious, disciplined work that seeks to synthesize, interpret, contextualize, critically review, and bring new insights into, the larger intellectual patterns of the original research. Similar to the scholarship of discovery, the scholarship of integration can also seek to investigate, consolidate, and synthesize new knowledge as it integrates the original work into a broader context. It often, but not necessarily, involves a team or teams of scholars from different backgrounds working together, and it can often be characterized by a multidisciplinary or interdisciplinary investigative approach. The consolidation of knowledge offered by the scholarship of integration has great value in advancing understanding and isolating unknowns. Beyond the differences, the scholarship of integration can include many of the activities of scholarship of discovery and thus may be rigorously demonstrated and validated in a similar manner.

e. Scholarship of Outreach/Application/Engagement: These activities apply faculty members' knowledge and expertise to issues that impact individuals, communities, businesses, government, or the environment. Examples may include economic development, environmental sustainability, stimulation of entrepreneurial activity, integration of arts and sciences into people's lives, enhancement of human well being, and resolution

of societal problems. Like other forms of scholarship and creative activities, the scholarship of outreach/application/engagement involves active communication and validation. Examples of validation may include (but are not limited to): peer reviewed or refereed publications and presentations; patents, copyrights, or commercial licensing; adoption or citation of techniques as standards of practice; invited presentation at a seminar, symposium or professional meeting; and citations of the faculty member's work.

C-3. OUTREACH and EXTENSION: Outreach activities are originated by every unit on UI's Moscow campus and from each of the University's physical locations around the state.

Outreach includes a wide variety of activities including, but not limited to, (a) extension (see 1565 B); (b) teaching, training, certification, and other dissemination of information to the general public, practitioner, and specialty audiences; (c) volunteer development and establishment/maintenance of relationships with private and public organizations; (d) unpaid extramural consultation and other professional services to individuals, organizations, and communities; and (e) undergraduate and graduate student recruiting activities. Delivery mechanisms include distance education, service learning, cooperative education, technology transfer, noncredit courses, workshops, presentations, and publications. Most of the examples provided, such as distance education, are not exclusively outreach. Instead, they lie at the intersection of outreach and teaching or research. Likewise, professional services may be associated with teaching, scholarship, or university service and leadership. A faculty member's position description specifies where his or her activities will be counted.

Evidence of effective outreach activities may include, but are not limited to, (1)documentation of the process by which needs were identified and what steps were taken to deliver carefully planned and implemented programs; (2) numbers of individuals and types of audiences affected; (3) evaluation by participants in outreach activities; (4) other measures of significance to the discipline/profession, state, nation, region and/or world; (5) quantity and quality of outreach publications and other mass-media outlets; (6) evaluation of the program's effects on participants and stakeholders; (7) awards, particularly those involving peer evaluation; (8) letters of commendation from individuals within organizations to whom service was provided; (9) service in a leadership role of a professional or scientific organization as an officer or other significant position; and (10) other evidence of professional service oriented projects/outputs.

C-4. UNIVERSITY SERVICE AND LEADERSHIP: The university seeks to create formal and informal organizational structures, policies, and processes that enable the university community to be effective, while also fostering a climate of participatory decision making and mutual respect.

a. Intramural service is an essential component of the University of Idaho mission and is the responsibility of faculty members in all units. Service by members of the faculty to the university in their special capacities as scholars should be a part of both the position description and annual performance review.

Within the university, intramural service includes participation in unit, college, and university committees, and any involvement in aspects of university governance and academic citizenship. University, college, and unit committee leadership roles are seen as more demanding than those of a committee member or just regularly attending faculty meetings. Because faculty members play an important role in the governance of the university and in the formulation of its policies, recognition should be given to faculty members who participate effectively in faculty and university governance. Intramural service can include clinical service, routine support, and application of specialized skills or interpretations, and expert consultancies. The beneficiaries of these forms of service can be colleagues and co-workers.

Effective performance in intramural service may be documented by a variety of means. Examples include: (1) letters of support from university clientele to whom your service was provided; (2) serving as a member or chairperson of university, college, or unit committees; and (3) receiving University service awards, especially those involving peer evaluation.

b. Administration:

(1) Unit Administration (see FSH 1565 B)**:** FSH 1420 E describes the responsibilities and the selection

and review procedures for unit administrators. Unit administration is not normally considered in tenure and promotion deliberations; it is accounted for insofar as expectations are proportionally adjusted in the other sections of the position description. For faculty in nonacademic units (e.g. faculty at large), administration may be considered in tenure and promotion deliberations.

(2) Other: Effective conduct of university programs requires administrative activities that support scholarship, outreach and teaching. Program support activities are to be noted in position descriptions and performance reviews. The role of the principal or co-investigator of a university program or project may include the following administrative responsibilities: (1) budgetary and contract management; (2) compliance with University purchasing and accounting standards; (3) supervision and annual review of support personnel; (4) purchasing and inventory management of goods; (5) graduate student and program personnel recruitment, training in University procedures/policies, and annual review; (6) collaborator coordination and communication; (7) management of proper hazardous waste disposal; (8) laboratory safety management; (9) authorization and management of proper research animal care and use; (10) authorization and management of human subjects in research; (11) funding agency reporting; (12) intellectual property reporting; and (13) compliance with local, state, and federal regulation as well as University research policy.

Demonstration of effective administration may be documented by a variety of means. Examples include: (1) compliance with applicable rules, standards, policies, and regulations; (2) successful initiation, conduct and closeout of research contracts and grants as evidenced by timely reporting and budget management; (3) completion of the research contract or proposal scope-of-work; organized program operations including personnel and property management. Documentation of effective university program operation, beyond scholarship, may also include input by graduate and undergraduate students participating in the university program; and input by collaborators, cooperators, funding agency and beneficiaries of the program. Documentation of effective administration may include evaluations by faculty and staff, as well as objective measures of performance under the incumbent's leadership.

D. UNIVERSITY FACULTY (FSH 1520 Article II):

D-1. INSTRUCTOR: Instructors may be appointed for the purpose of performing practicum, laboratory, or classroom teaching. Appointment to instructor constitutes a recognition of the appointee's scholarly contributions and professional accomplishments, and confers responsibilities and privileges as stated below. To avoid confusion over university faculty (those who have voting rights per FSH 1520 II, Section 1) the title of Instructor shall not be used in any other university position.

a. Instructor. Appointment to this rank requires proof of advanced study in the field in which the instructor will teach, the promise of teaching effectiveness, and satisfactory recommendations. Instructors have charge of instruction in assigned classes or laboratory sections under the general supervision of the departmental administrator. When they are engaged in teaching classes with multiple sections, the objectives, content, and teaching methods of the courses will normally be established by senior members of the faculty or by departmental committees. Instructors are expected to assist in the general work of the department and to make suggestions for innovations and improvements.

b. Senior Instructor. Appointment to this rank requires qualifications that correspond to those for the rank of instructor and evidence of outstanding teaching ability. Instructors are promotable to senior instructor. Effective teaching is the primary responsibility of anyone holding this rank and this primary responsibility is weighted accordingly in the annual performance evaluation and when a senior instructor is being considered for tenure. Except in very rare instances, this rank is considered terminal (i.e., it does not lead to promotion to the professorial ranks and there is no limitation on the number of reappointments). Prospective appointees to the rank of senior instructor must be fully informed of its terminal nature.

D-2. FACULTY:

a. Assistant Professor. Appointment to this rank normally requires the doctorate or appropriate terminal

degree. In some situations, however, persons in the final stages of completing doctoral dissertations or with outstanding talents or experience may be appointed to this rank. Evidence of potential effective teaching and potential scholarship in teaching and learning, artistic creativity, discovery, and outreach/application/engagement is a prerequisite to appointment to the rank of assistant professor. Appointees in this rank have charge of instruction in assigned classes or laboratories and independent or shared responsibility in the determination of course objectives, methods of teaching, and the subject matter to be covered. Assistant professors are expected to demonstrate the ability to conduct and direct scholarly activities, and to provide intramural and extramural professional service. [1565 C]

b. Associate Professor. Appointment or promotion to this rank normally requires the doctorate or appropriate terminal degree. In some situations, however, persons with outstanding talents or experience may be appointed or promoted to this rank. Associate professors must have demonstrated maturity and conclusive evidence of having fulfilled the requirements and expectations of the position description. An appointee to this rank will have demonstrated effective teaching or the potential for effective teaching, the ability to conduct and direct scholarly activities in his or her special field, and provide service to the university and/or his or her profession. Evidence of this ability includes quality publications or manuscripts of publishable merit; and/or unusually productive scholarship in teaching and learning; and/or significant artistic creativity; and/or major contributions to the scholarship of outreach/application/engagement. Associate professors generally have the same responsibilities as those of assistant professors, except that they are expected to play more significant roles in initiating, conducting, and directing scholarly activities, and in providing intramural and extramural professional service. [1565 C]

c. Professor. Appointment or promotion to this rank normally requires the doctorate or appropriate terminal degree. A professor should have intellectual and academic maturity, demonstrated effective teaching or the potential for effective teaching and the ability to organize, carry out, and direct significant scholarship in his or her major field. A professor will have made major scholarly contributions to his or her field as evidenced by several quality publications and/or highly productive scholarship in one or more of the areas of teaching and learning, discovery, artistic creativity, and outreach/application/ engagement. Professors have charge of courses and supervise research, and are expected to play a major role of leadership in the development of academic policy, and in providing intramural and extramural professional service. [1565 C]

D-3. RESEARCH FACULTY:

a. Assistant, Associate and Professor. Appointment to these ranks requires qualifications, except for teaching effectiveness, that correspond to their respective ranks as for faculty in D-2 above.

D-4. EXTENSION FACULTY:

a. Extension Faculty with Rank of Instructor. Appointment to this rank requires: sound educational background and experience for the specific position; satisfactory standard of scholarship; personal qualities that will contribute to success in an extension role; evidence of a potential for leadership, informal instruction, and the development of harmonious relations with others.

b. Extension Faculty with Rank of Assistant Professor. Appointment to this rank requires a master's degree along with the qualifications of extension faculty with rank of instructor and: demonstrated leadership ability in motivating people to analyze and solve their own problems and those of their communities; evidence of competence to plan and conduct an extension program; a record of effectiveness as an informal instructor and educational leader; proven ability in the field of responsibility; evidence of continued professional growth through study and participation in workshops or graduate training programs; acceptance of responsibility and participation in regional or national training conferences; membership in appropriate professional organizations, and scholarship in extension teaching or practical application of research; demonstrated ability to work in harmony with colleagues in the best interests of UI and of the people it serves.

c. Extension Faculty with Rank of Associate Professor. In addition to the qualifications required of extension faculty with rank of assistant professor, appointment or promotion to this rank requires: achievement of a higher degree of influence and leadership in the field; continued professional improvement demonstrated

by keeping up to date in subject matter, extension teaching methods, and organization procedures; progress toward an advanced degree if required in the position description; demonstrated further successful leadership in advancing extension educational programs; evidence of a high degree of insight into county and state problems of citizens and communities in which they live, and the contribution that education programs can make to their solution; an acceptance of greater responsibilities; a record of extension teaching or practical application of research resulting in publication or comparable productivity; a reputation among colleagues for stability, integrity, and capacity for further significant intellectual and professional achievement. These activities may occur in a domestic or international context.

d. Extension Faculty with Rank of Professor. In addition to the qualifications required of extension faculty with rank of associate professor, appointment or promotion to this rank requires: regional or national recognition in the special professional field or area of responsibility; a record of successful organization and direction of county, state, or national programs; an outstanding record of creative extension teaching or practical application of research resulting in significant publications or comparable scholarship; active membership and effective participation in professional committee assignments and other professional organization activities; demonstrated outstanding competence in the field of responsibility; achievement of full maturity as an effective informal teacher, wise counselor, leader of extension educational programs, and representative of the university. These activities may occur in a domestic or international context.

D-5. LIBRARIAN:

a. Librarian with Rank of Instructor. Appointment to this rank requires an advanced degree in library science from a library school accredited by the American Library Association or an equivalent terminal degree and relevant experience and: (a) evidence of potential for successful overall performance and for development as an academic librarian; (b) when required for specific positions (e.g., cataloger, assistant in a subject library), knowledge of one or more subject areas or pertinent successful experience in library work.

b. Librarian with Rank of Assistant Professor. Appointment to this rank requires the qualifications for librarian with rank of instructor and: (a) demonstrated ability, competence, and effectiveness in performing assigned supervisory-administrative, specialized public service, or technical service responsibilities; (b) demonstrated ability to establish and maintain harmonious working relationships with library colleagues and other members of the university community; (c) evidence of professional growth through study; creative activity; participation in workshops, conferences, seminars, etc.; participation in appropriate professional organizations; awareness of current developments in the profession and ability to apply them effectively in the area of responsibility; (d) service to the library, university, or community through committee work or equivalent activities.

c. Librarian with Rank of Associate Professor. Appointment or promotion to this rank requires the qualifications applicable to the lower ranks of librarians and: (a) acceptance of greater responsibilities, and conclusive evidence of success in the performance of them, e.g., bibliographical research performed in support of research activities of others; development of research collections; the preparation of internal administrative studies and reports; interpreting, and facilitating effective use of, the collections; effectively applying bibliographic techniques for organizing library collections; effective supervision of an administrative unit; (b) evidence of further professional growth, as demonstrated by keeping up to date in subject matter, methods, and procedures and by practical application of research resulting in significant improvement of library operations or in publication; effective participation in the work of appropriate professional organizations; and/or formal study, either in library science or in pertinent subject areas; (c) evaluation by colleagues as a person of demonstrated maturity, stability, and integrity, with the capacity for further significant intellectual and professional achievement. These activities may occur in a domestic or international context.

d. Librarian with Rank of Professor. Appointment or promotion to this rank requires the qualifications applicable to the lower ranks of librarians and: (a) demonstrated outstanding competence in the area of responsibility; (b) achievement of an outstanding record of creative librarianship, of effective administration, or of practical application of research resulting in significant publications or comparable productivity; (c) an additional degree in library science or in a pertinent subject area or equivalent achievement; (d) regional or

national recognition for contributions to the profession based on publications or active and effective participation in the activities of professional organizations; (e) evaluation by colleagues as an effective librarian who will continue to recognize that optimum productivity is a reasonable personal goal. These activities may occur in a domestic or international context.

D-6. PSYCHOLOGIST OR LICENSED PSYCHOLOGIST:

a. Psychologist with Rank of Instructor. Appointment to this rank requires: an advanced degree in counseling, counseling psychology, clinical psychology, or closely related field earned in a professional program accredited by the appropriate accrediting association; evidence of effective skills in counseling or therapy; and evidence of pursuit of a terminal degree.

b. Psychologist or Licensed Psychologist with Rank of Assistant Professor. Appointment to this rank requires the qualifications for psychologist with rank of instructor and: a doctoral or equivalent terminal degree; evidence of effective skills in counseling or therapy; awareness of current developments in the profession; and demonstrated potential for participation in appropriate professional organizations, service to the Counseling and Testing Center, the university, and the community through teaching, committee membership, or equivalent activities, and the development and execution of research projects or the development and execution of outreach services designed to benefit UI students.

c. Licensed Psychologist with Rank of Associate Professor. Appointment or promotion to this rank requires the qualifications applicable to the lower ranks of psychologists and: possession of a license as a psychologist in the state of Idaho; evidence of continued development of skills in counseling or therapy, as demonstrated by attendance at training workshops, personal study that leads to the presentation of workshops, classes, or seminars, or private study that leads to in-service training of personnel of the Counseling and Testing Center; evidence of continued professional development through service in professional organizations; evidence of effective teaching or training; completion of research that has resulted in quality publications or manuscripts of publishable merit, or the design and implementation of a continuing program in the Counseling and Testing Center that is of benefit to UI students and represents professional achievement of publishable merit; and continued service to the university and community through committee work or participation in community organizations. These activities may occur in a domestic or international context.

d. Licensed Psychologist with Rank of Professor. Appointment or promotion to this rank requires the qualifications applicable to the lower ranks of psychologists and: demonstration of outstanding competence in counseling or therapy; establishment of an outstanding record in research and publication or in development of continuing programs that contribute to the betterment of university students; continued professional improvement through private study, directed study, or attendance at workshops, conventions, etc.; regional or national recognition for contributions to the profession through publication, presentation of workshops, or active and effective participation in the activities of professional organizations; and recognition by colleagues as an effective psychologist who realizes that optimum productivity is a reasonable personal goal. These activities may occur in a domestic or international context.

D-7. OFFICER-EDUCATION: Appointment of persons to the faculties of the officer education programs was established for the purpose of ensuring the academic soundness of the programs. The dual role of these faculty members as military officers and academic instructors is recognized. The university expects the nominees to have demonstrated academic and intellectual capabilities and exemplary professional achievement. Specifically, UI expects:

a. Academic Preparation. It is desirable for officer education faculty members to have at least a master's degree. In his or her most recent education, the officer should have a superior academic record as demonstrated by such measures as high grade-point average in graduate school, being in the upper half of the class in graduate school, or superior graduate-level ability as attested in letters of recommendation from graduate-school professors.

b. Specialized Preparation. The officer must have significant education, experience, or formal preparation in

the subject areas in which he or she will teach.

c. Military Background and Preparation. A junior officer is expected to have had significant professional performance and experience. It is also desirable that the officer have some formal military education beyond commissioning. A senior officer should have broad experience with excellent performance. He or she is expected to have attended a junior or senior military college and to have made a distinguished record there.

d. Teaching. It is desirable for officers to have had some teaching experience. It is recognized that this is not always possible for junior officers. For such an officer, there should be some evidence that he or she will become a satisfactory teacher. Heads of officer education programs are expected to be experienced instructors.

e. Nominees who will pursue graduate studies at UI for one year before becoming an instructor will be given preliminary approval. In their last semester of full-time graduate enrollment, the service should submit the required information to the Officer Education Committee for regular, final approval. For preliminary approval, the officer should, in addition to the military requirement, show promise of being successful in graduate studies. This could be demonstrated by (a) a high score on the Graduate Record Examination, if taken, (b) full enrollment status as a graduate student at UI, (c) a high overall grade-point average in college (3.00 or above on a 4-point scale), (d) a high grade-point average in a major area, or (e) a good record in the final year of college and graduate-level ability as attested by letters of recommendation from college professors.

f. Appointment:

1. The following information is submitted by the nominee's service: (1) transcripts from undergraduate and graduate academic institutions; (2) transcripts or appropriate records from military schools and staff colleges; (3) at least three letters of recommendation from appropriate sources, such as former professors, military instructors, and supervisors or commanders. These letters should be concerned with matters such as the officer's civilian academic performance, military record and leadership ability, and actual or potential performance as a teacher. (Former supervisors or commanders could give their opinion based on the officer's demonstration of leadership ability and his or her experience as a training officer.); (4) a summary of the officer's duty assignments and military and teaching positions held; (5) copies of favorable communications from the officer's file.

2. The following is provided by the program unit concerned: (1) a description of the military schools attended and courses completed by the nominee; (2) a description of the positions held by the nominee; (3) an explanation of the appropriateness of the officer's experience and training to the courses he or she will teach.

3. Copies of the requested material are distributed by the local unit to the members of the Officer Education Committee at least 72 hours before the meeting at which the committee will consider the nominee. For appointments commencing in the fall, this information should normally be made available not later than the preceding May 1.

4. In the case of a person nominated to head an officer education program, UI may require a personal interview.

5. A minimum of two weeks, after receipt of all required information, is necessary for consideration of the nominee. UI notifies the nominee's service of its decision within one month.

D-8. UNIVERSITY DISTINGUISHED PROFESSOR: Acknowledgment of outstanding academic contributions to the university is appropriate and desirable. The rank of University Distinguished Professor[2] is bestowed upon University of Idaho faculty in recognition of sustained excellence in ~~teaching, scholarship[3], outreach, and service~~all

[2] As a result of Development Fund efforts, endowment support eventually may be obtained for many University Distinguished Fellowships, in which case a donor's name may be added to the title.

[3] ~~Scholarship in this context includes scholarship of discovery, scholarship of pedagogy, scholarship of application and~~

of their areas of responsibility. The rank will be held for the remainder of the recipient's active service at the University; if the recipient leaves the University and is eligible for emeritus status, the rank will change to University Distinguished Professor Emeritus. The rank is highly honorific and therefore will be conferred on no more than three faculty members university-wide in any given academic year. Selection of University Distinguished Professors will reflect the diversity of scholarly fields at the University. University Distinguished Faculty will receive a stipend of at least $5,000 per year for five years to be used to enhance salary or support professional activities (e.g., professional travel, student support, equipment, materials and supplies, etc.). Final discretion in conferring the rank of Distinguished Professor and the number of appointments in a given year resides with the President.

a. Selection Criteria: In general, University Distinguished Professors will have received national and usually international recognition. They will have brought distinction to the University through their work.

University Distinguished Professors will have achieved a superior record in at least three of the following areas: scholarly, creative, and artistic achievement; breadth and depth of teaching; excellence in extension or outreach; and University service and service involving the application of scholarship, creative, or artistic activities to addressing the needs of one or more external publics.

University Distinguished Professorships will be conferred on members of the University of Idaho Faculty who have attained the rank of Professor and have completed a minimum of seven years of service at the University, typically at the rank of Professor.

b. Selection Process: University Distinguished Professorships will be awarded by the president upon recommendation of The University Distinguished Professorship Advisory Committee a standing committee composed of four faculty members and three deans. The committee members should reflect all dimensions of diversity in the university community. They will be appointed by the Provost to serve three-year terms on a staggered basis. Nominations will be made by Faculty Senate and the Academic Deans, in consultation with faculty and administrators of units. Committee members must be tenured professors who themselves have outstanding records ~~of teaching, research and/or outreach~~in all of their areas of responsibility.

1. The Provost will request nominations from faculty, deans, directors and unit administrators annually.
2. Written nominations will be submitted to the Provost and must include:
   a. A nominating letter with a brief summary of the candidate's achievements;
   b. The candidate's *curriculum vitae*, including a list of any significant previous awards;
   c. Letters of endorsement from the appropriate deans and unit administrators or director(s). The candidate may also include a maximum of three additional letters of support, as appropriate, from students, colleagues at the University of Idaho, ~~and/~~or other institutions. Letters should describe the impact of the nominee on ~~her/his~~their field, evidence of external recognition, and the context of ~~her/his~~their work over the course of ~~her/his~~their employment.
3. The University Distinguished Professorship Advisory Committee reviews the nominations and makes recommendations to the Provost for transmittal to the President.
4. Because the rank of University Distinguished Professorship is intended to be highly honorific, it is possible that in a given year no candidates will be selected.
5. The applications of nominees who are not selected in the first year of nomination will remain active for a total of three years. Nominators will have the opportunity to update their nomination during subsequent years in which their candidate is under consideration.

D-9. CLINICAL FACULTY: Clinical faculty may be appointed for the purpose of performing practicum, laboratory, or classroom teaching. Clinical faculty is a non-tenure track position. Clinical faculty positions are appropriate for professional disciplines having strong applied and/or clinical elements or those serving university units or academic departments in a supporting capacity. Appointment to clinical-faculty status constitutes a recognition of the appointee's scholarly contributions and professional accomplishments, and confers responsibilities and privileges as stated in a below. Clinical faculty members may be appointed and/or promoted to the ranks of clinical assistant professor, clinical associate professor or clinical full professor.

~~integration, and artistic creativity.~~

a. Responsibilities, Privileges, and Rights. A clinical faculty member has a primary employment responsibility in a UI unit. The relationship of a clinical faculty member to UI is essentially that of a collaborator with a UI unit, program, or faculty member. The guarantees afforded by the principle of academic freedom [see ~~3160~~FSH 4000] are extended to members of the clinical faculty. They have the same responsibilities and privileges as university faculty (FSH 1520 II 1)

Clinical faculty members perform administrative, analytical, and research functions that complement UI's mission in teaching, research, and service.

1. Clinical faculty members may have teaching as a primary or major responsibility; in addition, they may advise students on their academic or professional programs, participate in research projects, serve on graduate students' supervisory committees, engage in outreach and engagement activities, and act as expert advisers to faculty members or groups.

2. The nature and extent of the services to be rendered are determined jointly by the clinical faculty member, his or her immediate supervisor, and the unit administrator(s) concerned.

b. Qualifications. Assignment to a clinical faculty position is based on demonstrated knowledge and experience, academic degrees, scholarly contributions, or other professional accomplishments comparable to those expected of faculty within the unit.

c. Conversion. Instructors and senior instructors who meet the qualifications for clinical faculty defined in D-9 b. may be considered for clinical faculty status upon the recommendation of the unit administrator and dean, subject to approval by the provost. Credit for prior equivalent experience may be granted by the provost up to a maximum of four years. Conversion of an existing tenure-track or tenure line in a unit to clinical status requires the approval of the dean and provost. A unit must demonstrate that a clinical position better advances the university's strategic goals than a tenure-track position.

E. EMERITUS STATUS. (FSH 1520 II.2)

E-1. PURPOSE. Emeritus status benefits both the university and emeriti by providing opportunities for emeriti to maintain ties with faculty members and continue service to the university and community.

E-2. ELIGIBILITY. A board-appointed, benefit-eligible member of the university faculty who holds one of the ranks described in 1565 D and who leaves the university and has a minimum of 8 years of service and attained the rule of 65 (age plus years of service is at least 65) is eligible for emeritus status.

E-3. APPOINTMENT.

1. Faculty must request consideration for emeritus status. This request may be made in the notice of resignation or in a request made directly to the provost. This request may be made along with or at any point following the submission of the letter of resignation. If a faculty member who is eligible for emeritus status under section E-2 does not request consideration for emeritus status in their resignation letter, then their college or department will send a notice to the faculty member asking if they wish to request emeritus status. The college or department will send a similar notice to any eligible faculty who receives a terminal contract due to program closure or similar circumstances.

2. In ordinary circumstances, the provost will grant emeritus status if the eligibility requirements specified in E-2 are satisfied. In exceptional circumstances, the provost may suspend the above eligibility rules and award, deny, or revoke a faculty member's emeritus status with a written notification to the faculty member stating the reasons for the decision and notifying them of the ability to appeal. A faculty member may appeal this decision to the Faculty Senate Chair, Faculty Senate Vice Chair, and Faculty Secretary, where the provost's decision must be upheld by a unanimous vote in order to be enacted§. Examples of exceptional circumstances include the reasons outlined in FSH 3910 A-1.

3. A list of emeriti is maintained by the Provost's office.

4. Emeriti are responsible for updating contact information with the university.

E-4. PRIVILEGES.

- **a. Access.** Emeriti continue to have access to research, library, and other UI facilities.
- **b. Participation.** UI encourages the voluntary continued participation of emeriti in the activities of the academic community. Emeriti may take an active role in the service and committee functions of their department, college, and the university as described in FSH 1520 II.2. Other activities are subject to approval by the provost.
- **c. Title.** Emeriti may use the title "professor emeritus/emerita," "research professor emeritus/emerita," or "extension professor emeritus/emerita," as applicable. A faculty member without such rank has the designation "emeritus" or "emerita," as applicable, added to the administrative or service title held at the time of retirement.
- **d. Mail.** Departmental mailboxes continue to be available to emeriti who reside locally. Emeriti who have departmental mailboxes receive full distribution of departmental notices unless otherwise requested.
- **e. Office supplies.** Office supplies are available under regular departmental procedures.
- **f. Postage.** Departmental postage may be used for professional mail.
- **g. Parking.** Emeriti receive one non-transferable gold parking permit annually.
- **h. Discount programs**. Emeriti receive any discounts available to other faculty members through various UI programs.
- **i. Functions**. Emeriti are invited to the same university, college, and departmental functions as active faculty.
- **j. Travel funding.** Travel funding may be used to support professional activities of emeriti in service to the university (e.g. guest lectures, research design, consultation, etc.). Emeriti may have a lower priority for travel funding than active faculty and such funding is at the discretion of the unit administrator or dean.
- **k. Office/lab space.** Offices and labs for emeriti are provided on a space-available basis as determined by the unit administrator or dean, giving higher priority to active faculty and unit needs. Office and lab space allocations to emeriti may be revoked upon 60 days' notice.
- ***l.*** **Information technology services.** Emeriti who elect to maintain an active computing account will retain access to services provided by Information Technology Services (ITS) including electronic communications (e.g., email, instant messaging, etc.), technical support, and offered software.

E-5. EMPLOYMENT OPPORTUNITIES.

a. Emeriti may hold a temporary or permanent part-time position (0.49 FTE or less) subject to regular employment procedures. It is the responsibility of emeriti to consult with HR regarding impact to benefits.
b. Emeriti shall not serve as supervisors of other employees unless they hold a position as outlined in E-5-a herein.

F. ASSOCIATED FACULTY: Associated faculty members (see FSH 1520 II-3) have access to the library and other UI facilities. Reimbursement for travel or for services to UI is at the unit's discretion. They are not eligible for sabbatical leave.

F-1. AFFILIATE FACULTY:

a. General. The affiliate faculty consists of professional personnel who serve academic departments in a supporting capacity. Appointment to affiliate-faculty status constitutes a recognition of the appointee's scholarly contributions and professional accomplishments, confers responsibilities and privileges as stated in subsection d below, and authorizes assignment of service functions as described in subsection d-2 below. It is also a means of encouraging greater cooperation between and among academic departments and other units. An affiliate faculty member holds a non-tenure-track faculty status in an appropriate academic discipline.

b. Employment Status. An affiliate faculty member may, by virtue of his or her employment, have either one of the following relationships with UI: (1) that of a UI employee, normally an exempt employee, who is [a] a member of the faculty or staff of a unit of the university other than the one in which he or she has affiliate-faculty status, or [b] a member of the professional support staff of the same unit of the university in which he or she has affiliate-faculty status; (2) that of an employee of a governmental or private agency who is assigned by that agency to a UI unit or to one of the agency's units or programs that is officially associated with the university.

c. Distinction between Affiliate and Adjunct Faculties. Members of the affiliate faculty have a more direct relationship with UI than do members of the adjunct faculty [see 1565 F-2]. Members of the adjunct faculty are not UI employees. An adjunct faculty member's primary employment is with a unit or program that is not officially associated with UI. Thus, the relationship of a member of this faculty category to UI is essentially that of a collaborator with a UI unit, program, or faculty member. An affiliate faculty member, in contrast, has a primary employment responsibility in a UI unit or in a non-UI unit that is officially associated with UI. In addition, he or she has a secondary relationship to another unit in a supporting role, or has a secondary relationship to the academic program in the same unit in which he or she has a primary employment responsibility. These latter relationships are the kind that are recognized by the affiliate faculty membership.

d. Responsibilities, Privileges, and Rights. The guarantees afforded by the principle of academic freedom [see ~~3160~~FSH 4000] are extended to members of the affiliate faculty. They have substantially the same responsibilities and privileges as do members of the university faculty; however, their right to vote in meetings of their constituent faculties is limited in accordance with the provisions of 1520 II-3-b. (Those who, in addition to their affiliate-faculty status, have status as members of the university faculty [e.g., psychologists in the Counseling and Testing Center and regular faculty members in other academic departments] have, of course, full rights of participation in meetings of the university faculty and of the constituent faculties to which they belong.)

Affiliate faculty members perform administrative, analytical, and research functions that complement UI's mission in teaching, research, and service.

1. Affiliate faculty members, as such, do not normally have teaching as a primary or major responsibility; however, with the approval of academic departments, they may teach classes, advise students on their academic or professional programs, participate in research projects, serve on graduate students' supervisory committees (with approval by the dean of graduate studies), or act as expert advisers to faculty members or groups.

2. The nature and extent of the services to be rendered are determined jointly by the affiliate faculty member, his or her immediate supervisor, and the departmental administrator(s) concerned.

3. Affiliate faculty qualify for the faculty-staff educational privilege [see 3740]

e. Qualifications. Assignment to an affiliate faculty position is based on demonstrating knowledge and experience, academic degrees, scholarly contributions, or other professional accomplishments comparable to what is expected of faculty within that unit.

f. Appointment.

1. Appointments to the affiliate faculty may be made at any time. They are reviewed by the dean of the college before publication of each issue of the *General Catalog*. No appointment should be continued unless the affiliate faculty member remains in UI employment or continues in his or her assignment to an entity that is officially associated with the university.

2. A recommendation for appointment to the affiliate faculty normally originates in the appropriate academic department and requires the concurrence of the nominee's immediate supervisor and the faculty

of the appointing department. The appointment must be approved by the dean of the college, the president, and the regents.

3. An appointment, termination, or other change in affiliate-faculty status is made official by means of a "Personnel Action" form.

F-2. ADJUNCT FACULTY:

a. General. The adjunct faculty includes highly qualified persons who are not employed by UI but are closely associated with its programs. [For the distinction between the affiliate and the adjunct faculty categories, see 1565 F-1-c.]

b. Responsibilities. Members of the adjunct faculty have the same academic freedom and responsibility as do members of the university faculty; however, their right to vote in meetings of the university faculty and of their constituent faculties is limited in accordance with the provisions of 1520 II-3-b. Adjunct faculty members may be assigned to advise students on their academic or professional programs at any level; to work in cooperative research projects; to serve on committees, including graduate students' supervisory committees (with approval by the College of Graduate Studies); to act as expert advisers to faculty members or groups; and to teach courses in their branch of learning.

c. Qualifications. Adjunct faculty members must be highly qualified in their fields of specialization and should have exhibited positive interest in UI programs in the field of their appointment. Their qualifications should ordinarily be equivalent to those required of regular members of the faculty in the area and at the level of the adjunct faculty member's responsibility.

d. Adjunct faculty do not qualify for the faculty-staff educational privilege. (see 3740)

e. Appointment.

1. Appointments to the adjunct faculty may be made at any time. b. Appointments are for an indefinite period, but are to be reviewed by the dean of the college before publication of each issue of the *General Catalog*. No appointments should be continued unless the adjunct faculty member is actively engaged in the responsibilities for which he or she was appointed.

2. Recommendations for appointment to the adjunct faculty are normally developed at the departmental level and have the concurrence of the departmental faculty. For interdisciplinary degree programs, adjunct faculty may also be assigned responsibilities with respect to the degree programs with approval of the program faculty and of the program director. Appointments must be approved by the dean of the college, the provost, the president, and the regents.

3. Before formal appointment procedures are begun, the prospective adjunct faculty member must agree to serve under the provisions herein described. When necessary, the consent of the nominee's employer, if any, will be requested and recorded.

4. Appointment information is recorded on the regular "Personnel Action" form.

5. The appointment of adjunct faculty members to graduate students' supervisory committees requires approval by the dean of the College of Graduate Studies.

G. TEMPORARY FACULTY: Temporary faculty have access to the library and other UI facilities. Reimbursement for travel or for services to UI is at the unit's discretion. They are not eligible for sabbatical leave.

G-1. LECTURER. A teaching title that ~~may be used at any level, i.e., it~~ carries no specific connotation of rank among the professorial titles. This title is conferred on one who has special capabilities or a special instructional

role. Lecturers are neither tenurable nor expected to progress through the professorial ranks. ~~A lecturer qualifies for faculty status with vote during any semester in which he or she (a) is on an appointment greater than half-time and (b) has been on such appointment for at least four semesters. When a lecturer qualifies for faculty status they shall be reviewed at a minimum of every 5 years thereafter as determined by the unit's bylaws. The review committee defined by the unit's bylaws shall include tenure-track faculty within the unit.~~

G-2. VISITING FACULTY. A designation that~~, when used with a professorial title, customarily~~ indicates that the appointee holds a regular teaching or research position at another institution. A visiting appointee who does not hold a professorial rank elsewhere ~~may be designated as a lecturer~~shall be subject to the requirements for lecturers to qualify for voting rights. ~~Appointees with visiting academic ranks (e.g., visiting associate professor, visiting professor) are considered temporary members of the university faculty. Those on full-time appointment have the privilege of voting in meetings of the university faculty and of the appropriate constituent faculties.~~

G-3. ACTING. Persons who are judged competent to perform particular duties may be appointed for temporary service as acting members of the faculty. An acting appointment may also be used to establish a probationary period for an initial appointment of a person who, while being considered for a regular position on the faculty, is completing the required credentials for a permanent appointment. Persons on acting status are not voting members of the university faculty or of constituent faculties.

G-4. ASSOCIATE. A title for a nonstudent with limited credentials who is assigned to a specialized teaching, research, or outreach position. Associates are exempt staff and are not members of the university faculty or of constituent faculties.

H. NON-FACULTY: Those within this category are not members of the faculty.

H-1. POSTDOCTORAL FELLOW. Postdoctoral fellows are persons who hold the doctoral degree or its equivalent at the time of their appointment and are continuing their career preparation by engaging in research or scholarly activity. Postdoctoral fellows are special exempt employees in the category of "temporary or special" (FSH 3080 D-2 a) employees recognized by the regents. [See also 3710 B-1.b.]

H-2. GRADUATE STUDENT APPOINTEES: The general nature of the following graduate assistantships is defined as an apprenticeship experience that consists of a work obligation partnered with educational and developmental activities, all of which are integrated with the graduate degree program of the student. All graduate assistants must be individually mentored by a faculty advisor and may receive additional mentoring from other faculty and/or staff on or off campus. All graduate assistant positions (H-2. a, b, c) are limited to twenty hours per week of work. All graduate student appointees must be academically qualified and registered. [See also 3080 D-2-a.]

a. Graduate Teaching Assistant. Graduate Teaching Assistants perform duties related to the instructional efforts of the unit in which they are employed under the supervision of a member of the university faculty, associated faculty, or temporary faculty (see FSH 1565 D, F, and G). These duties, which must be associated with academic credit instruction and constitute at least 50 percent of a Graduate Teaching Assistant's effort, may include, but not be limited to: primary teaching responsibilities; grading assignments; assisting with the delivery of instruction through technology; and providing other assistance related to instruction.

b. Graduate Research Assistant. Graduate Research Assistants develop competence in performing professional-level work in support of research, scholarship, or creative activity. These positions can only have duties within the scope of work permitted by the funding source.

c. Graduate Support Assistant. Graduate Support Assistants perform a wide range of duties and can have varying responsibilities in academic and non-academic campus departments and programs. The specific duties depend on the needs of the office or project and on the qualifications and experiences of the Graduate Support Assistant. Graduate Support Assistants may provide academic and/or non-academic instruction, and/or assist with research, or provide other support functions. The duties must be directly related to the Graduate Support

Assistant's program of study. The College of Graduate Studies shall periodically publish standards governing the permissible scope of Graduate Support Assistant appointments on its website.

I. QUALIFICATIONS OF NONFACULTY MEMBERS FOR TEACHING UI COURSES. Persons who are not members of the university faculty but are selected to teach UI courses offered for university-level credit (including continuing-education courses and those offered by correspondence study) are required to have scholarly and professional qualifications equivalent to those required of faculty members.

Version History

Amended January 2024. Changes made to G-1 Lecturer and G-2 Visiting Faculty to align with revised FSH 1520. Revised D-8 University Distinguished Professor to make Extension faculty eligible and C-2 to clarify how advising is credited for evaluative purposes.

Amended July 2022. Revised and clarified section C-1.a. to expand and clarify the evidence that may be used in evaluating teaching effectiveness.

Amended July 2021. Editorial changes.

Amended July 2020. The policy on emeritus status was extensively revised to provide greater clarity, ensure conformity with labor law, and add the ability to revoke emeritus status in exceptional circumstances. Section D-5 Librarian was revised to provide more flexibility in recruiting efforts.

Amended January 2020. The policy on office hours was moved from FSH 3240 to C-1.c. Changes were made to sections C-1 and C-3 to ensure that faculty efforts in the areas of teaching, advising, and outreach and extension are properly credited.

Amended July 2018. A new category for graduate support assistants was added to address needs that are not covered under the role of a typical teaching or research assistant position.

Amended July 2014. The cap on non-tenure track faculty appointments in a unit was adjusted and promotion processes clarified and revised.

Amended January 2014. The time necessary to qualify for emeritus status was redefined.

Amended July 2013. Definitions for research and teaching assistants were more clearly defined.

Amended July 2012. Edits were made to the Distinguished Professor under D-8 and to the qualifications for Emeritus status and a search waiver under E.

Amended July 2011. Voting for associated faculty was clarified and Clinical Faculty under "G. Temporary Faculty" moved to "D. University Faculty" as D-9 and was revised.

Amended July 2010. The affiliate and adjunct terms were switched to conform to national norms and the rank of Distinguished Professor was added.

Amended January 2010. Changes to the faculty position description and evaluation forms integrating faculty interdisciplinary activities into the evaluation processes were incorporated into this policy. Ranks for Associated Faculty in F were removed because the promotion process as detailed in 3560 for faculty ranks was deemed excessive for associated faculty. Those currently holding a specific rank in adjunct or affiliate will retain that privilege.

Amended July 2008. The policy was reorganized to better reflect classifications as stated in FSH 1520 Article II.

Amended July 2006. Substantial revisions were made to Section A.

Amended July 2001. Section J-1, voting rights for lecturers, was changed.

Amended July 2000. Revisions were made to C-1, D-1, and E-1.

Amended 1998. Extensive revisions were made to B (entirely new), C, D, and E.

Amended July 1998. Section A underwent additional substantial revision.

Amended July 1996. The definitions of 'postdoctoral fellow' (J-5), 'graduate assistant' (K-3) and 'research fellow' (K-4) were revised.

Amended July 1994. Section A was substantially revised, so as to underline better the importance of both teaching and scholarship. The so-called "Voxman Amendment" (the addition of 'in the classroom and laboratory' to the list of possible venues wherein the evaluation of scholarship might take place) made its first appearance.

Amended 1987. The material in section I was added.

Adopted 1979.

UNIVERSITY OF IDAHO

SUBJECT
Amendment to Ground Lease between University of Idaho & Palouse Mall LLC.

REFERENCE
August 2006 Approved Amended and Restated Ground Lease

APPLICABLE STATUTE, RULE, OR POLICY
Idaho State Board of Education Governing Policies & Procedures, Section V.I.2.a

BACKGROUND/DISCUSSION
In 2006, the University of Idaho revised its 1973 lease of 44 acres to Palouse Mall Associates. That 2006 ground lease updated the existing lease arrangement and extended the remainder of the term (making the mall eligible for the financing required to make capital improvements that would attract new retail tenants). For UI, the amendments improved the predictability of the income stream to be earned over the extended term of the amended lease. In 2023 the ground lease generated $345,544 in annual revenue for UI. UI does not own any of the buildings or other capital improvements on the property, nor does it operate the mall or manage the mall's tenants. The mall is not presented or advertised as a business partner or affiliate of UI. However, in the event of any termination of the existing ground lease prior to expiration of the term of that lease, UI will assume ownership of the mall's improvements and those subtenant leases executed by the mall as limited by the ground lease. In 2015, Palouse Mall Associates sold the mall improvements to Palouse Mall, LLC, and that entity has performed as ground lessee and mall operator since that time.

The proposed Third Amendment to the existing ground lease (Attachment 1) extends the term of that lease to 2096. It provides the mall with three additional ten-year options potentially extending the lease term further (to 2126) and revises the process by which the rent schedule during any option period may be adjusted to ensure a market-based rent schedule in the distant future. The amendment also permits the mall to introduce residential uses to that portion of the leased premises currently unoccupied as the former site of a long vacant and obsolete movie theater facility. Such permission allows the development of highly demanded housing in the community while serving to improve the overall economic viability of the entire property.

Additionally, the proposed amendment offers the mall a defined plan for rent deferral and eventual repayment should the mall elect to complete specific major capital improvements to its parking, HVAC and roof infrastructure. Upon completion of those specified capital improvements by no later than December 2025, the proposed amendment permits the partial deferral of rent for a thirty-month period beginning in 2026. The deferred rent is paid back to UI over a

thirty-month period beginning in 2046. This arrangement extends the useful life of mall facilities, an action necessary to continue to attract new tenants in the current commercial leasing market and to secure the continuing functionality and value of the mall's commercial improvements to the leased land. This investment prolongs the long-term income stream generated by the mall and returned to UI in the form of monthly ground rent. The arrangement also preserves the value of the existing improvements in the event of early termination of the ground lease.

Finally, the proposed amendment updates those provisions or references of the 2006 lease that are now outdated, and more particularly refines the terms under which UI will consent to certain subleases between the mall operator and its retail tenants. So, for those tenants larger than 10,000 square feet, UI will execute a commercially reasonable Non-Disturbance, Recognition, and Attornment Agreement at the time of the subtenant's lease with the mall operator. That agreement may, in some instances, obligate UI (in the unlikely event of early termination of the ground lease and UI's resulting assumption of the mall operator's real property and its existing subtenant leases) to provide those certain tenants with limited rent-offset rights. This change was made to conform to consistently observed demands of national retailers that serve as anchor tenants for the mall. University administration has concluded the terms of such consent are appropriate to attract national retail tenants and in the context of the Regents' possible assumption of the mall's property in the unlikely event the mall and its lender terminate the ground lease.

IMPACT

The proposed amendment extends the duration of rental income, permits limited residential uses and retail leasing conditions that can support long-term mall economic viability, and recognizes that certain capital improvements to the mall will result in continued benefits from UI's ongoing ownership interest in the leased land. While rent will be reduced during the defined period of deferral and recovered later during the defined term of repayment, such an arrangement is intended to extend the operational life of those income producing facilities, strengthening the mall as a reliable and long term source of UI income, and maintaining a vibrant retail center able to serve the University community.

ATTACHMENTS

Attachment 1 – Draft Third Amendment to Master Ground Lease

STAFF COMMENTS AND RECOMMENDATIONS

Board Policy V.I.2 a. Institution Approval Authorization Limits requires Board approval of leases of real property under the control of an institution, if the lease revenue is "over $2M or if the term of the lease exceeds five (5) years."

Staff recommends approval.

BOARD ACTION

I move to approve the Third Amendment to the Master Ground Lease between the University of Idaho and Palouse Mall LLC in substantial conformance to the form submitted to the Board in Attachment 1 and to authorize the University's Associate Vice President for Budget and Planning to execute the lease amendment.

Moved by _____ Seconded by _____ Carried Yes _____ No _____

THIRD AMENDMENT TO MASTER GROUND LEASE

THIS THIRD AMENDMENT TO MASTER GROUND LEASE (this "Amendment") is dated as of the _____ day of _____, 2024 (the "Effective Date") by and between THE REGENTS OF THE UNIVERSITY OF IDAHO, a body politic, organized and existing under and by virtue of the Constitution and laws of the State of Idaho ("Lessor"), and PALOUSE MALL LLC, a Washington limited liability company ("Lessee").

RECITALS:

WHEREAS, Lessor and Palouse Mall Associates, LLC, a Washington limited liability company ("Prior Lessee"), entered into that certain Amended and Restated Master Ground Lease dated as of July 1, 2006, which lease was amended by that certain First Amendment to Master Ground Lease by and between Lessor and Prior Lessee dated as of April 25, 2007 and made effective as of July 1, 2006, and the Second Amendment to Master Ground Lease by and between Lessor and Lessee dated October 30, 2015 (as amended, the "Ground Lease"), for the real property generally located at 1850 W. Pullman Road, City of Moscow, Latah County, Idaho, as legally described on Exhibit "A" to the Ground Lease (the "Premises" or the "Leased Premises");

WHEREAS, pursuant to that certain Assignment and Assumption of Master Ground Lease Agreement dated as of October 9, 2015, Prior Lessee assigned to Lessee all of Prior Lessee's right, title and interest under the Ground Lease, and Lessee accepted such assignment and assumed all of Prior Lessee's obligations under the Ground Lease (the "Assignment"); and

WHEREAS, Lessor and Lessee desire to make certain amendments to the Ground Lease, all as detailed herein.

NOW, THEREFORE, in consideration of the mutual covenants and agreements contained herein, together with other good and valuable consideration, the receipt of which is hereby acknowledged, the parties hereto agree that the Ground Lease is amended as follows:

1. **Section 2.2 – Term.** Section 2.2 of the Ground Lease is hereby amended and restated as follows:

> **2.2 Term.** Lessee shall have and hold said Leased Premises for a Term commencing on the Effective Date of the Ground Lease and extending until and including June 30, 2096 (collectively, the "**Term**", including three (3) – ten (10) year Options to Extend the Term through 2126 as described in Section 2.3). In no event shall the Term extend beyond June 30, 2126.

2. **Section 2.3 – Options to Extend.** The last sentence of paragraph 3 in Section 2.3 is deleted and replaced with the following:

> "In no event shall this Section extend the Term beyond June 30, 2126."

3. **Section 3.4 – Rent Adjustment.** Section 3.4 of the Ground Lease is hereby amended and restated as follows:

(a) Upon written notice to Lessor, the Lessee shall have the unilateral option in its sole discretion, to adjust the Rent in accordance with this Section 3.4 due under this Ground Lease effective as of July 1, 2096, and effective as of the beginning of any exercised renewal option to extend (**"Rent Adjustment Option"**). Lessor and Lessee shall attempt to negotiate a new rental rate for a period of 30 days following Lessee exercising its Option to Extend. If Lessor and Lessee are unable to agree on a new rental rate for the applicable option term within such 30 day period, then within ten (10) days following the expiration of such 30 day period, Lessor and Lessee shall each appoint an independent appraiser who shall be a member of the Appraisal Institute (or substitute organization which certifies and trains appraisers), with a current and proper Idaho appraisal license, with at least three (3) years' experience in appraising commercial real property in Ada, Latah, Kootenai or Bonner Counties, Idaho, or Spokane or Whitman County, Washington.

(b) The appointed appraisers shall diligently proceed to appraise the market value of the Leased Premises as unimproved commercial land designated for its then current use as of July 1, 2096, or July 1 of the year any exercised renewal option term commences, as applicable. Furthermore, the existence of any leases on the Leased Premises (including this Ground Lease), the improvements thereon, any cost to demolish or remove the same, any default or breach of this Ground Lease by Lessee, or the existence of any unremediated Hazardous Substances (as defined in Paragraph 14.4) which Lessee is obligated to indemnify Lessor against pursuant to Paragraph 14.5, shall not be taken into consideration when determining the market value of Leased Premises. For purposes of this Paragraph 3.4, market value shall mean the amount at which Leased Premises would change hands between a willing buyer and a willing seller, neither being under a compulsion to buy or sell and both having reasonable knowledge of the relevant facts.

(c) If the value of the two appraisals is within 5% of the lower estimate, the arithmetic average of the two appraised values will determine the market value of the Leased Premises. If the difference in value is more than five percent (5%) of the lower estimate, and the parties cannot thereafter agree upon the market value of the Leased Premises, the two appraisers shall together appoint a similarly qualified third appraiser within twenty (20) days after written demand is made by either party. The selected third appraiser shall review the two prior appraisals and shall determine the market value for the Leased Premises by what is commonly referred to as the "baseball arbitration" approach, that is, the third appraiser shall select the written market value determination provided by one (1) of the initial two appraisers as the market value of the Leased Premises applicable for the option term which shall be binding on the parties for purposes of this Paragraph 3.4. Each party agrees to pay its respective appraiser's fee plus one-half of the third appraiser's fee.

(d) After the market value of the Leased Premises has been so established, the Rent will be set at 8.5% per annum of the market value as established pursuant to this Paragraph 3.4. Rent in all subsequent five-year periods will increase 10% over the Rent in the previous period, similar to the schedule shown in the Rent Schedule shown in **Exhibit C**. If Lessee elects not to exercise a Rent Adjustment Option for one period, that failure to exercise the option will not prohibit Lessee from exercising a Rent Adjustment Option for a later period.

4. **Section 3.7 – Completion of Approved Capital Improvements - Deferral of Base Rent.** A new Section 3.7 is added to the Ground Lease as follows:

3.7 Completion of Approved Capital Improvements – Deferral of Base Rent. The parties acknowledge that Lessee will perform certain capital improvements to the Leased Premises that will result in long term benefits for Lessor's ownership interest in the Leased Premises. As a result thereof, Lessor is willing to defer a portion of Lessee's Rent in connection with Lessee performing such capital improvements in accordance with the terms of this Section 3.7 below.

(a) Capital Improvements. Lessee shall perform the capital improvements at the Leased Premises as identified on **Exhibit A-1** and depicted on **Exhibit B-1** attached hereto ("**Capital Improvement Work**"). As of the Effective Date, Lessee represents and warrants to Lessor that the Capital Improvement Work identified under the spreadsheet columns labeled as "2022 Actuals" and "2023 Actuals" on **Exhibit A-1** has been completed by Lessee. The Capital Improvement Work identified under the spreadsheet columns labeled as "2024" and "2025" on **Exhibit A-1** ("**Remaining Capital Improvement Work**") shall be completed by Lessee on or before December 31, 2025.

(b) Completion of Capital Improvement Work; Deferral/Repayment of Rent Deferral Amount. In return for Lessee completing the Capital Improvement Work and Remaining Capital Improvement Work, Lessor shall defer Lessee's obligation to pay Rent due under the Lease in the amount of $345,544.00 ("**Rent Deferral Amount**"). The Rent Deferral Amount shall be deferred over a period of two and one-half (2½) years as follows:

(i) Deferred Rent Payments. If the Remaining Capital Improvement Work is completed by December 31, 2025 and Lessee is not in default of this Lease after all applicable notice and cure periods, then commencing on July 1, 2026 ("**Rent Deferral Commencement Date**") and continuing on the first (1st) day of each month thereafter for a total of thirty (30) consecutive months, monthly Rent shall be reduced by $11,518.13 through the date that the Rent Deferral Amount has been credited to Lessee in full ("**Rent Deferral Termination Date**").

(ii) Lessee's Repayment of Rent Deferral Amount. Commencing on July 1, 2046 and continuing on the first (1st) day of each month thereafter for a total of thirty (30) consecutive months, in addition

to paying its regularly scheduled monthly Rent as set forth on **Exhibit C**, Lessee shall pay Lessor $11,518.13 as additional Rent until Lessee has repaid Lessor the Rent Deferral Amount in full.

5. **Section 5.1 – Retail Use.** Section 5.1 of the Ground Lease is hereby amended and restated as follows:

5.1 Retail Use. Lessee agrees that it will operate the Leased Premises as a retail shopping center, and Lessee agrees that its business therein is and shall remain retail in character and similar with the tenant mix of retail, theater, office, service and professional tenants found at shopping centers in Idaho, Washington, Oregon, and Montana ("**Retail Centers**"). Notwithstanding the generality of the foregoing, it is specifically acknowledged and agreed that Parcel II of the Leased Premises (as described on Exhibit A of the Ground Lease a.k.a., the Theater parcel) shall be regarded as an acceptable use by the Lessor, including any normal maturation of such use, such as for convention center or expanded hospitality services. Additionally, it is agreed that Parcel II of the Leased Premises may be used for residential and multi-tenant uses.

6. **Section 10.2 – Sublease**. Section 10.2 of the Ground Lease is hereby amended and restated as follows:

10.2 **Sublease**. Subject to the terms of this Section 10.2, Lessee may sublease all or any portion of the Leased Premises without Lessor's consent. Every sublease of the Leased Premises shall have the following provisions: (i) that the terms of the sublease shall be subject to the terms of this Ground Lease; (ii) no obligation of Lessor to indemnify, defend or hold harmless the sublessee; (iii) no term longer than the Term of this Ground Lease or a term which runs into an option term which is not contingent on Lessee exercising its option to extend the Term of this Ground Lease; (iv) no obligation of Lessor to cure any default of Lessee; and (v) no exclusive use restriction which is effective on property other than the Leased Premises. Following the Effective Date of this Amendment, for all Subtenants entering into Subtenant Leases occupying floor area in the Leased Premises equal to or greater than 10,000 square feet (exclusive of common areas), upon the request of Lessee, Lessor agrees to execute a commercially reasonable Non-Disturbance, Recognition and Attornment Agreement ("**NDA**") with such Subtenants in connection with their Subtenant Leases, which such NDA may include certain offset rights for such Subtenants (related to periods prior to Lessor assuming the Subtenant Lease) in the event Lessor assumes the role of lessor under the Subtenant Leases; provided that such offset rights (i) only permit a Subtenant to offset up to thirty percent (30%) of its base rent on a monthly basis; and (ii) only permit a Subtenant to offset base rent to reimburse the Subtenant for its out-of-pocket costs reasonably and directly incurred by the Subtenant to cure Lessee's obligation(s), if any under the applicable Subtenant Lease, to maintain, repair, or replace structural improvements located within the Leased Premises. In no event shall the rent-offset right apply to base rent paid by Subtenant to Lessee more than one (1) month in advance, to any unpaid tenant improvements owed by Lessee to Subtenant under the Subtenant Lease, or to any other debts owed by

Lessee to Subtenant under the Subtenant Lease. For Subtenants entering into subleases occupying square footage in the Leased Premises less than 10,000 square feet, Lessor may, but shall not be obligated to, upon request by Lessee execute a commercially reasonable NDA with such Subtenants on terms approved by Lessor in its reasonable discretion.

7. **Section 10.3(b).** Section 10.3(b) of the Ground Lease is hereby amended and restated as follows:

(b) (i) In the event of any termination of this Ground Lease for any reason whatsoever prior to the expiration of the Term of the Subtenant Lease, subject to the terms of any NDA executed by Lessor and Section 8.2 of this Ground Lease, Lessor may, but shall have no obligation to take possession of the Leased Premises subject to any or all Subtenant Leases. The terms, provisions, covenants and agreements of the Subtenant Leases to which Lessor agrees in writing to take possession of the Leased Premises subject to shall survive the termination of this Ground Lease and, provided that there are no uncured defaults under the Subtenant Lease, the Subtenant Lease (subject to the right of any leasehold mortgage to enter into a replacement lease with Lessor) shall continue in force and effect in accordance with and subject to all terms, provisions, agreements and covenants as a direct lease with the Lessor, as lessor, and such Subtenant, as lessee. Any Subtenant Leases to which Lessor does not agree in writing to take possession of the Leased Premises subject to, which decision Lessor may make in its sole and absolute discretion, shall terminate and no longer be of any force or effect as to the Leased Premises and Lessor. Subject to any leasehold mortgagee's interest, as to any Subtenant Leases to which Lessor agrees in writing to take possession of the Leased Premises subject to, the Subtenant will agree to promptly attorn to Lessor and to recognize Lessor as the lessor under the Subtenant Lease. Subject to clause (ii) below, Lessor shall, in such event, agree to undertake all of the rights, obligations and duties of Lessee in an under the Subtenant Lease and thereafter shall be entitled to collect all rents and payments due and payable under the Subtenant Lease, including the right to collect any sums being due and payable thereunder prior to the termination or expiration of the Ground lease which are accrued and unpaid by the Subtenant on the date of the termination of this Ground Lease.

(ii) Notwithstanding anything contained in clause (i) above to the contrary, Lessor shall not be liable in any way or to any extent to any Subtenant under any Subtenant Lease:

(A) Except as otherwise set forth in an NDA, for any act or default of the Lessee under the Subtenant Lease, and Subtenant shall have no right to assert the same or any damages arising therefrom as an offset or defense against Lessor;

(B) For the commencement or completion of any construction or any contribution toward construction upon the Leased Premises by Lessee or

the Subtenant Lessee or on any other property or any expansion or rehabilitation of existing improvements on the Leased Premises, except as may be required under the terms of the Subtenant Lease in the case of damage or destruction for which the Lessor (as the Lessee's successor) is required to carry insurance and in such instance only to the extent Lessor's insurance provider covers such claim;

(C) For the repayment of any obligations Lessee may owe to the Subtenants, except that the Lessor agrees (i) to honor Subtenant's prepayment of rent for the month in which this Ground Lease is terminated, (ii) in addition to clause (i), to honor Subtenant's prepayment of not to exceed one month's rent, and (iii) to repay the Subtenants at the times required by the Subtenant Leases any security deposits, damage deposits or other monies provided such security deposits, damage deposits and monies are, at the time of the termination of this Ground Lease, segregated into a separate account(s) and Lessor succeeds to the Lessee's interest in the separate account(s) free of any claims or encumbrances of others, other than the Subtenants; and

(D) for any indemnity, defense or hold harmless obligation imposed on Lessor as Lessee's successor to the extent prohibited by Idaho law.

8. **Section 10.6. – <u>Lessee's Right of First Offer to Purchase Leased Premises</u>.** Section 10.6 of the Ground Lease is deleted and replaced with the following:

10.6 Lessee's Right of First Offer. This Section shall not be applicable if any law, rule or regulation requires Lessor to conduct the sale of the Leased Premises in a public bidding process, shall not apply to any fee lender, including any foreclosure proceeding or deed in lieu of foreclosure, and shall not apply to any conveyance by Lessor for financing purposes. In the event that at any time during the Term hereof, Lessor determines to sell the Leased Premises, Lessor shall first offer to sell the Leased Premises to Lessee. Lessor shall give Lessee written notice ("**Lessor's Offer Notice**") of the purchase price for the Leased Premises and any payment terms. Lessee shall have sixty (60) days from its receipt of Lessor's Offer Notice in which to give Lessor written notice ("**Lessee's Acceptance Notice**") of Lessee's acceptance of Lessor's Offer Notice. If Lessee accepts Lessor's Offer Notice, closing shall occur no later than ninety (90) days after Lessor's receipt of Lessee's Acceptance Notice. Each party will bear its own attorneys' fees and any other closing costs will be charged to the party customarily responsible for such a cost on the closing date. If Lessee does not exercise its right of first offer as provided herein, Lessor may offer to sell the Leased Premises to a third party, except that the purchase price for the Leased Premises may not be less than the purchase price set forth in the Lessor's Offer Notice. If Lessor offers the Leased Premises for an amount less than the purchase price set forth in the Lessor's Offer Notice, Lessor has not entered into a contract to sell the Leased Premises within twelve (12) months after Lessor's Offer Notice to Lessee, or if Lessor has not closed the sale of the Premises within two (2) years after Lessor's Offer Notice, then any further transaction shall again be subject to Lessee's right of first offer under this Paragraph. If Lessee does not give the

Lessor Lessee's Acceptance Notice and the Lessor sells the Leased Premises to a third party in accordance with the above terms, Lessee shall have no further right of first offer to purchase the Leased Premises.

9. **Section 13.4.** The last sentence of Section 13.4 of the Ground Lease is hereby amended to read, "The arbitrator may award injunctive relief or any other remedy available from a judge, including the joinder of parties or consolidation of this arbitration with any other involving common issues of law or fact or which may promote judicial economy."

10. **Section 14.6.** Section 14.6 of the Ground Lease is hereby amended and restated as follows:

14.6 Indemnification of Lessee. This Section 14.6 shall apply only at such times as Lessor is not the Board of Regents of the University of Idaho, the Regents of the University of Idaho, the state of Idaho or any Idaho state governmental agency or subdivision. Lessor shall indemnify, defend (by counsel acceptable to Lessee), protect, and hold harmless Lessee, and each of Lessee's partners, employees, agents, attorneys, successors, and assigns, from and against any and all claims, liabilities, penalties, fines, judgments, forfeitures, losses (including, without limitation, diminution in the value of the Leased Premises, damages for the loss or restriction on use of rentable or usable space or of any amenity of the Leased Premises), costs, or expenses (including attorneys' fees, consultant fees, and expert fees) for the death of or injury to any person or damage to any property whatsoever, arising from or caused in whole or in part, directly or indirectly prior to the Effective Date with respect to the Leased Premises and from any contiguous property to the Leased Premises by and under the control of Lessor at any time, by (a) Lessor's use, analysis, storage, transportation, disposal, release, threatened release, discharge, or generation of Hazardous Substances, in, on, under, about, or from the Leased Premises, or (b) failure to comply with any Hazardous Substances Law relating to the Leased Premises. Lessor's obligations under this Section 14.6 shall include, without limitation, and whether foreseeable or unforeseeable, any and all costs incurred in connection with any investigation of site conditions, and any and all costs of any required or necessary repair, cleanup, remediation, detoxification, or decontamination of the Leased Premises (including without limitation, the soil and ground water on or under the Leased Premises, and the preparation and implementation of any closure, remedial action, or other required plans in connection therewith). Lessor's duty to indemnify Lessee under this Section 14.6 includes but is not limited to, proceedings or actions commenced by any person (including any federal, state, or local governmental agency or entity), before any court or administration agency. Lessor shall indemnify Lessee under this Section 14.6 for and against all expenses incurred by Lessee as they become due and not waiting for the ultimate outcome of the litigation or administrative proceeding. Lessor's obligations under this Section 14.6 shall survive the expiration or earlier termination of the Term of the Lease.

11. **Section 17.7.** Section 17.7 of the Ground Lease is hereby amended and restated to read, "Each of the parties represents, warrants and covenant to the other that there are no claims for brokerage commissions, finder's fees or like fees or commissions in connection with the execution of this Ground Lease.

12. **Section 3.5 and Article XV – Option to Lease Contiguous Land.** Section 3.5 and Article XV are hereby deleted from the Ground Lease.

13. **Section 3.6 and Article XVI – Lessor Option to Cancel Lease For Non-Contiguous Parcels.** Section 3.6 and Article XVI are hereby deleted from the Ground Lease.

14. **Exhibit C – Rent Schedule.** Exhibit C – Rent Schedule is deleted and replaced with **Exhibit C** attached hereto.

15. **Consents.** Lessor represents and warrants to Lessee that it has received all necessary consents from the Regents of The University of Idaho to enter into this Amendment. Lessee represents and warrants to Lessor that it has received all necessary consents from its lender to enter into this Amendment.

16. Except as amended hereby, the provisions of the Ground Lease remain in full force and effect and the parties hereto confirm each and every remaining provision of the Ground Lease. In the event of a conflict between the terms of the Ground Lease and this Amendment, the terms of this Amendment shall control.

17. This Amendment contains the entire agreement between Lessor and Lessee with respect to the matters described herein and any and all prior negotiations, understandings and agreements with respect to the modification thereof are superseded by this Amendment.

18. This Amendment may be executed in counterparts by the parties hereto and all such counterparts when taken together shall be deemed to be one original.

19. This Amendment shall be binding upon and inure to the benefit of the parties and their respective successors and permitted assigns.

20. This Amendment will be governed by and construed in accordance with the laws of the State of Idaho.

[Remainder of page intentionally left blank]

IN WITNESS WHEREOF, Lessor and Lessee have executed this Amendment as of the day and year first above written.

LESSOR:

THE REGENTS OF THE UNIVERSITY OF IDAHO

By: _____
Name: _____
Title: _____

[SIGNATURES CONTINUED ON NEXT PAGE]

[SIGNATURES FOR AMENDMENT CONTINUED FROM PRECEDING PAGE]

LESSEE:

PALOUSE MALL LLC,
a Washington limited liability company

By: PALOUSE MALL MANAGER CORPORATION, a Washington corporation, its Managing Member

By: _____
Name: _____
Title: _____

EXHIBIT A-1
CAPITAL IMPROVEMENT WORK

PALOUSE MALL, LLC
CAPITAL EXPENSES FORECAST SUMMARY FOR 2022-2026

CAPITAL EXPENSES:	AREA DESCRIPTION	2022 Actuals	2023 Actuals	2024	2025	TOTAL
Roof Replacement (in Blue Highlite on Site Plan)						
Area B & D	13,500 sqft @ $6.00/sqft (TPO 60 Mil)	$ 42,500.00	$ -	$ -	$ -	$ 42,500.00
Area G - Phase 1	11,000 sqft @ 6.00/sqft	$ 25,000.00	$ 35,000.00	$ -	$ -	$ 60,000.00
Area G - Phase 2	10,000 sqft @ 6.00/sqft	$ 25,000.00	$ 26,500.00	$ -	$ -	$ 51,500.00
Area I	10,000 sqft @ 6.00/sqft	$ -	$ -	$ 60,000.00	$ -	$ 60,000.00
Area ON, JO-ANN	20,000 sqft @ 6.00/sqft	$ 25,000.00	$ -	$ 50,000.00	$ 50,000.00	$ 125,000.00
						$339,000.00
HVAC Replacement						
HVAC CAM Units	Units #1 & #4 -(15 ton/ 5 ton)	$ -	$ -	$ -	$ -	$ -
HVAC CAM Units	Units #2 & #5 -(15 ton/ 5 ton)	$ -	$ -	$ -	$ 50,000.00	$ 50,000.00
HVAC CAM Units	Units #3 & #6 -(15 ton/ 5 ton)	$ -	$ -	$ -	$ -	$ -
						$50,000.00
Parking Lot Replacement (in Red Highlite on Site Plan)						
Parking Lot Area 1 (Target areaatrive lanes)	140,000 sqft (2" grind & overlay @ $4/sqft)	$ 336,728.54	$ 214,422.70	$ -	$ -	$ 551,151.24
Parking Lot Area 2 (Behind Drive Lane)	10,000 sqft (2" grind & overlay @ $4/sqft)	$ -	$ 20,000.00	$ -	$ -	$ 20,000.00
Parking Lot Area 3 (Winco)	50,000 sqft (2" grind & overlay @ $4/sqft)	$ -	$ -	$ 100,000.00	$ 100,000.00	$ 200,000.00
Parking Lot Area 4	20,000 sqft (2" grind & overlay @ $4/sqft)	$ -	$ -	$ -	$ 80,000.00	$ 80,000.00
						$851,151.24
Tenant Improvements & Cons						
TOTAL CAPITAL EXPENSES:		$ 454,228.54	$ 295,922.70	$ 210,000.00	$ 280,000.00	$1,240,151

EXHIBIT B-1
DEPICTION OF AREAS CAPITAL IMPROVEMENT WORK TO BE PERFORMED

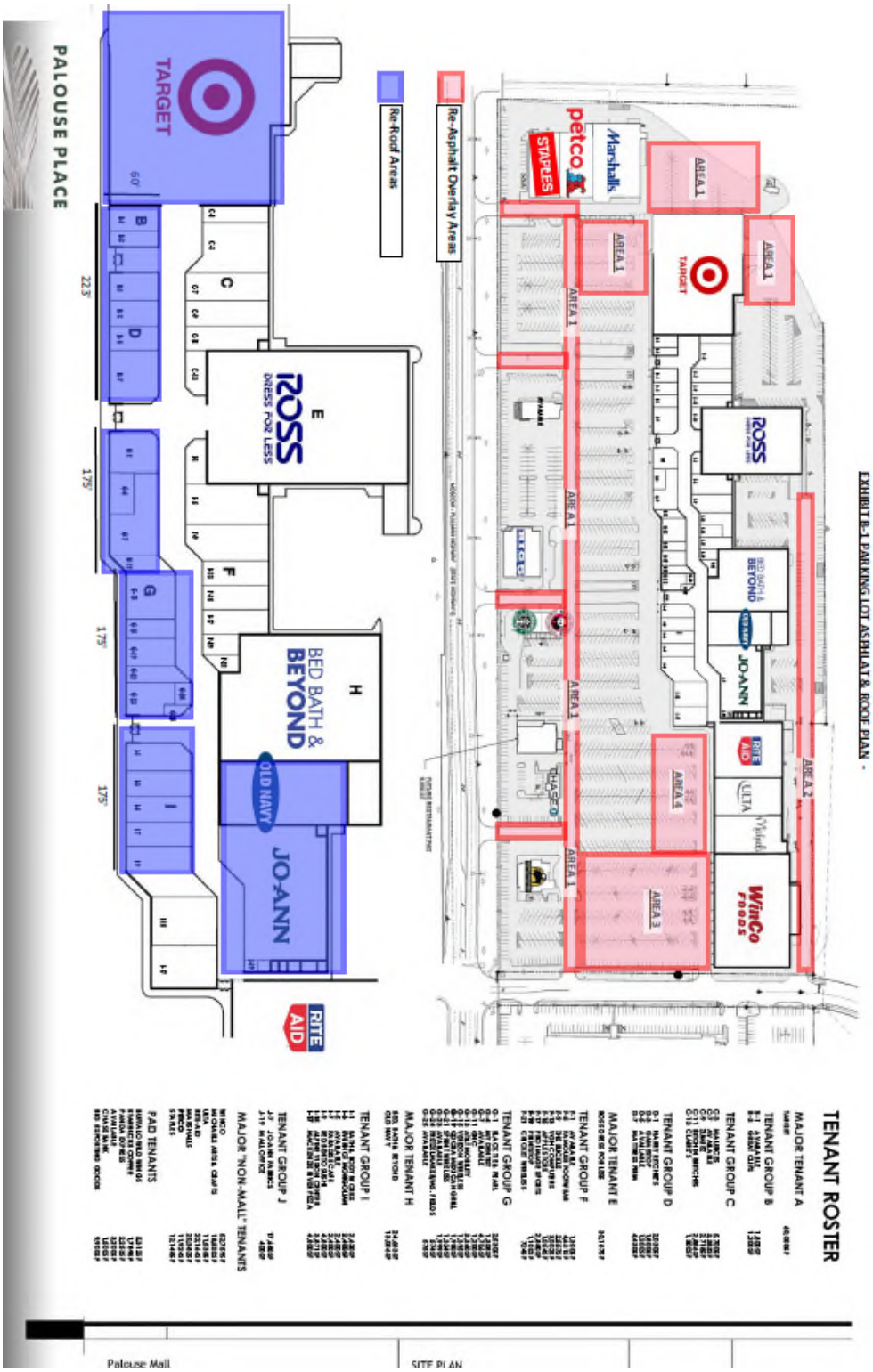


EXHIBIT "C"

Rent Schedule

Annual Rent

(Amounts Rounded to Nearest Dollar - Discrepancies Accepted)

Term	Period	Amount Including Escalation	Monthly Amount	Monthly Rent per Section 3.7 (b) - Completion of Capital Improvement work	Escalation Amount
Years 1-2	7/1/06-06/30/08	$236,018	$19,668		None
Years 3-5	7/1/08-06/30/11	$259,620	$21,635		10% over previous
Years 6-10	7/1/11-06/30/16	$285,582	$23,798		10%
Years 11-15	7/1/16-06/30/21	$314,140	$26,178		10%
Years 16-20	7/1/21-06/30/26	$345,554	$28,796		10%
*Years 21-25	7/1/26-06/30/31	$380,109	$31,676	$20,158 (7/1/26 through 12/31/28)	10%
Years 26-30	7/1/31-06/30/36	$418,120	$34,843		10%
Years 31-35	7/1/36-06/30/41	$522,650	$43,554		25% over previous
Years 36-40	7/1/41-06/30/46	$574,915	$47,910		10%
*Years 41-45	7/1/46-06/30/51	$632,407	$52,701	$64,219 (7/1/46 through 12/1/48)	10%
Years 46-50	7/1/51-06/30/56	$695,648	$57,971		10%
Years 51-55	7/1/56-06/30/61	$765,212	$63,768		10%
Years 56-60	7/1/61-06/30/66	$841,734	$70,144		10%
Years 61-65	7/1/66-06/30/71	$925,907	$77,159		10%
Years 66-70	7/1/71-06/30/76	$1,018,498	$84,875		10%
Years 71-75	7/1/76-06/30/81	$1,120,347	$93,362		10%
Years 76-80	7/1/81-06/30/86	$1,232,382	$102,699		10%
Years 81-85	7/1/86-06/30/91	$1,355,620	$112,968		10%
Years 86-90	7/1/91-06/30/96	$1,491,182	$124,265		10%
Option Extension Periods					
*Years 91-95	7/1/2096-06/30/2101	$1,640,301	$136,692		10%
*Years 96-100	7/1/2101-06/30/2106	$1,804,331	$150,361		10%
*Years 101-105	7/1/2106-06/30/2111	$1,984,764	$165,397		10%
*Years 106-110	7/1/2111-06/30/2116	$2,183,240	$181,937		10%
*Years 111-115	7/1/2116-06/30/2121	$2,401,564	$200,130		10%
*Years 116-120	7/1/2121-06/30/2126	$2,641,721	$220,143		10%

*** Subject to Adjustment pursuant to Section 3.4 of Ground Lease.**

*					
*	**Deferred Rent Payments: Per Section 3.7 (c)(i)**	**Total Rent Deferred**	**Monthly Defered Rent Payment Amount**		
	30 Months	7/1/26-12/31/28	$345,544	$20,158	$11,518 per month for total Rent Deferral Amount of $345,544.
*	**Deferred Rent Repayments: Per Section 3.7 (c)(ii)**	**Total Rent Repayment**	**Monthly Defered Rent Repayment Amount**		
	30 Months	7/1/46-12/31/48	$345,544	$64,219	

LEWIS-CLARK STATE COLLEGE

SUBJECT

Request for construction authorization for Clearwater Hall Construction Project

REFERENCE

August 2021	Idaho State Board of Education (Board) approved Lewis-Clark State College's – FY 2023 Alteration & Repairs Projects
June 2022	Board approved construction for Clearwater Hall First Floor

APPLICABLE STATUTE, RULE, OR POLICY

Idaho State Board of Education Governing Policies & Procedures, Section V.K.1, Section V.K.4 and Section V.K.5.

BACKGROUND/DISCUSSION

Lewis-Clark State College (LC State) seeks further authorization for construction of the first floor of Clearwater Hall. The Board approved construction of the first floor in June 2022 at a total project budget of $1.5M inclusive of construction, furniture, and equipment of which $1.2M was estimated for construction. The project is using the design build method and post refined scope of work, the estimated project budget to build out the first floor is $2.4M of which $2.0M is for construction and $400K for soft costs (e.g. architect, commissioning, contingencies, etc.). As the design professionals' estimate was provided to the contractor, the scope was more clearly defined, original cost estimates were revised based on inflation, and further user group input led to cost increases.

This build out has been on LC State's Idaho Division of Public Works (DPW) alteration and repairs project list since at least 2019. The relocation of the Workforce Training Center (WFT) will create synergies with two other centers located at Clearwater Hall, the Adult Learning Center (ALC) and the Idaho Small Business Development Center (ISBDC) and an additional center adjacent to this location, the Center for Arts and History (CAH). The buildout of Clearwater Hall will increase available programmatic space for Lewis-Clark State College and allow synergies between three existing downtown programs and Workforce Training.

IMPACT

The redefined project budget to build out this facility to include HVAC, restrooms, nine offices, and four classrooms totaling 6,400 square feet, not including furniture and equipment is $2.4M.

The primary differences in the increased project budget are the following:

- Refining the scope as the design progressed led to cost increases.
- Soft costs were underestimated.
- Increased costs of construction from date of original concept design estimate (18 months).
- Additional scope based on user group input for operable partitions, electronic door access, and a garage door.

The Board originally approved institutional funds for this project and since this time, DPW has allocated funding. The project will be funded by $1.3M from DPW and the remaining will use institutional funds of which includes $150K in WFT reserves and an internal loan. The fiscal impact to the college is an estimated $1.1M of which, an internal loan of $950K will be repaid by WFT. The net impact is less with the termination of an existing lease estimated at $7,100 per year. WFT will repay this internal loan through savings achieved by terminating an existing lease, programmatic revenue, fundraising, and anticipated growth with additional facility space.

ATTACHMENTS

Attachment 1 – Design Development Floor Plan
Attachment 2 – Project Budget

STAFF COMMENTS AND RECOMMENDATIONS

LC State is seeking an increase of the institution's original project budget for construction and related costs associated with the build out of 6,400 sq. ft. of space for the relocation of the Workforce Training Center (WFT). Approval of this budget modification request will provide LC State with the ability to immediately proceed with timely construction of this project, which is located on the first floor of the college's Clearwater Hall.

The Clearwater Hall Construction Project will be financially supported by funds already awarded through the Division of Public Works (DPW) Permanent Building Fund Advisory Council (PBFAC), a capital funding commitment by the Workforce Training Center (WFT), and an internal loan to the Workforce Training Center (WFT) from LC State. The breakdown is as follows:

Source – Planning and Design Funds	**Amount**
Department of Public Works – PBFAC funding	$1,300,000
Workforce Training Center (WFT) – Agency funds	$ 150,000
LC State – Internal Loan to WFT	$ 950,000
Total	$2,400,000

Adhering to Board Policy V.K.5 regarding Fiscal Revisions to Previously Approved Projects, LC State is requesting the Board approve the fiscal revision to the Clearwater Hall Construction Project not to exceed $2.4M. (Note: Board previously approved a not to exceed amount for this project of $1.5M in June 2022.)

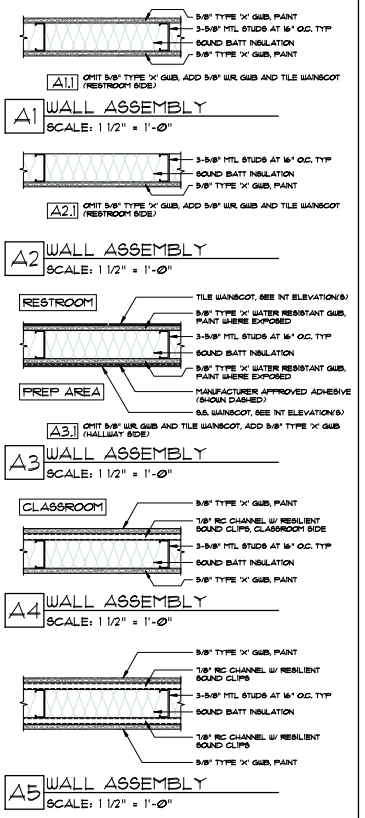
Staff recommends approval.

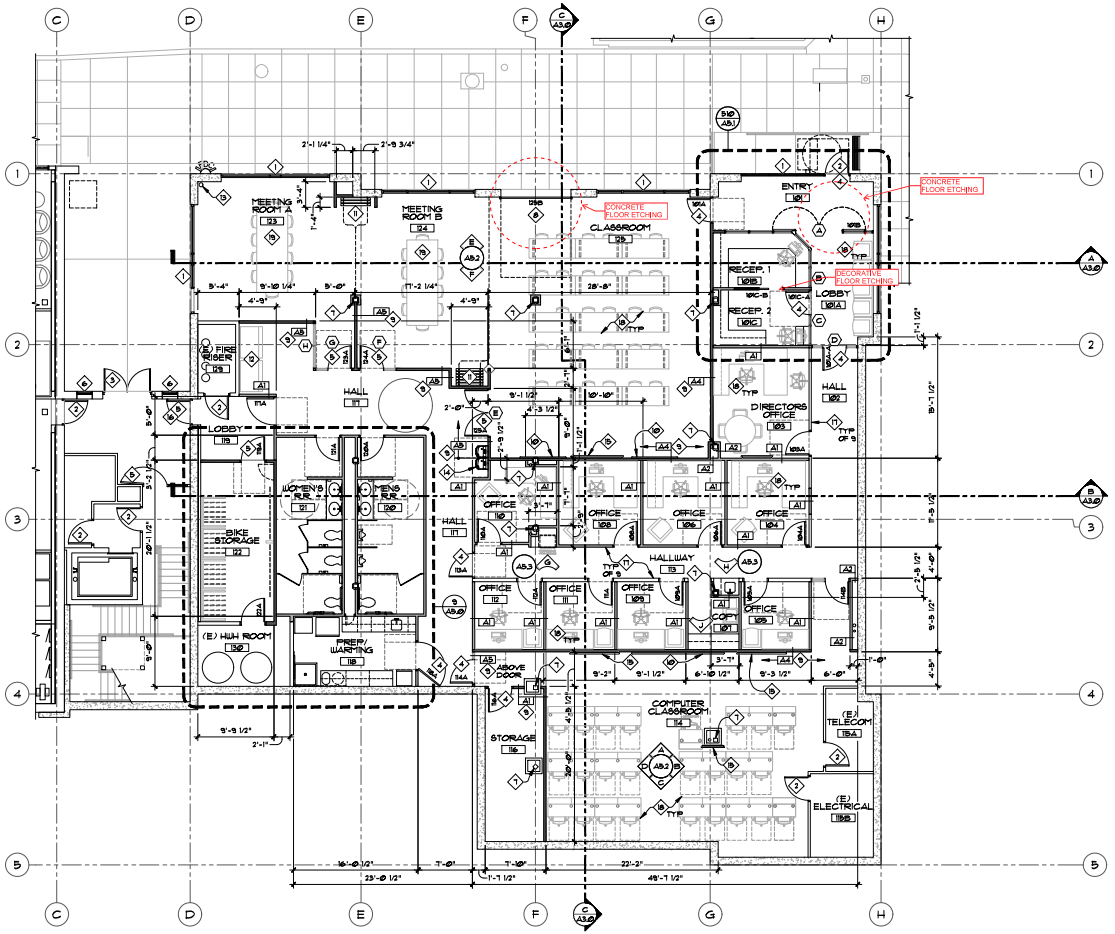
BOARD ACTION

I move to authorize the construction of the first floor of Clearwater Hall by Lewis-Clark State College for a cost not to exceed $2.4M, and to further authorize the President or designee to execute such documents and agreements relating thereto.

Moved by_____ Seconded by_____ Carried Yes_____ No _____

WALL TYPES





FLOOR PLAN REFERNCE NOTES

1. (E) STOREFRONT, TO REMAIN: (E) STOREFRONT TO REMAIN, TAKE CARE TO PROTECT DURING ALL PHASES OF WORK.
2. (E) DOOR TO REMAIN: (E) DOOR TO REMAIN, TAKE CARE TO PROTECT DURING ALL PHASES OF WORK.
3. ELEC- (E) DOOR, (N) ACCESS CONTROLS: (N) CONTROLS, CARD READER, TO BE ADDED TO (E) DOOR, COORDINATE WITH ELEC SHEETS
4. ELEC- (N) DOOR, ACCESS CONTROLS: (N) DOOR WITH ACCESS CONTROLS, CARD READER, COORDINATE WITH ELEC SHEETS.
5. ELEC- (N) DOOR, ACCESS CONTROLS, RESIDENT: (N) DOOR WITH ACCESS CONTROLS, CARD READER FOR RESIDENTS, COORDINATE WITH ELEC SHEETS.
6. (E) WINDOW TO REMAIN: (E) WINDOW TO REMAIN, TAKE CARE TO PROTECT DURING ALL PHASES OF WORK.
7. (E) STRUCTURAL COLUMN, PROTECT: TAKE CARE TO PROTECT (E) STRUCTURAL COLUMN AND INSULATION WRAP DURING ALL PHASE OF WORK.
8. (N) OVERHEAD DOOR GLASS: (N) OVERHEAD GLASS DOOR SEE SPEC SECTION XXXXX.
9. (N) WALL, FULL HEIGHT: (N) WALL TO BE FRAMED TO BOTTOM OF STRUCTURE, SEE SECTIONS / INTERIOR ELEVATIONS FOR ADDITIONAL INFORMATION.
10. (N) MARKER BOARD, WALL MOUNTED: (N) WALL MOUNTED MARKER BOARD, BY AGENCY.
11. (N) OPERABLE WALL: (N) OPERABLE WALL, SEE SECTIONS/SPEC SECTION 101239.
12. (N) VENDING MACHINE(S): (N) AGENCY SUPPLIED VENDING MACHINE(S).
13. (E) PIPE, EXPOSED, PAINT: (E) EXPOSED PIPE, TAKE CARE TO PROTECT DURING ALL PHASES OF WORK, PAINT.
14. PLUMB- (N) HIGH/LOW DRINKING FOUNTAIN: (N) HIGH/LOW DRINKING FOUNTAIN, SEE PLUMBING.
15. ELEC- (N) MONITOR, WALL MOUNTED: (N) WALL MOUNTED MONITOR, BY AGENCY. COORDINATE WITH ELECTRICAL SHEETS FOR ADDITIONAL DETAILING/NOTING.
16. ELEC- (E) DOOR, (N) MAG LOCK: (N) MAGNETIC LOCK/HOLD OPEN ADD TO (E) DOOR, COORDINATE WITH ELECTRICAL.
17. (N) FILE HANGER, WALL MOUNTED: (N) WALL MOUNTED FILE HANGER, SEE ADA MOUNTING STANDARDS A5.0 FOR ADDITIONAL MOUNTING INFORMATION, TYPICAL AT OFFICE DOORS, HALLWAY SIDE.
18. (N) FURNISHING: (N) FURNISHING, BY AGENCY.
19. (N) CONFERENCE TABLE: (N) CONFERENCE TABLE, BY AGENCY. COORDINATE WITH ELECTRICAL FOR ADDITIONAL INFORMATION.
20. STRUCT- (N) COLUMN: (N) HSS COLUMN TO SUPPORT (N) STEEL BEAM FOR (N) OPERABLE WALL, SEE STRUCTURAL.

GENERAL FLOOR PLAN NOTES

A. STOREFRONT TYPE = (A) SEE SHEET A5.1 FOR SIZES, TYPES AND OTHER NOTES.
B. DOOR NUMBER = 101A SEE DOOR SCHEDULE ON SHEET A4.1 FOR SIZES, TYPES AND OTHER NOTES.
C. WALL TYPE = A1 SEE WALL TYPES ON SHEET A2.0 (THIS SHEET) FOR TYPICAL CONSTRUCTION.
D. SEE SHEET A5.0 FOR ACCESSIBLE MOUNTING STANDARDS.
E. PROVIDE SOLID BLOCKING / BACKING AS REQUIRED FOR CURTAINS, BLINDS, TOILET ACCESSORIES, DOOR WALL STOPS AND CASEWORK.
F. DIMENSIONS AT INTERIOR FRAMED WALLS ARE TO FACE OF FRAMING UNLESS NOTED OTHERWISE.
G. SEE FINISH SCHEDULE, SHEET A4.0 FOR FLOOR & WALL FINISHES.
H. SEE ELECTRICAL SHEETS FOR EXTENT OF FLOOR BOXES LOCATED IN MAIN FLOOR FOR DATA AND POWER.
I. PAINT ALL EXPOSED STEEL STRUCTURE (COLUMNS & BEAMS) U.N.O. WHERE ROOMS ARE NOTED ON FINISH SCHEDULE TO BE PAINTED.
J. PAINT ALL EXPOSED CONDUITS, PLUMBING, DUCTS, AND SPRINKLER PIPING, TYPICAL. WHERE ROOMS ARE CALLED OUT ON FINISH SCHEDULE TO BE PAINTED.
K. COORD. W/ STRUCTURAL FOR BRICK PATCHING/INFILL LOCATIONS.
L. SEE MECHANICAL SHEETS FOR THERMOSTAT CONTROLS.
M. SEE ELECTRICAL SHEETS FOR WALL STATIONS (LIGHTING CONTROLS).
N. SOME FURNISHINGS SHOWN FOR REFERENCE ONLY (TO BE PROVIDED BY OWNER UNDER SEPARATE CONTRACT, U.N.O.).
O. SEE INTERIOR ELEVATIONS FOR EXTENT OF CASEWORK.
P. SEE REFLECTED CEILING PLAN, SHEET A2.1 FOR EXTENT OF CEILING FINISHES.
Q. SEE STRUCTURAL FLOOR PLAN FOR ADDITIONAL INFORMATION OR STRUCTURAL MODIFICATIONS.
R. COORDINATE TO PROVIDE ALL CUTTING AND PATCHING TO MATCH EXISTING FOR UNIFORM AND NEAT APPEARANCE.
S. SEE FLOOR PLANS FOR FIRE EXTINGUISHER COORDINATION.
T. NEW WALL FRAMING TO EXTEND 12" ABOVE CEILING HEIGHT (MATCHING TO EXISTING CONDITIONS).
U. WALL CONSTRUCTION IS INDICATED AS FOLLOWS:
- NEW FRAMED WALL (TO BTTM OF STRUCTURE)
- NEW FRAMED WALL (TO 6" ABOVE CEILING)
- (E) FRAMED WALL
- (E) CONCRETE WALL

DESIGN DEVELOPMENT CHECK SET

REVISIONS

DATE ◇ 10/06/2023
DRAWN ◇ DAM, DJG
CHECKED ◇ BLL
CKA PROJ. NO.◇ 22033
DFW PROJ. NO.◇ 22151

CONSULTANTS ◇

CASTELLAW ◆ KOM ◆ ARCHITECTS
1126 MAIN STREET ◆ LEWISTON, IDAHO
OFFICE (208) 746-0185 ◆ FAX (208) 746-7267

PROJECT ◇
LCSC CLEARWATER HALL
TENANT IMPROVEMENTS
WORKFORCE TRAINING (WFT)
410 MAIN STREET LEWISTON, ID 83501

DRAWING ◇
FLOOR PLAN

SHEET ◇
A2.0

DESIGN DEVELOPMENT CHECK SET

CLEARWATER HALL - GROUND FLOOR TENANT IMPROVEMENT

Project No: DPW 22151

TOTAL PROJECT BUDGET

12/6/2023

CONSTRUCTION	
Construction Cost Estimate	$1,510,663.00
General Conditions	$151,066.30
Kenaston Overhead & Profit (10%)	$166,172.93
Contractor Insurance	$18,279.02
Contractor Bonding	$22,154.18
DOPL Building Permit	$18,683.35
Kenaston Pre-construction Fee	$84,929.00
CONSTRUCTION SUB-TOTAL	**$1,971,947.78**
SOFT COSTS	
CKA Architects - Design Services	$84,929.00
DOPL Plan Review	$2,990.00
Commissioning (allowance)	$10,000.00
Construction Testing (allowance)	$5,000.00
Cabling (allowance)	$100,000.00
SUB-TOTAL	**$202,919.00**
Construction	$1,971,947.78
Soft Costs	$202,919.00
Construction Contingency (2.5%)	$49,298.69
Project Contingency (5.0%)	$98,597.39
Additional Contingency	$77,237.14
PROJECT TOTAL	**$2,400,000.00**
FUNDING	
Agency funding (WFT Commitment)	$150,000.00
PBFAC 2023 In-demand programs	$1,300,000.00
FUNDING TOTAL	$1,450,000.00
INTERNAL LOAN TO WFT	**$950,000.00**

STATE DEPARTMENT OF EDUCATION

SUBJECT

Emergency Provisional Certificate Recommendations

REFERENCE

April 2019	Board approved SDE recommendations for processing emergency provisional certificates.
August 2019	Board approved SDE revised procedures regarding emergency provisional certificates
August 2021	Board approved SDE revised emergency provisional certificate process
October 2022	Board approved 76 provisional certificates for the 2022-2023 school year.
December 2022	Board approved 87 provisional certificates for the 2022-2023 school year.
February 2023	Board approved 31 provisional certificates for the 2022-2023 school year.
April 2023	Board approved 14 provisional certificates for the 2022-2023 school year.
June 2023	Board approved 4 certificates for the 2022-2023 school year.
October 2023	Board approved 16 provisional certificates for the 2023-2024 school year. Board approved procedures for processing emergency provisional certificates.
December 2023	Board approved 117 provisional certificates for the 2023-2024 school year.

APPLICABLE STATUTE, RULE, OR POLICY

Idaho Code §§ 33-1201 -1203

BACKGROUND

Idaho Code § 33-1201 requires that every person who is employed to serve in any elementary or secondary school in as a "teacher, supervisor, administrator, education specialist, school nurse or school librarian" "to hold a certificate issued under authority of the state board of education, valid for the service being rendered." Idaho Code § 33-1203 allows the State Board of Education to authorize a provisional certificate for teachers when the candidate has at least two years of college training and an emergency has been declared. This section of code does not authorize issuance of emergency provisional certificates for pupil service staff or administrators.

School districts receive the same level of funding for staff with an emergency provisional certificate as they receive for an individual with a standard certificate. Funding for long-term substitutes is at the same level as non-certified classified staff.

DISCUSSION

Twenty-six complete Emergency Provisional Certificate applications for Instructional and CTE certificate(s)/endorsement(s) were received by the Idaho Department of Education by December 26, 2023.

The Certification Department of the Idaho Department of Education reviewed each candidate's full application. Each candidate presented below, requesting Instructional certificate(s)/endorsement(s), has completed at least two years of college training, making them eligible for emergency provisional certificate consideration. Each Local Educational Agency (LEA) has declared a hiring emergency, summarized the hiring efforts, and attested to the candidate's ability to fill the position.

The Idaho Department of Education is requesting authorization to issue provisional certificates as presented below.

St. Maries Joint School District #041

1. **Applicant Name:** Stacie Mattox
   Certificate: Provisional
   Endorsement(s): All Subjects K-8
   College Training: BS
   Declared Emergency Date: 11/13/2023
   Hire/Assignment Date: 11/13/2023
   Summary of Recruitment Efforts: The district has had this opening posted since Spring of 2023. They have not received any applications until recently.

2. **Applicant Name:** John Shepherd
   Certificate: Provisional
   Endorsement(s): Social Studies (6-12)
   College Training: BA
   Declared Emergency Date: 10/9/2023
   Hire/Assignment Date: 10/9/2023
   Summary of Recruitment Efforts: St. Maries High School lost a staff member due to cancer on September 19, 2023. That position was advertised, but the principal for St. Maries HS had to rearrange assigned staff, and there was a vacancy for History. The school received one qualified application.

Idaho Falls School District #091

3. Applicant Name: McKeyan Howell
   Certificate: Provisional
   Endorsement(s): Mathematics (6-12)
   College Training: BS
   Declared Emergency Date:
   Hire/Assignment Date:
   Summary of Recruitment Efforts: Does not qualify for Alternative Authorization. Cannot pass ABCTE testing and not enough credits to meet

the rubric for the Content Specialist.

4. **Applicant Name:** Kolby Rimer
   Certificate: Provisional
   Endorsement(s): English (6-12)
   College Training: BS
   Declared Emergency Date: 12/13/2023
   Hire/Assignment Date: 6/2023
   Summary of Recruitment Efforts: Kolby was hired on with the intention of being on an Alternative Authorization, believing he would meet the content qualifier. It was determined he cannot meet the points on the rubric to qualify for the Alternative Authorization.

Nampa School District #131

5. **Applicant Name:** Shane Williams-Rhodes
   Certificate: Provisional
   Endorsement(s): Physical Education (6-12)
   College Training: BS
   Declared Emergency Date: 11/17/2023
   Hire/Assignment Date: 1/2/2024
   Summary of Recruitment Efforts: The position was posted with no internal interest. It was opened externally and three applications were received. The principal interviewed two candidates; the third candidate withdrew their application.

Cassia County School District #151

6. **Applicant Name:** Shalamar Packer
   Certificate: Provisional
   Endorsement(s): All Subjects K-8
   College Training: 76 credits
   Declared Emergency Date: 12/18/2023
   Hire/Assignment Date: 8/1/2023
   Summary of Recruitment Efforts: Second provisional request. Candidate is not qualified for an Alternative Authorization due to the student teaching timeline. Medical circumstances prevented the candidate from progressing in the certification program. The candidate is set to resume the program in January, allowing for student teaching in the Fall of 2024.

7. **Applicant Name:** Beatriz Nava
   Certificate: Provisional
   Endorsement(s): World of Languages Spanish K-12
   College Training: 131 credits
   Declared Emergency Date: 01/22/2024
   Hire/Assignment Date: 7/23/2023
   Summary of Recruitment Efforts: Second provisional request. Candidate is not qualified for an Alternative Authorization due to the student teaching timeline. Medical circumstances prevented the candidate from progressing in the certification program. The candidate is set to resume the program in

January, allowing for student teaching in the Spring of 2024.

Emmett Independent School District #221

8. **Applicant Name:** Danielle Woehler
   Certificate: Provisional
   Endorsement(s): All Subjects K-8
   College Training: 91 credits
   Declared Emergency Date: 11/1/2023
   Hire/Assignment Date: 12/13/2023
   Summary of Recruitment Efforts: The job was posted on numerous websites. Emails were sent out the entire district. The district feels she is a strong fit.

Gooding Joint School District

9. **Applicant Name:** Makenzie Jenkins
   Certificate: Provisional
   Endorsement(s): English (6-12)
   College Training: BS
   Declared Emergency Date: 9/12/2023
   Hire/Assignment Date: 9/5/2023
   Summary of Recruitment Efforts: The vacancy happened when the previous teacher resigned the beginning of June. That same teacher then re-applied end of July stating he wanted to stay. Then, before the board re-hired him, he notified the principal on August 10th he would not be taking the position. The position was posted, once again, and only one application was received.

10. **Applicant Name:** Sonia Romero-Gomez
    Certificate: Provisional
    Endorsement(s): Bilingual Education K-12
    College Training: AA
    Declared Emergency Date: 9/12/2023
    Hire/Assignment Date: 8/21/2023
    Summary of Recruitment Efforts: The school received no other applications for the opened position. It was vacant the 22-23 school year. The candidate has been a migrant liaison who is fluent in Spanish and was willing to start working towards her certification.

Wendell School District #232

11. **Applicant Name:** Paul Claybrook
    Certificate: Provisional
    Endorsement(s): Mathematics (6-12)
    College Training: MA
    Declared Emergency Date: 12/5/2023
    Hire/Assignment Date: 11/14/2023
    Summary of Recruitment Efforts: A teacher resigned in October. Paul applied was hired to fill this position. He is not enrolled in a certification program.

Hagerman Joint School District #233

12. **Applicant Name:** Allix Schlund
Certificate: Provisional
Endorsement(s): All Subjects K-8
College Training: 103
Declared Emergency Date: 11/20/2023
Hire/Assignment Date: 11/4/2022
Summary of Recruitment Efforts: Allix was initially hired for the 22-23 school year as a 3rd grade teacher. She was expected to finish her student teaching that Spring. Due to personal reasons, she was unable to do so. The school was very excited with her progress and offered her a contract for the 23-24 school year, with the impression she would be completing her certification program by December. The school was informed she would not be able to complete her student teaching, creating the need for the emergency.

Bliss School District #234

13. **Applicant Name:** Devan Stevens
Certificate: Provisional
Endorsement(s): Mathematics (6-12)
College Training: AA
Declared Emergency Date: 7/10/2023
Hire/Assignment Date: 7/10/2023
Summary of Recruitment Efforts: The school recruited through the newspaper, word-of-mouth, district website, neighboring district administration and contacted retirees.

Mountain View School District #244

14. **Applicant Name:** Edward Simmons
Certificate: Provisional
Endorsement(s): All Subjects K-8, Health (6-12), Physical Education (6-12)
College Training: 200 credits
Declared Emergency Date: 12/21/2023
Hire/Assignment Date: 2021
Summary of Recruitment Efforts: Third provisional request. The school continues to struggle with filling hard-to-fill positions. Mr. Simmons has continued to make progress towards his degree. Upon completion of his degree, he will be enrolling in a certification program. Evaluations have been included by the district to showcase the need to keep Mr. Simmons.

Jerome Joint School District #261

15. **Applicant Name:** Sara Bateman
Certificate: Provisional
Endorsement(s): All Subjects K-8
College Training: 55 credits
Declared Emergency Date: 11/28/2023

Hire/Assignment Date: 8/1/2023
Summary of Recruitment Efforts: Candidate is not eligible for the Alternative Authorization due to the student teaching timeframe. The candidate must be student teaching in the authorized year of the Alternative Authorization. Her plan from the university states she will be student teaching in 2025, making her ineligible for the Alternative Authorization during the 23-24 school year. The school is requesting an Emergency Provisional.

Dietrich School District #314

16. **Applicant Name:** Steven Shaw
Certificate: Provisional
Endorsement(s): Natural Science (6-12)
College Training: BA
Declared Emergency Date: 8/7/2023
Hire/Assignment Date: 8/7/2023
Summary of Recruitment Efforts: Position was opened and posted on July 17th, 2023 on website and several other job recruiting sites due to death of a staff member. Multiple colleges were contacted for possible candidates. Due to the late nature of the opening, the applicant was interviewed and hired August 7th to give time for the candidate to place a two week notice at their present job and to be able to start teaching one week after school started.

Minidoka County School District #331

17. **Applicant Name:** Kayley Jasso
Certificate: Provisional
Endorsement(s): All Subjects K-8
College Training: AA
Declared Emergency Date: 10/16/2023
Hire/Assignment Date: 12/1/2023
Summary of Recruitment Efforts: The position was posted on district website and job boards.

Lewiston Independent School District #340

18. **Applicant Name:** Deven Maddy
Certificate: Provisional
Endorsement(s): Mathematics (6-12)
College Training: 86 credits
Declared Emergency Date: 8/2022
Hire/Assignment Date:8/2022
Summary of Recruitment Efforts: Second provisional request. The district was under the impression Mr. Maddy would be completing his student teaching and degree by Spring of 2023. The candidate must be student teaching in the authorized year of the Alternative Authorization. His plan states he will not be completing his student teaching until Fall of 2024, making him ineligible for the Alternative Authorization during the 23-24 school year.

Homedale Joint School District #370

19. **Applicant Name:** Evonne McGuire
Certificate: Provisional
Endorsement(s): All Subjects K-8
College Training: 53 credits
Declared Emergency Date: 12/11/2023
Hire/Assignment Date: 8/15/2022
Summary of Recruitment Efforts: Second provisional request. Evonne is not student teaching until Fall of 2024, making her ineligible for the Alternative Authorization during the 23-24 school year.

Wallace School District #393

20. **Applicant Name:** Bobbi-Jo Bighill
Certificate: Provisional
Endorsement(s): All Subjects K-8
College Training: 114 credits
Declared Emergency Date: 8/28/2023
Hire/Assignment Date: 8/28/2023
Summary of Recruitment Efforts: The 23-24 school year certified openings were posted to the district website, Indeed, IASA website, and the Idaho Department of Labor. The hired candidate is currently working towards her degree, but does not quite qualify for an Alternative Authorization since she is not currently enrolled in a certification program. The remaining candidates were hired by the district or declined the offer.

Teton School District #401

21. **Applicant Name:** Adrianna Green
Endorsement(s): All Subjects K-8
College Training: 97 credits
Declared Emergency Date: 8/1/2023
Hire/Assignment Date: 8/4/2023
Summary of Recruitment Efforts: Second provisional request. Currently enrolled to complete bachelor's degree. Completed 33 credits between Fall 2022-Summer 2023. School posted on multiple recruitment websites.

Twin Falls School District #411

22. **Applicant Name:** Dawn McClung
Certificate: Provisional
Endorsement(s): Mathematics (6-12)
College Training: BA
Declared Emergency Date: 10/3/2023
Hire/Assignment Date: 11/6/2023
Summary of Recruitment Efforts: Second provisional request. Dawn is not currently enrolled in a program, but does have a degree in Engineering. The school is finding innovative ways for test preparation. In lieu of putting students in a study hall for learning gaps, the principal is creating a position for Dawn so these students can learn from a teacher with an engineering

background who is familiar with the Math curriculum.

Kimberly School District #414

23. **Applicant Name:** Kelli Paulsen
Certificate: Provisional
Endorsement(s): All Subjects K-8
College Training: 94 credits
Declared Emergency Date: 11/14/2023
Hire/Assignment Date: 10/20/2023
Summary of Recruitment Efforts: The position was put on social media, district website and educational website.

Murtaugh School District #418

24. **Applicant Name:** Guadalupe Alvarez
Certificate: Provisional
Endorsement(s): All Subjects K-8
College Training: BA
Declared Emergency Date: 11/14/2023
Hire/Assignment Date: 11/14/2023
Summary of Recruitment Efforts: Currently enrolled in a program not related to elementary teaching. The school attempted to hire before the start of the school year, but did not have any applicants. The class size is too large. Ms. Alvarez is able to complete this year, but nothing beyond.

Weiser School District #431

25. **Applicant Name:** Nicolette Pulido
Endorsement(s): All Subjects K-8
College Training: 82 credits
Declared Emergency Date: 8/14/2023
Hire/Assignment Date: 8/15/2023
Summary of Recruitment Efforts: In August, a staff vacancy happened due to a certified staff taking a position at another school in the district. This position has been advertised since July 1st. The additional ELA/Reading position was filled with an instructor in their final year of their teacher education program through Western Governor's University. The current candidate was hired with the understanding it was for a one-year provisional.

Treasure Valley Classical Academy #532

26. **Applicant Name:** Candace Christy
Certificate: Provisional
Endorsement(s): All Subjects K-8
College Training: 55 credits
Declared Emergency Date: 7/18/2023
Hire/Assignment Date: 7/18/2023
Summary of Recruitment Efforts: The TVCA Board of Directors has declared an emergency vacancy for the position of first-grade teacher, as the school's extensive recruitment efforts, which included school website and

newsletter advertisement, school leadership out-of-state recruitment travel, interviews of local candidates, and school hosting and interviews of visiting out-of-state candidates. These attempts were unsuccessful.

IMPACT

If the Board approves the request, the Idaho Department of Education will be authorized to issue emergency provisional certificates to the qualifying candidates. An emergency provisional certificate is effective for one (1) year. No financial penalties will be assessed to the LEA while an emergency provisional certificate is in effect.

If the Board does not approve the request, the Idaho Department of Education will not be authorized to issue the requested emergency provisional certificates. The school district would be required to pursue other hiring options and may face financial impact.

BOARD STAFF COMMENTS AND RECOMMENDATIONS

Board staff verified that each candidate has completed at least two years of college training and that the school district declared a hiring emergency. All candidates have been hired by a LEA as teachers for the 2023-2024 school year. Candidates that have already completed a baccalaureate degree or higher are not eligible to apply through another pathway.

Staff recommends that the Board authorize the Idaho Department of Education to issue one-year provisional certificates for candidates 1-26 as presented above.

BOARD ACTION

I move to authorize the Idaho Department of Education to issue emergency provisional standard instructional certificates for candidates 1-26 as presented above, effective for the 2023-2024 school year only, and pending a cleared background check.

Moved by _____ Seconded by _____ Carried Yes _____ No ____

PROFESSIONAL STANDARDS COMMISSION

SUBJECT

Adoption of Educational Testing Service Paraprofessional Assessment Qualifying Score

REFERENCE

February 2021	State Board of Education (Board) accepted the Professional Standards Commission recommendation to approve Praxis II assessments and Idaho cut scores
April 2022	Board accepted the Professional Standards Commission recommendation to approve proposed Praxis II assessments and Idaho cut scores.
December 2022	Board accepted the Professional Standards Commission recommendation to approve proposed Praxis II assessments and Idaho cut scores.

APPLICABLE STATUTE, RULE, OR POLICY

Section 33-1258, Idaho Code
Idaho Administrative Code, IDAPA 08.02.02.007.10 – Definitions, Paraprofessional

BACKGROUND/DISCUSSION

To work in a public school as classified paraprofessional staff, an individual must have a high school diploma or general equivalency diploma and have completed two or more years of study at an accredited postsecondary educational institution or demonstrate through a State Board-approved academic assessment the knowledge of, and ability to assist in, instructing or preparing students to be instructed in the academic areas in which they're providing support (IDAPA 08.02.02.007.10). The support provided by classified paraprofessional staff is essential to the success of students and teachers in Idaho's public schools.

At the December 7-8, 2023, meeting of the Professional Standards Commission (Commission), the Commission considered two (2) agenda items regarding the State Board-approved academic assessment of paraprofessional staff. The first agenda item proposed the recommendation of an alternate paraprofessional assessment, developed by Boise School District #1. This alternate assessment was approved by the Board at its December 13, 2023, meeting. The second agenda item proposed the adoption of a lower qualifying score for the State Board-approved academic assessment, the Educational Testing Service (ETS) ParaPro Assessment.

Lisa Colón Durham from ETS provided a presentation on the ParaPro Assessment to the Commission's Recommendations Committee. In 2002, Idaho participated in a standard-setting study for the ETS ParaPro Assessment, and Idaho adopted the

recommended qualifying score of 460, effective 2003. The qualifying score of the ParaPro Assessment differs from state to state, and several states have worked with ETS to utilize standard errors of measurement (SEM) to potentially allow more test takers to pass the assessment. The surrounding states of Washington, Oregon, and Nevada have each adopted a qualifying score lower than 460 on the ParaPro Assessment.

The Commission recommends that the Idaho qualifying score for the ParaPro Assessment be reduced by one (1) SEM, from 460 to 457. According to the research provided by ETS, this qualifying score reduction may increase the Idaho pass rate by over 5%.

IMPACT

Decreasing the qualifying score of the ETS ParaPro Assessment from 460 to 457 may reduce barriers to employment for those desiring to serve students in a paraprofessional capacity.

ATTACHMENTS

Attachment 1 – ETS Presentation

BOARD STAFF COMMENTS AND RECOMMENDATIONS

The Professional Standards Commission has conducted a thorough review of the material. Board staff supports approval of the recommended change in cut score.

BOARD ACTION

I move to approve the request by the Professional Standards Commission to reduce the qualifying score of the Educational Testing Service ParaPro Assessment from 460 to 457.

Moved by _____ Seconded by _____ Carried Yes _____ No _____

ParaPro Assessment

Idaho Professional Standards Commission

Lisa Colón Durham
Director, Educational Partnerships

December 7, 2023

- Non-profit organization
- World's largest private educational assessment and research organization
- Our mission is to help advance quality and equity in education by providing fair and valid assessments, research, and related services

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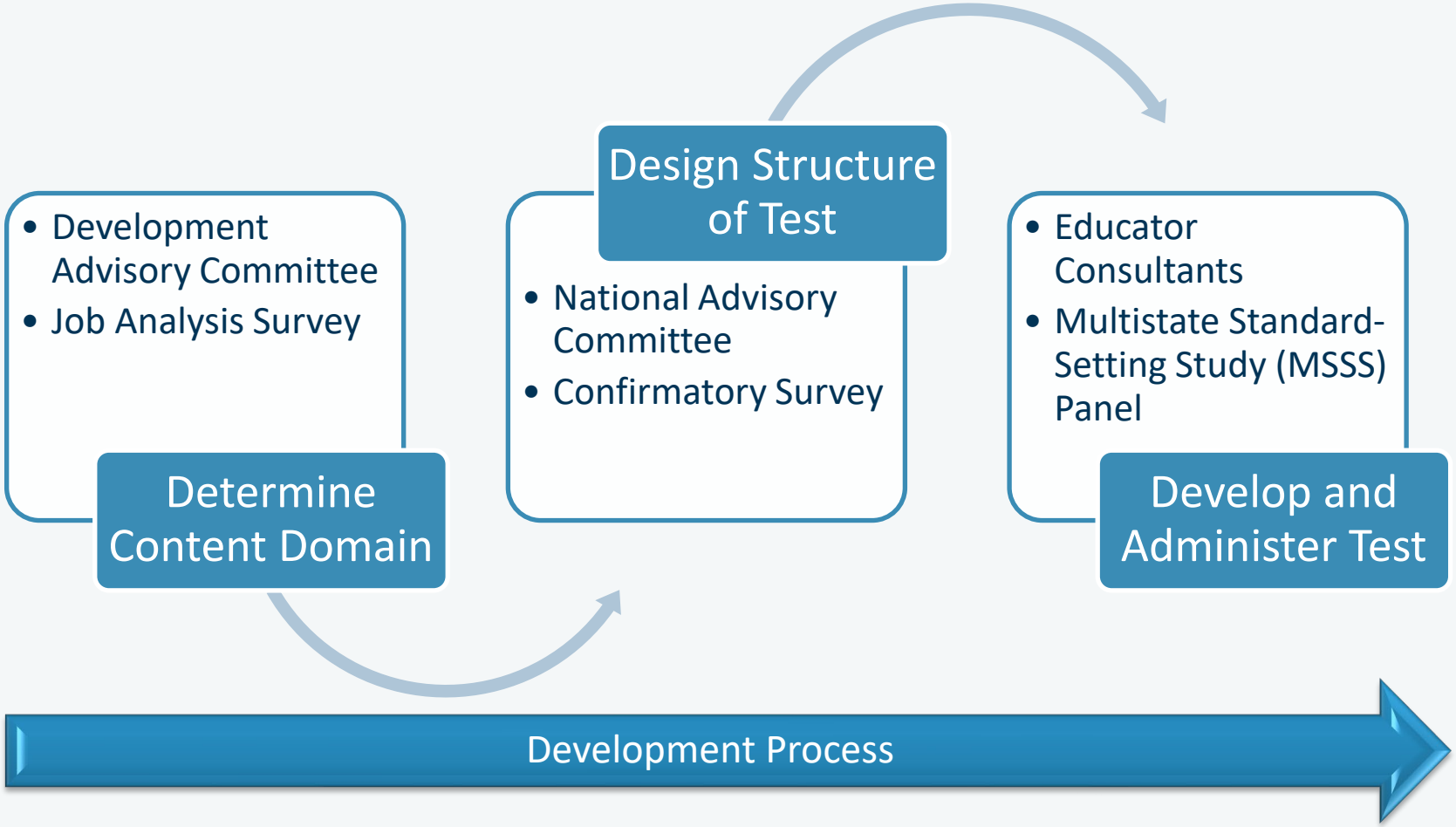
From Design through Implementation



Practicing educators involved throughout the process

Test at a Glance

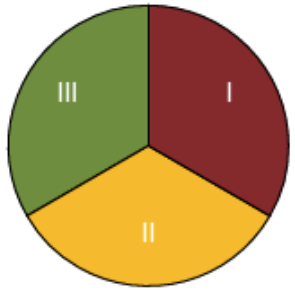
1. Learn About Your Test

Learn about the specific test you will be taking

ParaPro Assessment (1755)

Test at a Glance

Test Name	ParaPro Assessment
Test Codes	1755
Time	2.5 hours
Number of Questions	90
Format	Selected-response questions; use of a calculator is not permitted
Test Delivery	Computer delivered



Content Categories	Approximate Number of Questions	Approximate Percentage of Examination
I. Reading	30	$33\frac{1}{3}\%$
II. Mathematics	30	$33\frac{1}{3}\%$
III. Writing	30	$33\frac{1}{3}\%$

Administration Options

- Test Center
- At Home Testing
- Internet Based Testing (IBT) – School District
  - School districts are still able to administer the ParaPro

A new platform is currently being developed and school districts will still be able to administer ParaPro within the school district rather than having to send potential paraprofessionals to At Home Testing or Testing Centers.

Standard Setting Study

- Idaho participated in a standard setting study with Nevada and Utah in November 2002.
- The recommended cut score was 460.
- Idaho set the passing score at 460 as of January 6, 2003.

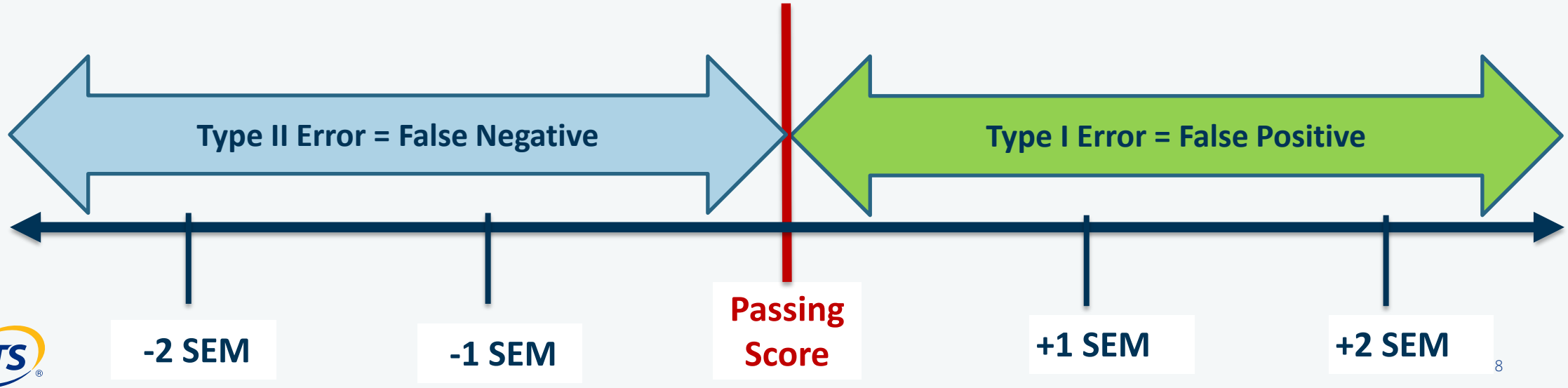
What is the SEM and how is SEM used?

- The Standard Error of Measurement (SEM) is a way to determine how well a test is measuring what it is intended to measure.
  - The smaller the SEM, the better
  - The SEM for ParaPro is 3.5

- The SEM is used to create confidence intervals around a cut score.
- It provides guidance to policymakers who may want to adopt a score that is different from the existing or proposed cut score.
- Several states have been working with ETS in the utilization of -1SEM and -2SEM to potentially allow more test takers to pass the assessment.

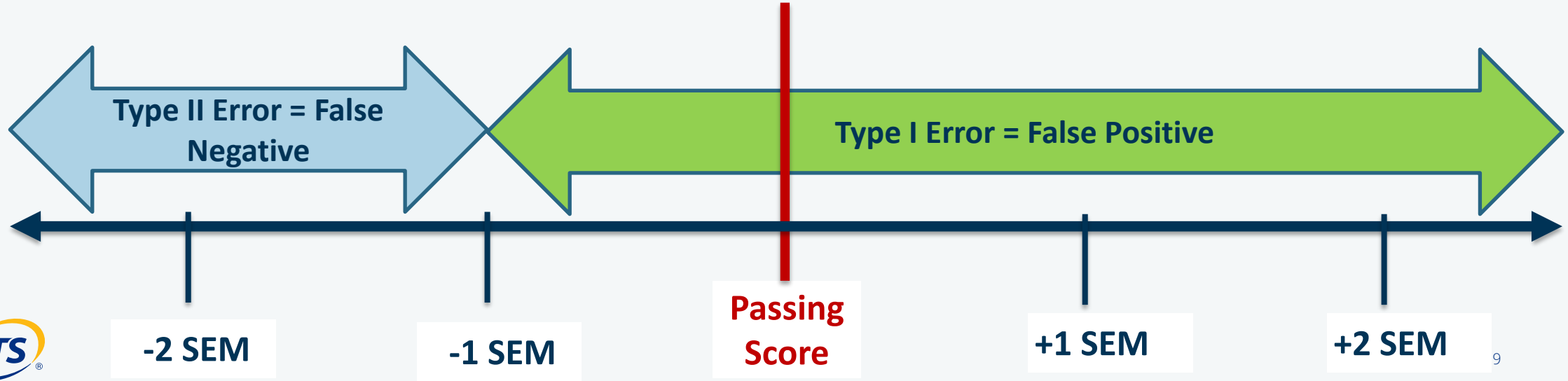
Using SEM when adopting/adjusting scores

- Regardless of where the score is set, there will always be a chance for Type I and Type II errors.
  - Type I Error is when someone earns the passing score but is not qualified (i.e., false positive).
  - Type II Error is when someone does not earn the passing score but is qualified (i.e., false negative).



Using SEM when adopting/adjusting scores

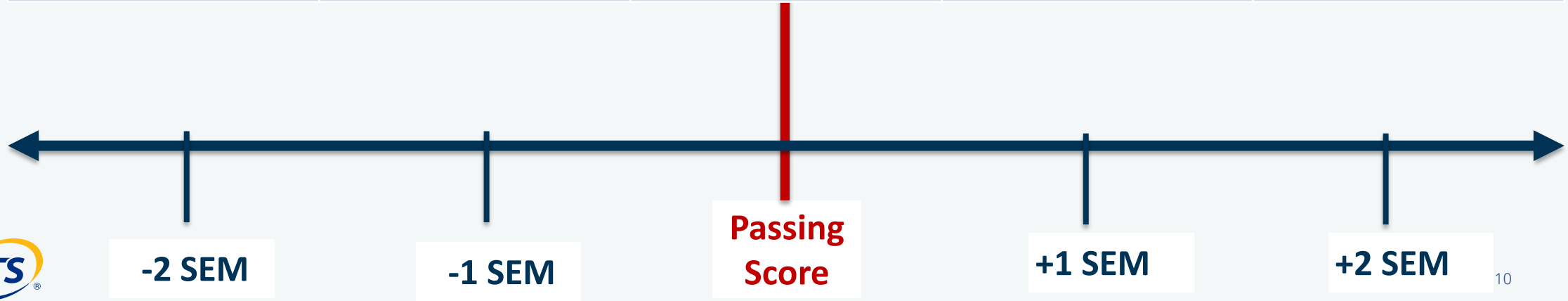
- Since there will always be a chance for false positives and false negatives, adopting a score at -1 SEM is a way to decrease the chance of false negatives (people who have the abilities needed but didn't demonstrate it by meeting the recommended passing score). It also, increases the chance of false positives (people who met the score but don't actually have the ability.



Standard Error of Measurement

ParaPro Assessment

-2 SEM	-1 SEM	Passing Score	+1 SEM	+2 SEM
453	457	460	464	467



National Pass Rates

Year Sep 1 – Aug 31	Number of Test Takers	Idaho -1 SEM (457) % Pass	Idaho Passing Score % Pass	Difference
2022-2023	35,930	80.38%	74.46%	5.92%
2021-2022	33,301	81.88%	76.46%	5.42%
2020-2021	22,947	84.78%	79.66%	5.12%
2019-2020	20,709	84.47%	79.49%	4.98%
2018-2019	32,010	85.01%	80.09%	4.92%

As of November 17, 2023

State/Province	Qualifying Score	State/Province	Qualifying Score	State/Province	Qualifying Score
Alaska	459	Louisiana	450	Ohio	456
Arizona	459	Maine	459	**Oregon**	**455**
Arkansas	457	Maryland	455	Rhode Island	461
Colorado	460	Massachusetts	464	South Carolina	456
Connecticut	457	Michigan	460	South Dakota	461
Delaware	459	Minnesota	460	Tennessee	456
District of Columbia	461	Nebraska	456	**Utah**	**460**
Hawaii	459	**Nevada**	**455**	Vermont	458
Idaho	**460**	New Hampshire	460	Virgin Islands	466
Illinois	460	New Jersey	456	Virginia	455
Indiana	460	New Mexico	457	**Washington**	**455**
Kansas	455	North Dakota	464	**Wyoming**	**462**

As of November 17, 2023

State/Province	Qualifying Score
Alaska	459
Arizona	459
Arkansas	457
Colorado	460
Connecticut	
	459
District of Columbia	461
Hawaii	459
Idaho	**460**
Illinois	460
Indiana	460
Kansas	455

State/Province	Qualifying Score
Louisia	450
Mai	
Maryland	
Massach setts	464
igan	460
Minnesota	460
Nebraska	456
Nevada	**455**
New Hampshire	460
New Jersey	456
New Mexico	457
North Dakota	464

State/Province	Qualifying Score
Ohio	456
Oregon	**455**
Island	461
	456
South Dak	1
Tennessee	456
Utah	**460**
Vermont	458
Virgin Islands	466
Virginia	455
Washington	**455**
Wyoming	**462**

Cut scores range from 450 to 466

Three of the states surrounding Idaho adopted a passing score of 455

As of November 17, 2023

Qualifying Score	States	Number
450	Louisiana	1
455	Kansas, Maryland, Nevada, Oregon, Virginia, Washington	6
456	Nebraska, New Jersey, Ohio, South Carolina, Tennessee	5
457	Arkansas, Connecticut, New Mexico	3
458	Vermont	1
459	Alaska, Arizona, Delaware, Hawaii, Maine	5
460	Colorado, Idaho, Illinois, Indiana, Michigan, Minnesota, New Hampshire, Utah	8
461	District of Columbia, Rhode Island, South Dakota	3
462	Wyoming	1
464	Massachusetts, North Dakota	2
466	Virgin Islands	1

Thank you!

TAB	DESCRIPTION	ACTION
1	BSU ANNUAL REPORT	Information Item
2	BSU EPP PROGRAM UPDATE	Information Item
3	ASSOCIATION OF PUBLIC AND LAND GRANT UNIVERSITIES GREETING	Information Item
4	BYU-I NEW EPP LITERACY ENDORSEMENT PROGRAM	Action Item
5	WORKFORCE DEVELOPMENT COUNCIL LAUNCH REPORT	Information Item
6	CTE ANNUAL REPORT	Information Item
7	MIDDLE GRADE MATH WORK GROUP RECOMMENDATIONS	Action Item
8	ACCOUNTABILITY OVERSIGHT COMMITTEE RE. LONG TERM GOALS	Information Item
9	ACCOUNTABILITY OVERSIGHT COMMITTEE RE. TRAJECTORY GROWTH MODEL	Information Item
10	STATE BOARD OF EDUCATION STRATEGIC PLAN	Action Item

11 **LEGISLATIVE SESSION UPDATE** Action Item

BOISE STATE UNIVERSITY

SUBJECT
Annual Progress Report

APPLICABLE STATUTE, RULE, OR POLICY
Idaho State Board of Education Governing Policies & Procedures, Section I.M.3.

BACKGROUND/DISCUSSION
This submission fulfills the Board's requirement to provide an annual progress report on the institution's strategic plan, details of implementation, status of goals and objectives, and information on other points of interest in accordance with a schedule and format established by the Board's Executive Director.

Since our last annual report, we have continued to achieve incredible outcomes, including record-breaking success in student retention and graduation, in Idaho student enrollment, research funding, and in philanthropic investment. The attached report provides details of this work alongside other achievements and metrics.

IMPACT
Boise State University's strategic plan drives the university's planning, programming, budgeting and assessment cycles and is the basis for the institution's annual budget requests and performance measure reports.

ATTACHMENTS
Attachment 1 – Boise State University Annual Progress Report

BOARD ACTION
This item is for informational purposes only.

2024

ANNUAL PROGRESS REPORT

3 **STRATEGIC PLAN IMPLEMENTATION**
- **3** — Improve Educational Access and Student Success
- **32** — Innovation for Institutional Impact
- **40** — Advance Research and Creative Activity
- **43** — Foster Thriving Community
- **49** — Trailblaze Programs and Partnerships

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BOISE STATE UNIVERSITY

CONTEXT

Our strategic plan, Blueprint for Success, has been remarkably successful and impactful for Boise State and for Idaho. We spent the last year engaged in the process of evaluating the strategies developed by each unit to achieve our institutional goals and assessing our progress towards those goals through clearly defined metrics.

We have achieved incredible outcomes, including record-breaking success in student retention and graduation, in Idaho student enrollment, in research funding, and in philanthropic investment in the university. We have raised significant new dollars to support the president's vision that no Idaho student has unmet financial need as a barrier to attendance at Boise State. We are doing more and better for our students, for the state and for the future. As a result, with the State Board of Education's (SBOE) approval, we plan to extend our strategic plan through the life of our campaign, to 2028, rather than 2025.

We have continued the significant change of requiring the simultaneous submission of annual strategic plan progress reporting, program prioritization annual reporting, and strategic budget requests. This synchronized submission process allows for aligned and integrated thinking about progress being made on the strategic plan, continuous improvement action items, and the funding needed to support them. Decisions about budget were made based on alignment with our goals in the institutional plan and helped us to make the critical decisions that led to closing the structural budget deficit left by the unfunded CEC and flat tuition. We have continued to look for innovative and entrepreneurial solutions to the unique position we occupy in the state with regard to our funding structure.

MISSION: Boise State University provides an innovative, transformative and equitable educational environment that prepares students for success and advances Idaho and the world.

VISION: To be a premier student-success driven research university innovating for statewide and global impact. The trailblazing, innovative character that has always defined Boise State will help us foster student success, advance Idaho and Idahoans, and strengthen our culture of innovation and impact.

STRATEGIC PLAN IMPLEMENTATION

The Blueprint for Success and the Board's clear direction in Complete College America's (CCA) "Momentum Pathways Project" have given us excellent guidance to direct the university forward.

Goal #1: Improve Educational Access and Student Success.

Enhance the comprehensive student experience with a focus on student success and post-graduate outcomes.

Boise State is investing significant effort and resources toward achieving this goal, and we aligned our efforts with the **Complete College America (CCA)** Game Changer strategies when Idaho became a CCA Alliance State in 2010. The State Board of Education's (SBOE) adoption of Complete College America's "Momentum Pathways Project" has shaped our work since 2019.

In our current report, we continue to highlight our CCA/CCI initiatives and progress made to date. CCA's focus on the importance of reducing the equity gaps between different student populations, our accrediting body's explicit charge to do the same, and our own Blueprint guided our work on the development of a new Strategic Enrollment and Retention Plan (SERP). In addition, Boise State is a member of the Powered by Publics Coalition of the Association of Public and Land Grant Universities (APLU), which has a focus similar to that of CCA: increase the number of college graduates and improve student success.

This year, one of our student success efforts was recognized by both the Northwest Commission on Colleges and Universities (NWCCU), our accrediting agency, and the APLU. The innovations and early math reforms focusing on student success and self-efficacy implemented by the Math Learning Center (MLC) were recognized with two national awards: **the NWCCU's Beacon award** and **the APLU's Degree Completion award,** both in November 2023.

Our coverage of Goal #1 has the following sections:

1. **Overall progress** toward this goal.
2. **Development and implementation of the Strategic Enrollment and Retention Plan (SERP),** addressing the importance of enrolling and serving students from all backgrounds and experiences in Idaho.
3. **Additional work supporting student access and success,** summarizing many additional student success-related initiatives and projects happening at Boise State.
4. **Update on the six "Game Changer Strategies"** that constitute the Momentum Pathways Project.

OVERALL PROGRESS

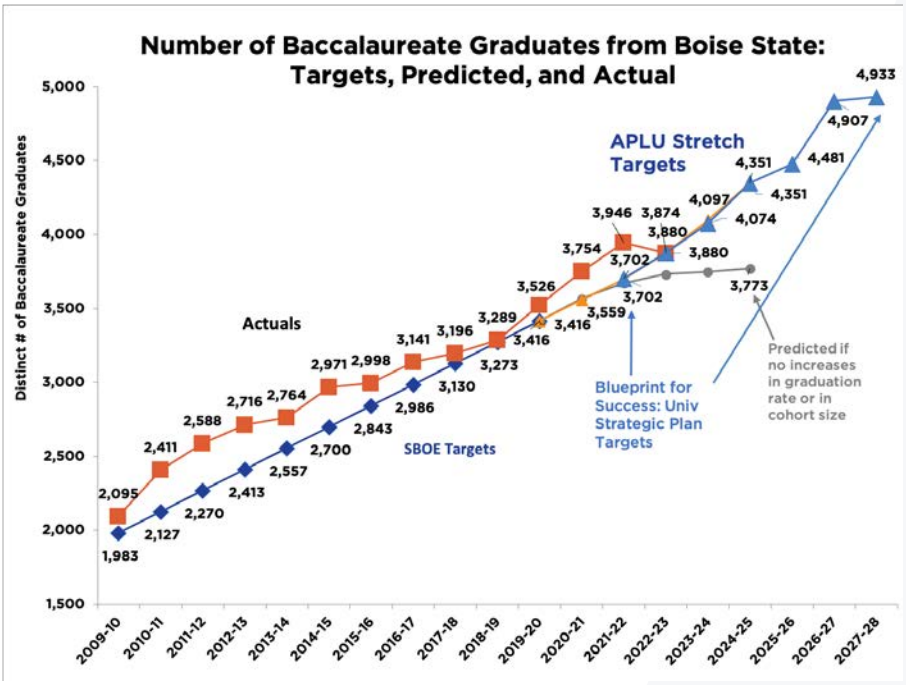
We are very proud to have played a significant role in increasing the college attainment rate for Idaho. **Boise State confers more than half of all baccalaureate degrees** from public institutions in Idaho, and we have **dramatically increased the percentage of Idaho students that we serve** in the last two years, growing our population of new Idaho students by **20%** last year and another **7%** this year.

Education not only provides Idahoans the opportunity to develop the **talents and skills necessary for employment,** but it can also transform the economic mobility and life satisfaction of students and their families. Students from all backgrounds must have access to and support for a college education to develop those skills and talents, develop their full potential and give back to our great state.

Education also **increases the size and competence of the state's workforce,** as captured in the "educational attainment goal" (Goal #3) of the Board's *K-20 Public Education Strategic Plan, FY 2024-2029.* Increasing the rate of college attainment in all groups, especially those populations presently underrepresented in college, is the most effective way to increase the size and competence of the workforce and achieve the SBOE's educational attainment goal.

The number of **baccalaureate graduates** from Boise State has increased markedly over time. As illustrated in the following chart, **Boise State has exceeded our targets every single year,** starting with the targets put forth by the SBOE in August 2010 and continuing through the targets in the Blueprint for Success. With 3,874 distinct baccalaureate graduates in 2022-23, Boise State continues to lead the way in contributing to a vibrant workforce.

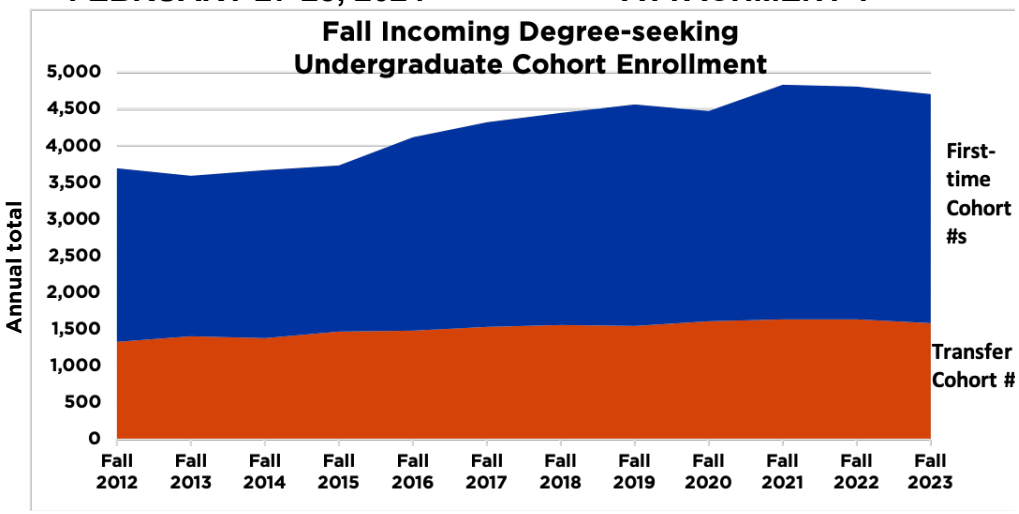
The increases we have seen in baccalaureate graduates have been, in large part, a result of substantial increases in Boise State's retention and graduation rates, as well as the number of students who enter the university, as shown in the following figures.

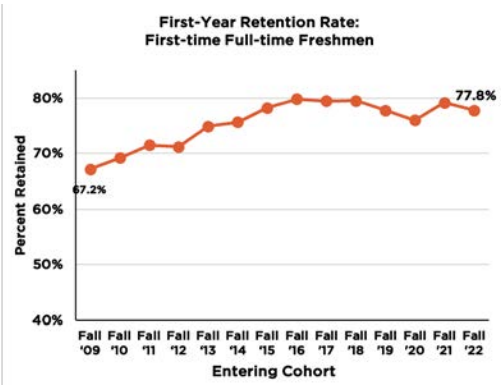


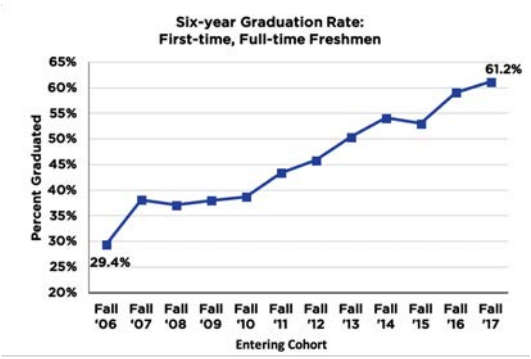
After experiencing dips in first-to-second-year retention rates for the Fall 2019 and Fall 2020 first-time full-time cohort, the retention rates of the Fall 2021 and Fall 2022 cohorts rebounded to near pre-pandemic levels. The retention rate for the Fall 2022 first-time full-time cohort was 77.8%. Retention of the full-time transfer cohort increased with the Fall 2019 cohort and, despite some vacillation, remains strong at 74.2%.

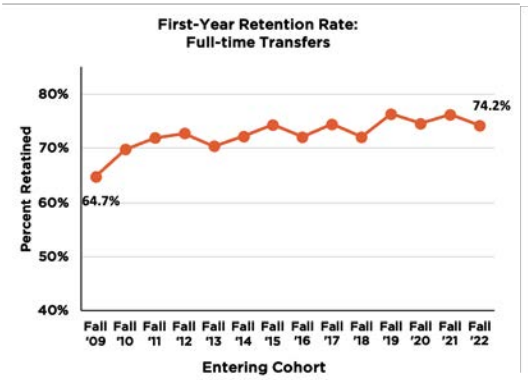
Boise State has reached its highest-ever six-year graduation rate with unprecedented growth over the last dozen years. The six-year graduation rate for the **first-time full-time freshmen** went from 29% for the Fall 2006 cohort to 61.2% for the Fall 2017 cohort, or a **32-point increase**. The four-year graduation rate for full-time **transfer students** also reached an all-time high rate of 61.5% for the Fall 2019 cohort, which is a **25-point increase** over the Fall 2008 cohort.

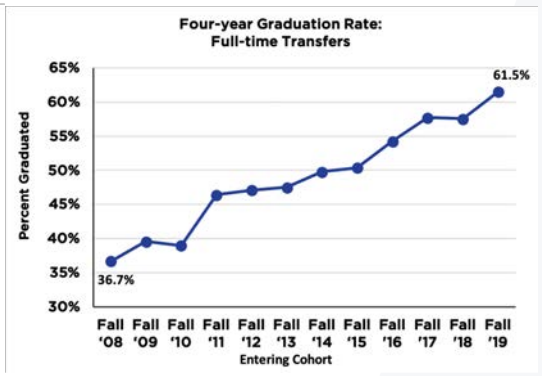
These incredible outcomes earned us **two national awards** this year in student retention and success.





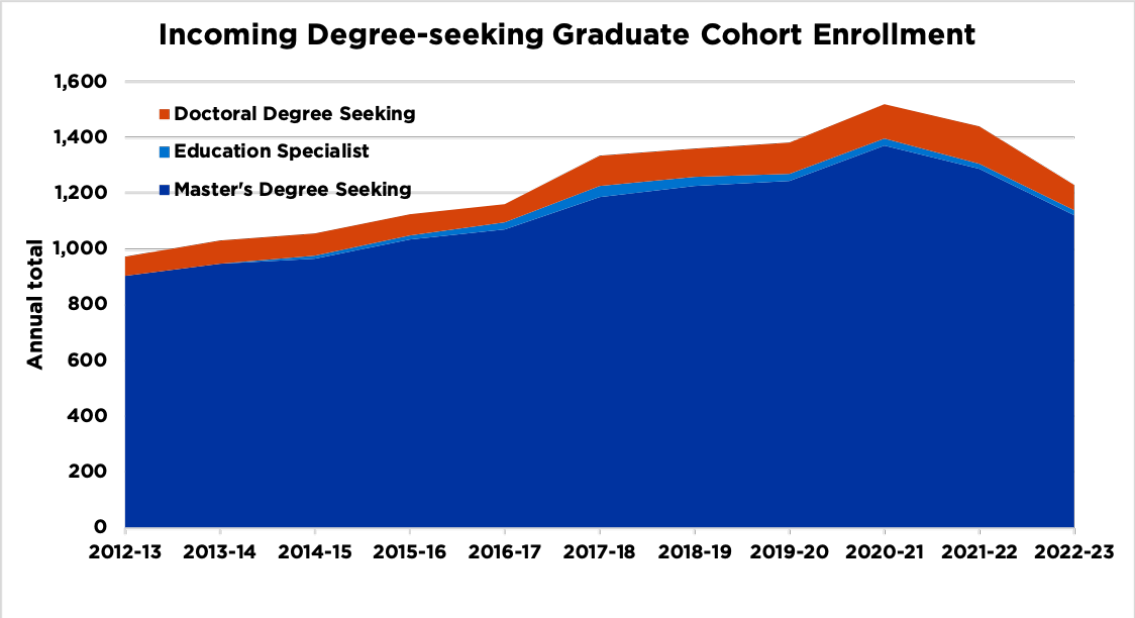


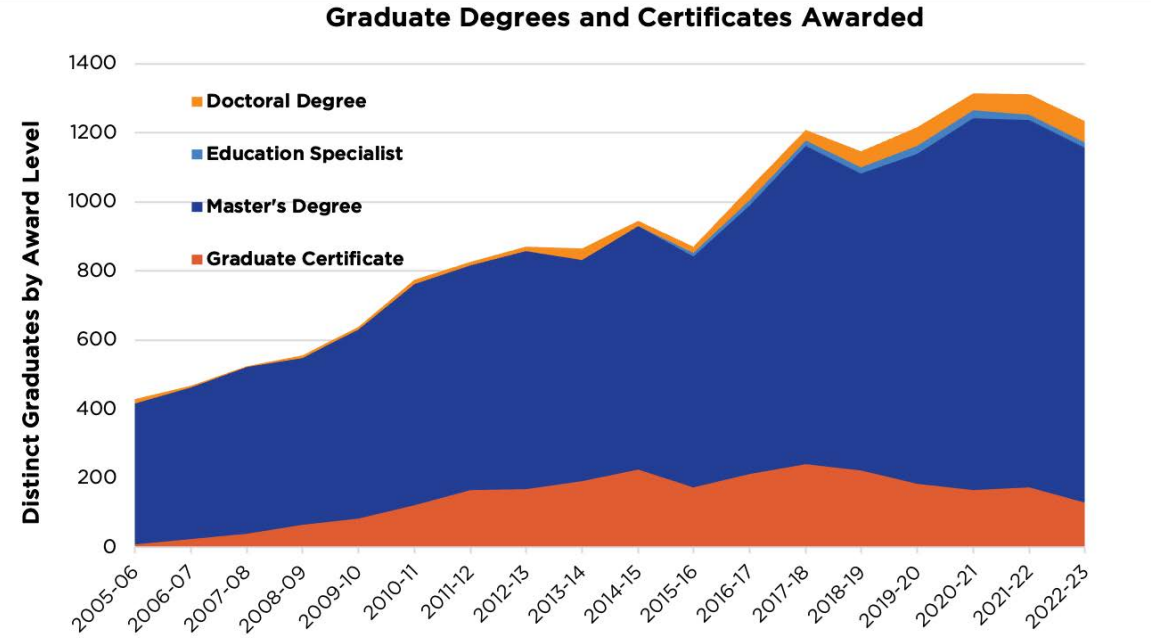




Graduate-level programs are also an important aspect of serving Idaho and Idahoans, and Boise State continues to develop new programs to serve the state. Industry, for example, has called upon Boise State to play a key role in the American competitiveness and success our nation seeks to achieve with its significant investment in the semiconductor industry. They have called upon us to grow our STEM programming at the graduate and undergraduate levels.

The number of students graduating from **graduate degree and certificate programs** has maintained its upward trend with an **increase of 57%** since 2012-13.





Success rates in our graduate degree programs also remain strong. The most recent one-year success rates (percent retained or graduated) were 85% for entering master's degree students and 88% for entering doctoral degree students. We are currently working to create a standing analysis of the disaggregated rates so we can continue to monitor progress of all students in graduate programs.

STRATEGIC ENROLLMENT AND RETENTION PLAN (SERP)

The first goal of the Blueprint for Success calls for a **Strategic Enrollment and Retention Plan (SERP)** to improve student access and success. This effort, led collaboratively by the Student Affairs and Enrollment Management and Academic Affairs divisions, culminated in the creation of a plan in Fall 2022. The SERP establishes clear goals and targets for enrollment, with a focus on closing selected institutional equity gaps in access and completion, and provides research-informed and institutionally appropriate initiatives to advance toward our goals. Furthermore, these efforts align with concerns around demographic gaps in attendance for service areas the board highlighted.

An important focus of the SERP is developing strategies to close discrepancies in access and success for demographic groups of students, such as those who are rural, first-generation, low-income, underrepresented, etc. Our 2019 NWCCU accreditation review called upon Boise State to address these gaps.

Boise State confers more college degrees than any other public institution in Idaho — more bachelor's degrees than all other public universities combined.

We play a key role in increasing college attainment levels of all Idahoans. This fact makes our efforts to reach four groups with substantially lower levels of college attainment meaningful for both those students and their families, and our state. Our path forward requires that we focus energy on **(i) increasing college attendance** among those students typically less likely to attend college in the first place and **(ii) increasing successful retention and graduation** among those students typically less likely to graduate.

Goals for better serving Boise State students

In developing the SERP, we identified four specific underserved groups in Idaho with respect to access and success: **Rural Idahoans, First-Generation** students, students who are **Low-Income/High-Financial Need** (Pell-eligible), and **Hispanic/Latinx** students. Each of these four groups represent a substantial fraction of Idaho's population and represent a substantial gap in college attainment.

These groups may overlap with each other (e.g., a rural student might also be Pell Grant eligible) and may overlap with other identities (e.g., gender: male students are less likely to attend college in recent years). Further, other students may also require particular attention to access and progress (e.g., part-time, online, non-traditional, veterans, underrepresented students, students with disabilities, etc.). By improving outcomes for the populations identified in our SERP, we expect to simultaneously address other known institutional performance gaps.

Our goal is to provide optimal service to all our students, and research has shown that when we learn how to better serve these populations of students, we will better serve all students.

The following sections provide the current status relative to our goals for both access and graduation. The data shows our progress with respect to students who join our community as first-time full-time college students. These students make up about two-thirds of each incoming class. We are working on an approach for analyzing and representing progress for transfer and part-time students who are not included in the analysis below.

Access/Cohort Goals

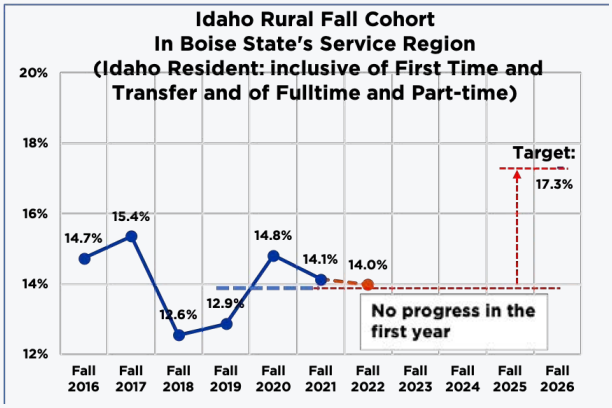
For rural and Hispanic/Latinx Idahoans, census data enables us to compare the percent of these populations in our Service Region 3 to the composition of Boise State's incoming cohort.

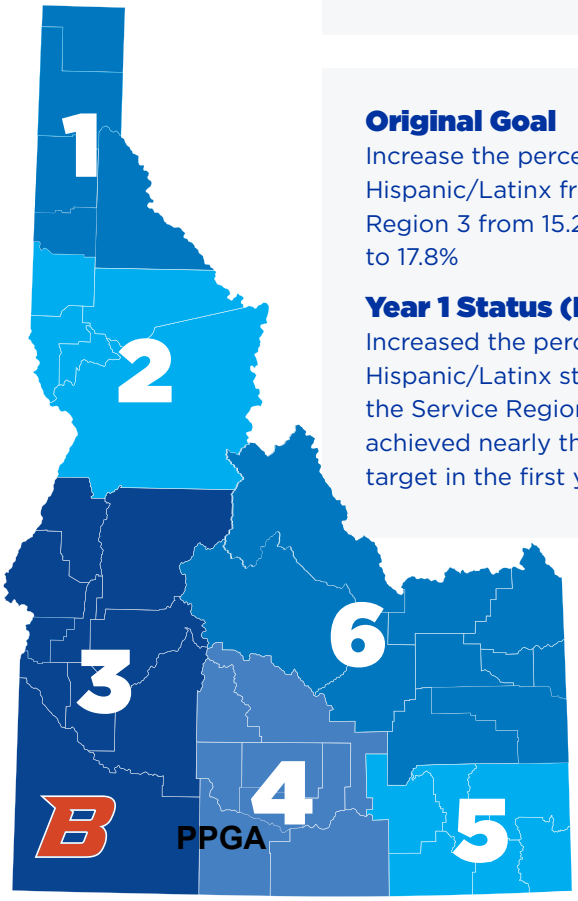
Original Goal

Increase the percentage of Idaho rural students from Service Region 3 from 13.9% (3-year avg) to 17.3%

Year 1 Status (Fall 2022)

The percentage of Idaho rural students from the Service Region is 14.0% - no progress in the first year



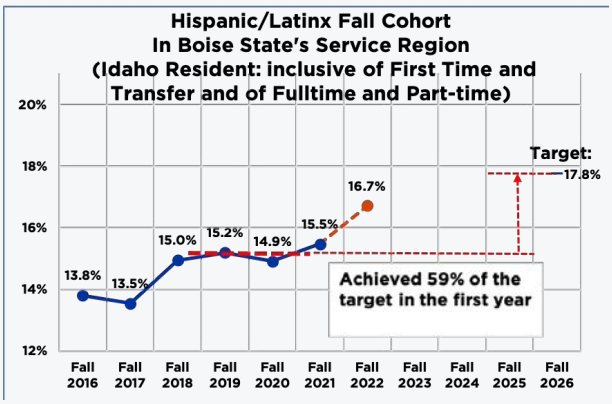


Original Goal

Increase the percentage of Idaho Hispanic/Latinx from Service Region 3 from 15.2% (3-year avg) to 17.8%

Year 1 Status (Fall 2022)

Increased the percentage of Idaho Hispanic/Latinx students from the Service Region 3 to 16.7% - achieved nearly three-fifths of the target in the first year



Access/Cohort Goals

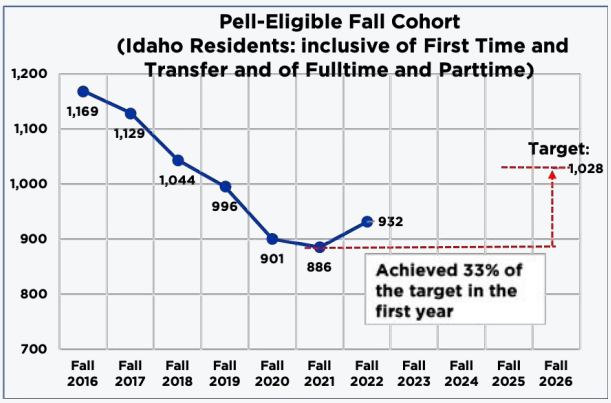
Because standard external data sets do not exist for Pell-eligible and first-generation student populations in Idaho, we relied on internal benchmarking to set the goals of reversing our current declining trend by half.

Original Goal

Increase the number of Idaho Pell students to 1,028 in the incoming class

Year 1 Status (Fall 2022)

Increased the number of Idaho Pell students from 886 to 932 in the incoming class — achieved one-third of the target in the first year

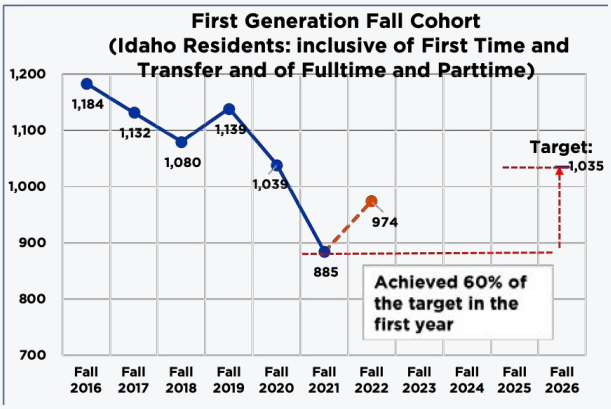


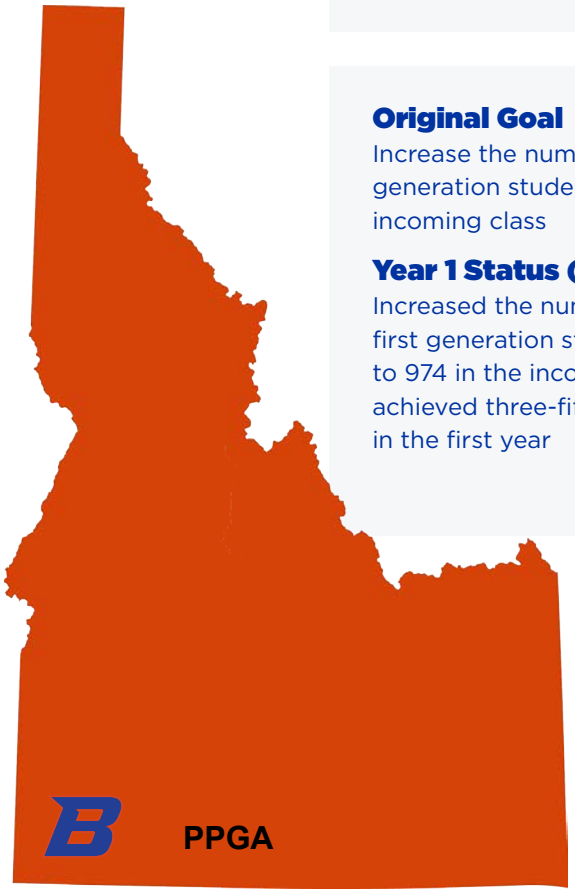
Original Goal

Increase the number of Idaho first generation students to 1,035 in the incoming class

Year 1 Status (Fall 2022)

Increased the number of Idaho first generation students from 885 to 974 in the incoming class — achieved three-fifths of the target in the first year





What contributed to our progress?

While the Strategic Enrollment and Retention Plan officially launched with the release of the plan in Fall 2022, the goals of the SERP were identified in Fall 2021, which allowed recruitment strategies to begin even before the full plan was released. While a variety of both small and large factors undoubtedly contributed to the changes in access in year one, the following changes are likely significant contributors:

- Adjusted our recruitment and outreach strategies to focus on SERP goals.

  Strategies are continually adjusted, but the focus on SERP populations began in Fall 2021 for the Fall 2022 incoming class.

- Extended New Freshman Resident scholarships from 2-year awards to 4-year awards.

  Began with Fall 2022 incoming class.

- Extended New Transfer Resident scholarships from 1-year to 2-year awards.

  Began with Fall 2022 incoming class.

- Gave Idaho residents a 3-hour head start for housing applications.

  Began with Fall 2022 incoming class.

- Expanded our online efforts.

Analysis is underway to assess the specific impacts of the scholarship and housing changes on student access and retention (e.g., which students were impacted and what outcomes are observed for those students). One additional area of progress is that we hired two new rural regional counselors in September 2022 and expect that we will see some movement in our enrollment of rural students in the coming year.

Degree Attainment/Graduation Goals

The SERP degree attainment/graduation goals were developed based on the magnitude of the gaps in six-year graduation rates for the fall 2015 cohort. The SERP goals are to cut those gaps by at least half within five years. Graduation goals were set for first-time full-time cohorts, inclusive of both resident and nonresidents, for all SERP groups except Rural; goals for Rural students were set for Idaho residents only. As noted above, equity gaps exist for both resident and non-resident students.

Year 1 Goal and Status	Year 1 Status

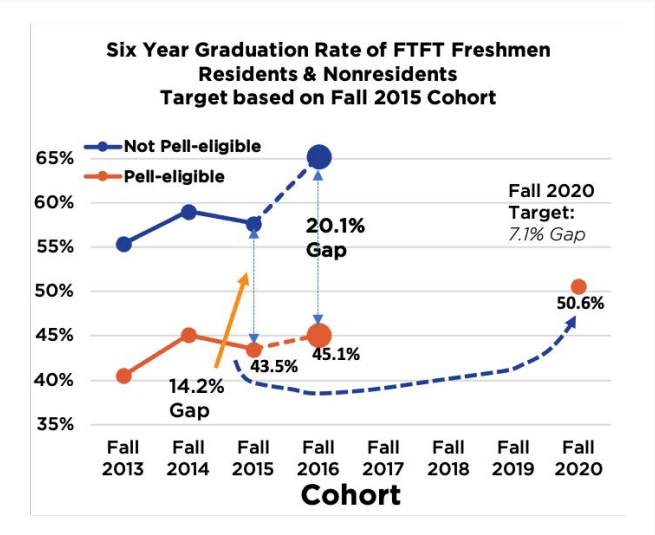
Pell-eligible Students

Goal:

- Reduce the 14.2% gap in the six year graduation rate between Pell-eligible and not Pell-eligible by half
- Goal = 7.1% gap for the Fall 2020 cohort

Status:

- Graduation rates for the Fall 2016 Pell-eligible cohort (45.1%) and not Pell-eligible cohort (65.2%) reflect increases relative to those of the Fall 2015 cohorts
- While the gradraduation rates increased for both Pell-eligible and not Pell-eligible, the gap between them increased to 20.1%



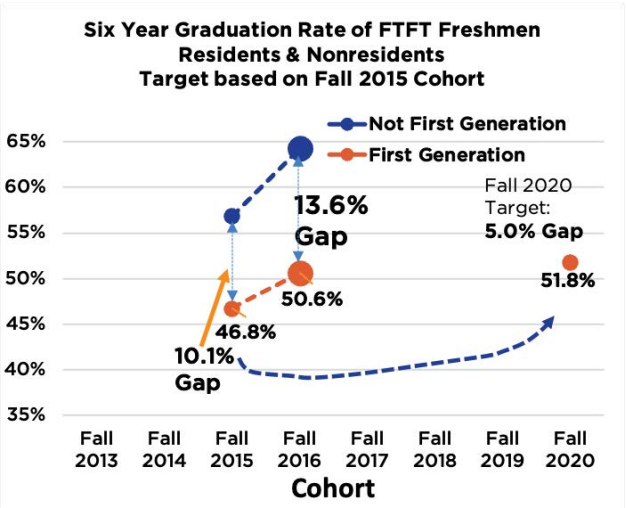
First-Generation College-going Students

Goal:

- Reduce the 10.1% gap in the six year graduation rate between first generation and not first generation by half
- Goal = 5.0% gap for the Fall 2020 cohort

Status:

- Graduation rates for the Fall 2016 first generation cohort (50.6%) and not first generation cohort (64.2%) reflect increases relative to those of the Fall 2015 cohorts.
- While the graduation rates increased for both first generation and not first generation, the gap between them increased to 13.6%



Year 1 Goal and Status	Year 1 Status

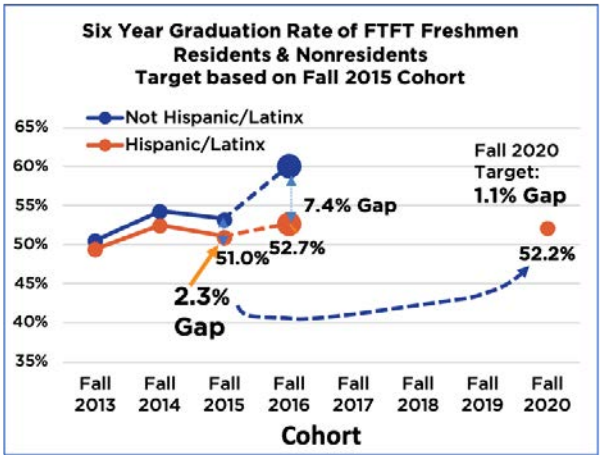
Hispanic/Latinx Students

Goal:

- Reduce the 2.3% gap in the six year graduation rate between Hispanic/Latinx and Not Hispanic/Latinx by half
- Goal = 1.1% gap for the Fall 2020 cohort

Status:

- Graduation rates for the Fall 2016 Hispanic/Latinx cohort (52.7%) and not Hispanic/Latinx cohort (60.1%) reflect increases relative to those of the Fall 2015 cohorts
- While the graduation rates increased for both Hispanic/Latinx and not Hispanic/Latinx, the gap between them increased to 7.4%



Year 1 Goal and Status (Idaho only)	Year 1 Status

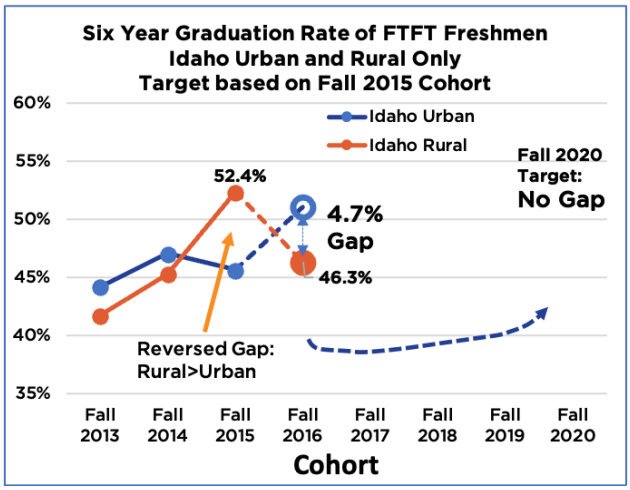
Idaho Rural Students

Goal:

- Maintain or improve rural student six year graduation rate of 52.4%
- Watch to make sure no gap appears (relative to urban)

Status:

- Graduation rate for the Idaho rural Fall 2016 cohort (46.3%) reflects a decline relative to the Fall 2015 cohort.
- Graduation rate for the Idaho urban Fall 2016 cohort (51%) reflects an increase relative to the Fall 2015 cohort.
- A 4.7% gap appeared between Idaho rural and urban students



We are pleased to observe increases in graduation rates across most groups. Although it may be too early in the initiative for the SERP strategies to have played a role in these gains, we recognize that SERP has created a new consciousness across campus and contributed substantially to a campus culture around success strategies for students with varying backgrounds.

We also know that COVID-19 negatively impacted students and their academic progress. Consistent with national trends, the preceding graduation data makes it clear that the pandemic disproportionately impacted our SERP groups.[1]

1 U.S. Department of Education's Office for Civil Rights. (2021) Education in a Pandemic: The Disparate Impacts of COVID-19 on America's Students. Washington, D.C.: USGPO

Key Progress in the Last Year

We are tracking both those strategies that have been completed and those that are in progress, and we are engaged in a dynamic process to learn from what we're doing and modify activity as we go. This year, four of the "ready to do/ready to develop" strategies named in the SERP, all related to making it easier for students to navigate the university, have been completed. Many others are in progress. Additionally, a number of "Foundational Investment" and "Aspirational Project" strategies have been realized. These include two Regional Admissions Counselor positions, a College Enrollment Dashboard Tool, and increased capacity for counseling in University Health Services.

We are particularly excited about movement on two of the aspirational projects:

- **First Year Experience:** In Spring 2023, a group of faculty and staff convened in a "First Year Collaboratory" designed to explore ways to improve the first-year experience. That group has created two subgroups that will continue their work during the 2023-24 academic year. We also hired a new **First Year Experiences Director**, housed in the College of Arts and Sciences, who will be moving first-year student success initiatives forward both within the college and across the university.
- **Experiential Learning Network:** Experiential Learning is a high-impact practice that improves the quality of a student's learning experience and supports retention and graduation. It can make a significant impact on career readiness as well.

Strategic Enrollment and Retention Plan next steps/goals for 2023-24

In addition to work that will naturally follow from efforts already underway (e.g., implementation of existing strategies, capacity work, transfer working group, etc.), we have identified several additional areas that need attention in the coming year.

Male student access and retention

Institutional data from Boise State mirrors national data, which indicate that men are both less likely to access a college education and, if they do enroll, are retained at lower rates than women. This year, we plan to explore what these gaps look like at Boise State, especially with respect to how gender intersects with identities of Rural, Pell-eligible, first-generation college-going, and Latinx students. We will use the processes built to support SERP to identify goals and strategies to address these gaps.

Student Engagement

A strong suggestion from campus stakeholders is to find a way to bring more student voices to this process. To that end, this year we will pilot a process in Admissions to engage students identified by the SERP to provide feedback on the processes involved in applying to and ultimately enrolling in the university. This will help us to determine changes that are needed to make the process easier and more welcoming to navigate.

Assessment

Institutional Effectiveness and Enrollment Services are creating a standard process and demographic profile report consisting of aggregated percentages and distributions by SERP population. This will include university-level data for comparison purposes, allowing units to better assess their services as related to students identified by SERP and answer a critical question of whether they are serving the students for which they are intended.

Synergistic Activities

As the work to implement the SERP has gotten underway this year, it has become clear that the goals and the activities of the SERP often intersect with work and proposals in other areas. For example, there are important intersections between the work of the SERP and the ideas generated by the Emerging Hispanic-Serving Institutions committee. Additionally, there are important connections to recommendations from the Fall 2021 Future of Online Programs report. The SERP process seeks to find ways to mutually support and enhance these efforts as we move forward.

ADDITIONAL WORK SUPPORTING STUDENT ACCESS AND SUCCESS

Increased need-based financial aid

One of our aims during our comprehensive campaign is to grow scholarships. During the last fiscal year, we raised over **$16 million for scholarships**; of that total, approximately 20% was for need-based scholarships, including $1.4 million for scholarships with an **Idaho residency** preference or requirement. These "True Blue Promise" scholarships represent a crucial component of our need-based financial aid and aim to ensure support for all qualified Idaho college students, eliminating the financial barrier to their success.

Boise State's goal to increase student access and academic success through scholarship support lies at the heart of the Unbridled campaign. To incentivize donors to create endowed scholarships, the Boise State University Foundation Board of Directors has provided a **$2.5 million bridge program** for qualifying new and enhanced scholarship gifts. The Foundation's match will allow donors to help Boise State students immediately while establishing endowment funds to create lasting legacies.

Expanded institutional scholarships and other funding opportunities

The expansion of our institutional scholarships for Idaho residents from 2-year to 4-year awards continues to improve access for Idaho residents. We saw a **29% increase (442 students) in Idaho students** in our incoming freshman class since 2021.

Boise State's Center for Multicultural and Educational Opportunities, housed in the College of Education and in operation since 1991, continues to serve low-income and first-generation students, as well as students with disabilities, veterans and students from migrant families, from pre-college enrollment to postsecondary graduation. There are fourteen grant-funded programs within the Center, providing a pipeline of support for students from populations of low-income and other non-traditional college-attending backgrounds and improving the academic achievements of all students, vitally contributing to the mission of Boise State.

A focus on rural communities

Community Impact Programs (CIP) are Boise State's place-based educational pathways in rural Idaho. The CIP pathways build a comprehensive education ecosystem through the following approaches:

- **Community Impact Certificate** (CIC), an academic certificate and bachelor's degree pathway incorporating place-based learning.
- **Community Leadership Program** (CLP), a non-credit, accessible, upskilling professional development opportunity.
- **15 to Start**, a concurrent enrollment program increasing the availability of concurrent enrollment course options in rural Idaho.
- **Relationship building** that supports these efforts and is vital to the success of the program.

The table below breaks down those who participated and completed each pathway.

Community Impact Programs Pathway	Number of Participants	Completed the Pathway
Community Impact Certificate	88	54
Community Leadership Program	52	52
15 to Start	32	1

Since the launch of the Community Impact Certificate in Fall 2020, 88 students have started the certificate. Of those 88 students, 54 completed the certificate and 19 graduated from Boise State to date. Community Leadership Program, the non-credit CIP pathway, started in 2021 and 52 individuals have completed this professional development opportunity. 15 to Start began in 2022 with 32 students currently participating. Students active in 15 to Start will begin to graduate in Spring 2024 and will be able to attend Boise State beginning in Fall 2024. Those individuals will be prepared to participate in Community Impact Certificate or come to the main campus.

Community Impact Certificate program successes

- Overall, students had high levels of satisfaction with the CIC.
- The place-based education was the most valuable part of the certificate.
- Students felt confident in their ability to complete the program learning outcomes.
- Students were grateful for the scholarship support they received.

Since the launch of this initiative, **annual enrollment from CIP communities is 17% larger** on average each year versus the years preceding CIP. This suggests that having a presence in these communities positively impacts the perception of the university and influences individuals' decisions to attend Boise State. CIP will continue to provide a multifaceted, place-based education ecosystem that increases access to higher education in rural Idaho.

Recruitment of students from groups that traditionally do not attend college includes the following activities by the Office of Admissions:

- Hired and trained **two new regional admissions counselors** serving North Idaho and Magic Valley/ Eastern Idaho.
- Visited rural high schools throughout the state to foster relationships with our educational partners and actively **recruit rural students.**
- Invited high school seniors to the Spring **Mosaic,** an annual event designed to support students with specific backgrounds and needs in mind. This includes those with financial need, first-generation college students, and ethnic minorities historically underrepresented in Idaho's higher education landscape, such as Native American, Black/African American and/or Hispanic/Latinx.
- Offered two bilingual events. **Infórmate con Boise State** informs prospective students and families about Boise State's academic programs, admissions process, scholarships, financial aid and resources on campus. At **Prepárate con Boise State** admitted students and families engage with admissions counselors and go through next steps, including information about scholarships and financial aid, intent to enroll, housing and orientation.
- Actively engaged with community-based organizations whose mission it is to increase the go-on rate in populations that are underrepresented in higher education in our state, including the **One Refugee** and the **Idaho Commission on Hispanic Affairs.**
- Collaborated with the Idaho Commission on Hispanic Affairs to actively engage in the **Hispanic Youth Leadership Summits,** connecting with hundreds of Hispanic/Latinx students across the state. In further partnership with Boise State's student organization, Organización de Estudiantes Latino-Americanos, Admissions successfully hosted **Project Dream for Tomorrow.**
- Partnered with educational organizations such as **TRIO, AVID, Gear Up,** and **One Refugee** to deliver

tailored presentations, group visits and comprehensive information on admissions, financial aid and scholarships, all designed to cater to the unique requirements of each group.

- Enhanced our partnership with Extended Studies to improve our **outreach to community colleges.**
  - Increased our partnership with concurrent enrollment for an admissions counselor to provide a presentation to any visiting group on campus.
  - Supported group visits of College of Western Idaho students visiting Boise State to take a Spanish College Level Examination Program exam and a campus tour.

Professional development for faculty to support student success

The Center for Teaching and Learning (CTL) provides opportunities for faculty members to become better teachers for the student population we serve, with particular attention to increasing our capacity effectively to support every student.

- The CTL offers a variety of workshops and other opportunities to support faculty teaching, focusing on topics like effective course design, understanding the unique needs of first-generation college students, and providing effective feedback to support student learning. Particular programs/activities undertaken this year include the creation of a **Student Partners program** that positions undergraduate students as partners, alongside faculty, in course (re)design.
- The eCampus Center prepares faculty to meet the needs of diverse students in the online environment. By providing support for flexible options for students, the center effectively extends the Boise State campus to students in rural Idaho and beyond.
- The BUILD Program offers a variety of workshops and consultations to support faculty and staff across campus to develop knowledge and skills needed to generate a **sense of belonging for all our students**, an effort that improves student retention and success.
- University Foundations, Boise State's general education program, launched a pilot faculty program with over a dozen instructors who are introducing a six-lesson **constructive dialogue curriculum** into their discussion-based courses. The curriculum prepares students to participate in open-minded, curious and respectful classroom discussions with a variety of viewpoints by introducing behavioral research and helping students practice constructive dialogue skills in small groups.

Boise State efforts aimed at strengthening the support network for students

- The Advising and Academic Support Center has revised its academic support class, Building Academic Success and Efficacy (BASE). Bronco BASE Camp is a one-credit, first five-week course that helps prepare first-year students to reach their academic goals and set a course for success in their first semester.
- The **Idaho Office of Drug Policy** awarded Boise State a **$40,000 grant** to provide substance misuse prevention services. The program seeks to decrease student alcohol consumption through an array of initiatives geared toward residential first-year students.
- **The U.S. Department of Justice** awarded Boise State a **$400,000 grant** to continue to support students impacted by sex-based violence and stalking by improving policy, coordination with local law enforcement and best practices staff training.
- **AmeriCorps** awarded Boise **State a $20,000 grant** to fund a staff member to coordinate food pantry operations.

- New Student Programs has grown its first-year support program serving **first-year commuter students.** Roughly 900 students live off campus during their first year. Their retention rate is 72%, compared to their on-campus peers at 83%. The program includes email communication, a peer navigator and connection to resources. Currently, 31 Idaho resident students meet with a peer navigator. All 31 students are from Idaho and are first-generation.
- New Student Programs coordinated and supported affinity groups during **new student orientation** programs to help connect students with common interests and experiences.
- Admissions partners with the College of Western Idaho **host Spanish-speaking CWI students** throughout the year to tour campus and take the Spanish College Level Examination Program exam at the testing center.
- The **Bronco Shop contributed $100,000 to the general scholarship fund** for Boise State students, continuing its mission of Purchases Fund Scholarships. The Bronco Shop also contributed $10,000 from Sun Valley's Writers Conference, funding two fellowships for Boise State students.
- The dining services contract with Chartwells provides set donations over the next five years to help **address food insecurity** with $16,600 to Swipe Out Hunger and $5,000 to the Campus Food Pantry annually. Since the start of the academic year, 1,100 free meal swipes have been awarded to students in need.
- Boise State awarded Swire Coca-Cola with a five-year multi-million exclusive beverage contract, including a non-discretionary amount of $285,000 a year to Student Affairs and Enrollment Management, $60,000 to sponsor student events and $20,000 in product donations.
- A donor pledged a **gift to the Campus Food Pantry totaling $467,500** for 10 years. The gift will help the pantry purchase food and hygiene products. Since the start of the academic year, the food pantry has served 2,141 individual students.
- Boise State received a three-year grant from the JED Foundation in 2021 for suicide prevention. The grant was allocated to facilitate the creation of the **JED Campus student mental health strategic plan.** More details on the incredible work of the JED grant can be found on page 48.
- The Educational Access Center partnered with the **Idaho Interagency Council on Secondary Transition** to support the transition from high school to post-secondary education for **students with disabilities** in Idaho.
- The Educational Access Center participated in the **Workforce Recruitment Program** to recruit junior and senior students with disabilities for federal summer internships or employment upon graduation.

UPDATE ON "GAME CHANGER STRATEGIES"

Complete College America Game Changer: "Think 30"

Students too often take fewer credits per semester or year than they could successfully complete, thereby prolonging their time in college and decreasing their likelihood of finishing. Boise State has implemented tactics to increase the number of credits taken per year and decrease the time to completion. At the same time, we recognize and respect that some students with full-time jobs and families may be unable to attend school full-time. For these students, "Think 30" may not be appropriate.

Ongoing activities and current status

- Since 2019, we have **discounted undergraduate per-credit cost of attending Summer school** by at least 20% compared with Fall and Spring semesters. We have engaged in a robust marketing campaign using a "Think 30: On-time, On-track" message to motivate students to take Summer courses as a way of reaching 30 credits for the full year. As a result of the discount and associated marketing campaign, the number of undergraduate discounted credit hours taken in Summer sessions increased from 26,932 in 2018 to 30,668 in 2023. This is an increase of 3,736 credit hours or 14%.
- **Extending Think 30** - This year we have elected to suspend the Finish-in-Four program that supported students to commit to a four-year graduation plan. Analysis of results suggests that it has not been well utilized by students who are most likely to need support to complete a degree. The 500 students currently enrolled will be supported until they graduate under the current terms of the program. In its place, we are planning to incorporate the idea of "on-time" rather than "full-time" and expand on the Think 30 messaging that has been used to promote summer registration. The goal of the new efforts is to create messaging and use advising checks and other interventions to help a broader set of students stay on track toward their graduation goals.
- We have observed a sizable **increase in students completing 30 credits per year,** increasing from 23.9% of students in 2016-17 to 29.6% of students in 2022-23, surpassing the previous peak of 28.7% achieved in the 2019-20 academic year.
- In 2022-23, we launched the **"Student Success Hub"** platform of Salesforce to facilitate student connections with advising and make it easier for academic advisors to provide timely support and track students needing support. The first stage of advisor adoption will be complete in Winter 2024. We have utilized Salesforce Marketing Cloud to build strategic texting campaigns to prompt students to enroll. Data shows this has been effective in helping students enroll in classes.

Future Plans

- Continue to **expand need-based scholarships.** A key reason students, especially low-income students, take fewer than 15 credits per semester is that they must work. A key component of our need-based financial aid is our **True Blue Promise Scholarship,** which has the goal of ensuring support for all qualified Idaho college students. The True Blue Promise has expanded. In 2016-17, we awarded ~$400,000. In 2022-23, Boise State **awarded over $1 million** and is projected to award over **$1.8 million** in the next few years.
- After stage 1 adoption of the Student Success Hub, additional users beyond advisors can be added to the system.

Complete College America Game Changers: Math Pathways and Co-requisite Support for Mathematics

In Fall 2023, Boise State received two prestigious national awards for our work for student success in Math. We received the **2023 NWCCU Beacon Award for Excellence in Student Achievement and Success** from the Northwest Commission on Colleges and Universities and the **2023 APLU Degree Completion Award** from the Association of Public and Land Grant Universities. Both awards are focused on the work of our Math Learning Center (MLC), one of our Game Changer initiatives.

In the mid-2000s, analysis showed that an important driver of early academic success was our early math classes. Nearly half of first-time-in-college students took one of those three classes in their first semester. And **more than half of those students did not pass.** This program dramatically increased success rates, doubling them for most groups.

As context, Boise State has five **Math Pathways,** which, taken together, recognize that the goals of the pathways differ substantially among majors and reflect the insights of CCA. To this, Boise State adds a second focus: **success in subsequent coursework.**

The Math Learning Center developed its own model of co-requisite support to enable a much greater proportion of students to quickly and successfully complete a general education mathematics course and to gain the mathematical foundation necessary to pursue their chosen major, **even if it depends heavily on mathematics (e.g., engineering, science or mathematics).**

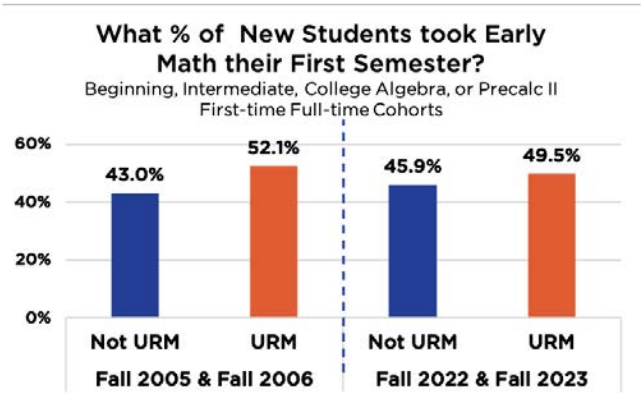
Boise State's model for **co-requisite support for mathematics** derives from the foundational goals of the MLC that represent an intertwining of student success and early math reform: (i) Increase success in early math classes while ensuring the acquisition of mathematical skills and knowledge; (ii) Contribute to the overall academic success of students who are enrolled in MLC courses; (iii) Ensure that students move through their math courses at an individually appropriate pace; (iv) Provide the support necessary so that any student, regardless of initial placement level in math, can pursue a major that depends heavily on mathematics.

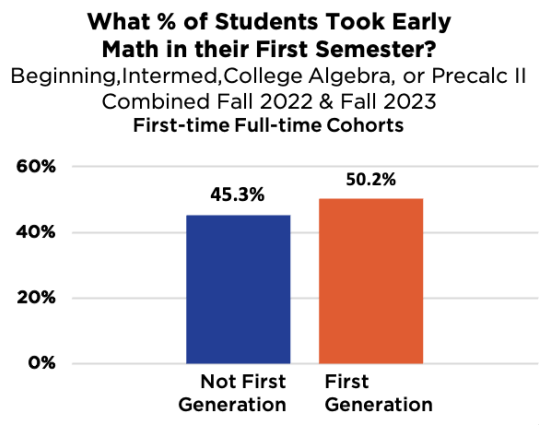
Seven innovations support the MLC's work.

1. Self-efficacy:
   Success in math classes requires not only successful math content delivery; it also requires self-efficacy. **Students must believe they can be successful in mathematics.** This is a focus of our efforts.
2. Adaptive Placement:
   We utilize the ability of ALEKS software to enable students to proceed at a customized, individually appropriate pace, so students who are ready to move quickly can, and those who need more assistance can get that help. Students who make rapid progress are allowed to jump to the next highest course at **no additional cost.** The flexibility also enables the MLC to make use of what can be termed **"accelerated placement"** with a **"zero-credit, zero-added cost corequisite"** to ensure academic success.
3. Student Success Advisor:
   The MLC has its **own student success advisor.** That advisor identifies (via ALEKS) students who are struggling, then alerts instructors to encourage students to get back on track and reaches out to those who continue to struggle to develop a plan for success.
4. Focus on Overall Academic Success:
   The MLC helps instill in students the academic skills that will aid in the successful transition from a high school mentality to a **college mentality**, where self motivation, time management and individual accountability are necessary.
5. Relevance and Problem Solving:
   Students solve real problems, guided by the instructor and working with their peers. The program even develops new courses that, for example, focus on topics relevant to business students.
6. New Courses:
   (i) MATH 103 Mathematical Transition for Success was created as a replacement for MATH 025 to target students in Level 1. It is especially appropriate for **returning students** and recognizes that there are students who will not be successful if pushed through a general education math class in a single semester.
   (ii) MATH 133 Elementary Models with Functions was created to replace MATH 108 and serve as both a stepping stone course in the algebra sequence and a general education math class.
7. New Math Placement Tool:
   The Right Math Class© uses an algorithm based on self-evaluation of academic skills and confidence in math ability as well as on high school math courses and grades, high school GPA, and SAT/ACT scores if available. Success of students can be improved if students are placed correctly.

The Department of Mathematics, which oversees math classes not under the MLC, has also made a number of improvements, including: (i) reforming Calculus I and II with the focus of relevance and problem solving; (ii) creating a new entry level statistics class as the foundation for a statistics math pathway and revising the second-level statistics class to have a focus on team-based learning and (iii) creating corequisite sections for the entry level statistics class and the math for liberal arts class.

More than half of recent graduates from first-time-in-college cohorts have taken one or more of the MLC's courses. About a third of recent Engineering and Computer Science baccalaureate graduates have taken one or more of the MLC's courses, demonstrating that **significant numbers of Engineering/Computer Science students were able to graduate from our ABET-accredited programs even though they were not "calculus-ready" when they arrived at Boise State.**





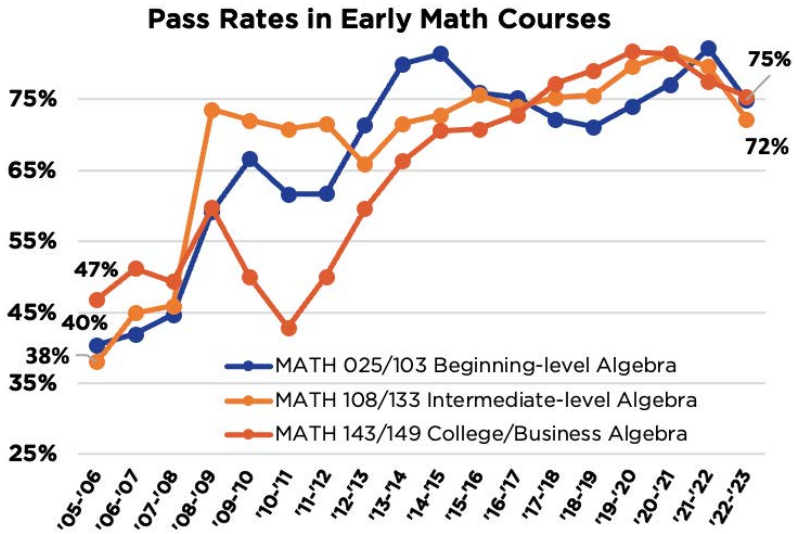
The next step for the MLC is to become part of a synergistic organizational structure that brings together the MLC with other first-year classes (e.g., writing and oral communication) into a coordinated First-Year Experience structure. Doing so would more easily ensure that all first year courses are focused on student success as well as on their content areas.

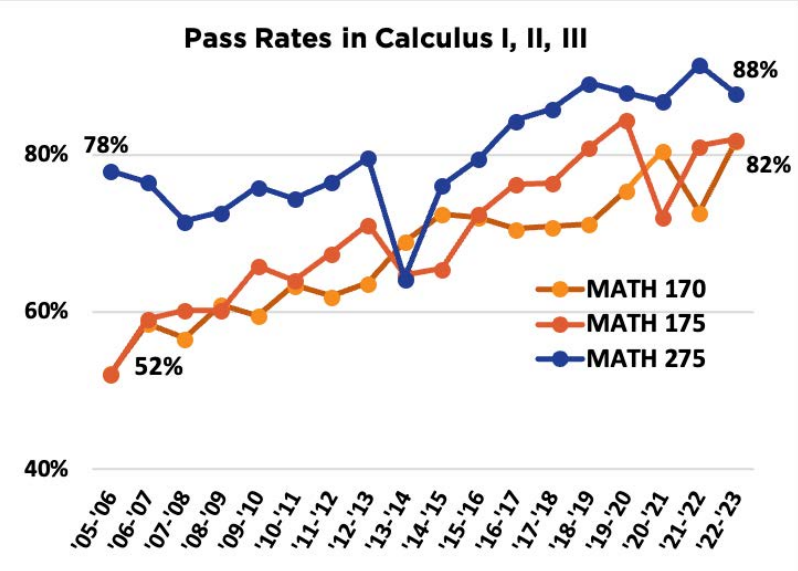
The following graphs further demonstrate the success of Boise State's strategy for early math classes:

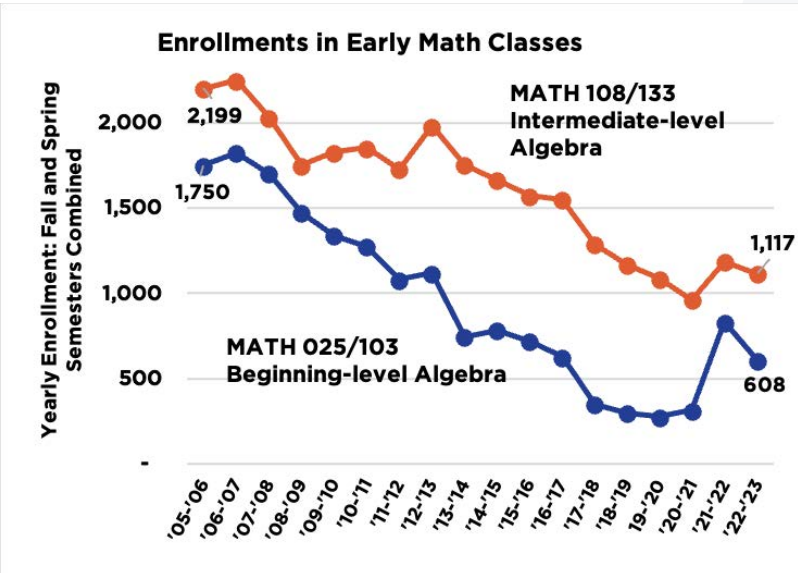
1. Pass rates in beginning, intermediate and college algebra have nearly doubled since the MLC began its work.

2. There is a potential danger in over-reliance on pass rates given the possibility of grade inflation. Therefore, it is important to pay attention to the success of students in subsequent courses that rely on early math classes. As can be seen, courses that rely on the foundation provided by early algebra classes (i.e., College Algebra and Calculus I, II, III) have seen substantial increases in success, indicating that the increased pass rates in early algebra classes have not led to an erosion of success in subsequent courses.

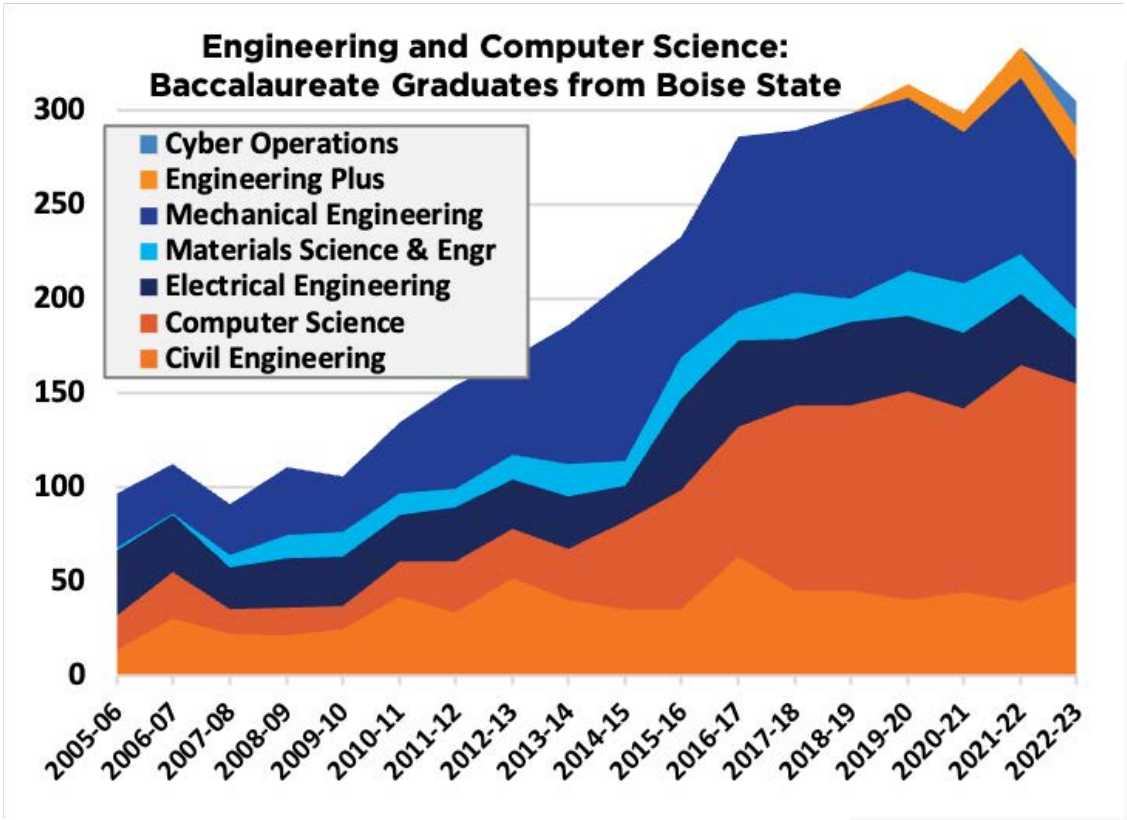
3. Enrollments in MATH 025/103 beginning-level Algebra and MATH 108/133 have dropped substantially as a result of fewer repeats **because of higher success** and placement into higher courses through the use of adaptive placement and accelerated placement. Students have benefited with more rapid progress through their math classes and less cost because fewer enrollments in math classes were needed.







4. The success of Boise State's math initiatives has **increased** the number of students who have the math skills and the confidence in math ability necessary to **pursue a major that is math-dependent**, even those students who enter college at the beginning algebra level.

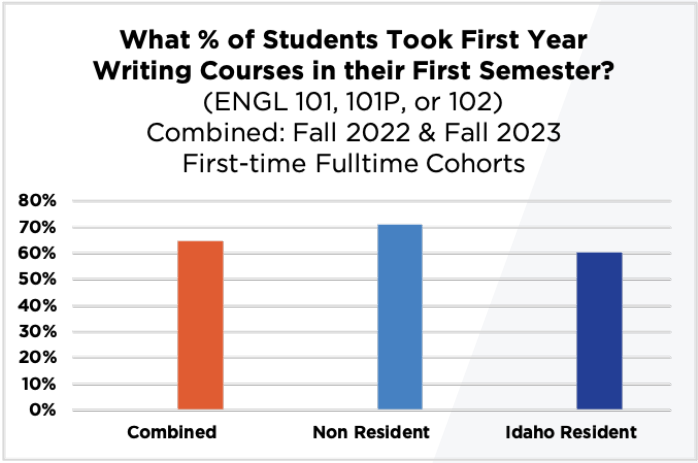


Complete College America Game Changer: Co-requisite Support for English

This game changer strategy replaces remedial English courses with gateway courses that provide supplemental support in the form of a P ("Plus") co-requisite studio for students who need it. It helps hasten completion of general education English courses to reduce student attrition and time to degree while also building student self-efficacy in writing.

Ongoing activities and current status

- The **First-Year Writing Program** designed a web-based writing placement tool for students called The Write Class that has been adopted by colleges and universities around the country.
- Boise State **eliminated English 90, a zero-credit remedial course**, in 2012 and implemented a pure co-requisite model in English 101-P. "P" stands for plus, a one-credit, one-hour per week writing studio where students get hands-on extended support from their 101 instructors. Success rates for 101-P are virtually identical to those for the traditional 101 class, and success rates in the follow-on class (English 102) are also virtually identical for both populations.
- The impact of the work of the **First-Year Writing Program** on the Boise State student body is substantial. As shown in the graph, 65% of new students take a first-year writing class in their first semester. Significantly, it appears that a higher proportion of non-residents than residents benefit from being exposed to Boise State's first-year classes.
- The combined success of English 101-P and The Write Class has meant that the Boise State First-Year Writing Program is seen as a **model** of curricular revisions that **positively affect student success rates**. These results have been shared at a number of state-level Complete College America events as well as in several peer-reviewed publications and an edited special issue of Composition Studies on equity and access in co-requisite writing courses.



Complete College America Game Changer: Momentum Year

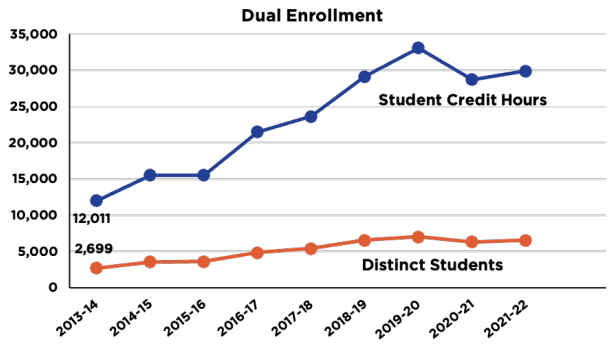
This game changer proposes that clarity of career path helps students settle on a major earlier in their academic careers, thereby reducing the impact of switching majors. Additionally, it promotes early academic success. Higher pass rates in early coursework, including, but not limited to math and English, are an important driver of retention and graduation.

The Momentum Year also increases the ability of students to understand and articulate the value of their degrees and of co-curricular experiences, enabling students to better wield skills and knowledge gained during their college career. Ultimately, the goal is to help students understand the value of becoming a college graduate earlier in their academic career. In this way, they are better prepared to pursue their aspirations, as well as to recognize the competencies they have acquired and how they offer a variety of career pathways.

Ongoing activities and current status

- Boise State developed **six meta-majors/areas of interest** that largely correspond to current colleges or math pathways. They include Business, STEM, Education, Arts and Humanities, Social Sciences and Health. Meta-majors primarily are used as "undeclared pathways," which have been implemented in advising of new, incoming undeclared students at the point of orientation and registration.
- To give students a better understanding of careers, Boise State is increasing information flow to students about majors and encouraging students to actively contemplate their futures. In addition, Boise State facilitates reflection about how coursework and co-curricular experiences will affect what the student knows, can do and will become.
    - A new university-wide strategy was tested with students to understand what resonates with them in all University Foundation courses. **Beyond Boise State**, a strategy designed to bolster a student's knowledge, skills and understanding of life far beyond graduation. This means they encounter very intentional, embedded future and career focused messaging in courses during freshman, sophomore and senior years.
    - University Foundations staff and faculty on the General Education Committee have also begun focusing on **durable skills**, as part of an effort to support student readiness for work beyond their degree programs.
    - The university completed a redesign project for **Major Finder**, a web application that helps prospective students and current undergraduates gain information about the range of degree programs that Boise State offers. It includes information about the careers that a graduate can pursue.
    - The **Career Pathways** dashboard enables exploration of majors to careers based on degree level, major field of study and career outcomes. One can also select a career outcome and see the fields of study that individuals came from.
- The **Learning Assistants program** continues to increase early academic success by providing support in high fail-rate courses with embedded peer-to-peer support. The program has made asking for help a normalized activity, rather than a rarefied trip to a tutoring center. We have also implemented a pilot **Peer Instructional Assistant program**, which uses peer instructors in the classroom to support relationship-rich learning environments.

- **Dual Enrollment** programs are one way to gain early momentum toward a degree. The participation in concurrent enrollment opportunities through Boise State has increased substantially. Over the last 10 years, the number of participating students and the number of dual credit hours generated have increased by about two and a half times.



- Every student at Boise State takes a **Finishing Foundations** course in their senior year, which requires that they engage in a culminating reflection assignment. Before students graduate, they articulate their vision for the future, look back at the skills and experiences they gained at Boise State, plan a career and name specific next steps for reaching their goals.
- **Integrating career education into the curriculum** represents a campus-wide effort aimed at advancing student success and further demonstrating the value of a degree. Currently, a career reflection activity is being implemented in a 200- or 300-level course in every major, providing students the opportunity to pause midway through their academic journey to reflect on their **future plans, past experiences and necessary next steps.** To date, 53% of academic departments have an integrated midpoint career reflection and 33% of departments are currently in the process of developing one.

Complete College America Game Changer: Academic Maps and Proactive Advising

The focus is on offering full-program academic maps to provide a clear and relevant path to graduation — including a default sequence for courses, identification of milestone courses, alignment to math pathways and career interests — and providing proactive advising to help students remain on track with their academic maps. As a result, there should be an increased rate of degree progression, fewer wasted credits and lower attrition.

Activities and status

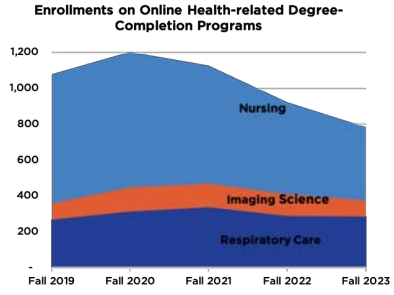
- **Academic maps have been developed for all majors** which list courses critical to each program's curriculum. Virtually all of these plans feature required English, math and university foundations courses to be taken in the first year. These plans are reviewed and updated annually.
- Degree plans are available to students and their advisor in the software package **Degree Tracker.** This software is regularly updated, and all colleges are now utilizing Degree Tracker. We will continue with efforts to expand its use.
- **Proactive Advising**
  - All new students must, during their first year, receive advisor approval for their course schedules.
  - In the College of Business and Economics, students must receive approval to register throughout their college careers to help ensure timely graduation.
  - Changing to high-intervention majors requires consultation with an advisor.

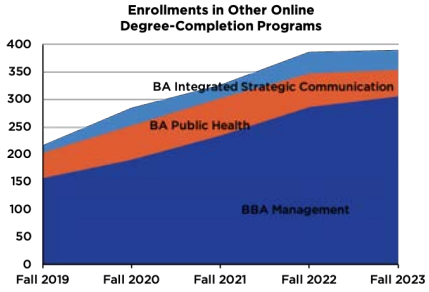
Complete College America Game Changer: A Better Deal for Returning Adults

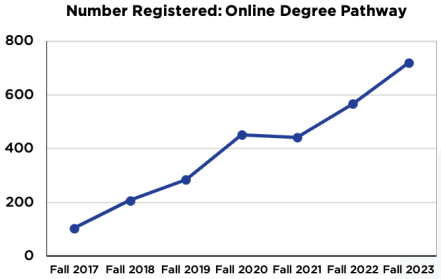
This goal focuses on facilitating college attendance and completion for adult learners by offering options that accommodate life responsibilities, such as awarding more credit for prior learning and marketing to those with some college but no degree. Expected outcome is more adult completers at reduced financial and opportunity costs.

Ongoing activities and current status

- For several years Boise State has offered two degree-completion programs in both face-to-face and online formats that are specifically designed for the needs of returning adult learners: Bachelor of Applied Sciences (BAS) and Bachelor of Arts in Interdisciplinary Professional Studies (IPS). **Both BAS and IPS are highly flexible and customizable to meet the specific needs of individual students.** Combined enrollment of the two programs increased from 317 in Fall 2013 to 418 in Fall 2023, a 32% increase.
- Boise State has developed several additional online degree-completion programs to meet the needs of adult learners in **high-demand fields.** One set of programs targets health care professionals who possess an associate's degree:
  - BS in Advanced Medical Imaging
  - BS in Nursing
  - BS in Respiratory Care
  - BBA (Bachelor of Business Administration) in Management
  - BA in Integrated Strategic Communication
  - BA in Public Health







- Boise State's **Online Degree Pathway** enables adult degree-completion students to finish general education and prerequisite coursework before entering one of the online degree-completion programs. As illustrated, the number of students registered has sharply increased between 2017 and 2023.
- Boise State is an active partner with the **Air Force General Education Mobile (GEM) initiative.** This program facilitates acceptance of military experience and technical credits into the BAS program.
- Boise State is an active member of the **Air University, Associate to Baccalaureate Cooperative (AU-ABC).** This program facilitates direct transfer to Boise State from the Community College of the Air Force (for select, fully online programs), and opens access to Air Force members worldwide. Currently Boise State has seven active programs in this partnership.

- The **Military Tuition Assistance Promise** program closes the gap between traditional online tuition/ fees and standard Federally Approved Tuition Assistance. This "gap coverage" allows active duty, guard and reserve members to maximize their tuition benefit without additional out-of-pocket expenses. In fiscal year 2023, 411 active duty, guard and reserve students enrolled in Boise State programs and earned **over 2,700 credit hours at no cost** to the students.
- **BroncoReconnect** is an ongoing effort to re-engage and re-enroll students who have stopped out of Boise State. The program provides these students with a guided pathway back into the institution using the same high-touch concierge-level support provided in the Interdisciplinary Professional Studies and Bachelor of Applied Sciences programs.
- Boise State hired a full-time **Clinical Experiential Learning** faculty member in Fall 2019 who teaches the one-credit Prior Learning Assessment (PLA) preparation course and facilitates other PLA support for students in all majors. A total of 200 students enrolled in this one-credit PLA preparation course, many earning PLA credits. Since the addition of the clinical line, we have issued 771 student credit hours and **saved students $269,850** (771 credits at $350 per SCH). The program continues to grow, and a recent assessment of program impact shows that **nearly 100%** of participating students have either graduated or have been retained and continue to pursue their degree.

Future plans

- Experiential Learning Framework has been integrated into the Bachelor of Science in **Cyber Operation and Resilience** program (CORe). Over **350 students** are currently enrolled in CORe-related programming.
- Boise State continues to monitor existing programs and develop additional ways to **support returning adults.**

Goal #2: Innovation for Institutional Impact.

Expand and implement leading-edge innovations to provide access to integrated high-quality teaching, service, research and creative activities.

We call it Blue Turf Thinking, and we've been nationally recognized for it. Boise State has been nationally recognized as a top university for innovation. We are building on a campus-wide culture of innovation — developing research that positively impacts lives, structures that transcend disciplines so researchers and students can collaborate on complex problems, and spaces and programs specifically devoted to innovation. This strategic goal recognizes our focus on innovation and seeks to expand and grow it in every aspect of what we do.

NEW ACADEMIC PROGRAMS

Boise State continues to expand its curricular offerings in targeted areas driven by an **analysis of student, industry and community demand**, as well as by our research about where we can create innovations that will enhance student learning and research and will positively impact our state and nation.

Our diverse offering of new programs are designed to meet the **labor force demands** within Idaho and on a national level. The programs fill shortages in healthcare, respond to needs expressed by community leaders, and upskill Idaho's workforce, which allows the Idaho economy and its communities to thrive.

NEW DEGREE-LEVEL PROGRAMS

Bachelor in Project Management (BPM) - Fall 2023
Bachelor of Science in Environmental Science - Fall 2023
Master of Environmental Management (MEM) - Fall 2023
Ph.D. in Public and Population Health Leadership - Fall 2023

NEW GRADUATE CERTIFICATES

Cybersecurity Management - Fall 2023

NEW UNDERGRADUATE CERTIFICATES

Launched 14 new undergraduate certificates in Fall 2023 in various disciplines.

NEW CENTERS AND SCHOOLS

Institute for Microelectronics Education and Research (MER) - Spring 2023

ORGANIZATIONAL CHANGES OF THE ACADEMIC PROGRAMS

The **Human-Environment Systems (HES)** graduate certificate program moved from the College of Innovation and Design to the College of Arts and Sciences and the School of the Environment in Fall 2023. Human-Environment Systems graduate students work to solve complex environmental problems. The program strives to build capacity through research, education and engagement to resolve the human-environment system challenges of our time.

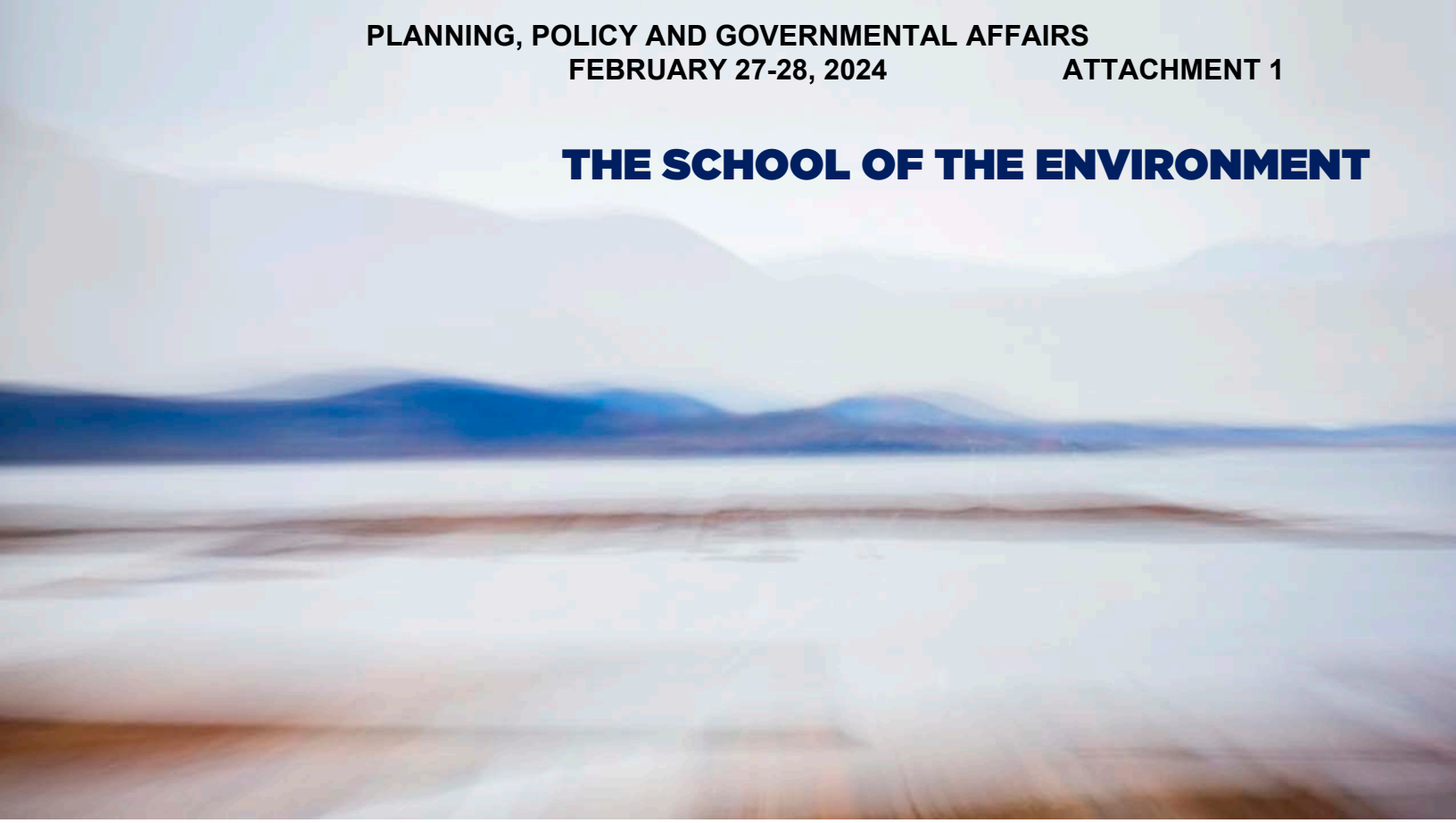
The **Games, Interactive Media, Mobile (GIMM)** Bachelor of Science program moved from the College of Innovation and Design to the College of Arts and Sciences in Fall 2023. The program is for students who seek to specialize in interface design and client-side application development. Students will be exposed to a variety of cutting-edge industry tools and practices targeted at helping them become proficient in visual design, object-oriented programming, 2 and 3D animation, game, and mobile development.

INSTITUTE FOR MICROELECTRONICS EDUCATION AND RESEARCH (MER)

MER was established in Spring 2023. The institute is university wide and multidisciplinary. It connects **government and industry partners** with Boise State colleges and departments. It is a nexus of the microelectronics efforts at Boise State and develops opportunities for educational initiatives, workforce development and avenues of research. It collaborates across campus and forges partnerships with government agencies, private industry and other universities in Idaho, the northwest and beyond.

With the federal investment in microelectronics through the CHIPS and Science Act of 2022 and the subsequent plans by Micron of a $15 billion dollar semiconductor fabrication facility, expectations are strong for a substantial increase in the need for undergraduate and graduate students across multiple disciplines over the next decade.

THE SCHOOL OF THE ENVIRONMENT



The interdisciplinary **School of the Environment,** co-led by the College of Arts and Sciences and the School of Public Service and established in 2022, envisions cultivating collaborative solutions to contemporary environmental challenges in ways that only an innovative public research university can.

The School of the Environment benefits students by improving coordination across existing degree programs and new opportunities for experiential education. Notably, Boise State now offers a portfolio of relevant and collaborative programs all housed in the School of the Environment, including a BS in Environmental Sciences, a BA in Environmental Studies and an MA in Environmental Management.

Idaho's environment is central to both its economy and identity. In addition to our strong academic programs, it is one of the primary factors attracting students to Boise State. Environmental challenges – including more intense wildfires, water scarcity and declining wildlife and fish populations – adversely impact communities in Idaho and beyond. Preparing innovative and capable problem-solvers in Idaho will greatly benefit our economic and environmental future. The ultimate legacy of the School of the Environment will be realized through generations of graduates who gain marketable technical, critical and interpersonal skills through close collaboration with students, faculty, staff and community stakeholders to solve environmental problems during their time at Boise State.

The **Cyber Operations and Resilience degrees (CORe)** were approved at the Master of Science and Bachelor of Science levels in 2021, and BAS level in January 2022, enabling students from rural Idaho and AA/AAS students to transfer into a four-year degree program. These programs are a part of the statewide cybersecurity initiatives and the collaboration between Idaho's higher education institutions to meet the growing workforce demand for cyber-related education. In November 2023, Forbes selected CORe as one of the seven best online Cybersecurity programs in the nation.

In Fall 2021, the program's first year, CORe had 78 students with 46 undergraduate and 32 graduate students. For the Fall 2023 semester, the CORe programs had 338 total students (74 graduate students and 264 undergraduate students), a **51% increase from Fall 2022 and four and a half times the enrollment from when the program launched.** Within the undergraduate CORe program is the Cyber Operations and Cyber for All certificates. Cyber Operations and Cyber for All are 12-credit hour certificates that can be enrolled in by any Boise State student.

All CORe programs at Boise State are designed around the realities of today's cyber and physical landscape, and they prepare students to anticipate, detect, mitigate and manage cyber, physical and interdependency infrastructure threats. In addition, the unique scaffolding of these programs, **designed as a stackable degree program,** along with the emerging importance of cyber and physical resilience prepare students with the knowledge, skills and expertise needed for maintaining the operational effectiveness of complex business, academic, and government information and physical systems.

Because they are entirely online, these programs enable Boise State to reach potential students who need flexibility in their education due to professional and personal responsibilities. These students may also live in a rural area of Idaho that does not have face-to-face educational opportunities. The CORe program utilizes capstone projects to assist rural cities, counties and school districts in enhancing their cybersecurity maturity by offering a no-cost cybersecurity risk assessment. This also provides valuable experiential learning opportunities for students in a real-world environment.

In November 2023, Forbes selected CORe as one of the seven best online Cybersecurity programs in the nation.

CYBER OPERATIONS AND RESILIENCE DEGREES (CORE)

NUCLEAR SAFEGUARDS AND SECURITY GRADUATE CERTIFICATE

Boise State University, Idaho State University, and the University of Idaho created **a joint Graduate Certificate in Nuclear Safeguards and Security.** The 12-credit certificate, which became effective Fall 2023, offers students the opportunity to expand their education in a field with growing workforce needs within Idaho and the United States. The cross-institutional certificate is tied to the Nuclear Engineering Department at Idaho State University, the Nuclear Engineering Department at Idaho State University and the School of Public Service at Boise State University. The certificate is like no other at any Idaho institution of higher education, leveraging the talent and strength of **three public universities in Idaho.**

PhD IN PUBLIC AND POPULATION HEALTH LEADERSHIP

Housed in the College of Health Sciences and the School of Public and Population Health, this doctoral program builds on the success of our existing undergraduate public health degrees and our Master of Public Health (MPH) program. Graduates will be equipped to lead efforts tailored to improve the health and well-being of citizens within the context of each community's core values and priorities.

INNOVATIVE INITIATIVES AND STUDENT/COMMUNITY FOCUSED PROGRAMS

REP4 Alliance

Boise State is proud to be one of six institutions to form REP4, **a national alliance to change the future of education,** with learners taking the lead in how the new system should work. REP4 stands for "Rapid Education Prototyping" "4" change, learners, community and equity. Learners will be co-designers of education prototypes, and the best ideas will be scaled nationwide through the alliance.

This alliance is supported by Microsoft, a technology partner that recognizes the need for rapid change.

REP4 Related Funding Received and Current Initiatives

Peer Mentoring Pilot, Nampa High School (2022-Current) – $42,000: Funded by the Steelcase Foundation, this program establishes a student-driven Peer Mentoring Program available to all entering TRIO UpwardBound Freshmen at Nampa High School. The purpose of the program is to establish mentoring relationships with upper classmen to support new students in pursuit of educational goals and setting up a social network in their new school. To date, 13 mentors have been trained and 26 mentees have participated.

REP4 2023 Support (2023) – $42,000: Provides support for the 2023 REP4 Summer Summit including student stipends, staff salary, and event planning and support.

Great Admission Redesign Initiative (2023) – $750,000 (split among three schools): Funded by the Lumina Foundation, this initiative is focused on updating and improving the admissions process. This is an essential part of implementation for the Boise State Strategic Enrollment and Retention Plan.

The Summer 2023 REP4 cohort provided direct planning and design input into the **Semiconductor for All initiative.** They represent the first wave of students engaged in the overall effort to increase participation in STEM-related education to build the workforce pipeline needed to support the tech industry in Idaho.

For information on the Community Impact Programs (CIP) for rural students, see page 15.

Idaho Workforce Development Council (WDC) grants (current and new)

- **Cyber-Physical Systems Security Workforce Capacity Building** (2020) – $833,958: To grow the cyber workforce through online cybersecurity degree pathways. It has been designed to be accessible to anyone interested in earning the credential. The resulting program leverages emerging cyber-security programs at all Idahoan community colleges and Career and Technical Education programs throughout the State of Idaho.
- **Semiconductor for All** (2023) – $4,996,260: To grow an enduring semiconductor workforce in Idaho and the region by inviting and retaining a broad student pool, with pathways from junior high through high school, to a bachelor's degree and doctoral degree.
- **Military and Veteran Outreach and Education** (2024) – $600,000: To recruit existing military and veterans into semiconductor and advanced manufacturing-related programs. The purpose of this project is to ensure military service members and veterans are aware of Idaho workforce opportunities, prepared for Idaho workforce opportunities and connected to those opportunities.

The Idaho Onramp program: The Onramp Program and our Mobile Lab provide a wide range of STEAM experiences for learners of all ages across Idaho schools, libraries and community organizations. Onramp provides access to equipment and high-quality instruction using Apple's Everyone Can Code and Everyone Can Create curriculum. In the 2022-23 academic year, we reached more than 2,000 learners and will more than double that in our current year.

Bronco Gap Year Program: Boise State developed the "Bronco Gap Year" program in Fall 2020 to give students a low-cost opportunity to make academic progress and benefit from the guidance of a faculty mentor. Of the first cohort of 35 Bronco Gap Year students, 60% enrolled at Boise State upon completing the program. The remaining students either enrolled at College of Western Idaho with plans to transfer to Boise State, enrolled at another university or selected a professional path (e.g., attaining a real estate license). This program serves both students who have come from high school and students who have stopped out.

In the College of Arts of Sciences, nearly 70% of the students who stop-out are in good academic standing. These students have invested time and money, but they are experiencing obstacles not related to their academic success. The Bronco Gap Year program focuses on supporting these students. We moved the program into the College of Arts and Sciences advising office and hired a permanent program director. Now, students who are on the brink of stopping out receive a warm hand-off (from an advisor or faculty mentor) to our Gap Year program director.

First-Year Experience: College of Arts and Sciences working with the Vice Provost for Undergraduate Education initiated the first-year experience program as a foundation for all students' success in college and the University, providing a purpose driven first year experience within and beyond the classroom and delivering a rich constellation of general education courses that are meaningfully integrated. The College of Arts and Sciences hired an inaugural Director of First Year Experiences at Boise State that started in Fall 2023.

The main goals of First-Year Experience are twofold: building a network of first-year support programs and anchoring the network in the goal of building student self-efficacy. Key first-year programs such as University Foundations, Math Learning Center, New Student Programs and First-Year Writing all contribute to student self-efficacy in distinct ways. Through First-Year Experience, that work will be better coordinated and more visible to our students. To track our success, we are setting retention and satisfaction goals (through the First-Year Data Team), with a specific focus on the Boise State SERP equity groups and goals.

University Foundations: Boise State's University Foundations program is designed to provide a scaffolded framework for learning from freshman year through senior year focused on durable skills and university learning outcomes valuable for every student, regardless of major.

Boise State has consistently innovated in University Foundations courses. In Spring 2022, the Faculty Senate General Education Committee identified a signature focus of helping students understand the role of general education in their educational experience. In alignment with work being done by the General Education and Matriculation Committee at the state level, we highlight the purpose of general education and promote the development of durable skills.

Goal #3: Advance Research and Creative Activity.

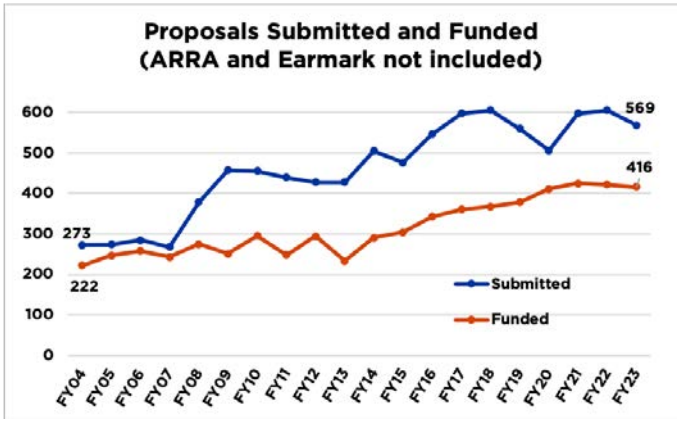
Advance the research and creative mission of the university community by fostering transformational practices, and supporting faculty, staff and student excellence in these pursuits.

Boise State is **committed to fostering an environment where research and creative activity thrive.** Focus and attention includes providing comprehensive support for faculty during all phases of the research endeavor; facilitating relationships with industry for research and commercialization collaboration; and leading outreach aimed at fostering economic development in Boise and the region.

RESEARCH AWARDS

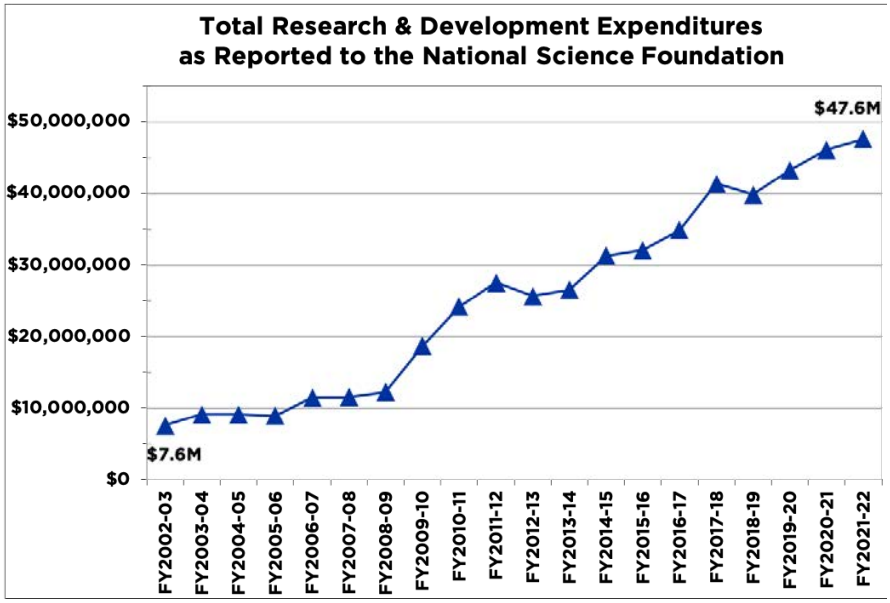
Boise State was awarded $91 million in research awards this past year, a 70% increase over the last five years.

Boise State has fostered a steady increase in research proposal submissions and in the number of globally competitive research awards. The total of proposal submissions has more than doubled over the last 20 years.



Even more remarkable is the dramatic increase in research funding dollars awarded to the university. Over the last 20 years, total research and development expenditures have increased by more than six times, from $7.6 million to $47.6 million. And despite the challenges presented by COVID-19 to the campus research community in the recent past, total research and development expenditures continued to grow and increased by 10%, or $4.3 million, between FY20 and FY22.

Currently funded work ranges from researching election cybersecurity, to evaluating farmland conversion impacts in the Treasure Valley, to better understanding the earthquake that shook the region in March 2020, to revolutionizing aerospace manufacturing.



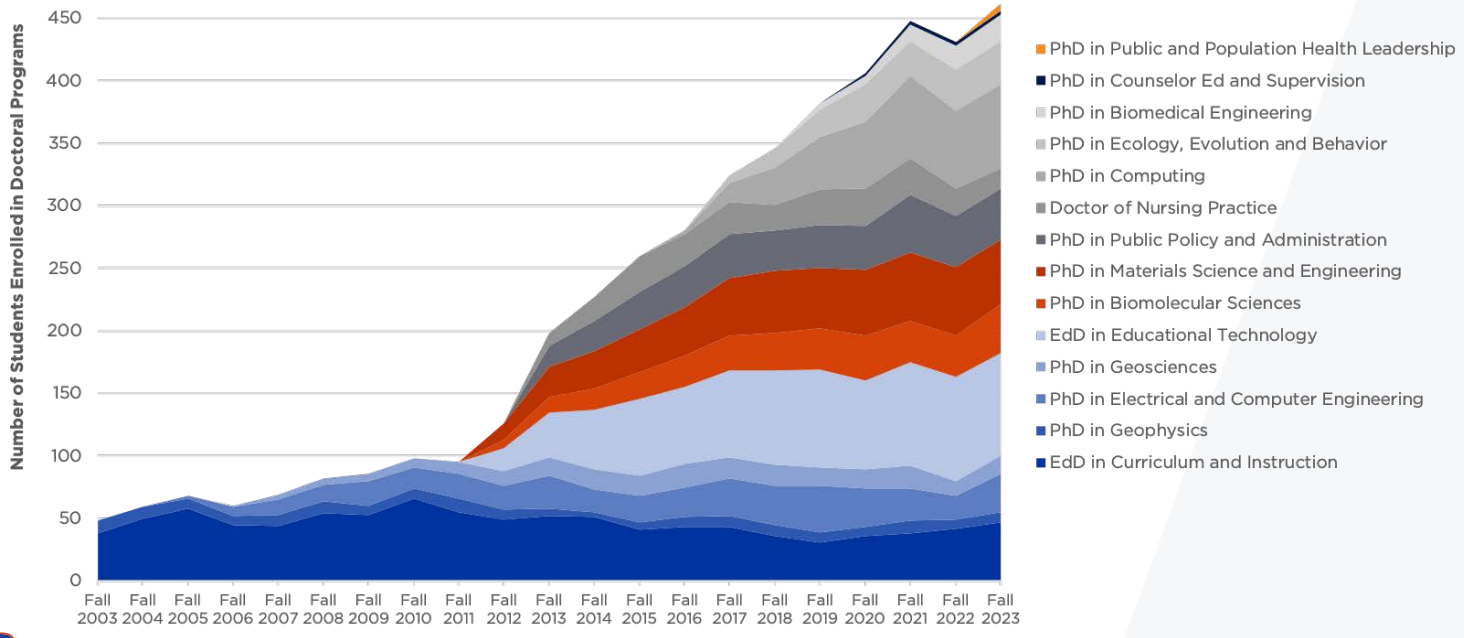
Creating research intensive graduate programs, especially doctoral programs, and recruiting active research faculty to the university have helped advance not only our students, but Boise, the state of Idaho, and, more broadly, the world by fostering discovery and innovation.

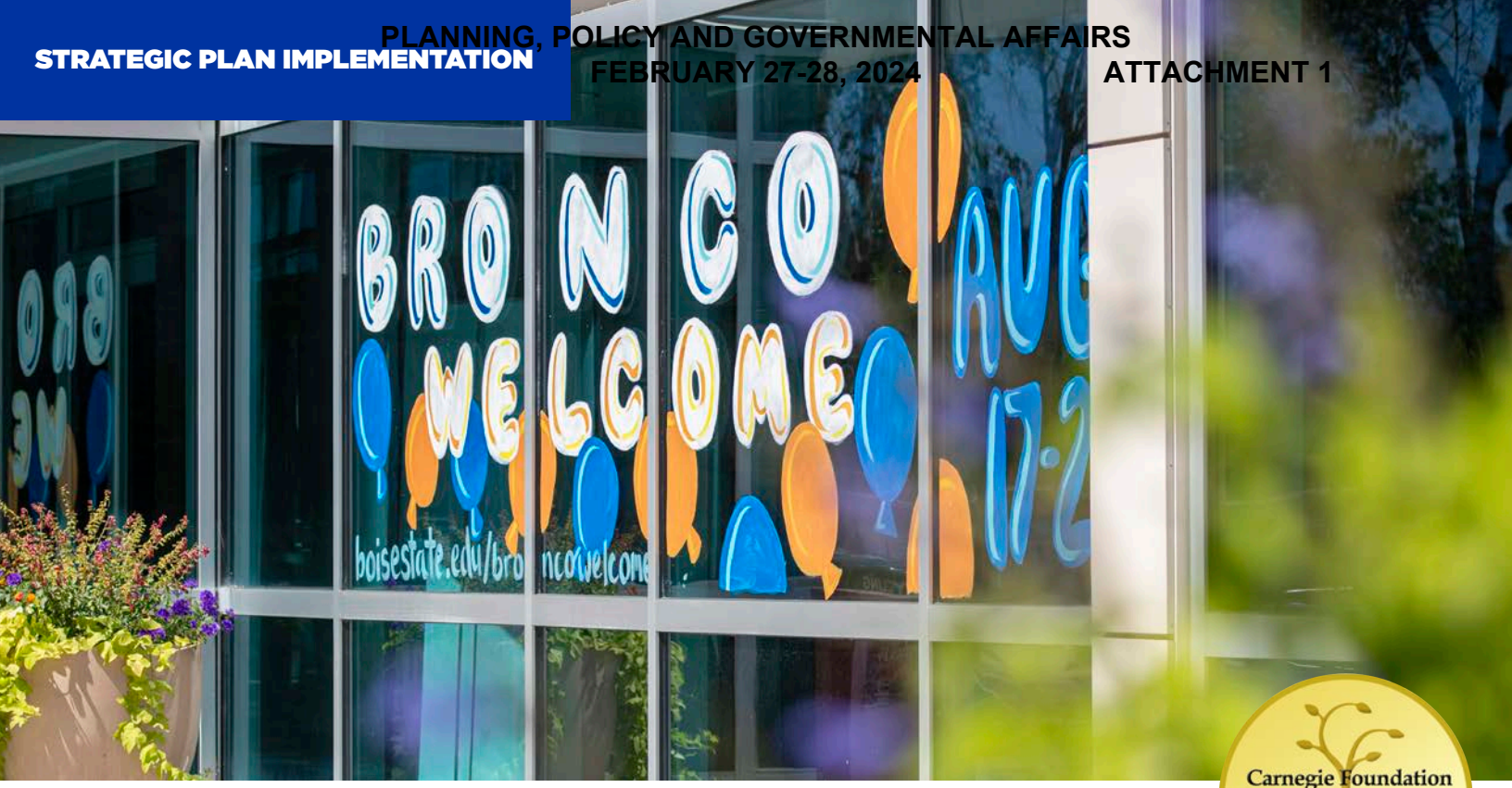
DOCTORAL PROGRAMS

At the core of Boise State's critical service to the community, state and region has been the creation of successful and impactful doctoral programs.

Over the past decade, Boise State has created 10 new doctoral programs: Ph.D.s in materials science and engineering; biomolecular sciences; public policy and administration; ecology, evolution and behavior; computing; and biomedical engineering; counselor education and supervision; public and population health leadership; an Ed.D. in educational technology; and a Doctor of Nursing Practice. In Spring 2024, the State Board of Education will review Boise State's new proposal for an interdisciplinary Ph.D. in Engineering. This program had a very successful external review in Summer 2023.

The following figure shows the growth in the number of doctoral programs and growth in the number of students enrolled in those programs. The number of doctoral students has doubled over the last ten years, increasing from 227 in 2014 to 462 as of Fall 2023.





Carnegie Foundation
Elective
Community Engagement
Classification

Goal #4: Foster Thriving Community.

Promote and advance a fair, equitable and accessible environment to enable all members of the campus community to make a living, make a life and make a difference.

President Tromp brought to Boise State a focus on an ethic of "caring for our community." This ethic has strong roots on campus, and we embrace the opportunity to imagine and implement new ways to better serve the various communities within our sphere of activity, including and foremost all members of the campus community.

In 2006, Boise State was one of **only 76 universities** in the nation initially selected by the **Carnegie Foundation as a Community Engaged Institution.** That classification was renewed in 2015 in recognition of the myriad ways that Boise State actively works to align with the cares, interests and activities of our local and state community. This commitment to service has been, and continues to be, a defining feature of the university.

Boise State successfully renewed its classification as a Carnegie Community Engaged Institution, covering the period from 2024 to 2032.

More than 40 staff and faculty contributed to writing the application. In the report, we highlight eight projects that involved state and faculty working with external partners across Idaho. This report laid the foundations for our recently awarded National Science Foundation project (TRANSFORM), which is geared towards supporting faculty and staff to work closely with community partners.

INSTITUTE FOR ADVANCING AMERICAN VALUES

The Institute for Advancing American Values encourages conversation between different viewpoints to spur engagement, understanding and human connection. Institute activities include public events to encourage dialogue about central issues facing Idaho and the nation, research and projects that approach complex and contested issues through the prism of American values and evidenced-based research, and educational programming that charts how the values of freedom and opportunity have shaped the triumphs and challenges of American life and history. Through these commitments, the Institute inspires us to talk and listen to each other respectfully about the issues and values that have shaped America and Americans from all walks of life.

In 2023, the Institute has:

- Sponsored Distinguished Lecture Series speakers Cornel West and Robert George (October 2023) and Arthur Brooks (March 2023).
- Presented "Idaho Listens" events in Idaho Falls and Coeur d'Alene in partnership with a donor and Idaho Public Television.
- Presented "Boise State Listens" student-focused events (February and November 2023).
- Awarded faculty research grants.
- Created a Faculty-Staff Conversation Series with five meetings during Fall 2023.
- Sponsored a Day of Dialogue in association with the Distinguished Lecture Series (October 2023).
- Created a faculty and an undergraduate fellows program.
- Partnered with an external advisory committee composed of business and community leaders.

Recognized as part of the American Council of Trustees and Alumni's Oases of Excellence network for promoting open inquiry and free expression on campuses.

ONLINE PROGRAMS

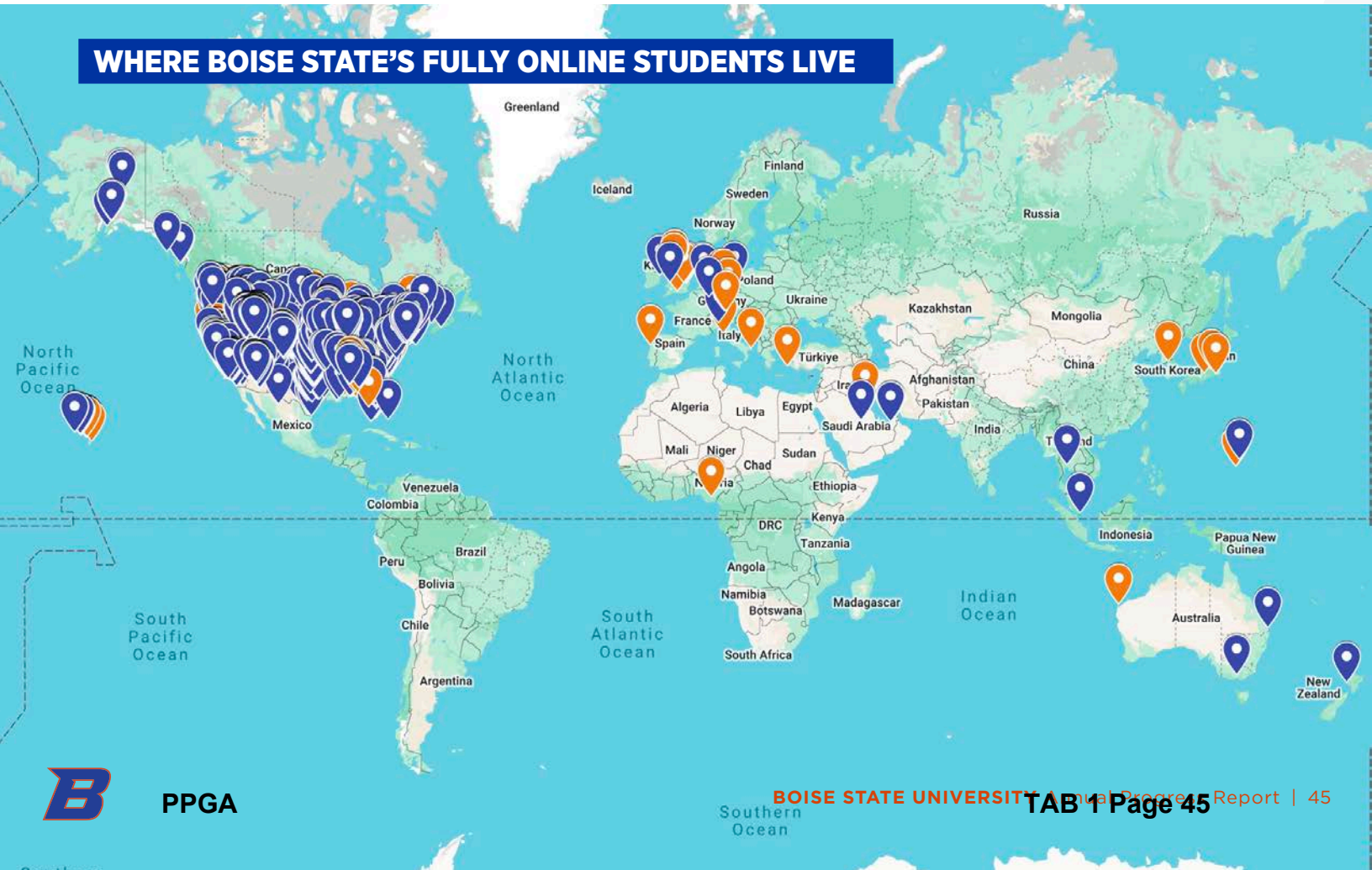
Boise State greatly expanded access across Idaho and beyond, enrolling **5,410 students in fully online** programs this past academic year. These are entire academic programs students can access anytime and anywhere, creating opportunities for busy working adults who may not otherwise have the opportunity to attend college.

Over the past decade the university has made strategic investments in the infrastructure and staffing necessary for academic departments to be able to develop fully online programs that are needed to respond to student and workforce demands. The university now has **98 degrees and certificates** that can be earned without ever coming to campus. The vast majority of these were developed with no new state funds.

Boise State online highlights:

- 2,174 of online students come from Idaho.
- 23% of the university's degrees and certificates awarded were from fully online programs during 2022-23 academic year.
- In addition to the distance students who took all their courses online, our campus-based students took a number of online courses to add flexibility to their schedules. Altogether, **20,357 students took at least one online course**, and 36% of all the university's credit hour generation was from online courses in this same time frame, academic year 2022-23.
- Online courses are taught by Boise State faculty embedded in the university's colleges and academic departments.

WHERE BOISE STATE'S FULLY ONLINE STUDENTS LIVE



Built for working adults

Boise State's online programs were created to address workforce needs and were **intentionally designed for working adults who cannot come to campus.**

Distinguishing features include: a year-round calendar featuring seven-week sessions and six entry points per year; holistic student support including intensive "high-touch" advising; and a "stackable" design that allows students to earn certificates on their way to a bachelor's degree.

Boise State online programs among the nation's best

- U.S. News & World Report

#55
Best Online Bachelor's Programs
#32 for Veterans

#24
Best Online Bachelor's Programs in Business

#58
Best Online MBA Programs
#37 for Veterans

#63
Best Online Master's Business Degree Programs
(non-MBA)(MSA)

#10
Best Online Master's in Nursing Programs

THE LANDSCAPE OF STUDENT WELLNESS AND MENTAL HEALTH

Enhanced student well-being, already a goal of the university's Blueprint for Success strategic plan, is a critical priority given the mental health of the student-aged population nationally. During the 2022-23 academic year, 81% of reports of concern submitted through the Campus Assessment Resource and Education (CARE) program at Boise State included a concern for student mental health. Our JED partnership and an increase of student services described below were designed to make an impact on this problem.

University Health Services

In July 2022 Health Services received funding from the student fee increase to **grow the clinical staff** by four full-time providers (mental health clinicians and a psychiatric nurse practitioner). To date, these positions have been filled by the counseling team, adding a psychologist, two licensed counselors and a psychiatric nurse practitioner.

Office of the Dean of Students

Over the last six years of being a recipient of **Garrett Lee Smith Suicide Prevention Grant**, the Office of the Dean of Students has evolved to serve an essential role in trailblazing student mental health support on campus. The office created a position, Assistant Dean for Outreach and Prevention, that works to fill gaps and act as a bridge between students and mental health care. The primary areas of work include prevention, direct case management and post-hospitalization student support, training for the campus community and collaborative problem-solving with stakeholders.

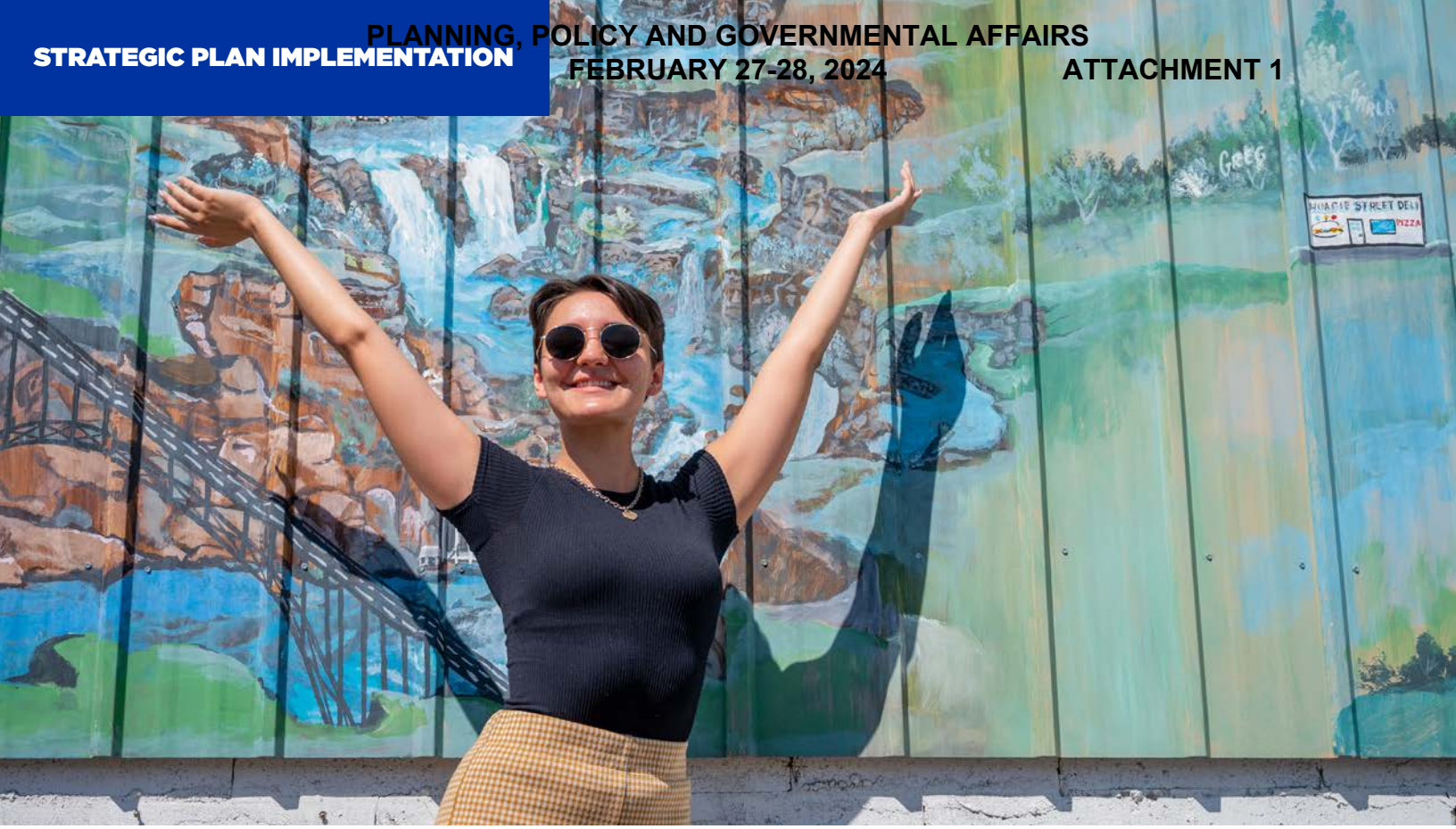
JED Campus

A portion of the $304,000 three-year Suicide Prevention grant Boise State received was allocated to the creation of a JED Campus student mental health strategic plan. This initiative is in collaboration with the JED Foundation, a national nonprofit dedicated to promoting emotional well-being and preventing youth suicide. Boise State is currently in the third year of this four-year program.

The execution of our university's student mental health strategic plan is led by the Office of the Dean of Students, University Health Services and BroncoFit. These departments are actively engaging stakeholders, rolling out various new initiatives, such as comprehensive suicide prevention training and multiple communication campaigns that center on student well-being, community engagement, and reducing the stigma associated with seeking help.

Two New Strategic Hires

The university hired a Chief Human Resources Officer and Associate Vice Provost of Community Engagement and Belonging in the last year. Both hires were designed to advance our goal of creating a Thriving Community. The first will modernize and develop our HR function at the university, so it is more service-oriented and aids units in making critical strategic decisions in alignment with the unit's and university's plan. The second will focus on the well-being and engagement of faculty, staff, and students in Academic Affairs.



Goal #5: Trailblaze Programs and Partnerships.

Boise State University participates in many collaborative programs and community partnerships in the academic, research and industry non-profit and other community realms.

COLLABORATIONS AND COMMUNITY PARTNERSHIPS

COLLABORATIONS

Reaching out to develop new community partnerships and evolve the university to better serve its students, Boise, the state and our region, is a key priority of our strategic plan. Below are just a few key efforts.

College of Innovation and Design, Division of Research and Economic Development, College of Business and Economics, College of Arts and Sciences and School of the Environment received a **$6 million National Science Foundation grant** for the **ART Transform project.** The work supported by this grant will be foundational in developing and institutionalizing a faculty reward and recognition system for community-engaged scholarship and entrepreneurial scholarship.

Boise State began its educational partnership with the **Amazon Career Choice Program** in Spring 2022. The program provides Amazon employees with new skills and tuition assistance for career success at Amazon or elsewhere. Since inception, 95 Amazon employees used over $428,000 in Amazon tuition benefits at Boise State.

The Department of Anthropology is working with colleagues at the University of Michigan and the University of Illinois to create a holistic approach to planning and implementing **weather-resilient measures for U.S. defense facilities.**

The **Food and Dairy Innovation Center** is engaged with private sector companies on external grants and sponsor-funded projects. These include Agropur, Glanbia Nutritionals, Daisy Brand, Jones & Company Flavorings, Valley Food Tec, Lactalis, High Desert Milk, Cinder Wines, Telaya Winery, Split Rail Winery, Food Physics, Anheuser Busch, Global Gardens - Jannis Inc., Clextral, SREUS, Southern Fabrication Works, Giddy Group, Dairy West and Chobani.

The **Center for School and Community Partnership received $16.1 million**, the largest single sponsored project award in university history, from the United States Department of Agriculture to help increase the amount of food that is sourced locally by school districts across the nation.

As part of the Sawtooth Livestock Herbivory and Ecosystem Evaluation Project, faculty in Human Environment Systems (HES) are collaborating with **Sawtooth National Forest** officials to improve understanding of the impacts of cheatgrass invasion on the soil seed bank and exploring sheep grazing as a tool for rangeland restoration. Faculty are also collaborating with University of California, Berkeley, Idaho Department of Health and Human Services, and Community Council of Idaho to assess farmworker well-being in Southwestern Idaho.

The **Idaho Small Business Development Center** and its APEX team (federal contracting program) are working with Micron's Small Business Liaison Office to promote subcontracting opportunities for Idaho businesses, and with the Small Business Administration, Veterans Chamber of Commerce, Commerce Department for Exporting and Importing, Idaho State University, Idaho Technology Council, Idaho National Lab and Mountain Home Air Force Base to expand small business contracting with the federal government.

The **Institute for Microelectronics Education and Research** is collaborating with Micron, Exyte, Applied Materials, Lamb and others to assess and meet the engineering and computer science workforce and research needs for the semiconductor industry. This has led to successful funding of **Semiconductor for All** coordinated course offerings with Micron and numerous conversations with other universities.

The School of Public and Population Health has formed a partnership with **St. Luke's** and the **City of Boise** titled **"Boise Youth Behavioral Health Initiative"** dedicated to improving youth behavioral health in Idaho.

The College of Health Sciences has more than **1,300 clinical affiliations in Idaho and across the U.S.** These partnerships help agencies deliver services and prepare Boise State students for licensure in their health discipline.

Radiologic Sciences is currently working on more than **100 new affiliation agreements** for the new Advanced Medical Imaging Program. The program is scaled to recruit from across the nation and is quite innovative at growing partnerships, not just in Idaho, but across the U.S.

Albertsons Library worked with **The Wassmuth Center, Friends of Minidoka, Congregation Ahaveth Beth Israel and City of Boise** to customize lectures, panels and events related to hosting of the **"Americans and the Holocaust" exhibit** at the library.

Human Environment Systems faculty are collaborating with the **American Farmland Trust** to develop a systematic approach to farmland protection planning based on ecosystem services, climate resiliency and social acceptability.

Mathematics partnered with the **Idaho Transportation Department** to offer an innovative Summer camp called STEM on the Move, which introduced middle-school students to mathematical, engineering and science aspects of transportation-related problems.

The College of Education has relationships with **almost every school district in Idaho.** A new Micron Aspiring Rural Teaching Fellowship that provides student teachers with a $5,000 stipend for their student teaching semester in exchange for a commitment to spend their first year of teaching in a rural school.

The Division of Research and Economic Development collaborated with the Idaho Department of Finance to establish a Financial Innovation Lab to set Idaho on a path of national leadership around FinTech.

In addition, Division of Research and Economic Development collaborated with the U.S. State Department, the School of Public Service, and Cyber Operations and Resilience to develop a **digital diplomacy certificate.**

The **Cyberdome** partnered with College of Eastern Idaho, Lewis Clark State College, Vallivue School District, Jefferson County, City of Sun Valley, Town of Frutiland, Kendrick School District, Whitepine School District, Cambridge School District, Midvale School District and Joint School District 171 to further opportunities and collaborations around cybersecurity for Idaho.

Admissions continued to collaborate with the Idaho Commission on Hispanic Affairs in developing and participating in four **Idaho Hispanic Youth Leadership Summit** events in the Treasure Valley and throughout Idaho. Through these events, Boise State admissions counselors interacted with more than 2,000 students to discuss admission processes and scholarship opportunities.

Extra Mile Arena created a unique and innovative partnership with Broncos of the Last Decade (BOLD) around the Outlaw Field Concert Series at the **Idaho Botanical Gardens**. The partnership brings Boise State and BOLD out into the community, providing student recruitment opportunities and includes a generous donation from CMoore Concerts to the BOLD scholarship.

Boise State's Office of Information Technology, University of Idaho, Idaho State University and the **Idaho National Laboratory** are collaborating to use the **Falcon supercomputer** – offering more than 10 times the processing power of any academic cluster in the region – as an energizing force for innovation, collaboration and education in Idaho.

PROGRAM PRIORITIZATION PROCESS

Idaho State Board of Education Policy III.F requires the university to engage in program prioritization. Between July 2020 and June 2021, under the direction and guidance of the Board Policy III.F, a total of 604 programs at the university were evaluated: 204 degree and graduate certificate programs; 236 minors, emphases and undergraduate certificates; and 164 administrative and support programs. Most importantly, we developed a process that is sustainable and integrated with our strategic plan and our strategic budgeting process, thereby creating a much more comprehensive and effective ongoing, systematic structure for measurement of institutional and unit-level effectiveness.

Integrated planning process

Our synchronized submission process allows for aligned and integrated thinking about progress being made on the strategic plan, continuous improvement action items and the funding needed to support them.

Results of the 2020-21 program prioritization pertaining to instructional programs and academic departments can be summarized as follows:

- Of the 440 evaluated instructional programs, 153 received assignments in the fourth or fifth quintile (79 in the fourth and 74 in the fifth quintile). Missing or insufficient data meant 44 instructional programs were not assigned to a quintile; all of these programs are new.
- Placement in the fourth or fifth quintile for a program that is established, rather than new (as these programs will not yet have had an opportunity to grow enrollments), triggered a requirement for the program to submit an action plan. In the fourth and fifth quintiles, 94 of the 153 instructional programs are not new and, thus, were required to submit the action plan report and to describe substantive changes they plan to make or to start a process for discontinuation.
- The most common deficiency for those programs in the fifth or fourth quintile was productivity, typically resulting from a low number of graduates.
- Twenty of the programs assigned to the fifth quintile are degree programs and graduate certificates. These programs must make substantial changes to increase their productivity, relevance, quality and/or efficiency or be considered for discontinuation. In the fifth quintile, 54 of the programs are undergraduate minors, emphases and certificates. These programs must make substantial changes to increase their productivity, relevance, quality and/or efficiency or be considered for discontinuation.

By December 2023, **33 instructional programs were discontinued** or are in the process of discontinuation in the current academic year.

Discontinued instructional programs:

Academic Year 2020-2021

- Certificate in Applied Public Administration
- Certificate in Habilitative Services
- Bachelor of Arts in Dual Blended Early Childhood/Early Childhood Special Education, Elementary Education
- Master in Teaching in P-8 Special Education
- Master in Teaching English Language Arts
- Master of Applied Historical Research

Academic Year 2021-2022

- Minor in German for Business
- Minor in Iberian Studies
- Minor in French for Business
- Minor in Romance Languages
- Certificate in Early Childhood Intervention Services
- Bachelor of Arts in Dual Special Education, Early Childhood Special Education
- Graduate Certificate in School Technology Coordination
- Graduate Certificate in Early Childhood Special Education
- Graduate Certificate in Instructional Interventions and Supports
- Graduate Certificate in Healthcare Simulation
- Graduate Certificate in School Technology Coordination
- Graduate Certificate in History for Secondary Educators
- Executive Master of Business Operational Excellence
- Master of Education in Teaching English to Speakers of Other Languages
- Master of Education in Bilingual Education

Academic Year 2022-2023

- Bachelor of Arts in Economics, Social Science, Secondary Education
- Bachelor of Arts in Sociology, Social Science, Secondary Education
- Bachelor of Business Administration in Accountancy - Twin Falls Site
- Master of Social Work - Twin Falls Site
- Minor in General History with Geographic Focus
- Minor in Addiction Studies
- Certificate in Refugee Services

Academic Year 2023-2024 (In process)

- Undergraduate Certificate in Energy/Environment
- Undergraduate Certificate in Mechanical Materials
- Undergraduate Certificate in HVAC/Building Systems
- Undergraduate Certificate in Industrial Processes
- Minor Spanish Interpretation

Please see the Appendix describing progress updates on the key actions outlined in department and college action plans and administrative and support units' continuous improvement plans.

Summary of major structural changes

In March 2023, the Division of University Affairs merged with Finance and Administration, a return to an administrative structure that Boise State historically used. This change is expected to create a leaner administrative team, preserving university resources for other initiatives. The new division, Finance and Operations, is overseen by Alicia Estey, now Chief Financial and Operating Officer and Vice President for Finance and Operations. The Division of Finance and Operations includes the departments currently in University Affairs, as well as the Controller's Office, Procurement and Vendor Services, Finance and Leasing, Student Financial Services, and the offices of Information Technology, Continuous Improvement, and Budget and Planning.

A few major progress updates from academic department and colleges

Specialized Accreditation in College of Engineering: All four engineering departments and the Department of Computer Science completed ABET accreditation. Programs accredited by the Accreditation Board for Engineering and Technology (ABET) provide assurance to students and graduates that Boise State's engineering programs and Computer Science meet quality standards of the profession for which the programs prepare graduates. The Micron School of Materials Science and Engineering and Computer Science had no concerns, weaknesses or deficiencies. The others are currently working on a response as detailed in the reports to address concerns.

College of Business and Economics launched COBE Blue, an app that rewards students for participating in pre-advising sessions, employer panel discussions and COBE Career Services. Nearly 1,000 COBE students have used the app.

College of Education made great strides in rural placements. Beginning Fall 2022, the College sponsored the Rural Educators Tour. After listening to the needs of the rural partners, the team learned that teacher recruitment, retention and support are critical pain points. Given the problems presented, the team went to work developing two trailblazing projects: the **Rural Clinical Educator role and Rural Teaching Fellowship.**

INSTITUTIONAL DATA

Enrollment

Enrollment Fall 2023 (October 15 census) *Source: IE University Enrollment Report*	Headcount
Undergraduate Degree-seeking	17,085
Graduate Degree-seeking	2,813
Early College/Dual-credit	6,235
Other Non-degree Seeking (Undergraduate and Graduate Combined) and Audit Only	594
Total	**26,727**

Annual Headcount Enrollment *Source: PSR-1 Annual Enrollment Report*	2022-23
Undergraduate Degree-seeking	19,309
Graduate Degree-seeking	3,538
Early College/Dual-credit	7,115
Other Non-degree Seeking (Undergraduate and Graduate Combined) and Audit Only	2,689
Total	**32,651**

2022-2023 Graduates

Degree and Graduate Certificate Graduates *Source: IPEDS Completions Report (IE)*	Distinct Number of Graduates
Associate Degree	184
Undergraduate Certificate	590
Baccalaureate Degree (Academic)	3,858
Graduate Certificate	130
Master's Degree	1,028
Educational Specialist Degree	15
Doctoral Degree	60
Total Distinct Graduates	**5,233***

*Note: the sum of the distinct graduates does not equal the overall distinct number of graduates because students can complete more than one degree

Employee Nov 2022 Shapshot	Full-Time	Part-Time	FTE	%
Faulty	830	636	1,042	34.2%
Professional Staff	1,491	55	1,509	49.6%
Classified Staff	483	28	492	16.2%
Total	**2,804**	**719**	**3,044**	**100.0%**

Revenue and Expenditures for FY2023

Operating Revenue	FY2023
Student Tuition and Fees (Gross)	220,107,450
Scholarship Discounts and Allowances	(30,797,000)
Federal Grants and Contracts	57,759,417
State and Local Grants and Contracts	5,501,446
Private Grants and Contracts	3,830,862
Sales and Services of Educational Activities	11,937,903
Sales and Services of Auxiliary Enterprises	83,206,741
Other	1,157,017
Total Operating Revenues	**352,703,836**

Operating Expenses	
Instruction	156,004,110
Research	44,895,465
Public Service	29,906,090
Libraries	6,208,248
Student Services	23,780,152
Operation & Maintenance of Plant	35,004,584
Institutional Support	44,632,771
Academic Support	42,067,928
Auxiliary Enterprises	110,233,324
Scholarships and Fellowships	11,568,132
Depreciation	29,156,434
Total Operating Expenses	**533,457,238**
Operating Income/(Loss)	**(180,753,402)**

Non-operating revenues/(expenses)	
State Appropriation - General	123,832,491
State Appropriation - Maintenance	2,890,497
Pell Grants	20,640,125
Gifts	36,887,332
Net Investment Income	6,058,086
Change in Fair Value of Investments	31,268
Interest	(7,353,546)
Gain/Loss on Retirement of Assets	(473,223)
Federal Aid Grant Revenue	1,000,000
Loss on Perkins Federal Capital Contribution	
Other Non-operating Revenue/(Expense)	100,245
Net Non-operating Revenues/(Expenses)	**183,613,275**

Other Revenue and Expenses	
Capital Appropriations	
Capital Gifts and Grants	2,701,043
Total Other Revenues and Expenses	**2,701,043**
Increase in Net Position	**5,560,916**
Net Position - Beginning of Year	**577,242,908**
Net Position - End of Year	**582,803,824**

Research and Economic Development

	FY2019	FY2020	FY2021	FY2022	FY 2023
	Office of Technology Transfer				
Invention Disclosures	20	22	16	13	10
Patent Applications Filed	18	28	20	18	12
Patents Issued	2	5	1	8	8
Licenses/Options/Letters of Intent	25	19	22	32	51
License Revenue	$57,136	$15,996	$8,500	$14,456	$25,678
Startups	1	0	0	1	1
FTEs	1.5	2.25	2.1	1.5	1

Number of protocols reviewed by:	Office of Research Compliance				
Institutional Biosafety Committee	65	68	68	74	97
Institutional Animal Care and Use Committee	101	82	68	67	76
Social and Behavioral Institutional Review Board	526	494	509	473	465
Medical Institutional Review Board	24	32	33	48	42

	Office of Sponsored Programs				
Total # of Proposals Submitted	560	506	598	606	569
Total # of Awards	378	411	425	422	416
Total Sponsored Projects Funding	$53.5M	$58.2M	$65.3M	$68.0M	$91.0M
Total Research and Development Expenditures as reported to NSF	$39.8M	$43.3M	$46.1M	$47.6M	not available at this time
Externally Funded Research Expenditures	$27.M	$29.8M	$34.7M	$35.3M	$39.9M

UNIVERSITY ADVANCEMENT

Fiscal Year 2023 — Another Record Fundraising Year

At Boise State University, we have a driving purpose and spirit that unites faculty, students and staff as we tackle the most formidable challenges of our time.

In support of these ambitions, the university received substantial new financial commitments, reaching a record total of $58.5 million in fiscal year 2023. This total exceeded the record set in fiscal year 2022 by $2 million. What makes this achievement notable is the significant contribution made by alumni, who played a pivotal role in this success story.

In all, 27,050 donors contributed to various university priorities, including student endowed scholarships, faculty, research and athletics, or to establish endowments that will support Boise State in perpetuity.

$58.5 MILLION
raised in total support during FY2023

Nearly 11,000 alumni collectively accounted for 31% of these commitments, indicating a strong bond and dedication toward the university. This support from former students signifies their gratitude for their education and experiences at the institution and their belief in the university's mission and vision for the future.

Endowment Performance

Despite large market fluctuations over the past few years, for the year ending June 2023, the Boise State University Foundation's investment performance exceeded its short-term objective of maintaining its purchasing power. The portfolio posted an annual return of 10.0%, compared favorably with the median return for foundation endowment funds less than **$500 million** (9.4%).

The market value of the Foundation's total endowment investment portfolio grew to almost **$146 million** at the close of fiscal year 2023. This growth is a function of both market gains and generous new gifts. Over the past 10 years, the Boise State University Foundation's total endowment value has grown by nearly 75% while supporting Boise State's students, faculty and research programs with more than **$55 million** in payout.

Looking Forward

Unbridled: The Campaign for Boise State University

In October 2023, the President and the Vice President for University Advancement, in partnership with the Boise State University Foundation Board of Directors, publicly launched *Unbridled: The Campaign for Boise State University.* The **most ambitious philanthropic and alumni engagement campaign** in the university's history aims to raise funds for scholarships, endowed faculty positions and the Department of Athletics What's Next Initiative. At launch, donors had committed over $295 million towards a $500 million goal by 2028.

This work aligns with the university's strategic plan, the Blueprint for Success, and University Advancement's vision to create the best culture of philanthropy and alumni engagement of any public university in the country.

Increased Financial Aid

During the last fiscal year, the Foundation raised over $16 million for scholarships; of that total, approximately 20% was earmarked solely for need-based scholarships, including $1.4 million for scholarships with an Idaho residency preference or requirement. These “True Blue Promise” scholarships represent a crucial component of our need-based financial aid and aim to ensure support for all qualified Idaho college students, eliminating the financial barrier to their success.

Boise State’s goal to increase student access and academic success through scholarship support lies at the heart of the Unbridled campaign. To incentivize donors to create endowed scholarships, the Boise State University Foundation Board of Directors has provided a $2.5 million bridge program for qualifying new and enhanced scholarship gifts. The Foundation’s match will allow donors to help Boise State students immediately while establishing endowment funds to create lasting legacies.

COLLEGE HIGHLIGHTS

Innovation and a multidisciplinary approach drive work across Boise State's academic colleges and help us best meet the needs of our communities, industry and our state.

College of Arts and Sciences

- The Bachelor of Arts in Interdisciplinary Studies (Triple Discipline) **allows students to customize their degree path.**
- The **School of the Environment** elevates collaborations across campus to solve big environmental issues.
- The highly flexible Bachelor of Applied Sciences (BAS) and BA in Interdisciplinary Professional Studies (IPS) are specifically designed to the needs of returning adult learners. Combined enrollment of the two programs increased from 317 in Fall 2013 to 418 in the Fall 2023, a 32% increase.
- **Onramp in the Luminary ("ST-Art Space")** The Stein Luminary and the Onramp (Apple iPads) team focus on interactive experiences and the integration of arts and technology for middle and high school student groups who visit the Boise State campus. Learners engage in immersive and creative touchscreen activities then use iPads to experiment with art-making tools.
- **Bronco Gap Year** helps current students stay on track and progress towards their degrees, even if they have to temporarily stop-out.

College of Business and Economics

- Graduate accountancy programs have near 100% job placement rates and are accredited by the Association to Advance Collegiate Schools of Business (AACSB). These programs include the sole MS in Accountancy – Taxation program in Idaho and the only Master of Accountancy program in Idaho to offer pathways to prepare for all three of the new discipline sections of the Uniform Certified Public Accountant (CPA) Examination (effective in 2024). The online Master of Accountancy (non-MBA master's degree) program was **ranked #1 in the Pacific Northwest by U.S. News Rankings.**
- COBE has five distinct MBA offerings accredited by the Association to Advance Collegiate Schools of Business (AACSB). The online MBA is ranked by **U.S. News #58 best Online MBA (top 17%), #37 Best Online MBA for Veterans.** The Executive MBA is ranked by **Fortune Magazine as the #15 Best Executive MBA**, and it consistently outranks other Executive MBAs worldwide as rated by recent graduates surveyed by the International Executive MBA Council.
- The online Bachelor of Business Administration in Management began in 2017. The program's growth illustrates the attractiveness of this degree program; in the first year, 97 students enrolled, while in 2022-2023, 785 students enrolled. Over half of its students are Idaho residents, while the remainder are located across the U.S. and beyond. Due to the fully online nature of this program, it is appealing to active military members, people who work full-time and anyone with demands on their time. This year, the program is projected to hit a key milestone as it will graduate over 100 students. **U.S. News ranked the online BBA program #24 out of 214 schools; it was #3 in the Pacific Northwest and #5 in the West.**
- As part of the online Bachelor of Business Administration, the Resort and Hospitality Management Program was developed based on requests from the Idaho hospitality industry. The program partners with the hospitality industry to update workforce skills in the industry and provide a career path for current and future hospitality employees.

College of Education

- The Noyce Scholarship pays tuition for qualifying candidates who want to become STEM teachers, along with a $10,000 stipend.
- The **Micron Aspiring Rural Teaching Fellowship** provides student teachers with a $5,000 stipend for their student teaching semester in exchange for a commitment to spend their first year of teaching in a rural school.
- Created a new faculty position to support new teachers in rural school districts.
- Received largest single sponsored project award to support innovation in school food systems.
- Received $1.5 million to accelerate math learning for Idaho students.

College of Engineering

- The **Cyber Operations and Resilience degrees (CORe)** were approved at the Master of Science and Bachelor of Science level in 2021 and Bachelor of Applied Science level in January 2022, enabling students from rural Idaho and AA/AAS students to transfer into a four-year degree program. In November 2023, Forbes selected CORe as one of the seven best online Cybersecurity programs in the nation. For the Fall 2023 semester, the CORe programs have 338 total students (74 graduate students and 264 undergraduate students), a 51% increase from Fall 2022 and four and a half times the enrollment from when the program launched in Fall 2021.
- National Institute of Health's prestigious Centers of Biomedical Research Excellence (COBRE) awarded $10 million to a joint COEN and COAS project.
- **Institute for Microelectronics Education and Research (MER)** was established in the Spring of 2023. The institute is a university-wide, multidisciplinary institute that connects government and industry partners with Boise State colleges and departments. It is a nexus of the microelectronics efforts at Boise State and develops opportunities for educational initiatives, workforce development and avenues of research.

College of Health Sciences

- Master of Social Work online program ranked **#1 by Fortune Magazine.**
- The School of Social Work's MSW online program was **ranked #1 by EDUMED.**
- Adult Geriatric Nurse Practitioner (AGNP) **ranked #10 by U.S. News & World Report.**
- The Nursing face-to-face undergraduate program was **ranked in the top 90 in the United States by U.S. News & World Report.**
- Master of Science in Respiratory Care received the APEX award by Commission on Accreditation for Respiratory Care and **ranked #1 in the nation by EDUMED.**
- Master of Population and Health Systems Management received the Herzlinger Innovation Education Award by the Commission on Accreditation of Healthcare Management Education for the most innovative curriculum in the nation.

- The COHS has put 11 programs fully online. The national delivery model allows for scaling so all of these programs can be offered affordably to Idaho residents.
- COHS is the statewide leader in the delivery of online health related educational programming in Idaho.
- COHS has offered the first doctoral program in Public Health Leadership (Fall 2023). The program was designed to create public health science leaders in the state of Idaho.

College of Innovation and Design

- **Esports** had another successful, winning year: 2022 Esports Program of the Year by the Esports Business Summit and Tempest Awards; National championship in Overwatch; ECAC Champions in Halo and Rocket League; three Mountain West titles.

NATIONAL SUCCESS
#1 coach
#1 program
National Champions

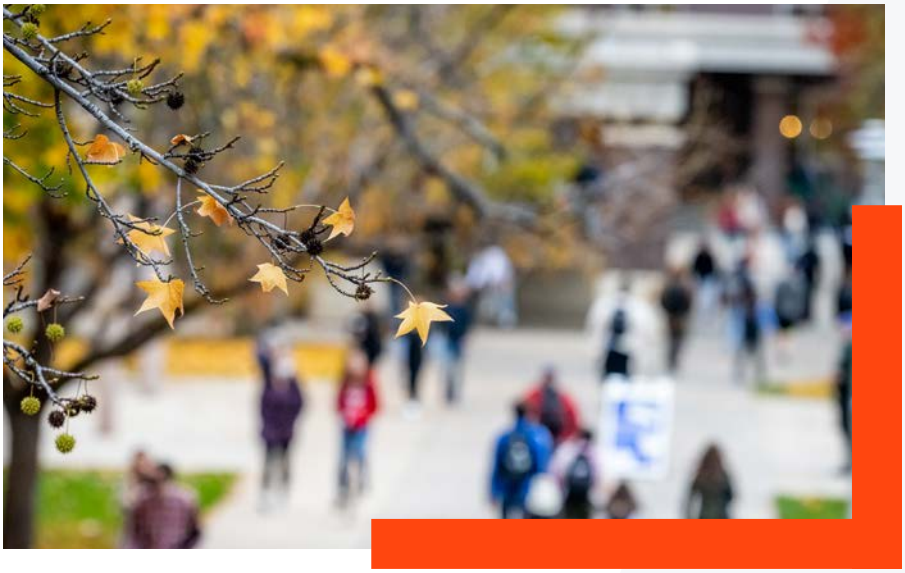
School of Public Service

- The School of Public Service launched its **Capital Connection** program in Spring 2024. An inaugural cohort of Boise State students will live together in Washington, D.C., where they will complete internships, a professional development seminar and two online political science courses. Boise State alumni in the D.C. area will serve as on-site mentors for the students.
- Boise State University, Idaho State University, and the University of Idaho created **a joint Graduate Certificate in Nuclear Safeguards and Security,** located in the School of Public Service. The 12-credit certificate, which became effective in the Fall of 2023, offers students the opportunity to expand their education in a field with growing workforce needs within Idaho and the United States.

Division of Extended Studies

Online programs allow community members to pursue higher education without leaving their hometowns or their jobs.

- During the past academic year, access to college degrees and certificates were greatly expanded thanks to Boise State's fully online programs:
  - **5,410 students enrolled in fully online programs**, with 2,174 of them from Idaho. These are entire academic programs that students pursue anywhere/anytime, without ever having to come to campus.
  - The University now has **98 fully online degrees and certificates.** The vast majority of these were developed as part of a comprehensive university initiative over the past decade that has required no new state funds.
  - In addition to the distance students who took all their courses online, our campus-based students took a number of online courses. **20,357 students took at least one online course,** and 36% of all the University's credit hour generation was from online courses.



ATHLETICS

Boise State achieved significant successes related to each of the four pillars of the What's Next Initiative, which supports the institution's Blueprint strategic plan. Highlights in each area of focus include:

Revenue generation

- Record fundraising year with $26.1 million in gifts and commitments during the 2023 fiscal year.
- Received a $5 million gift, the largest in athletics history, from the Miller family in support of Boise State's north end zone expansion at Albertsons Stadium.
- Increased Bronco Athletic Association membership by 14%.
- $8 million total revenue generated through ticket sales; 9.4% growth from 2021-22.
- 26% increase in men's basketball season ticket holders.
- $150 million fundraising goal as part of the university's launch of the Unbridled Campaign.

Infrastructure

- Upgrades to beach volleyball and volleyball locker rooms.
- Installation of LED lights on the roofline at Albertsons Stadium
- Added outdoor lights at Boas Soccer Complex.
- New photo studio in Caven-Williams indoor facility.
- Appleton Tennis Center court resurfacing.
- Installation in progress for new lights at Huber Field at Dona Larsen Park.

Marketability

The Blue - Voted #1 best attraction for sports fans - USA Today. #1

- 31 million impressions across Boise State main, football and men's basketball social media accounts combined.
- Increased Bronco Sports app users by 129%.
- Led the Mountain West with over 800,000 average TV viewership for football.
- 31% growth on Instagram for Men's Basketball. Eight million impressions for football accounts.
- 21% year-over-year increase in average attendance for men's basketball.
- 25% year-over-year increase in fan attendance for softball.
- Marked a new attendance record for home football games at Albertsons Stadium with 35,867 average attendance.
- $833,349 in total collegiate licensing royalties.
- Launched Social Media Certificate Program.
- Introduced limited edition student-athlete trading cards in partnership with Jacksons.
- Offering personalized name and number apparel for student-athletes in support of NIL.

Student-athlete experience

- **94% graduation success rate**, a new department record and the highest in the Mountain West.
- 79% of student-athletes held at least a 3.0 cumulative GPA.
- **Top 5% Academic Progress Rate** among Division I institutions.
- 2,476 total community service hours completed as a department with 56 local charities and schools.
- 50% of student-athletes attended CONNECT, a career planning event with representatives from 130 local businesses.
- 35 wins over Power 5 programs.
- Seven All-Americans across four different sport programs.
- Softball was the Mountain West Conference regular season champion.
- Bronco Football won fifth Mountain West Championship
- Men's Tennis was the Mountain West Tournament champion.
- Established BroncoBOLD High School Ambassador Program to provide guidance, peer-to-peer mentorship and resources to launch mental health campaigns at four area schools.

NEW FACILITIES

New Residence Hall

A new residence hall is under construction next to Albertsons Library and adjacent to the Boise River and Greenbelt. Expected to open in Summer 2025, it will add approximately **450 beds for first-year students**. Research demonstrates that on-campus housing positively impacts student academic success.The six-story building will have views of the Boise River, Julia Davis Park, downtown Boise and Boise State's campus. The site includes an existing parking lot adjacent to the library and extends north toward the river. Subsequent improvements to river access and the lawn north of Albertsons Library will create a new hub for student and community activity. A comprehensive student housing plan, created in partnership with Brailsford & Dunlavey, helped guide Boise State's decision to construct this facility. The residence hall has a total project budget of approximately $59 million.

ESI Construction Management Building

In collaboration with industry partners and the Boise State University Foundation, the new **ESI Construction Management Building** will include lab and classroom spaces and be located on the south side of campus along Beacon Street. This building will expand and modernize facilities for the growing Construction Management program, and incorporate various construction methods and materials that showcase the field itself. The project has land-use approval and the design phase is complete. The construction timeline is dependent on meeting fundraising milestones.

North End Zone Expansion

A design-build process is underway for a facility expansion in the Albertsons Stadium north end zone. The expansion will enhance the premium club and lounge seating experience on game days and create a year-round dining program for student-athletes. The project may also connect the east and west concourses to provide improved circulation and availability of services for fans. This project is in the design phase, with targeted completion by the 2026 season.

Science Research Building

The university is in the pre-design phase for a new science research building, which will meet pressing demand for science lab sections. An internal committee met throughout 2023 to assist with facility programming, early site assessment and preliminary cost estimation. The work is guiding the facility toward an emphasis on life sciences, including but not limited to biology, chemistry, biomolecular research, neuroscience and physics. A formal planning and design phase will begin in 2024.

College of Health Sciences Simulation Lab

College of Health Sciences completed a $100,000 remodel of the Simulation Lab at Health Sciences Riverside to support Respiratory Care and Imaging Sciences. This included converting HSRV 200 from a large office space to a space for specialized instruction, namely clinical education for students in School of Allied Health Sciences programs. The renovation developed spaces for patient simulation, simulation control, a space for simulation debriefing that also can serve as a meeting space for other small classes, as well as a small storage space. The project supported the growing college's need for simulation space during a healthcare crisis, which served to further limit other forms of clinical education, such as placements in hospitals and healthcare clinics. Thus, professional accrediting agencies are embracing the use of **patient simulation** as an increasingly **important vehicle for clinical education** of our students.

APPENDIX

Program Prioritization Progress Update on the Key Actions Outlined in Action Plans and Other Continuous Improvement Plans

Note: Due to the timing of when the university collects information on the program prioritization action plans as part of the integrated planning process, some of the information presented below is from Spring 2023.

College of Arts and Sciences (COAS)

Building relationships with community partners in the Department of Music

The Department set out to build relationships with more community partners and to create more internship opportunities. Given the large scope of careers in music, the Department seeks to develop more relationships that are specific to music careers. Collaborations include Mirror Studios, the Brass Band of the Treasure Valley, the creation of the first-ever Ableton Live internship, a Boise State Student Showcase at Treefort in 2023, and the Antigua and Barbuda Youth Symphony.

Open Educational Resources (OER) materials for Department of World Languages

In an effort to reduce costs for students related to textbooks, the French section has begun creating and implementing OER materials that replace the previous textbook in the first four semesters of the language. The first version of the OER Pressbook is now complete for 101 and 102 and the OER team is working on the materials for 201 (Fall 2023) and 202 (Spring 2024). The Chinese section has begun planning and implementation of OER materials that will replace the current textbook in Chinese 101 starting in Fall 2023.

Experimentation with new credit structures in the Department of World Languages

The Basque and French programs have been implementing a pilot program that will create three-credit lower-division language sequences in place of the traditional four-credit courses. The objective is to recruit and retain more students to take a language given the easier-to-accommodate three-credit load. Starting Fall 2022, all Basque and French 101 courses became three credits, followed by both sections' 102 courses in Spring 2023.

Strategic enrollment management in the History Department

The department successfully created new minors and certificates that highlight strengths in their curriculum and appeal to a wide variety of students. A particular strength this year has been the growth in experiential learning efforts, especially in terms of internships. The department placed considerably more interns this year in paid positions at a near record high placement rate.

Dedicated resources to re-branding the Department of Communication

The department produced a promotional video, created social media content by interviewing alumni and current students, and partnered with Career Services to create a major wave of branding.

Focus on curriculum revision in the Department of Theatre, Film and Creative Writing

The department has begun a substantive curriculum revision this year with the following priorities: revise and update Programmatic Learning Outcomes; adjust the current class offerings to relieve the heavy scaffolding of course sequences that make it difficult for transfers and returning students, as well as an increasing number of first-years, to complete their Theatre requirements in a timely manner; add credits to production participation areas in which our majors spend a great deal of time and effort; and include more career preparation courses in advance of graduation. Curriculum revisions will continue next year with Film and Creative Writing.

Other Examples of Planned or Completed Actions in COAS

BS Physics Astrophysics Emphasis used Astronomy First Friday generated public donations to support astronomy outreach and sparked public interest in astronomy with the goal of increasing enrollment. Completed a curriculum revision, and switched to OER software eliminated additional course costs for astrophysics courses.

MS Raptor Biology

Onboarded a new faculty member to contribute directly to the program whose work has increased enrollment and contributed toward undergraduate and graduate classes. The faculty member is working to recruit students to their research program, building a lab and networking inside and outside of the program and Boise State.

Bachelor of Music in Composition

Created a two-faculty member mentoring committee for each student (a private studio teacher and the student's advisor). Continues to develop experiential learning opportunities on campus and with outside professional organizations such as Mirror Studios, Ableton Live internships and Treefort, and continues to do outreach with visits to local schools each semester to talk about music, offer experiential learning programs, or to attend and assist school musical productions.

College of Business and Economics (COBE)

The college launched COBE Blue, an app that rewards students for participating in pre-advising sessions, employer panel discussions and COBE Career Services. Nearly 1,000 COBE students have used the app and completed at least one activity. COBE Career Services, COBE Advising, COBE Undergraduate Studies and COBE faculty have collaborated to develop over 200 activities and events supporting COBE's 10 behavioral competencies. Each competency has had at least one completion, led by Academic Progress, Career and Self-Development, and Professionalism.

Professional Track MBA

A faculty group reviewed data from students and employers and analyzed comparable programs at other universities. It decreased time-to-completion from 36 months to 24 months and addressed student needs, such as flexibility and reduction in "team fatigue." Two elective options were added in Summer to allow a more flexible schedule. These specific curricular changes started for the entering cohort in Fall 2022. The first cohort under the new curriculum took flexible Summer classes in Summer 2022. Twenty-one students entered the program under the new curriculum in Fall 2022. In addition, one credit application/integration course has been approved and developed. Experienced adjuncts with valuable industry knowledge have been recruited and hired to teach. Student satisfaction is high with the first class offered in Fall 2022.

Economics Undergraduate Programs

Commenced a student-to-student mentorship program. The program is designed to put first, second and third year students in touch with upper-level students and recent graduates. Upper-level students and recent graduates will have the opportunity to share their college experience and self-assessment with their mentees. Mentors focus on encouraging their mentees to reflect on their choices and make the most of their opportunities. The program started in Fall 2022 with seven mentors and 30 applicants for mentees.

Information Technology Management

Continued focus on recruitment and retention with a curriculum revision that emphasizes relevance and flexibility. The program changes emphasize the Python programming language across ITM courses, emphasize analytics, project management, cybersecurity and infrastructure and de-emphasize software development. This change should make the program more relevant to students and industry. Additionally, the department made several small prerequisite changes to make the degree more flexible.

Department of Management Online BBA Program

A program redesign with the assistance of Extended Studies continued throughout 2023. The redesign supports the program's goal of maintaining its quality and relevance. For example, the Business Communications course redesign discusses the impact of COVID-19 and the added requirements of communicating via online modalities (Zoom, Teams, etc.).

Department of Management Entrepreneurship Management Program

The department is working on a curriculum review and revision. The program recently developed and launched a new course, ENTREP 422 (New Venture Funding), which addresses the challenges related to estimating capital requirements, raising start-up capital and valuing new ventures.

Department of Management International Business (IB) Program

The new IB curriculum is now being implemented with the first cohort of students entering the program. Student feedback has been highly positive. The revised major was advertised in the Spring 2023 COBE meeting and COBE advising is well-versed in the new curriculum. The department is working with international partners to attract 2+2 students into the IB program.

Department of Management Human Resource Management Minor

A curriculum review and improvement is underway. In Fall 2022, a new course called People Analytics was added to the curriculum and was offered in Fall 2023. The program will continue to be reviewed, including the consideration of additional HR classes.

College of Education (COED)

Supporting Rural Communities

COED made great strides in Fall 2022 on rural placements. Beginning Fall 2022, the Dean, Assistant Dean, and Faculty Dean in Residence sponsored the Rural Educators Tour. Chairs, program coordinators and faculty joined the deans in touring 10 rural districts to meet with the superintendent and principals to gauge needs. After listening to the needs of the rural partners, the team learned that teacher recruitment, retention and support are critical pain points. To improve recruitment and retention, rural schools need to provide robust support to both new teachers and teachers on alternative authorizations to ultimately build a more workforce with more varied depths of experience. In reaction to the problems presented, the team went to work developing two trailblazing projects: the Rural Clinical Educator role and Rural Teaching Fellowship.

Serving Students

COED continues to focus on how to best serve students. The Curriculum, Instruction and Foundational Studies (CIFS) program is focused on continuing to improve on providing access to their high-quality programs to students who are not able to access them on the main campus during traditional hours or settings. They have been engaged in ways to understand user needs of both students and industry.

Center for School and Community Partnerships is continuing to develop a portfolio of externally funded projects related to advancing research in education and community impact with pre K-12 stakeholders.

Improving Access through Curriculum & Program Design

COED programs have improved access for students through changes to curriculum as well as program options. The Master in Teaching (MIT) program is now available fully online for those with a bachelor's degree in the field they would like to teach. The online format provides a pathway into teaching that appeals to both recently graduated candidates and career-changers looking to become a teacher.

The Department of Education Technology (Ed Tech) has implemented several new graduate certificate programs and received approval for two new undergraduate programs: an eSports certificate and an eLearning certificate. Ed Tech continues to explore innovative degree options such as multiple niche certificates combined to be a bachelor's degree as well as an Instructional Design undergraduate degree program with potential for bachelor's through doctoral degrees.

The Department of Early and Special Education has increased undergraduate enrollment across programs and the newly combined degrees appear to be meeting the needs of students. Through focused recruitment efforts, ESP is seeing growing numbers in their MEd in Early and Special Education, and the intervention specialist certificate enrollment has made steady growth in the last year. The behavior certificate at the graduate level is also showing steady growth and remains one of the strongest interest areas among students.

College of Engineering (COEN)

Specialized Accreditation

All four engineering departments and the Department of Computer Science completed ABET accreditation. Programs accredited by ABET provide assurance to students and graduates that Boise State's engineering programs and Computer Science meet quality standards of the profession for which the programs prepare graduates. The Micron School of Materials Science and Engineering and Computer Science had no concerns, weaknesses or deficiencies. The others are currently working on a response as detailed in the reports.

College of Engineering Strategic Enrollment Plan

As workforce needs increase, the college is developing plans to work more closely with community colleges on pathways for students. A recent NSF S-STEM award is a cornerstone of this work. The college is awarding scholarships based on financial need, to students at College of Western Idaho, College of Southern Idaho and Boise State. The two main goals are to make the institution student-ready, rather than the student institution-ready. Another strategic objective is to become a "serving" college to Pell Grant recipients, rural students, first-generation students and the Hispanic/Latinx population, mirroring the university's SERP plan.

BS in Civil Engineering

The program has undergone many curriculum changes due to the recent curriculum revision. These changes were approved in Fall of 2022. In addition, the design-elective requirements have also been changed to comply with ABET accreditation.

Micron School of Materials Science and Engineering (MSMSE)

Curriculum changes at the undergraduate level are complete, and many MSMSE students are choosing to continue their education under the newly revised curriculum. The flexibility of the curriculum helps students with time to completion. In addition, students outside the major are enrolling in junior-level courses. MSMSE is implementing two actions to increase recruiting. The first action is to create an online version of Materials Science and Engineering 101, which can be made available to community colleges and possibly work with the Idaho Digital Learning Academy to make it available to high school students. Secondly, the school offered a workshop for teachers during the Summer of 2023. The weeklong workshop was free to teachers and will help increase recruitment in the high schools.

Minor in Construction Management

The Construction Management Department had several accomplishments over the past year, including developing relationships with community colleges, improving social media presence, increasing team competitions, increasing graduates, increasing industry connections with Industry Advisory Board members and career fair participants, increasing granted certificates via extended studies, streamlining ACCE accreditation and developing clearer Tenure and Promotion requirements. During the past year the program has seen more interest from Civil Engineering and Mechanical Engineering students with the Construction Management minor.

In summary, most of COEN's fourth and fifth quintile programs from 2020-21 program prioritization were minors, certificates, and a few Master of Science degrees. Civil engineering has been working on its Master of Science program. MSE and ECE are looking at continuing their MS courses online/hybrid to increase workforce engagement. The minors were investigated to look at the curriculum structure. Finally, there were several certificates offered with low enrollment, and a few were submitted for discontinuation in Fall 2023. They will continue to be monitored.

College of Health Sciences (COHS)

Radiologic Sciences Online Bachelor's Programming

The computed tomography, magnetic resonance imaging and medical sonography programs are advanced imaging programs that are critical services needed in Idaho but have limited access to clinical rotations. This has resulted in low graduation rates. To rectify this problem, the offerings are now bundled into an advanced medical imaging degree plan that is fully online. By scaling nationally, the programming can still be offered to Idaho students and graduation rates will be increased through a national online footprint.

Kinesiology K-12 PE

The current K-12 PE program has experienced declining enrollment and was flagged for a three-year average graduation rate less than 10 per year. Through the Prioritization Action Plan the department addressed improving student enrollment and retention with the overall outcome of increasing graduation rates. The following steps have been taken to address this issue: (1) creating earlier mentoring and enhanced advising strategies, (2) changing curriculum to streamline graduation and (3) conducting an external review for quality/relevance. Plans are underway to develop marketing strategies.

The Department of Kinesiology has worked to restructure the advising process by having the COHS centralized advising take on their undergraduate advising efforts during orientation. After orientation, K-12 PE faculty take on advising support for students to help with student retention. Recently, the PE degree was expanded to a dual endorsement degree (PE and Health), which should continue to help with recruitment. The changes made over the past two years have resulted in a modest increase in students graduating from eight in 2021 to 13 in 2023. This trend is similar in the number of majors in K-12, which is up approximately 30%.

Radiologic Sciences - CT, MRI and DMS

Radiologic Sciences was flagged for low graduation numbers across three imaging areas. To address this issue, a model was developed whereby the programming could be offered online so that a larger audience could be recruited nationally while still supporting the Idaho audience. The program in partnership with extended studies has grown dramatically and now has an additional 58 students enrolled through online programming for Fall 2023, and another 35 applicants are being reviewed. This is in addition to face-to-face programming (mostly Idaho students), which has also grown since the prioritization evaluation was conducted. This is a series of significant changes with big impacts over a short period of time.

Environmental Occupational Health and Safety (EOHS)

The undergraduate major was flagged for low numbers of graduates. Marketing materials have been updated and the program faculty are working closer with the COHS Student Success and Advising Center to help with student recruitment. Also, the programs are working to streamline the curriculum. However, the number of majors was 17 in 2021, 11 in 2022 and 16 in 2023. Ongoing work needs to be directed to this programming if it is to be viable in the future.

Other examples of planned or completed actions in College of Health Sciences: Master of Science in Kinesiology

The program reviewed the curriculum and implemented new advising models to increase support for students. Plans are underway to increase graduate assistant stipends to help recruit and retain graduate students. The program has grown modestly from 18 students in Fall 2022 to 22 students in Fall 2023.

School of Nursing - Adult-Gerontology Nurse Practitioner Certificate Program

Final admissions for the primary care certificate took place in Spring of 2023, and the final admissions for the acute care certificate will take place in the Spring of 2024. These changes address objectives outlined in the College of Health Sciences three-year plan, including a mandatory accreditation move of nurse practitioner training to the doctoral level that will also include adding family and psychiatric nurse practitioner programs.

College of Innovation and Design (CID)

Launched the Innovator Incubator Space

The CID Dean's Office reallocated existing staff workloads to add duties to launch the Innovation Incubator space. The Incubator allows CID to host faculty and staff and support innovation and meetings that advance the Blueprint for Success.

Digital Innovation and Design

The degree program was restructured and changes will take effect during the 2023-24 academic year. Changes include reducing the core credits from 10 to 6 to simplify requirements and support graduation. The degree also added four new certificate choices to the degree, which increases offerings that support 21st century workplace competencies and builds relations with other colleges and departments.

The Harvard Business School

- Simplified enrollment process: Created process to enroll students via access codes, which extends enrollment periods and reduces steps/inefficiencies in enrolling.
- Idaho Launch Grant eligibility has increased community (non-credit) enrollments from 7 to 23 year over year.
- Program is now fully online, eliminating confusion about how students would access the course and materials.

Other Examples of Planned or Completed Actions in CID:

- Venture College has increased efficiency and now provides more programming with one fewer full-time equivalent than previous years.
- The Certificate in User Experience Design (UX-D) is now offered as a 100% fully asynchronous, online certificate, which allows increased access for Boise State students.

School of Public Service (SPS)

SPS restructured and adjusted curricula across the college to enhance efficiencies for faculty workload and enable students to efficiently work through degree programs, including:

- The **Urban Studies and Community Development** program made curriculum adjustments based on ongoing program learning outcome assessment activities and student feedback, including improved group assignments and content on effective teamwork.
- **Political Science** made a series of curriculum changes in the Fall of 2023 aimed at reducing barriers to our classes and attracting new students.
- **Interdisciplinary programs** added a new course to the curriculum, Interdisciplinary Research Fundamentals, designed to better prepare our students for undergraduate research, both academic and non-academic.
- The **Master of Public Administration** program reduced the number of emphases and launched a number of graduate-level certificates in response to trends in student survey data.
- The **Master of Public Administration** program initiated recruiting for their graduate certificates, which are newly revised for consistency.
- The **Conflict Management and Leadership** certificates worked together to leverage the Interdisciplinary Studies (IDS) degree option for students. Through this, students who take both the conflict management and leadership graduate certificates can create their own graduate program.

SPS programs have collaborated across the University to develop new curricula to increase the relevance of our programs for our students and to increase impact across Idaho.

- In Fall 2023, SPS launched a new, fully online Certificate in Planning that will serve the state's need for planning expertise in fast-growing communities and increase student preparation and employability.
- SPS has been a strong partner in collaborating toward the approval of the School of the Environment, which promises to increase program visibility for our Environmental Studies Bachelor of Arts program as well as the new Master of Environmental Management Program, including a 4+1 option, that launched in Fall 2023.
- Faculty within the Energy Policy Institute have led efforts to establish a Graduate Certificate on Nuclear Security with Online Idaho that may become a model for cross-university academic programs in Idaho.
- Significant progress was made in 2023 on a pre-law program and a public service bachelor's degree.

SPS has continually adapted its methods of course, service delivery and admissions to **meet student needs and expand accessibility**, including:

- The largest major in SPS, **Criminal Justice**, has been exploring opportunities for improving modes and delivery. They continue to offer a degree completion program for students in the Twin Falls area and a 2+2 program with College of Western Idaho. Those programs were primarily offered in person, but they recently began offering them solely online to be more efficient and increase student access.
- The **Conflict Management certificate** program has worked to fine-tune the design and delivery of the online certificate in conflict management, to great effect. Moving the graduate certificate online has allowed them to reach a broader audience, and enrollment in their courses are higher than projected.
- The **SPS advising office** continues to survey students each semester to determine how to best set up their virtual to in-person advising format ratio. They adjust the ratio of drop-in to virtual and in-person options to match the results. This allows for equitability, flexibility, accessibility, and customized service.
- The **Master of Public Administration (MPA)** program addressed barriers to the admissions process by increasing the number of application deadlines and removing the GRE requirement from the application process.

Non-Instructional College Program Prioritization Updates

Extended Studies

Continues to be an access point for Idaho students.

- Grew Boise State online annual enrollment by 4.5% in FY22. This is in spite of large decreases in a few disciplines (such as Online Nursing RN to BSN, Respiratory Care and Online MBA) caused by economic factors and ongoing effects of the pandemic.
- Fostered student success rates in Boise State online programs that are comparable to on-ground rates. With support from the division's Enrollment and Student Success team, fully online undergraduate students are retained from first to second semester at a rate of 83%. For graduate students the rate is 95%. Both are slight improvements over last year.
- Facilitated 6,534 concurrent enrollment students, including 48 that earned an associate degree while still in high school in FY22. FY23 enrollment is on track to exceed FY22 numbers.
- For the fourth straight year, facilitated the enrollment of 10,000-plus students in the Summer session.

Established a successful "new normal" for the Extended Studies workforce.

- Extended Studies evaluated all its positions to determine if the position needed to be fully in-person, could be hybrid or could be fully remote. For those jobs that could be done effectively without being in the office full-time, we provided employees greater opportunity to work from home.
- Extended Studies ensured service and support were not diminished. Efforts included developing supervisor and employee guidelines; implementing metrics to measure employee performance; ensuring high engagement by staff, such as creating an employee success coordinator who developed a more robust employee orientation and engagement program; and creating a survey of academic partners to gauge satisfaction of those units we work with.

- The division is able to draw and retain talented staff, despite middling wages and the high cost of living in Boise, by touting these fully remote and hybrid work options.
- These changes allowed the division to consolidate its office footprint, eliminating a lease at the Meridian Center and vacating an annex on Grant Street.

Graduate College

Collaboration and Process Improvement

Collaborated with academic colleges in **growing/emphasizing new doctoral opportunities:** Hosted a successful site visit by external reviewers for College of Health Sciences Ph.D. in Public and Population Health Leadership; hosted a doctoral recruitment event – 50 prospective doctoral applicants on campus and an additional 25 in a live-stream online event. 70+ faculty, staff and current graduate students participated in the event.

Collaborated with academic colleges in celebrating and emphasizing graduate scholarship

Three Minute Thesis – a record 46 graduate students registered and received presentation and writing support from the Graduate College, with at least one student representative from each of the six academic graduate degree-granting colleges at Boise State. **Boise State took first and second place at the state-wide event.** Continued to **grow graduate programs and graduates**. Set the all-time university record for the total number of master's degrees (1,095) conferred at Boise State University in academic year 2022.

Successfully redistributed unused graduate assistantship funding to the academic colleges, **targeting the recruitment of new doctoral students** and supporting new faculty hires.

Increased focus on **improving communication** to all faculty stakeholders, current students, and applicants. Increased targeted email communication and social media, and developed a Customer Relationship Management (CRM) functionality in the Slate application tool.

Streamlined and made more transparent the Slate admissions tool, which **decreased application turn-around time** and improved communications capabilities.

Improved Graduate Council oversight, continuing to **streamline the curriculum process**, Boise State's curriculum management system functionality, and allowed for consent agenda processes to improve the graduate faculty and minor curriculum revision procedures

Implemented a new application system (Slate) and new curriculum management system (Kuali), making two of the major functions of the Graduate College **more transparent and reducing our processing time** for both graduate applications and curriculum changes.

Honors College

First-year retention rate increased from 96.7% to 97.5% for Fall 2021 cohort (in comparison to 79.6% university-wide first-year retention rate for that same cohort). Six years ago our first-year retention rate was 89%.

Graduation rates

The Honors College graduated 47 students in December 2022. This is our largest December class, and that's after last year's December class was also record-breaking at 42 graduates. The college is projecting 133 graduates this Spring. The first-year retention rate rose, but our overall six-year completion rate from Honors declined.

One important factor is that our Fall 2016 cohort's six-year graduation rate is 84.5% (the 2015-2016 cohort was 82.3%) compared to the university's six-year graduation rate of about 59.1%. Honors does not deserve all of the credit for that high number, but we are a factor in their success even when they don't finish our specific Honors program. This is consistent with national Honors data.

These **successes in student retention and graduation** speak to the desirability of our program for students. Approximately 65% of our incoming freshmen continue to report that Honors was a significant factor in their decision to attend Boise State. Student satisfaction with the program remains high, as measured by positive course evaluations, our required last lecture series where seniors report on their Honors experience, and assessment of student-staff meetings through the Honors College house system (students are required to meet with a staff member once per year).

College Administrative Units

College of Arts and Sciences

Raptor Research Center (RRC)

Data suggests that student outcomes continue to be outstanding. Graduate students are gaining positions in industry or in doctoral programs, and publishing in the highest-regarded journals in the field. Undergraduates are gaining graduate school positions and are benefitting from the research and professional development opportunities provided by RRC.

New research and education partnerships involving the RRC have been championed both domestically and internationally and offer promise for additional federal funding. The RRC has remained engaged in previously funded extramural research focused on birds of prey with local, state and national partners.

College of Business and Economics

Idaho Small Business Development Center (SBDC)

The Idaho SBDC has consistently outperformed its goals in every category. This quality team forms relationships with Idaho businesses that work well. Additionally, the collaborative team approach to leadership at the state level keeps regional leaders engaged and motivated.

The unit's strategic plan is updated each year and includes three major categories:

1. Network Reach and Sustainability
2. Organizational Effectiveness
3. Employee and Team Development

The result of this plan is the development of statewide strategies to affect these goals in positive ways. Once the strategies are formed, team leaders develop annual action plans to implement on-the-ground executable tasks that flow up to the goals.

Completed Examples

A. Develop a consistent onboarding process: We will develop an outline of what an onboarding experience looks like statewide. Online onboarding modules created and implemented administrative roles in the SBDC. 100% compliance in regions adopting the online process. Best practices in 1:1 training shared between regions.

B. Demonstrate value to stakeholders: The lead center and each service center actively engage their key stakeholders to determine their needs and report on SBDC activity that addresses them. Key stakeholders are defined as stakeholders that have a financial impact/influence on the SBDC, at the local, state and federal level. Highlights include 19,593 consulting hours, 90 new business starts, 27.5M capital, 534 jobs, 26.5M sales revenues increased by Dec. 31, 2022, with special attention to underserved areas and populations.

College of Education

Teacher Education (TE) Programs

- Started partnerships with Idaho Digital Learning Alliance and GEM prep to provide opportunities for online, remote and more rural placements in diverse settings. The program expanded opportunities for teaching in more diverse settings in Title One schools, which have large numbers of language learners, students with socioeconomic challenges and new-to-country students.
- Created diverse placement options for secondary education candidates by developing a partnership for an early placement with the AVID Program in Title One schools. Candidates receive specialized training and then work with small groups of 6-12 students. This training allows these candidates to take on part-time employment with the district after their internship.
- Expanded opportunities for Early Diverse placements by continuing to work with IDLA to connect students with service-learning opportunities. We piloted this project in Fall 2020 and ran a second iteration in Fall 2022.

College of Engineering

Research Affairs

- The Idaho Microfabrication Lab has seen an increase in industry users, students (up 20%) and faculty. Internal revenue of $40k and external revenue of $60k are important to support the sustainability of the recharge center. Also, potential growth from CHIPS and Science Act funding could play an important role.
- COEN has seen substantial growth in research expenditures from $14M to $16M in the last academic year.

Micron Student Success Center

- The Micron Student Success Center became official in Fall 2022, and the inaugural director, Adriana Facundo, began in January 2023. The center's goal is to establish a centralized events/opportunities marketing hub for College of Engineering students to access all university and COEN-specific leadership/career opportunities easily.

College of Health Sciences

Center for Excellence in Environmental Health and Safety (CEEHS)

Successfully hosted the 3rd Annual Rocky Mountain Wildfire Smoke Symposium in a virtual format on Nov. 14, 2022. More than 150 people attended the symposium, representing government, academia and research, industry and non-profit organizations. The symposium focused on community resilience to wildfire smoke and covered topics on community engagement, strategies for communication, sustainable programs and improved infrastructure for better air quality. Speakers included Dr. Richard Kwok from The National Institute of Environmental Health Sciences. Eight students also presented on topics related to indoor or outdoor air quality. The symposium also featured a facilitated cognitive mapping activity on prescribed burning decisions, including stakeholder perspectives, public perceptions and policy options.

Published research on the relationship between work and family dynamics for Hispanic/Latinx farmworkers in southwestern Idaho and on the use of satellite-based methods to estimate residential proximity to agricultural crops.

Presented research on sex differences in acute pesticide poisonings among agricultural workers at the Sentinel Event Notification System for Occupational Risk – Pesticides conference in Washington, DC, which included members of the Environmental Protection Agency, the National Institute for Occupational Safety and Health, and several state health departments. The center also presented research on routes of pesticide exposure for pregnant women in Idaho at the Annual Meeting of the International Society of Environmental Epidemiology in Athens, Greece, and the Annual Meeting of the International Society of Exposure Science in Lisbon, Portugal.

College of Innovation and Design

Venture College

Launched three new programs (the Cybersecurity Entrepreneur Challenge, Hackfort Tech Challenge and the Carbon Venture Challenge), secured 20 new program partners, saw seven Idaho universities and colleges represented across our programs, and worked with 10 high schools across the state to introduce their students to entrepreneurship.

Continue to grow our ‘Hacking for X’ framework, increasing our partnerships across industries and providing opportunities for students to solve real-world problems with innovative solutions while being introduced to entrepreneurship.

School of Public Service

Andrus Center for Public Policy

In August 2022, the Andrus Center welcomed Dr. Emily Wakild as the Cecil D. Andrus Endowed Chair for Environment and Public Lands. As Andrus Center Endowed Chair, Emily will advance the Environment and Public Lands mission of the Center, including the scholarship and development of the university's students interested in these areas of study.

The Andrus Center, the Public Lands Foundation and the National Association of Forest Service Retirees partnered to host the inaugural John Freemuth Student Congress on Oct. 3-6, 2022 for college students from across the country.

- This partnership provided Boise State University and the center the opportunity to recognize the life and legacy of John Freemuth, University Distinguished Professor and Cecil D. Andrus Endowed Chair of the Environment and Public Lands. The conference theme was "Wildland Fire Management." A small group of undergraduate and graduate students were recruited from colleges and universities from across the country to participate, and the cohort included 23 students from 17 states and 19 unique schools.
- The culmination of the event was a student-authored report presented in Washington, D.C. in February 2023.

Albertsons Library

Overall use of the library continues to climb. In 2022, there were 228,343 visits to the library, a 44% increase over the previous year. Library statistics also show significant increased use of the library's computer lab. Up approximately 250%, there were 29,445 logins last year.

The library completed a strategic hire with the addition of a collections analyst who assists with data gathering and is involved in the cost analysis project for licensed, owned and open access resources.

In response to federal policies requiring machine-readable data management plans, the library worked with other campus stakeholders to customize the DMPTool, a free resource that meets federal requirements and generates DOI's for each maDMP created.

Other Divisional Updates

Division of Finance and Operations

Office of Information Technology (OIT)

OIT has thoughtfully engaged in numerous activities over the years to improve technical infrastructure and improve systems and processes that support the campus. These efforts include the following:

- Designed, built, configured and installed a new modular data center.
- Moved the virtualized server environment to a more capable product that dramatically reduces unplanned downtime due to hardware failures.
- Conducted Cybersecurity and Infrastructure Security Agency and the National Guard penetration tests to ensure the university is well protected from potential cyber threats.

University Financial Services

- Broad efforts have been dedicated to implementing the Jaggaer ePro system, funded by the College of Business and Economics. Production and roll-out to campus started in early 2023. This software will provide broad improvements to requisitions, purchase orders and invoicing.

President's Office

Human Resource Services

HR spent the majority of the year focused on the new human resources and payroll system project and has decreased considerably over/underpayment issues. A roadmap was developed for 2023 to organize and prioritize activities to address issues/gaps in reporting, address ineffective/inefficient processes and workarounds and continue to resolve a number of technical issues that require Oracle's assistance as part of HCM Cloud implementation. In addition, selected payroll control improvements from the Deloitte review are being implemented.

HR also implemented the first phase of a broad restructuring plan. Through a significant reduction in force, the unit welcomed a new Chief Human Resources Officer and had adequate funds to restructure the unit in a way that will significantly improve campus customer service.

Division of Student Affairs and Enrollment Management

Access and affordability

The Veteran Services Center certified payments for 1,035 students, facilitating $4.5 million in stipends to military students and their dependents to help with their educational costs. VSC decreased certification errors, which trigger a debt from the university to the VA, by 90% over the year – from 20 per semester to only two in the Fall 2022 semester.

Reduced the overall cost of textbooks by offering digital or online textbooks at a significantly lower price than traditional books, saving students nearly $1 million dollars when compared to traditional materials.

Student retention

The Strategic Enrollment and Retention Plan (SERP) was created through a massive university-wide collaboration, coordinated by Student Affairs, Enrollment Management and the Provost's Office.

Mental health, student wellness and violence prevention

Securing a $40,000 grant to implement Substance Misuse Prevention programming and providing substance-free tailgates for students to attend before football games.

The impact of the **Campus Food Pantry** continues to grow, serving 4,052 students with more than 23,000 visits during the year.

Innovation

Developed predictive models that assess a prospective student's likelihood to apply and the likelihood of an admitted student to enroll, allowing for targeted and personalized outreach that would otherwise not have been possible. These models inform the communications strategies of the Student Communications and Marketing team.

Created the Office of University Event Services, a specialized university-wide event system, to ensure the successful execution of high-quality signature events consistent with the Boise State brand and the Blueprint for Success. This team is focused on improving event scheduling and production to increase consistency and compliance and reduce competing priorities for space and resources.

Strategic Partnerships

A committee of representatives from Academic Affairs, Athletics, Extended Studies, Student Affairs and Enrollment Management was formed to build meaningful relationships with the Idaho Hispanic Chamber of Commerce and discuss the needs, challenges and opportunities for recruiting, retaining and serving Hispanic/Latinx students. The Chamber is a trusted connection to resources for the Idaho Hispanic/Latinx community with a strong desire and enthusiasm to work alongside Boise State University as it strives to become a Hispanic-Serving Institution.

In partnership with the President's office, the division continues to build upon the Memorandum of Agreement with the Shoshone-Bannock tribe to support indigenous students. The University Committee for Tribal Initiatives (UCTI) was created to advise and provide strategic direction for the partnership.

Division of Research and Economic Development

Center for Research and Creative Activity

Developed several programmatic opportunities to encourage Big Ideas thinking and support for teams to be responsive to large funding mechanisms, as a result of Grand Challenges and the Interdisciplinary Research Accelerator.

Energy Policy Institute

Developed regional partnerships with University of Alaska and University of Wyoming energy-economic diversification and critical minerals mining that will place Boise State in a strategic position with the Department of Energy/Idaho National Laboratory.

SUBJECT

Boise State University Educator Preparation Program Presentation

APPLICABLE STATUTE, RULE, OR POLICY

Idaho Code § 33-114

BACKGROUND/DISCUSSION

Boise State University's Educator Preparation Program is a Board-approved educator preparation program for certification purposes.

The State Board of Education's strategic plan includes a focus on alignment and coordination throughout the education pipeline as well as a focus on rigorous curriculum, and overall student success. The success of Idaho's students is largely dependent on the success of Idaho's teachers, making the work of teacher preparation an important part of the process.

Dr. James Satterfield, Dean of Boise State University's College of Education will share an update with the Board.

IMPACT

This informational item will give Board members an opportunity to discuss with EPP leadership the steps BSU is taking to ensure that all of the teacher candidates exiting their program are learner-ready when they enter the classroom.

ATTACHMENTS

Attachment 1 – Boise State University Educator Preparation Program Presentation

BOARD ACTION

This item is for informational purposes only.

COLLEGE OF EDUCATION
FEBRUARY 27, 2024
BOISE STATE UNIVERSITY

COLLEGE OF EDUCATION

OVERVIEW

- College of Education
  - Academics
  - Research
  - Community Engagement
- Restructuring Update
- Educator Preparation Programs

COLLEGE OF EDUCATION

COLLEGE OF EDUCATION

One College. Limitless Learning.

We embrace and engage in our vision for excellence in teacher education, graduate programs, doctoral study, research and external funding, and community and partnership relations.

COLLEGE OF EDUCATION

By the numbers

5 Departments

31 Educator preparation programs

19 Clinical faculty

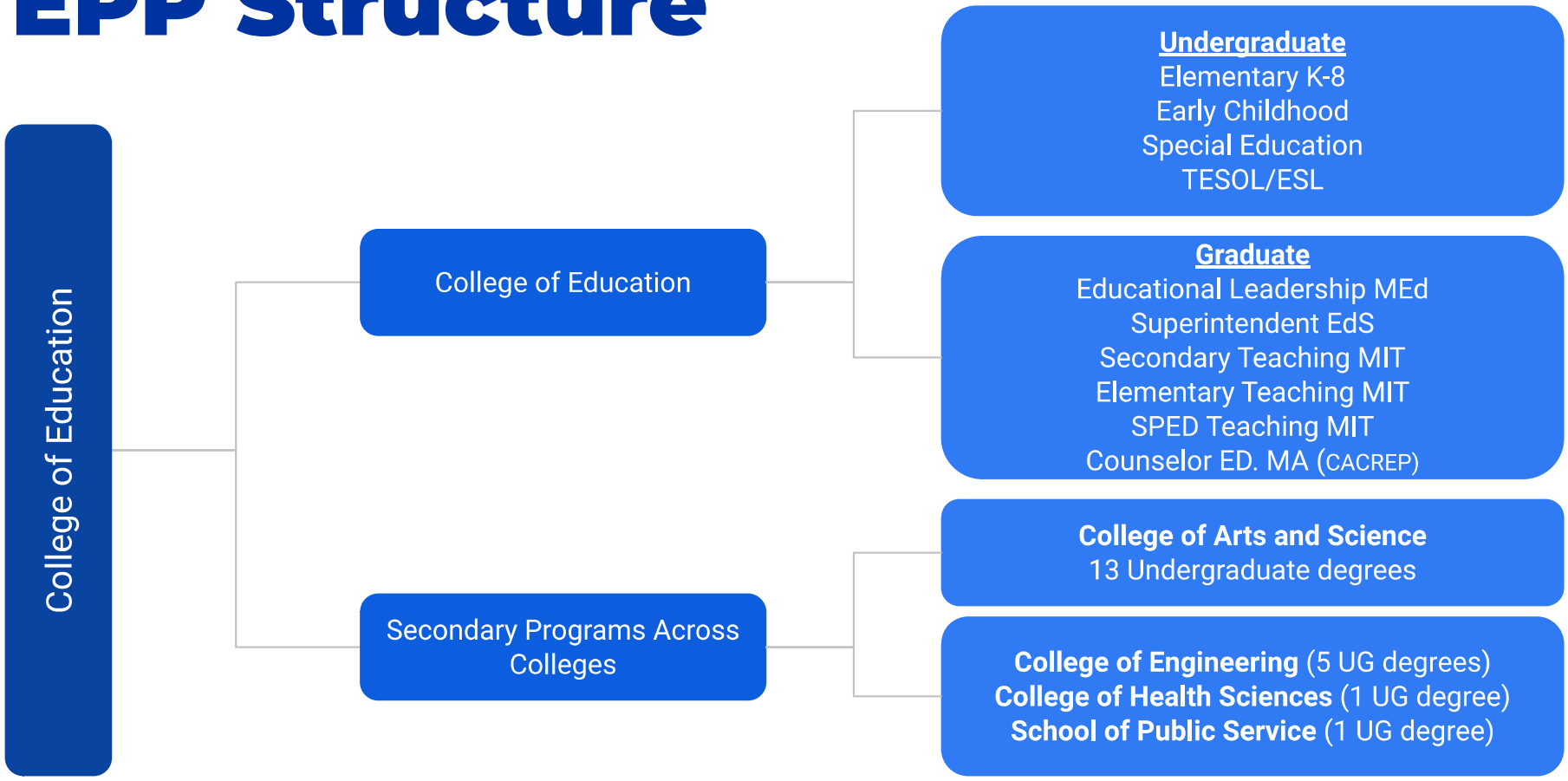
59 Faculty members

214 Initial program completers in 2023

75 Advanced program completers in 2023

COLLEGE OF EDUCATION

EPP Structure



COLLEGE OF EDUCATION

Program Innovation and Continuous Improvement

- **Early Childhood Program Administration and Leadership (EC PAL)**
  - 12 credit online undergraduate certificate, 1-credit modules designed for easy on and exit ramps for students
- **AI in Education**
  - 12 credit online graduate certificate
  - 1-credit professional development for in service teachers
- **Career Technical Education (CTE) teacher preparation**
  - First of its kind in Idaho:
    - *Master In Teaching in CTE, online program*
    - *Cybersecurity CTE degree-based teacher preparation program*

COLLEGE OF EDUCATION

Research and External Funding

- Service grants and funding
  - $23,201,515
- Research awards
  - $441,984

Total awards FY2023

= $24,026,397

Community Engagement

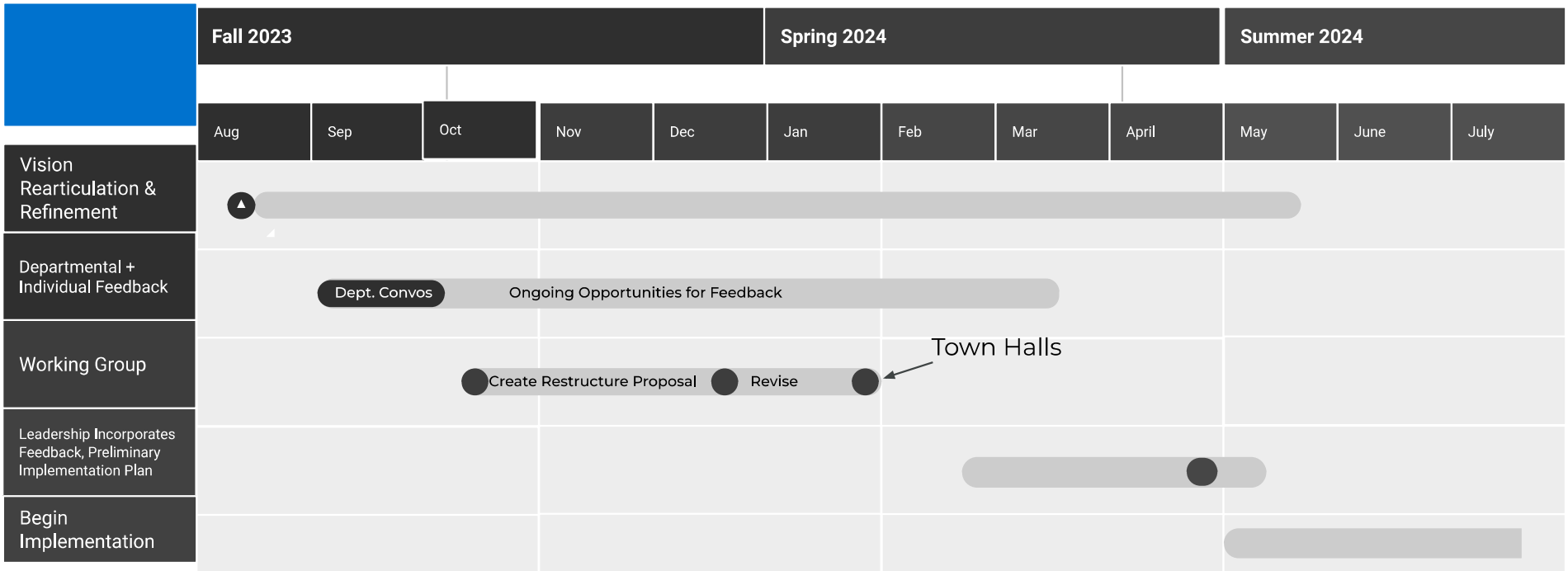
- Center for School and Community Partnerships, Lindsey Turner
  - $16.1 million award, U.S. Department of Agriculture
  - Largest single sponsored project award in university history
  - Collaboration with other institutions to build a just and resilient food system in American schools

Click here to learn more

RESTRUCTURING

Restructuring Overview

Seeking SBOE approval, Summer 2024



Academic Year 2023 - 2024

EDUCATOR PREPARATION

EDUCATOR PREPARATION PROGRAMS

Pathways to Certification

- Traditional 4-year undergraduate programs
- Master in Teaching, 1-year post-baccalaureate
  - Elementary
  - Secondary
  - Special Education
  - CTE (in development)
- Teacher residency programs (in development)
  - Special Education
  - Early Childhood
- Teacher to new certification
- Alternative authorizations

EDUCATOR PREPARATION PROGRAMS

High-Quality Teacher Preparation and Clinical Practice

- Progressive development of professional responsibilities
  - Early and mid program field experiences
  - Intern and student teaching semesters (professional year)
- Quality mentors
  - Mentor selection, training, collaboration and co-supervision of teacher candidates in the classroom
- Partnerships
  - Mutually beneficial partnerships between school districts, charter and private schools, the college, teacher candidates and most importantly, Idaho's P-12 students

EDUCATOR PREPARATION PROGRAMS

CAEP Accreditation

- April 2023
  - CAEP accreditation visit (every 7 years)
- October 2023
  - Earned full CAEP accreditation through 2030 (no areas for improvement, no stipulations)
    - Standard 1: Content and Pedagogical Knowledge
    - Standard 2: Clinical Partnerships and Practice
    - Standard 3: Candidate Recruitment, Progression, and Support
    - Standard 4: Program Impact
      - Alumni and employer satisfaction surveys
    - Standard 5: Quality Assurance System and Continuous Improvement

Learn more: https://www.boisestate.edu/education-caep

EDUCATOR PREPARATION PROGRAMS

Science of Reading (pre service)

- Integration of all five elements of the science of reading into coursework
  - Phonemic Awareness, Phonics, Fluency, Vocabulary, and Comprehension
  - Dyslexia
- Science of reading principles extended into writing instruction
- All Elementary, Special Education and TESOL teacher candidates required to complete four courses that incorporate science of reading:
  - Comprehensive Literacy
  - Writing Instruction
  - Language Acquisition
  - Content Area Literacy
- Idaho Comprehensive Literacy Assessment

EDUCATOR PREPARATION PROGRAMS

Science of Reading (in service)

- College of Education recognized as a state-approved dyslexia professional development provider
- Currently developing dyslexia expertise through faculty professional development to provide more support for in service teachers
- In process: realigning Master in Literacy program to integrate current research and policy on science of reading and dyslexia

EDUCATOR PREPARATION PROGRAMS

College of Education Literacy Council

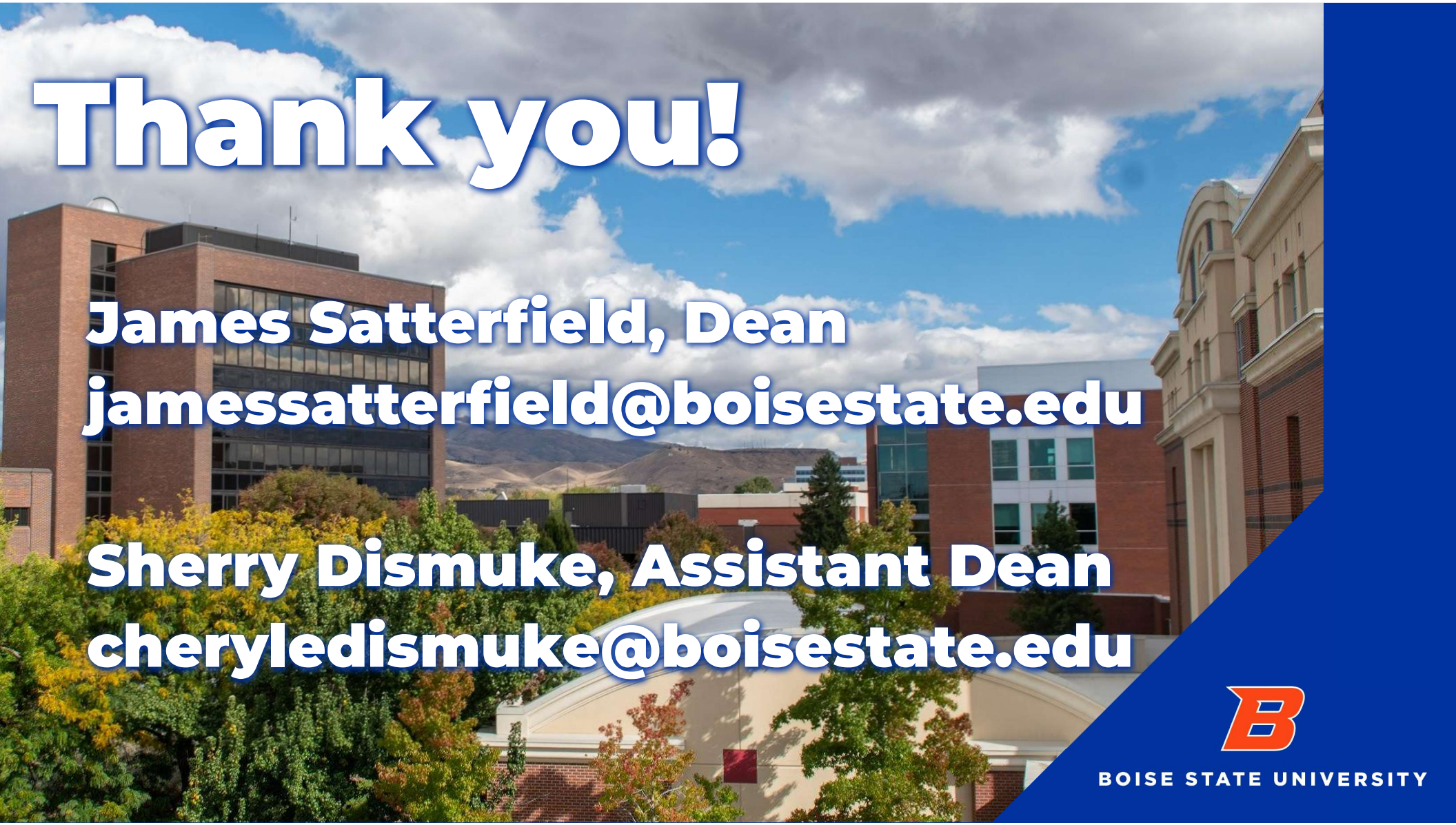
- **Carolyn Cort**, clinical faculty and dyslexia coordinator
- **Sherry Dismuke**, assistant dean for Teacher Education
- **Marybeth Flachbart**
- **Audrey Gribble**, Lee Pesky Learning Center
- **Laura Moylan**
- **Arturo Rodriguez**, Early and Special Education chair
- **Eun Hye Son**, Literacy, Language and Culture chair

- Early literacy/dyslexia endorsement
  - 20 credits (pre service or in service)
- Master in early literacy/dyslexia
  - 33 credits (in service)
- Graduate certificate in dyslexia
  - 12 credits certificate (in service)
- Professional development in dyslexia
  - Developing three credit series: identification, instructional strategies, assessment (in service)

EDUCATOR PREPARATION PROGRAMS

Retention is the new recruitment

- Strategies to keep new teachers in the classroom
  - High-quality observation feedback
  - High-quality mentors
  - “Capacity for change” and inquiry
- Studying Practice and Student Learning (SPSL): New Teacher Induction for Student Learning and Teacher Retention (2017-2018)
- Rural clinical faculty member for new teachers: Burley, Minidoka, Jerome
  - 13 teachers
- Developing teacher residencies built on priorities to strengthen retention


Thank you!
James Satterfield, Dean
jamessatterfield@boisestate.edu
Sherry Dismuke, Assistant Dean
cheryledismuke@boisestate.edu
BOISE STATE UNIVERSITY

SUBJECT

New Program Approval for Idaho State Board Approved Educator Preparation Programs

REFERENCE

August 2023	State Board of Education approved the Idaho Standards for Educator Preparation Providers.
October 2023	State Board of Education approved the Educator Preparation Program Approval Guide.

APPLICABLE STATUTE, RULE, OR POLICY

Idaho Code § 33-114
IDAPA 08.02.02.015.01, Rules Governing Uniformity
IDAPA 08.02.02.021, Rules Governing Uniformity
Idaho State Board of Education Governing Policies & Procedures, Section IV.D.

BACKGROUND/DISCUSSION

In academic year 2022-23, a work group was formed to create the Idaho Standards for Educator Preparation Providers and the Educator Preparation Program Approval Guide. These two documents were approved by the State Board in 2023. Brigham Young University – Idaho (BYU-I) is the first Educator Preparation Provider to submit a new program application for review and consideration by the State Board. A review team was assembled and reviewed BYU-I's K-12 literacy program application on January 11, 2024. Board staff facilitated the review. The review team concluded the review on January 11, 2024 and recommended BYU-I's K-12 literacy program application to be approved.

IMPACT

The approval of the new program application would allow BYU-I to offer a K-12 literacy endorsement as a 20-credit endorsement option. The disapproval of the new program application would not allow BYU-I to offer a K-12 literacy endorsement as a 20-credit endorsement option.

ATTACHMENTS

Attachment 1 – BYU-I K-12 Literacy Program Approval Evaluation Report and Recommendation
Attachment 2 – BYU-I K-12 Literacy Program Application

BOARD STAFF COMMENTS AND RECOMMENDATIONS

Board staff facilitated the new program application review and recommend approval of BYU-Idaho's requested new program.

BOARD ACTION

I move to approve the request by the Office of the State Board of Education's review team to approve Brigham Young University - Idaho's twenty (20) credit K-12 Literacy Program.

Moved by _____ Seconded by _____ Carried Yes _____ No _____

Idaho State Board of Education

New Program Approval Evaluation Report
Brigham Young University – Idaho
January 11, 2024

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Recommend 2

EDUCATOR PREPARATION PROVIDER
Brigham Young University – Idaho

NEW PROGRAM AREA
K-12 Literacy

NEW PROGRAM REVIEW DATE
January 11, 2024

REVIEW TEAM
New Program Approval Review Facilitator:

Name	Employer	Role
Katie Shoup	Office of the Idaho State Board of Education	Educator Effectiveness Program Manager

New Program Approval Review Team:

Name	Employer	Role
Helen Henderson	Idaho Department of Education	Professional Standards Commission Coordinator
Karyn Kilpatrick-Snell	Idaho Department of Education	K-5 ELA/K-12 Dyslexia Coordinator
Cina Lackey	Idaho Department of Education	Certification Director
Katie Mathias	Boise State University	Assessment and Reporting Director
		Professional Standards Commission Member
Dr. Lori Sanchez	Northwest Nazarene University	College of Education Dean
		Professional Standards Commission Member

REVIEW TEAM RECOMMENDATION
Recommend

The review team recommends the approval of Brigham Young University – Idaho's twenty (20) credit K-12 literacy program application.

NEW PROGRAM APPROVAL GUIDE

INTRODUCTION

This document describes the process by which an Idaho State Board Approved Educator Preparation Providers (Educator Preparation Providers) seek approval for a new endorsement program leading to certification. The Office of the Idaho State Board of Education (Board Office) facilitates the approval process.

Public universities and colleges seeking a new degree or certificate program will also follow their institutional policies and procedures and the process identified in State Board Policy III.G – Postsecondary Program Review and Approval. Additional information may be found on the Idaho State Board of Education's website at Postsecondary Program Approval | Idaho State Board of Education. Educator Preparation Providers seeking a new degree or certificate program will complete the Postsecondary Program approval process in addition to the new program approval process for programs leading to educator certification.

STATUTORY AUTHORITY AND REFERENCES

Idaho Code 33-114: supervision and control of the certification of professional education personnel is vested in the State Board. The Board shall approve the program of education of such personnel in all higher institutions in the state, both public and private, and shall accredit as teacher training institutions those in which such programs have been approved.

Idaho Code 33-1207A: The State Board shall review teacher preparation programs at the institutions of higher education.

IDAPA 08.02.02.021: Idaho Educator Preparation Providers shall prepare candidates to teach in area(s) of endorsements in accordance with the Idaho Standards for Initial Certification of Professional School Personnel.

State Board Policy IV.D.: Educator Preparation and Certification

IDAPA 08.02.02.015.01: Instructional staff certification requirements.

IDAPA 08.02.02.015.02: Pupil service staff certification requirements.

IDAPA 08.02.02.015.03: Administrator certification requirements.

NEW PROGRAM APPROVAL PROCESS STEPS

The new program approval process has a total of three steps as follows:

1. Preparation and Submission of the New Program Application
2. Review and Feedback
3. Determination of Approval Status

Step 1: Preparation and Submission of the New Program Application

The Educator Preparation Provider will use one or more of the following new program applications to request approval of the new program:

NEW PROGRAM APPROVAL GUIDE

- New Elementary or Secondary Program – Use New Program Application A
- New Special Education Program – Use New Program Applications A and B
- New Pupil Service Program – Use New Program Application C
- New Teacher Leader Program – Use New Program Application D
- New Administrator Program – Use New Program Application E

Flow Chart

New Elementary or Secondary Program	New Special Education Program	New Pupil Service Program	New Teacher Leader Program	New Administrator Program
Use New Program Application A	Use New Program Application A & B	Use New Program Application C	Use New Program Application D	Use New Program Application E

The new program application includes the following:

- New Program Design
- Explanation how the New Program will meet the provider standards and components
- Clinical Experience Design

Upon completion, the new program application and all applicable supporting documentation is submitted to the Board Office – Educator Effectiveness Program Manager.

Step 2: Review and Feedback

After receiving a completed new program application, the Board Office will assemble and facilitate a team to review the new program application materials, to include one member of the Professional Standards Commission and members from at least two of the following groups:

- Approved Idaho Educator Preparation Program Staff
- Idaho Experts from the Field and experience with Educator Preparation Program Review
- Idaho Division of Career Technical Education Staff
- Idaho Local practicing K-12 Educators
- Idaho Local practicing K-12 Administrators
- Idaho State Department of Education staff – Certification Department

The review team will assess whether the new program as proposed meets the criteria listed in the new program application. A new program that meets the criteria listed in the new program application and shows alignment to the Idaho Standards for Educator Preparation Providers (Provider Standards) will move to Step 3. The review team will use review rubrics to guide input and make the determination if the program meets the criteria listed in the new program application and shows alignment to the Provider Standards.

A new program that does not meet the criteria listed in the new program application will be returned to the Educator Preparation Provider by electronic mail and accompanied by review team feedback. The

NEW PROGRAM APPROVAL GUIDE

Educator Preparation Provider may address the feedback and resubmit a new program application to the Board Office for review as described in Step 1.

Incomplete new program applications received by the Board Office will be returned to the Educator Preparation Provider for completion.

Step 3: Determination of Approval Status

The review team will provide a program recommendation to the Board Office, for consideration by the State Board at their next regularly scheduled meeting. The Board Office will notify the Educator Preparation Provider of the date of the State Board meeting at which the new program proposal will be considered. The State Board will either approve or not approve the new program. Upon State Board approval or non-approval of the new program, Board Staff will notify the Educator Preparation Provider of the new program approval status by electronic mail. If the new program is approved by the State Board, the Educator Preparation Provider may advertise the program and recruit candidates to the program. If the new program is not approved by the State Board, the application may be revised and resubmitted. Approved new programs will be reviewed at the same time as the Educator Preparation Providers state review that typically occurs on a seven-year cycle.

New Program Approval Guide

New Program Application A – Elementary or Secondary Program

Educator Preparation Provider: Brigham Young University – Idaho

Date of Submission: October 2023

Expected Date of Program Start: April 2024

New Program Name: Literacy Education

Certification/Endorsement: Literacy K-12 as outlined in ISBE Policies Section B.10.bb

This is an application to add the Idaho Literacy K-12 certification to our Elementary Education major program as a minor program option. The standards evidenced below include items from the proposed minor for this endorsement. The majority of the Idaho Teaching Standards are provided in the Major Program that must accompany the Literacy Minor. However, all standards are evidenced in the 20-credit minor program as well. Candidates would be eligible for the Literacy K-12 second area endorsement with an initial Elementary certification.

In addition to the table below, please reference the attached program plan and information in the Support Documentation section. It includes the course descriptions, outlines, and sequencing for the proposed minor area endorsement.

Additionally, language from course descriptions and outcomes that directly fulfill the Certificate and Endorsement Requirements (IDAPA 08.02.02 & Board Policy IVB) have been highlighted and color-coordinated in the attached document to crosswalk those requirements specific to the code.

BYU-Idaho approved this minor program, to begin with the 2024 catalog, with the Spring 2024 semester starting in April. As none of these courses have been taught yet, all supporting evidence comes from the course descriptions, outcomes, and basic syllabi.

1.1 CONTENT KNOWLEDGE AND PEDAGOGY Educator Preparation Providers ensure candidates are able to apply their knowledge in critical concepts, principles, and practices as identified in the Idaho Standards for Initial Certification of Professional School Personnel, National Accreditation Standards of Pupil Service Programs, and State Board approved Idaho Student Content Standards.

How is each standard met? What is the plan to meet the standard? Please share your program design, narrative, and evidence. (Course Titles, Course Numbers, Course Credits, Syllabi, Course Description, Module Information, Assessment, Projects, Evidence of Student Learning, etc.)

Component	Evidence Item (Link items only as a PDF)	Narrative/Rationale for Meeting Standard
Idaho Teaching Standards The Learner and Learning · Standard 1: Learner Development	ED 340: Foundations of Literacy Development and Reading Disabilities	This course addresses the components and theories for literacy and language development. It includes the variance of development that occurs for various reasons, including children with dyslexia, learning difficulties, and the factors that environment and culture play in learning.
	ED 350: Language and the Brain	This course explores the known brain functions related to language and reading development and the variations that occur when those functions are not typical.
	ED 454: Literacy Intervention Methods	Teacher candidates learn instructional methods to teach developmentally appropriate language and literacy skills, including instructional design.
	ED 455: Practicum in Assessment and Intervention	Teacher candidates implement the theoretical study of literacy development and instructional approaches in a school setting with students.
Idaho Teaching Standards The Learner and Learning · Standard 2:Learning Differences	ED 454: Literacy Intervention Methods	Teacher candidates learn instructional methods to teach developmentally appropriate language and literacy skills, including instructional design. The focus is on systematic instructional strategies to meet diverse needs.
	ED 350: Language and the Brain	This course explores the known brain functions related to language and reading development and the variations that occur when

		those functions are not typical. Specific attention is given to instruction for children with dyslexia.
Idaho Teaching Standards The Learner and Learning Standard 3: Learning Environment	ED 454: Literacy Intervention Methods	The candidate will understand lesson design and instructional strategies that support learning and encourage student engagement and motivation, especially for those struggling with reading and literacy skills.
	ED 455: Practicum in Assessment and Intervention	The candidate will collaborate with the mentor teacher to support the learning of individual students and students in groups. The candidate will implement previous knowledge of classroom environments, including management and behavior strategies, to result in student engagement and motivation.
Idaho Teaching Standards Content · Standard 4: Content Knowledge	ED 352: Advanced Phonics	Content knowledge of phonics instruction at a deeper level than what is introduced in the elementary education core literacy courses. Additional aspects of the reading process are included.
	ED 460: Literacy in the Content Areas	Candidates learn strategies for literacy development in the content areas specific to incorporating reading and writing. The focus is on how literacy is developed through content and how adaptations and supports can be provided to ensure all students can access content, considering the student's needs in areas such as learning

		development, culture, and language.
Idaho Teaching Standards Content · Standard 5: Application of Content	ED 455: Practicum in Assessment and Intervention	The candidates connect the concepts learned throughout the program in literacy development and intervention and implement them in literacy instruction. Candidates must consider student diversity as they plan for instruction.
	ED 460: Literacy in the Content Areas	Candidates will use young adult literacy and expository texts with their understanding of literacy instruction in the content areas to plan lessons that consider various perspectives and engage learners in critical thinking and problem-solving.
Idaho Teaching Standards Instructional Practice · Standard 6: Assessment	ED 354: Assessment for Literacy Intervention	Candidates learn the principles and practices for assessment in reading and literacy, focused on students who are struggling. Students learn the components of test administration and data analysis, followed by intervention design.
	ED 455: Practicum in Assessment and Intervention	Candidates apply their knowledge of theory, instructional practices, and assessment to analyze data and implement evidence-based instruction.
Idaho Teaching Standards Instructional Practice · Standard 7: Planning for Instruction	ED 454: Literacy Intervention Methods ED 455: Practicum in Assessment and Intervention ED 460: Literacy in the Content Areas	Each of these courses includes components of planning for instruction, specifically on supporting individual students and groups in specific learning goals in literacy. The courses teach specific pedagogy in literacy instruction, and candidates implement that in lesson planning and teaching.

Idaho Teaching Standards Instructional Practice · Standard 8: Instructional Strategies	ED 455: Practicum in Assessment and Intervention	The candidate implements theory and methods learned throughout other courses to plan for and implement instruction focused on literacy intervention to help learners build skills and develop an understanding of reading and literacy.
	ED 460: Literacy in the Content Areas	Candidates plan lessons using instructional strategies related to literacy to develop learner understanding in content areas. The candidate further utilizes key pedagogical approaches to leverage literacy to comprehend content concepts.

1.2 PROFESSIONAL KNOWLEDGE Educator Preparation Providers ensure candidates are able to apply their knowledge of the Idaho Standards for Initial Certification of Professional School Personnel, National Accreditation Standards of Pupil Service Programs, and the State Board approved Idaho Student Content Standards

How is each standard met? What is the plan to meet the standard? Please share your program design, narrative, and evidence. (Course Titles, Course Numbers, Course Credits, Syllabi, Course Description, Module Information, Assessment, Projects, Evidence of Student Learning, etc.)

Component	Evidence Item (Link items only as a PDF)	Narrative/Rationale for Meeting Standard
Idaho Teaching Standards Professional Responsibility: · Standard 9: Professional Learning and Ethical Practice	ED 455: Practicum in Assessment and Intervention	Candidates reflect regularly on the experiences and teaching opportunities throughout the practicum, noting specific instructional successes and areas for improvement. The candidate will reflect on growth over time in teaching capacity. The candidate will conduct assessment and data analysis several times throughout the teaching experience to monitor students' progress and adjust instruction as necessary.
Idaho Teaching Standards Professional Responsibility · Standard 10: Leadership and Collaboration	ED 455: Practicum in Assessment and Intervention	The candidate will collaborate with the mentor teacher and will likely communicate with parents. The candidates will take responsibility for student learning as the key interventionist for assigned students, with support from the mentor teacher.

1.3 IDAHO EDUCATIONAL EXPECTATIONS

Educator Preparation Providers integrate State Board of Education policies and procedures and Idaho Rules Governing Uniformity into the preparation of candidates.

How is each standard met? What is the plan to meet the standard? Please share your program design, policy, narrative, and evidence. (Course Titles, Course Numbers, Course Credits, Syllabi, Course Description, Module Information, Assessment, Projects, Evidence of Student Learning, etc.)

Component	Evidence Item (Link items only as a PDF)	Narrative/Rationale for Meeting Standard
Idaho Teaching Standards State Specific Standards: · Standard 11: American Indian Tribes in Idaho	ED 454: Literacy Intervention and Methods ED 340: Foundations of Literacy Development and Reading Disabilities ED 460: Literacy in the Content Areas	The specificity of this standard is addressed more in the major area. It will be encompassed in and used as a specific group in the instruction related to student diversity and various explicit needs in the courses listed.
Idaho Teaching Standards State Specific Standards: · Standard 12: State Board approved Code of Ethics for Idaho Professional Educators	ED 340: Foundations of Literacy Development and Reading Disabilities ED 455: Practicum in Assessment and Intervention	This standard is most specifically met in the capstone Student Teaching experience that happens in the first field area. However, the ethical responsibilities of educators specifically related to the field of literacy will be addressed in these courses. ED 340 will connect the historical evolution of literacy instruction to the ethical responsibilities of the candidate to use evidence-based practices and stay up to date on research. The practicum course will enable students to implement ethical practices in working in a school with students.
Idaho Teaching Standards State Specific Standards: · Standard 13: Technology	ED 354: Assessment for Literacy Intervention	Candidates will learn technology-based assessment platforms and use technology tools to aid in the organization and analysis of data.

	ED 454: Literacy Intervention Methods	Candidates will learn technology tools and support for literacy intervention, such as supportive programs and assistive technology.
Idaho Comprehensive Literacy Standards Standard 1: Foundational Literacy Concepts • Standard 1: Fluency, Vocabulary Development, and Comprehension • Standard 3: Literacy Assessment Concepts • Standard 4: Writing Process • Standard 5: Diverse Reading and Writing Profiles – Reading and Writing Difficulties	Standard 1 ED 344 – Idaho Comprehensive Literacy #1 Standard 2 and 5 ED 345 – Idaho Comprehensive Literacy #2 Standard 3 ED 345 – Idaho Comprehensive Literacy #2 and ED 448: Assessment and Evaluation Standard 4 ED 441 – Language Arts Methods ED 346E: Elementary Literacy Practicum	Most initial instruction in the literacy standards is provided in the first field foundational literacy courses. All candidates take the Idaho Comprehensive Literacy Assessments and must pass them for institutional recommendation for certification. The syllabi for each course have been linked to each course name to the left. Further evidence, such as examples of common assessments, can be provided if needed.
	Specific to this proposed program, all courses deepen understanding related to each of the Literacy Standards as it is a K-12 literacy certification. Below, each course has been mapped to the specific literacy standards it most closely meets.	
	Standard 1 ED 340: Foundations of Literacy Development and Reading Disabilities ED 350: Language and the Brain ED 352: Advanced Phonics	These courses deepen candidate knowledge and understanding of language and literacy development and focus on using evidence-based practices. There is a focus on learner development and the use of systematic and explicit instructional practices to lessen instructional and learning gaps and as intervention practices for students with dyslexia and learning difficulties.
	Standard 2	These courses deepen candidates' knowledge and

	ED 454: Literacy Intervention Methods ED 460: Literacy in the Content Areas	understanding of instructional practices for teaching decoding, comprehension, and vocabulary. The content course teaches integration methods and strategies to teach literacy for content areas. The use of trade literature will allow candidates to use a variety of texts in their instruction.
	Standard 3 ED 354: Assessment for Literacy Intervention ED 455: Practicum in Assessment and Intervention	Candidates will learn assessment strategies and administration. They will learn appropriate testing options and data evaluation methods. Candidates will implement intervention plans and differentiated instruction based on assessment data.
	Standard 4 ED 460: Literacy in the Content Areas ED 454: Literacy Intervention Methods	Writing methods across content areas will be a key component of the literacy in the content areas course. Methods for literacy instruction will include methods of writing instruction focused on interventions. The foundational instruction for this standard occurs in ED 441: Language Arts Methods, which all candidates will take in their first field program.
	Standard 5 ED 340: Foundations of Literacy Development and Reading Disabilities ED 350: Language and the Brain ED 354: Assessment for Literacy Intervention	These courses focus on understanding diverse learner profiles, the characteristics of students with learning differences, and the instructional methods used to intervene and bridge learning gaps while distinguishing between general learning difficulties and dyslexia.

	ED 454: Literacy Intervention Methods	
Certificate and Endorsement Requirements (IDAPA 08.02.02 & State Board Policy IV.D.) *Show how your sequence of courses/modules/evidence of student learning meet the requirements in policy and rule.	Please see the attached documents that outline the program course sequencing and each course description, outcomes, and basic syllabus.	

STANDARD TWO: CLINICAL EXPERIENCE Educator Preparation Providers ensure diverse high-quality clinical experiences to develop knowledge, skills, and professional dispositions in candidates and educators.

2.1 CLINICAL PRACTICE Educator Preparation Providers include clinical practice of depth, breadth, coherence, and duration to enable candidates or educators to demonstrate proficiency in their area of endorsement.

Component	**Evidence Item (Link items only as a PDF)**	**Narrative/Rationale for Meeting Standard**
Clinical preparation depth, breadth, coherence, and duration	ED 354 Assessment for Literacy Intervention ED 454: Literacy Intervention Methods	These two courses are specific to the preparation for the clinical experience. However, all courses in the program work together to provide content and practical knowledge and understanding of literacy instruction to prepare candidates to have a depth of literacy instructional expertise that will continue to be deepened by experience in the field and ongoing learning.
Comprehensive clinical experience	ED 455 Practicum in Assessment and Intervention	Candidates receive elementary-level experience in their first field literacy practicum. This practicum is focused on middle and high-school-level literacy intervention. Combined with

		the first field literacy practicum, this gives candidates a K-12 span clinical experience. This practicum is focused on the evaluation and intervention practices for students who are not performing at expected levels in reading and writing. Candidates will be prepared to provide instructional and assessment advisement and coaching for peers. Candidates will be equipped to assess students and provide evidence-based instruction for individuals and groups of students as an intervention.
Signatures		
Signature of the Program/College Chair, Director, or Other Designee	Jeff Pulsipher, Chair of the Elementary, Early, and Special Education Department	Date: 11/6/23
Signature of the College of Education Dean or Educator Preparation Provider Head Official	Melissa Green, Dean for Teacher Preparation	Date: 11-2-23
	David Peck, Dean for the College of Education and Human Development	Date: 11/2/23

*Applications without appropriate dated signatures will not be considered.

* Public universities and colleges seeking a new degree or certificate program will also follow the process identified in State Board Policy III.G – Postsecondary Program Review and Approval.

*The signatures serve as an attestation that the Educator Preparation Provider understands the requirements and has met all policies, rules, and statutes, and institutional procedures.

Supporting Documentation

IDAPA 08.02.02

01.c.i To receive endorsement in two (2) fields of teaching, preparation must consist of completion of at least thirty (30) semester credit hours in one (1) field of teaching, and completion of at least twenty (20) semester credit hours in a second field of teaching.

> BYU-Idaho candidates receiving the Literacy K-12 teaching endorsement must complete the first field of teaching in Elementary Education in which they receive at least thirty (30) credits as prescribed by Idaho State Board of Education Governing Policies and Procedures IV.B.10.and then complete the literacy as their second field of study which consists of twenty (20) credits.

Idaho State Board of Education Governing Policies and Procedures IV.B.10.

bb.Literacy (K-12). Twenty (20) semester credit hours to include coursework in methods of teaching reading and writing; foundations of literacy including reading, writing, listening, speaking, viewing and language; language acquisition and development; diversity of literacy learners; literacy in the content area; literature for youth; diagnostic reading and writing; literacy assessments; data analysis and identification of characteristics of literacy difficulties including dyslexia; data driven instruction; instructional interventions; and the Idaho Comprehensive Literacy Plan.

> Please see the color coordinated markings in the course descriptions and outcomes in the following document that note where the requirements of the ISBE Policies have been addressed and met.

Program Courses

Course Code	Course Name	Credits
ED340	Foundations of Literacy Development and Reading Disabilities	3
ED350	Language and the Brain	3
ED 460	Literacy in the Content Areas	3
ED352	Advanced Phonics	3
ED354	Assessment for Literacy Intervention	3
ED454	Literacy Intervention Methods	3
ED455	Practicum in Assessment and Intervention	2
	Total	20

ED 340: Foundations of Literacy Development and Reading Disabilities

Course Description:

This course addresses the critical components and theories of literacy (and language) development and provides an introduction to the nature and needs of students with reading disabilities, including dyslexia. The course focuses on scientifically based research on the effects of learning disabilities, including dyslexia, on learning to read and write. The course addresses the historical development of the field of literacy, relevant laws and policies, and the impact on students with learning disabilities, including dyslexia.

Course Outcomes:

1. Explain widely recognized theories of reading development (and language) and disabilities (dyslexia).
2. Describe the distinguishing characteristics of reading disabilities, including dyslexia.
3. Analyze federal and state laws that pertain to learning disabilities, especially reading disabilities, including dyslexia.
4. Describe the historical milestones in the development of the field of learning disabilities and dyslexia.

Link to Course Syllabus ED 340

ED 350: Language and the Brain

Course Description:

This course addresses brain function as it relates to language and reading development and variations in visual memory, auditory memory, attention, language function, and auditory processing among students with and without reading disabilities. The course will also address the neurobiological origins of dyslexia and its effects on language and literacy development, including the role of attention, executive functioning, memory, and processing speed in reading and writing development.

Course Outcomes:

1. Describe theories of language acquisition and progression of development for all students, including students with reading disabilities, including dyslexia.
2. Explain the various parts of the brain associated with reading development and the effects of reading disabilities, including dyslexia, on brain function.
3. Explain the principles, concepts, processes, and development of brain function in language and literacy development and the effects on students with and without reading disabilities, including dyslexia.
4. Identify sources of differences in reading and language development.

Link to Course Syllabus ED 350

ED 460 Literacy in the Content Areas

Course Description:

In Literacy in the Content Areas, teacher candidates develop an understanding of language and literacy as it applies to teaching content in secondary schools with a focus on English learners and students who struggle with reading and writing. The course emphasizes incorporating reading and writing in the content areas and evidence-based instructional strategies to support all students' literacy development. Teacher candidates develop an understanding of struggling readers and writers, including students with dyslexia, learn how reading and writing difficulties vary in presentation and degree, and federal and state laws pertaining to students with learning disabilities. The course focuses on how reading, writing, and oral language skills are developed and used in discipline-specific curricula, including adaptations to support English learners and struggling readers and writers. Young adult literature is integrated throughout the course.

Course Outcomes:

1. Understand the importance of reading fluency, reading comprehension, and motivation to read and the impact of vocabulary and background knowledge in oral and written language comprehension within the content areas for all students, including English learners and students with reading difficulties, including dyslexia.
2. Integrate structured writing into content instruction to provide authentic writing opportunities that encompass a range of tasks, purposes, and audiences using ethical and credible research practices and effectively evaluate student writing to provide individualized constructive feedback and support for all learners, with a focus on English learners and students with reading difficulties, including dyslexia
3. Use evidence-based, explicit instruction to support middle and high school students in reading and writing in all content areas with a focus on appropriate supports and accommodations for English learners and students who struggle to read and write, including those with dyslexia.
4. Understands the characteristic of struggling readers and writers, including the distinguishing characteristics of dyslexia and dysgraphia, how reading difficulties vary in presentation and degree, federal and state laws pertaining to learning disabilities, advocacy for struggling readers and writers, appropriate accommodations, and adapting instruction to make learning accessible.

Link to Course Syllabus ED 460

ED 352: Advanced Phonics

Course Description:

This course addresses the multifaceted linguistic principles, structures, patterns, and historical influences on the English language. The relationship between phonemic awareness and the phonological system of language related to the reading process is examined along with an in-depth study of language processing, including phonology, phonetics, orthography, morphology, syntax, semantics, and pragmatics.

Course Outcomes:

1. Identify, pronounce, classify, and compare the consonant and vowel phonemes of English.
2. Analyze common linguistic rules, relationships, patterns, and constraints on letter sequences in English orthography.
3. Explain historical influences on English morphemes and spelling patterns.
4. Utilize current research in language and literacy development to support learners with reading challenges including dyslexia.

Link to Course Syllabus ED 352

ED 354: Assessment for Literacy Intervention

Course Description:

This course addresses the principles and practices of effective assessment for students with dyslexia and other reading disabilities, including the purposes of various assessments, the psychometric properties of high-quality assessment instruments, and issues related to test administration. Students will identify effective literacy assessment tools, develop informal assessment procedures, and interpret assessment data as the foundation for literacy intervention design.

Course Outcomes:

1. Evaluate the psychometric properties and test administration protocols of effective literacy assessments.
2. Analyze and evaluate literacy assessment data to identify deficiencies as indicators of reading disabilities, including dyslexia.
3. Interpret assessment data to determine the effectiveness of interventions.
4. Interpret literacy assessment data as a basis for tiered intervention decisions, instructional design, and program improvements.
5. Communicate assessment information and evaluation to a variety of stakeholders.

Link to Course Syllabus ED 354

ED 454: Literacy Intervention Methods

Course Description:

In this course students will take a deep dive into evidence-based literacy intervention for struggling readers including those with dyslexia. Students will learn how to explicitly teach systematic word identification, decoding, comprehension, and vocabulary strategies along with methods of instructional routines specific to the multiple levels of literacy acquisition as part of a comprehensive literacy intervention program.

Course Outcomes:

1. Know the methods of explicit and systematic instruction of all levels of literacy acquisition including phonemes, letter-sound relationships, syllable patterns, morphemes, vocabulary, sentence, paragraph, and text structures, reading fluency and comprehension.
2. Know multimodal methods of literacy instruction.
3. Plan systematic, explicit, multisensory/multimodal, and cumulative literacy instruction based on assessment data analysis.
4. Design instruction to needs of learners including students with reading challenges such as dyslexia.
5. Know components of planning a comprehensive literacy intervention program for multiple students in a school-wide setting, including analyzing data and planning with classroom teachers.

Link to Course Syllabus ED 454

ED 455 Practicum in Assessment and Intervention

Course Description:

The practicum integrates the theoretical study of assessment and intervention practices with application in various school and classroom settings. Teacher candidates apply the principles of effective assessment and intervention to implement evidence-based practices for students with reading disabilities, including dyslexia in a school setting.

Course Outcomes:

1. Demonstrate effective reading disability/dyslexia (literacy) assessment practices.
2. Apply the principles of progress monitoring assessment to track progress and make ongoing intervention decisions for struggling readers, including students with dyslexia.
3. Interpret literacy assessments in relation to an individual child's needs (profile).
4. Design a literacy-based intervention plan based on assessment data and evidence-based intervention practices.
5. Implement evidence-based literacy intervention practices for individuals and small groups.

Link to course Syllabus ED 455

SUBJECT

Workforce Development Council Update – Launch Grant Program

APPLICABLE STATUTE, RULE, OR POLICY

Section 72-1201, Idaho Code
Section 72-1204 through 72-1206, Idaho Code

BACKGROUND/ DISCUSSION

Idaho Code § 72-1205 establishes the Idaho Launch Grant Program to be administered by the Workforce Development Council. The grant provides a reimbursement of the lesser of $8,000 or 80% of the cost of tuition and fees at an eligible institution. This legislation went into effect on July 1, 2023, and initial grant awards were made in December of 2023.

Idaho Code § 72-1204(1)(f)(ii) defines a Launch Grant Program eligible student, in part, as an Idaho resident "who will graduate from an accredited high school or its equivalent in Idaho as determined by the board beginning with the spring 2024 graduating class".

Wendi Secrist, Executive Director of the Workforce Development Council presented an update on the progress of the Launch Grant Program to the Planning, Policy and Government Affairs Committee in November of 2023, and was asked at that time to provide an update to the full Board in February.

BOARD ACTION

This item is for informational purposes only.

Idaho Launch Implementation Framework

Eligible Institutions (72-1204 1.e.)

1. A training provider as recognized by the council under the Workforce Innovation and Opportunity Act or the Workforce Development Training Fund.
2. A board of trustees of a community college was established pursuant to the provision of Chapter 21, Title 33, Idaho Code.

Institutions/providers and programs can be found at https://lmi.idaho.gov/data-tools/occupations-in-demand/

Eligible Students:

Accredited High School or **its Equivalent** in Idaho as Determined by the Board (72-1204 1.f.ii.)

State Board Minutes Approved on October 18, 2023

Home schooled students must provide a transcript of subjects taught and grades received signed by the parent or guardian of the student; or a student who has obtained a general equivalency diploma by not later than the age of 21.

Career Pathway Plan Minimum Requirements (72-1204 1.f.iv.)

To receive Idaho LAUNCH funding students will be required to complete three (3) activities in Next Steps Idaho:

(1) Plan Smart Assessment including the Reflection
(2) Interest Profiler Assessment including the Reflection
(3) Work Values Assessment

-Or-

Submit for approval to Idaho Workforce Development Council the district / school Senior Project that aligns to Career Exploration. Senior Project is an expected graduation requirement; thus, with a Career Exploration component for Senior Project this would meet the Idaho LAUNCH requirement.

-Or-

Submit the district / school's Career Exploration Plan. Once students graduate there will be a crosswalk completion between applications for Idaho LAUNCH and high school graduation or equivalent as defined by the Idaho Office of State Board of Education. The district / school will be responsible for completing the crosswalk from the Idaho LAUNCH applications that the Idaho Workforce Development Council provides.

Grant (72-1204 1.d and 1.g.)

In no case shall the council reimburse more than eighty percent (80%) of a program's total tuition and fees, or more than eight-thousand dollars ($8,000), whichever is less. Grant funds may not be refunded to a student.

The Council establishes the maximum grant amount to be $8,000 per eligible student (cannot exceed $8,000).

In-Demand Career List (72-1204 1.i)
In-demand careers, as determined by the Council, have a minimum of 50 annual openings statewide.

A list of in-demand careers can be found here https://lmi.idaho.gov/data-tools/occupations-in-demand/ Note – the in-demand careers, that require training/education, are aligned to programs using the NCES CIP SOC Crosswalk.

Prioritization of Grant Awards (72.1205 2.c.i)
Grant awards shall be prioritized first based on the pursuit of in-demand careers. If additional funds remain, prioritization shall then be based on financial need.
For the Class of 2024, prioritization shall be done based on pursuit of in-demand careers. The following process shall be used, in order, until the funding cap is reached:

1. Applicants pursuing programs at community colleges that are not aligned to in-demand careers will be excluded.

Extension/Exceptions and Extenuating Circumstances (72.1205 3)
Acceptable Extensions/Extenuating Circumstances & Required Documentation:

- Religious Service
  - Call letter or similar from verified religious organization
- Military Service
  - Orders/enlistment papers
- Structured Volunteer Service with Peace Corps or AmeriCorps
  - Copy of contract
- Health or Medical Issues
  - Letter from medical provider (sufficient to meet FMLA requirements) stating that they can't receive reasonable accommodations from the training provider
- Program Not Available Fall Semester Following Graduation
  - A letter from the approved training provider with the date they will be admitted to the program

Process:
To request an extension / extenuating circumstance the participant will be required to submit documentation at one of two intervals:

- Upon initial application to receive Idaho LAUNCH grant, knowing that one of the exceptions/extension circumstances will need to be applied the year following high school graduation.
- After entering an education / training program and a break (greater than 6 months) is needed.

Extension / Extenuating Circumstance Guidance for Review:

- Extension will be approved for the length of the first commitment of service/medical provider note (sufficient to meet FMLA requirements) as provided in the documentation.
- Must show proof of completion at end to be included in the next available application cycle.
- Cannot initially defer for more than 2 years from high school graduation.

Early Reversion/Recapture of Grant Funds (72-1205 6)
A participant may have their grant funds reverted, or be required to pay back their grant in the following circumstances:
Unsatisfactory Academic Progress:

- Unsatisfactory Academic Progress means that a student does not meet the definition of the institution or training provider's satisfactory progress. Part-time students who meet all other criteria for satisfactory academic progress shall be exempt from this section.
- If an institution or training provider reports unsatisfactory academic progress, the participant shall pay back the LAUNCH grant funds used for the time period with unsatisfactory progress. These funds must be paid back within six (6) months of notification from the Council and additional funds will not be disbursed until they are paid back.

Expulsion:

- Expulsion is defined by each individual institution and / or industry standard.
- Participants shall be required to pay back the LAUNCH grant funds used for the time period in which the expulsion occurred. These funds must be paid back within six (6) months of notification from the Council and additional funds will not be disbursed until they are paid back.
    1. If the participant is going through an appeals process with the education / training provider, any additional action by LAUNCH will be on hold until the final determination is made.

Voluntary Drop/No-Show:

- Participants who exit their program prior to completion shall be required to pay back the LAUNCH grant funds used for the time period in which the drop/no-show occurred. These funds must be paid back within six (6) months of notification from the Council and additional funds will not be disbursed until they are paid back.

Job Out:

- Participants who drop their current education / training program due to transitioning to gainful employment in an Idaho LAUNCH in-demand career related to their training program or approved by the WDC Policy Committee, will not be required to pay back funds. However, the participant will be required to provide documentation in the form of two (2) months of pay stubs. The participant forfeits the remainder of their Idaho LAUNCH funds.

Transfer to an ineligible program after successful completion of a course or semester:

- Ineligible program means a program that does not meet the eligibility criteria for Idaho LAUNCH. This could include transfers to out-of-state providers.
- Participants will have up to six months to re-enroll in an eligible program; if participant doesn't re-enroll in an eligible program they forfeit the remainder of their LAUNCH funds.

Appeals

If a participant does not agree with a decision made on their Extension request or is asked to repay funds under the Voluntary Drop Out/No-Show policy, they can appeal by submitting a detailed explanation to idaholaunch@wdc.idaho.gov.

- The appeal must be received by the Idaho Workforce Development Council within 45 days of the date of letter sent by the WDC explaining the denial or request for repayment.
- An appeal on an Extension request must include updated documentation meeting the requirements for extensions.
- An appeal on repayment for Voluntary Drop/No-Show must include evidence of gainful employment in an Idaho LAUNCH in-demand career related to their training program or approved by the WDC Policy Committee, including two (2) months of pay stubs.

Process

- Staff reviews initial appeal to ensure it aligns with the requirements to the allowable extensions.
- Staff will research the issue and determine if the requirements for extension are met.
- Decision made is final.

IDAHO DIVISION OF CAREER TECHNICAL EDUCATION

SUBJECT

Idaho Division of Career Technical Education (Division) – Annual Report

APPLICABLE STATUTE, RULE, OR POLICY

Idaho State Board of Education Governing Policies & Procedures, Section I.M. Annual Planning and Reporting
Chapter 22, Title 33, Idaho Code

BACKGROUND/DISCUSSION

This agenda item fulfills the Board's requirement for the Idaho Division of Career Technical Education to provide an annual progress report on the Division's strategic plan, status of goals and objectives, as well as information on other points of interest in accordance with a schedule and format established by the Board's Executive Director.

Chapter 22, Title 33, Idaho Code, establishes the State Board for Career Technical Education, authorizes the Board to appoint an administrator to the State Board for Career Technical Education, establishes the Division of Career Technical Education and defines career technical education and the career technical education delivery system in Idaho. The Division of Career Technical Education serves as the administrative agency, under said Administrator, for the State Board for Career Technical Education and is responsible for the administration of Idaho's career technical education system and carrying out the State Board for Career Technical Education's policies and state and federal laws relative to career technical education. The Division provides leadership, administrative and technical assistance, and oversight for career technical education programs in Idaho's public secondary (grade 7 through 12) schools and technical colleges. For FY 2024, the Division is responsible for approximately $60.8M in funding for postsecondary programs, $39.7M for secondary and general programs (including CTE educator preparation), and an additional $7.8M toward related programs such as adult education, workforce training centers, Centers for New Direction, apprenticeship programs and fire service training.

The Division of Career Technical Education presented this report at the Planning, Policy and Government Affairs committee meeting on February 5, 2024. The written report is included in these materials for the Board's review.

IMPACT

This annual report serves to provide a state of the Division update and inform the Idaho State Board for Career Technical Education of the Divisions annual priorities in alignment with the Board's strategic plan and how they are, and will be, used to guide the Division' work moving forward.

ATTACHMENTS

Attachment 1 – Idaho Division of Career Technical Education Board Presentation
Attachment 2 – Idaho Division of Career Technical Education 2023 Annual Report

BOARD ACTION

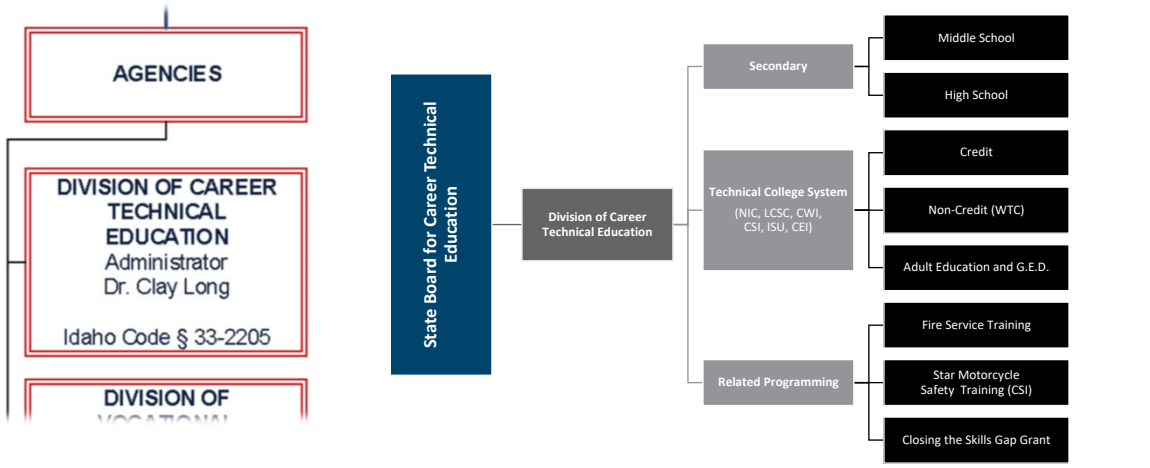
This item is for informational purposes only.

2024 IDCTE Update

Clay Long, Ph.D.

CTE MONTH®
CELEBRATE TODAY, OWN TOMORROW!

IDAHO Division of Career Technical Education



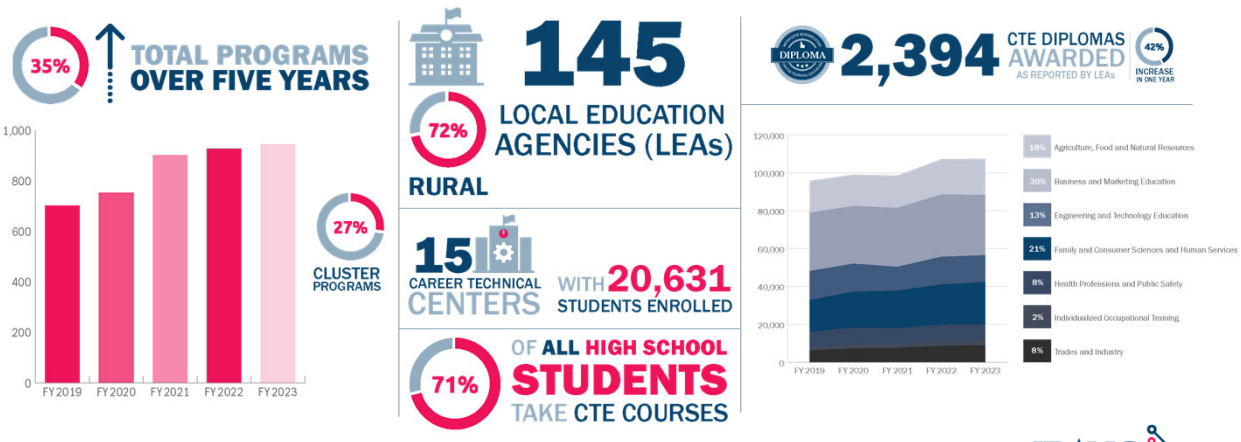
IDAHO Division of Career Technical Education

Our mission:

To prepare Idaho's youth and adults for high-skill, in-demand careers.

IDAHO Division of Career Technical Education

Secondary Success



Source: IDCTE 2022/2023 Annual Report

IDAHO Division of Career Technical Education

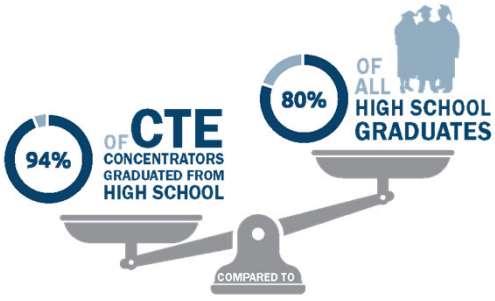
Secondary program applications

Program Area	2021*	2022	2023	2024
Agriculture and Natural Resources	53	14	13	25
Business and Marketing	58	10	9	30
Engineering Technology Education	22	18	13	24
Family Consumer Sciences and Human Services	39	10	17	32
Health Professions and Public Safety	15	3	12	18
Trades and Industry	16	2	6	11
Individualized Occupational Training	0	2	3	11
	203	**59**	**73**	**151**

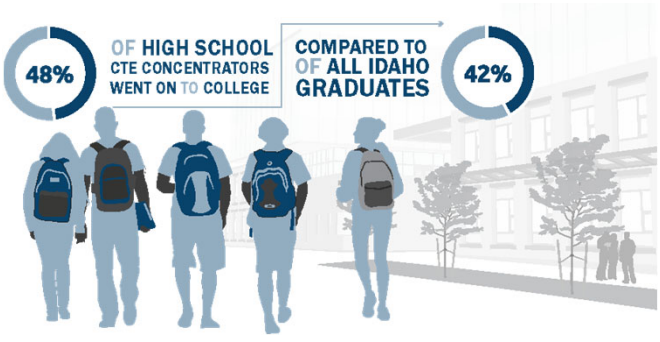
IDAHO Division of Career Technical Education

New Program Application window close February 15th annually
*Perkins V implementation

Secondary Success (cont.)



2021-2022 School Year

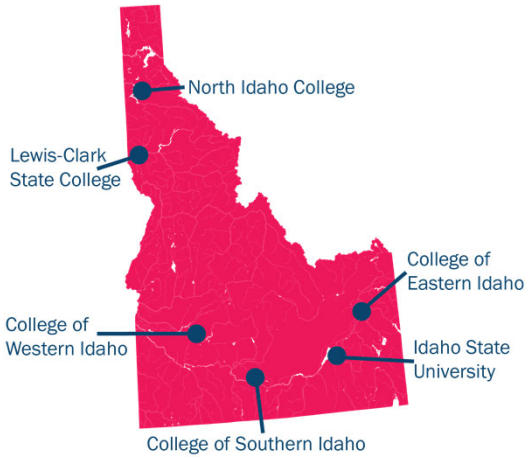


Source: IDCTE 2022/2023 Annual Report

What is the most important secondary data point?

IDAHO Division of Career Technical Education

Technical College System Success



1,708 STUDENTS AWARDED CERTIFICATES AND DEGREES

2% INCREASE IN FIVE YEARS

93% OF TECHNICAL COLLEGE COMPLETERS FOUND JOBS, CONTINUED THEIR EDUCATION, OR WENT INTO THE MILITARY

71% OBTAINED EMPLOYMENT RELATED TO THEIR CTE TRAINING

IDAHO Division of Career Technical Education

Source: IDCTE 2022/2023 Annual Report

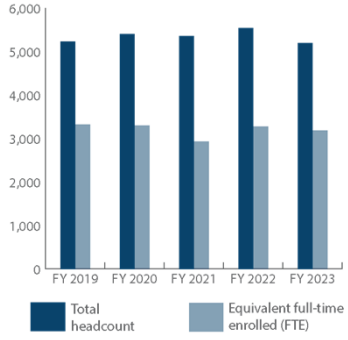
Technical College System Success

>5,100 STUDENTS ENROLLED AND NEARLY 3,200 FTE

215 ACTIVE PROGRAMS

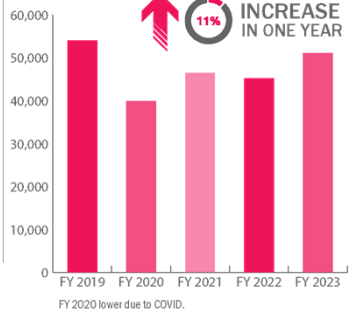
95,675 YEAR-END CREDITS

CERTIFICATE/DEGREE PROGRAMS



WORKFORCE TRAINING CENTERS (WTC)

11% INCREASE IN ONE YEAR



FY 2020 lower due to COVID.

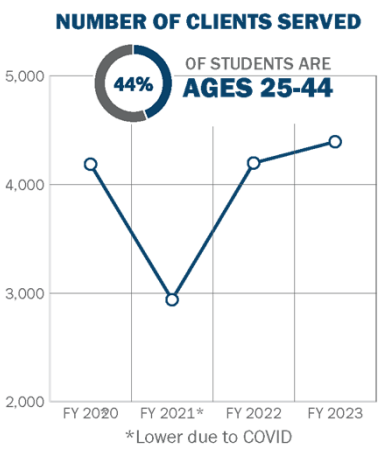
A FIVE-YEAR AVERAGE OF OVER **47,000** WTC ENROLLMENTS

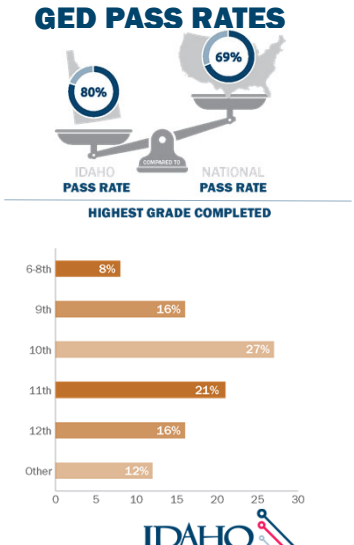
Source: IDCTE 2022/2023 Annual Report

IDAHO Division of Career Technical Education

What is success at the postsecondary level?

Adult Education

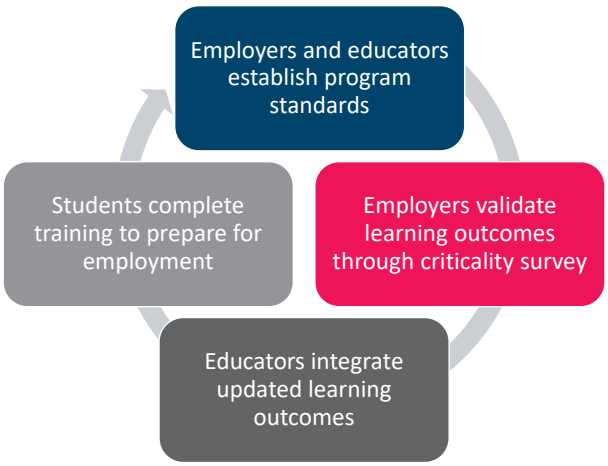




IDAHO Division of Career Technical Education

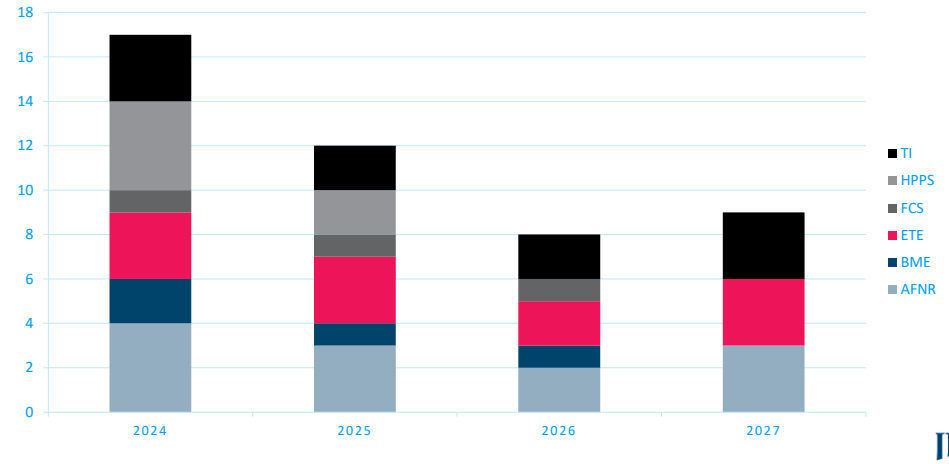
Should we allow students access to secondary technical programs while working on their high school equivalency?

Program Alignment (annual report p. 33)



IDAHO Division of Career Technical Education

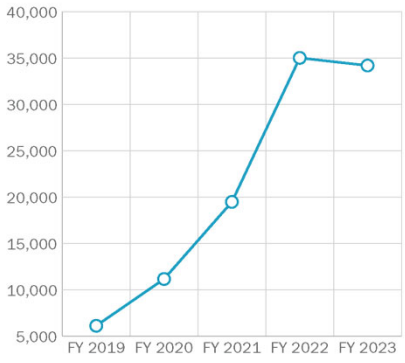
Program Standards Revisions

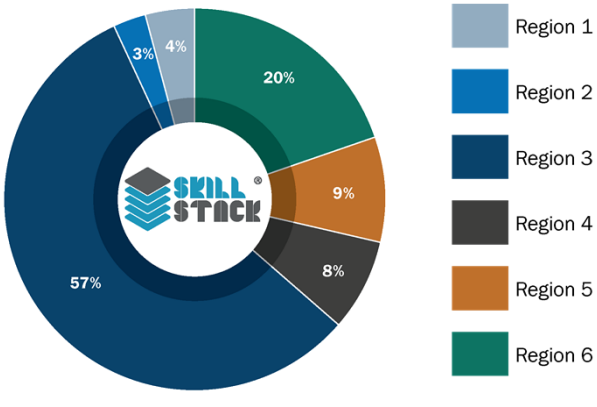


IDAHO Division of Career Technical Education

SkillStack®

>32,000 UNIQUE STUDENTS EARNING **>115,000** MICROCREDENTIALS





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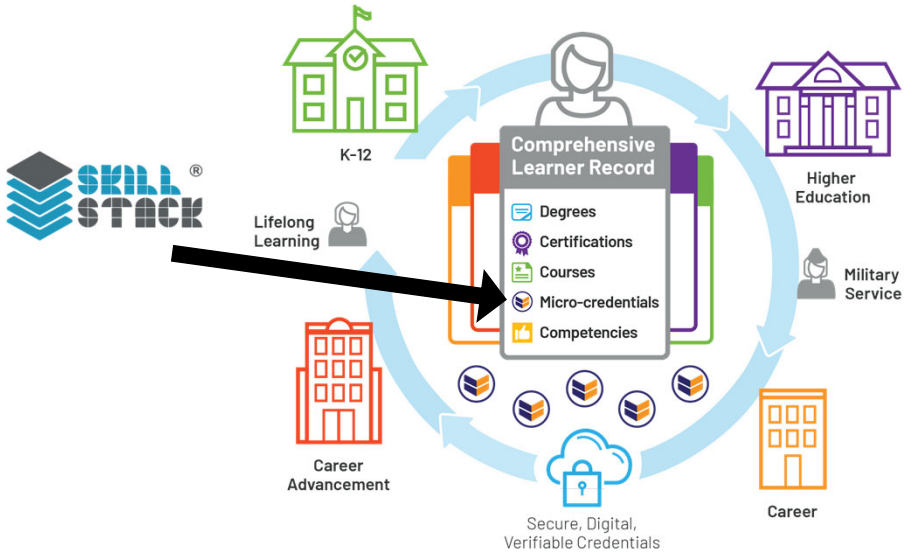
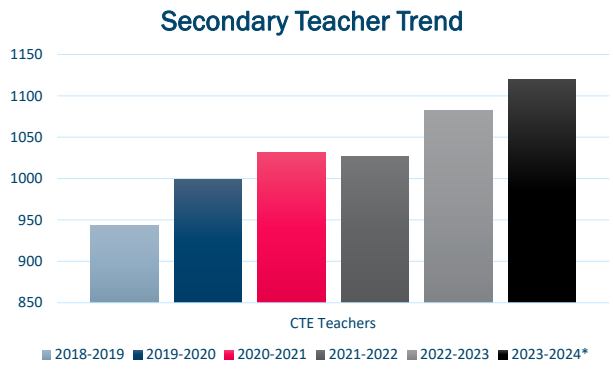
Digital Credentials Ecosystem



What should a comprehensive learner record look like?

Educator Services

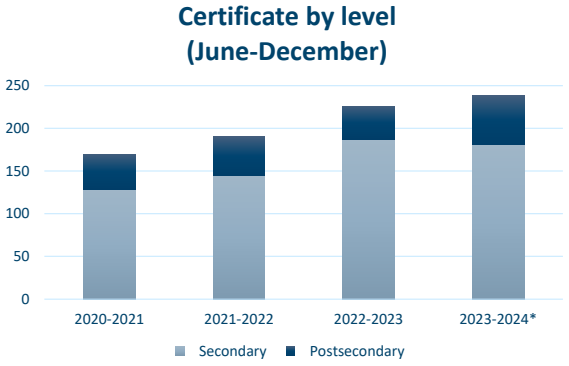
- Educator Certification
- Professional Development
  - (InSpIRE Ready! Oct. meeting)

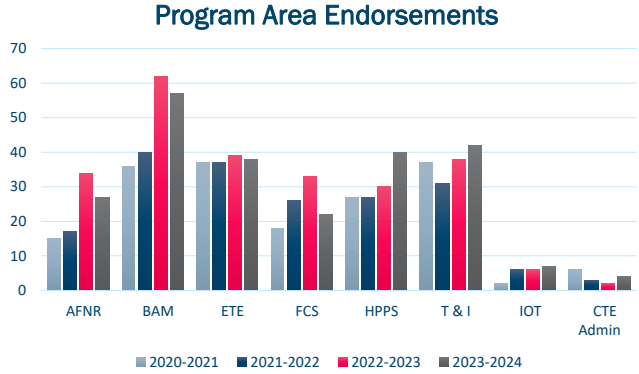


Current 2023-2024: 943 | Projected growth 3.5% (5yr average growth)

IDAHO Division of Career Technical Education

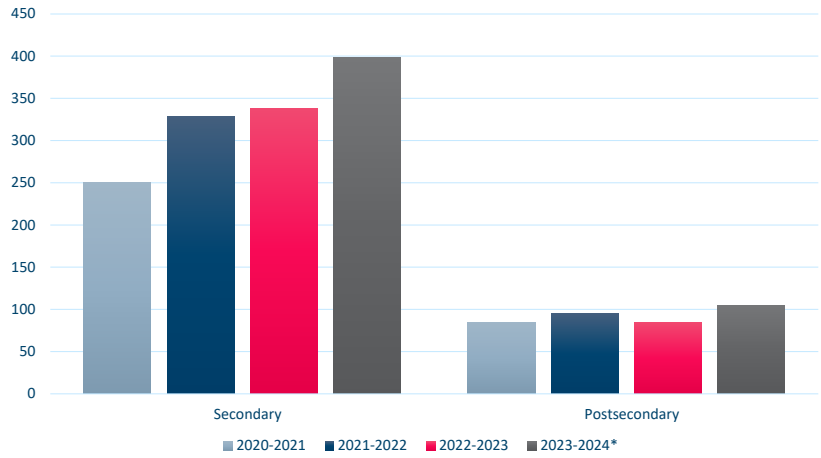
CTE Certification Trends





Based on certificates awarded June-Dec

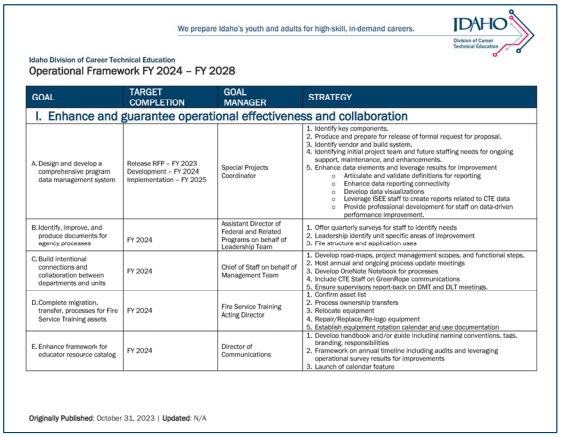
Annual CTE Certification Trends



*2023-2024 school year projected based on historical trends

2024-2028 Operational Framework

1. Enhance and guarantee operational effectiveness and collaboration
2. Foster and lead quality programs
3. Provide dynamic educator services



We prepare Idaho's youth and adults for high-skill, in-demand careers.

IDAHO Division of Career Technical Education

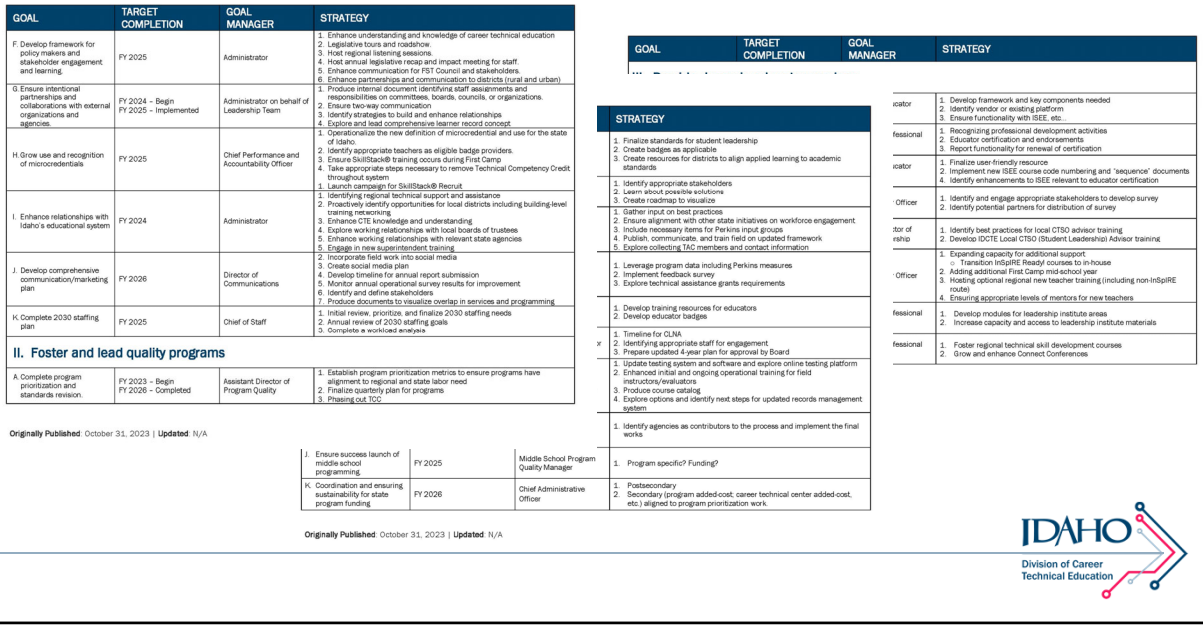
Idaho Division of Career Technical Education

Operational Framework FY 2024 – FY 2028

GOAL	TARGET COMPLETION	GOAL MANAGER	STRATEGY
I. Enhance and guarantee operational effectiveness and collaboration			
A. Design and develop a comprehensive program data management system	Release RFP – FY 2023 Development – FY 2024 Implementation – FY 2025	Special Projects Coordinator	1. Identify key components. 2. Produce and prepare for release of formal request for proposal. 3. Identify vendor and build system. 4. Identifying initial project team and future staffing needs for ongoing support, maintenance, and enhancements. 5. Enhance data elements and leverage results for improvement ○ Articulate and validate definitions for reporting ○ Enhance data reporting connectivity ○ Develop data visualizations ○ Leverage ISEE staff to create reports related to CTE data ○ Provide professional development for staff on data-driven performance improvement.
B. Identify, improve, and produce documents for agency processes	FY 2024	Assistant Director of Federal and Related Programs on behalf of Leadership Team	1. Offer quarterly surveys for staff to identify needs 2. Leadership identify unit specific areas of improvement 3. File structure and application uses
C. Build intentional connections and collaboration between departments and units	FY 2024	Chief of Staff on behalf of Management Team	1. Develop road-maps, project management scopes, and functional steps. 2. Host annual and ongoing process update meetings 3. Develop OneNote Notebook for processes 4. Include CTE Staff on GreenRope communications 5. Ensure supervisors report-back on DMT and DLT meetings.
D. Complete migration, transfer, processes for Fire Service Training assets	FY 2024	Fire Service Training Acting Director	1. Confirm asset list 2. Process ownership transfers 3. Relocate equipment 4. Repair/Replace/Re-logo equipment 5. Establish equipment rotation calendar and use documentation
E. Enhance framework for educator resource catalog	FY 2024	Director of Communications	1. Develop handbook and/or guide including naming conventions, tags, branding, responsibilities 2. Framework on annual timeline including audits and leveraging operational survey results for improvements 3. Launch of calendar feature

Originally Published: October 31, 2023 | Updated: N/A

IDAHO Division of Career Technical Education



GOAL	TARGET COMPLETION	GOAL MANAGER	STRATEGY
F. Develop framework for policy makers and stakeholder engagement and learning.	FY 2025	Administrator	1. Enhance understanding and knowledge of career technical education 2. Legislative tours and roadshow. 3. Host regional listening sessions. 4. Host annual legislative recap and impact meeting for staff. 5. Enhance communication for FST Council and stakeholders. 6. Enhance partnerships and communication to districts (rural and urban)
G. Ensure intentional partnerships and collaborations with external organizations and agencies.	FY 2024 – Begin FY 2025 – Implemented	Administrator on behalf of Leadership Team	1. Produce internal document identifying staff assignments and responsibilities on committees, boards, councils, or organizations. 2. Ensure two-way communication 3. Identify strategies to build and enhance relationships 4. Explore and lead comprehensive learner record concept
H. Grow use and recognition of microcredentials	FY 2025	Chief Performance and Accountability Officer	1. Operationalize the new definition of microcredential and use for the state of Idaho. 2. Identify appropriate teachers as eligible badge providers. 3. Ensure SkillStack® training occurs during First Camp 4. Take appropriate steps necessary to remove Technical Competency Credit throughout system 1. Launch campaign for SkillStack® Recruit
I. Enhance relationships with Idaho's educational system	FY 2024	Administrator	1. Identifying regional technical support and assistance 2. Proactively identify opportunities for local districts including building-level training networking 3. Enhance CTE knowledge and understanding 4. Explore working relationships with local boards of trustees 5. Enhance working relationships with relevant state agencies 5. Engage in new superintendent training
J. Develop comprehensive communication/marketing plan	FY 2026	Director of Communications	2. Incorporate field work into social media 3. Create social media plan 4. Develop timeline for annual report submission 5. Monitor annual operational survey results for improvement 6. Identify and define stakeholders 7. Produce documents to visualize overlap in services and programming
K. Complete 2030 staffing plan	FY 2025	Chief of Staff	1. Initial review, prioritize, and finalize 2030 staffing needs 2. Annual review of 2030 staffing goals 3. Complete a workload analysis
II. Foster and lead quality programs			
A. Complete program prioritization and standards revision.	FY 2023 – Begin FY 2026 – Completed	Assistant Director of Program Quality	1. Establish program prioritization metrics to ensure programs have alignment to regional and state labor need 2. Finalize quarterly plan for programs 3. Phasing out TCC

Originally Published: October 31, 2023 | Updated: N/A

GOAL	TARGET COMPLETION	GOAL MANAGER	STRATEGY
J. Ensure success launch of middle school programming.	FY 2025	Middle School Program Quality Manager	1. Program specific? Funding?
K. Coordination and ensuring sustainability for state program funding	FY 2026	Chief Administrative Officer	1. Postsecondary 2. Secondary (program added-cost; career technical center added-cost, etc.) aligned to program prioritization work.

Originally Published: October 31, 2023 | Updated: N/A

What coming?

- April
  - First-look at IDCTE's Strategic Plan
  - Program Alignment
    - Program Standards Process
    - Endorsement modifications/additions
  - Perkins V State Plan (revised 4-year plan)
- June
  - Final approval of the Strategic Plan

IDAHO Division of Career Technical Education

IDAHO Division of Career Technical Education

Questions?

Clay Long, Ph.D.
clay.long@cte.idaho.gov | 208-429-5530 | cte.idaho.gov

IDAHO
Division of Career Technical Education

2023 ANNUAL REPORT

We prepare Idaho's youth and adults for high-skill, in-demand careers.

Letter from the administrator

While CTE in Idaho continues to grow by just about every metric, I'm most excited about the steady growth of opportunities for learners. Thanks to unprecedented support from Governor Brad Little and the Idaho Legislature, we've enjoyed a renewed investment in our programs, which directly benefits Idaho's students and employers. With millions in grants awarded from the Leading Idaho and Building Idaho's Future programs, districts and institutions have been able to expand and modernize Idaho's CTE programs.

And at all levels, we're listening to you to make Idaho's future even brighter. Thanks to your insight and feedback, we've made improvements ranging from enhancements to our website to identifying our priorities as part of our five-year framework. This insight helps me and the team remain aligned with Idaho's workforce needs and deliver on our mission: to prepare Idaho's youth and adults for high-skill, in-demand careers.

As you look through the following pages, I hope you'll be as impressed with the successes of our educators, students, and programs as I was. We appreciate your support and partnership and look forward to continuing to work together to grow and improve career technical education in Idaho.

Clay Long, Ph.D., State Administrator

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Highlights

The IDCTE team accomplished a lot during fiscal year 2023, but we think these six accomplishments had the most impact on preparing Idaho's youth and adults for high-skill, in-demand careers:

Finalized RFP for new data and reporting system

We finalized a request for proposal (RFP) to solicit vendors for our new data system. The RFP was a 100-page document outlining several requirements for four modules: CTE programs, Perkins, funding, and contacts.

Supported almost 300 new CTE educators

Our three in-house employees and five contractors supported almost 300 CTE educators. See p. 13 for more details.

Experienced exponential program growth

We had 150 new or reinstated program request applications, a 172% increase over fiscal year 2022.

Invested in program expansion and modernization

Idaho's CTE secondary and technical college system programs received $8 million in grants for program expansion and modernization. See p. 5 for more details.

Reassessed and aligned program standards

This multi-year project will facilitate a seamless transition from high school to technical college programs, and increase the likelihood of students completing CTE programs or obtaining industry credentials. See p. 33 for more details.

Increased the number of CTE diplomas issued

We experienced a 42% increase in the number of Workforce Readiness and Career Technical Education Diplomas issued during the 2022-2023 school year.

Program awards

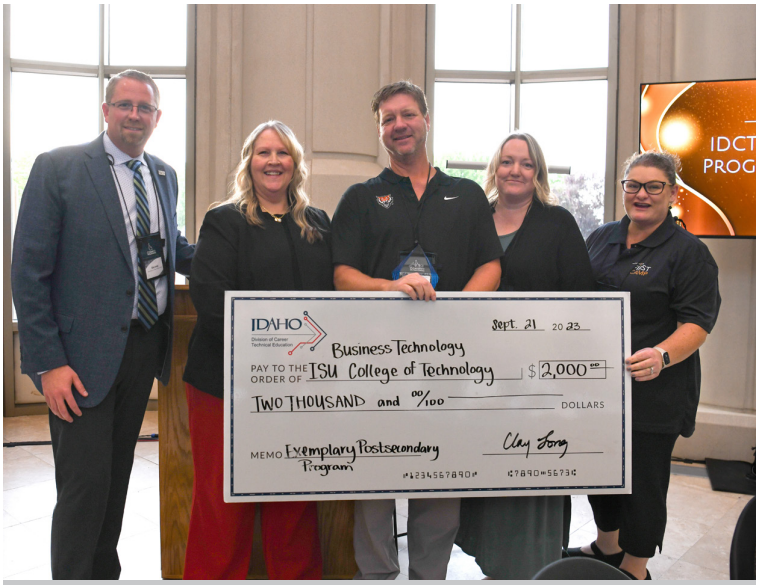
HEALTH PROFESSIONS PROGRAM
Mountain Home High School

Exemplary Program Award SECONDARY 2023

Thanks to a robust technical advisory committee, strong community partnerships, valuable hands-on experiences, and employment connections for students, IDCTE was pleased to recognize Mountain Home High School's (MHHS) Health Professions program as the Secondary Exemplary Program of the Year.

With dual credit options, clinical experiences, and diverse industry certifications, the program propels students seamlessly into the workforce or advanced education, with many securing positions with local employers prior to graduation. Notably, every student in the program attains all programmatic SkillStack® badges, while the Nursing Assistant and Pharmacy Technician programs boast a 100% pass rate in the Technical Skills Assessments, Workplace Readiness Assessments, and industry certification exams.

Beyond academic achievements, MHHS's HOSA chapter has consistently championed mental health and suicide prevention, earning state and national accolades for impactful community service. Program members, including state officers, receive recognition at the HOSA State Leadership Conference for their outstanding competitive event accomplishments, further highlighting the program's excellence.



BUSINESS TECHNOLOGY PROGRAM
ISU College of Technology

Exemplary Program Award POSTSECONDARY 2023

The Business Technology program at Idaho State University's College of Technology clinched the Postsecondary Exemplary Program of the Year Award by dynamically tailoring its four degree options to the ever-evolving employment landscape, ensuring alignment with local, regional, and state needs.

Accommodating diverse students, the program offers flexible pathways, including one-semester basic technical certificates, two-semester intermediate technical certificates, two-year associate degrees, and a route to a four-year bachelor of science degree. The program's emphasis on immersive, hands-on learning and significant on-site work hours is complemented by assistance in securing opportunities.

A standout feature is the program's diverse technical advisory committee, which boasts influential partners such as the Idaho National Laboratory and the City of Pocatello. The Business Professionals of America organization plays a crucial role in guiding students through the transition from postsecondary training to employment while cultivating a collegiate environment and nurturing leadership skills. With strong faculty-student connections, the program serves as a versatile and exemplary solution for both students and industry stakeholders.

Grant transforms Bonners Ferry High School woodworking program

In 2014, Francis Carlson's career took an unexpected turn. Though she had a certificate in fine woodworking from Selkirk College in Nelson, British Columbia, she struggled to find a job in the post-recession economy. It was then that Carlson, a 2011 Bonners Ferry High School (BFHS) graduate, discovered an opportunity to share her passion for woodworking in education.

Faced with the potential cut of the Cabinetmaking and Bench Carpentry program at her alma mater due to the absence of a teacher, Carlson stepped in as a substitute teacher. Her initial reluctance turned into a genuine passion, and with enough experience on the job, she obtained a Limited Occupational Specialist Certificate and made the leap into teaching full-time.

Over the past nine years, Carlson has earned a bachelor's degree in technical education and will finish a master's degree in curriculum development from the University of Idaho. She has also become a fervent advocate for technical education and the imparting of practical employability skills.

"I'm passionate about CTE. I feel like this is where we should be directing our time, energy, and resources," said Carlson.

Under Carlson's guidance, the BFHS Cabinetmaking and Bench Carpentry program has blossomed. Students start the program learning basics in shop safety, small tools and machines, as well as measuring and layout concepts. Students focus intensively on standards, planning, materials, drafting, and reading plans in their second year. The curriculum emphasizes lean manufacturing principles and includes techniques such as gluing and computer numerical control engraving for personalization. In their third year, students delve into the intricacies of cabinet joints, doors, and drawers, culminating in constructing cabinets for various locations at BFHS, such as

> "If we want our students to have the best education, we have to give them access to the best equipment. Now I'm confident my students have that."
>
> –Francis Carlson

classrooms, the principal's office, and the shop toolroom. In the final year of cabinets, students dive deeper into cabinetry and fine woodworking, learning advanced skills like veneering, glass etching, table construction and joints, with special emphasis on cabinet and furniture production.

Carlson actively collaborates with local employers to understand their needs, establish internships, and cultivate positive relationships with businesses. She also strives to give her students experience with industry standard equipment so they can meet employers' expectations on the job.

However, acquiring the necessary resources can be challenging in a small school within a small district. Though Carlson has made consistent upgrades and improvements since she began teaching, there's one piece of equipment she hasn't been able to replace: a dust collector originally installed in 1992. This vital component removes sawdust and woodchips, ensuring clean air and a safe work environment for students. The existing collector showed signs of wear and tear, but the financial burden of a $200,000 replacement was daunting for a small school.

Undeterred, Carlson used her grant-writing skills and applied for a Leading Idaho grant. In September 2023, she secured a $250,000 grant, not only covering the replacement of the dust collector but also upgrading the planer, drum sander, and jointer. The equipment is currently being manufactured, with the installation expected in January or February 2024.

Despite the temporary inconveniences during the installation, Carlson is optimistic about the new, more efficient equipment and how it will contribute to a dynamic and engaging educational experience.

"If we want our students to have the best education, we have to give them access to the best equipment," said Carlson. "Now I'm confident my students have that."

CTE PROGRAMS RECEIVE $8 MILLION IN PROGRAM EXPANSION AND MODERNIZATION GRANTS

IDCTE awarded $8 million in grants for Idaho's secondary and postsecondary CTE programs. The grants were possible thanks to Governor Brad Little's Leading Idaho initiative, which gives back Idaho's record budget surplus in the form of tax cuts and critical investments that matter most to Idahoans.

Grants were open to all approved secondary and postsecondary CTE programs and could be used to reimburse awardees for the actual cost of approved equipment up to the maximum award amount. At the secondary level, pathway programs (a linear progression of courses culminating in a capstone course) and cluster programs (a group of courses grouped around broad industry or economic areas) were eligible to apply.

More than 140 secondary and 26 postsecondary programs applied for the grants, and more than $14 million was requested. All applications were evaluated and prioritized based on data provided by the Idaho Department of Labor.

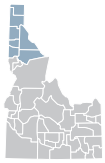
"We identified recipients using a very targeted approach," said Chet Andes, IDCTE's assistant director of program quality. "We looked at regional and statewide data to ensure we supported programs that help regional employers fill their most high-skill, in-demand careers, and awarded a roughly equal amount of grants to rural and urban local education agencies."

Applications that supported training for the top 250 occupations with at least 100 job openings or projected 25 percent growth were prioritized. While more than 96 percent of postsecondary applicants received funding, less than 38 percent of secondary applicants received grants, which calls attention to the need for ongoing support for CTE programs.

"We're extremely grateful to Governor Little for his ongoing support of CTE," said Dr. Clay Long, IDCTE's state administrator. "We look forward to the continued support of the governor and legislature to ensure we continue to meet the needs of Idaho's students and employers."

REGION 1

SECONDARY

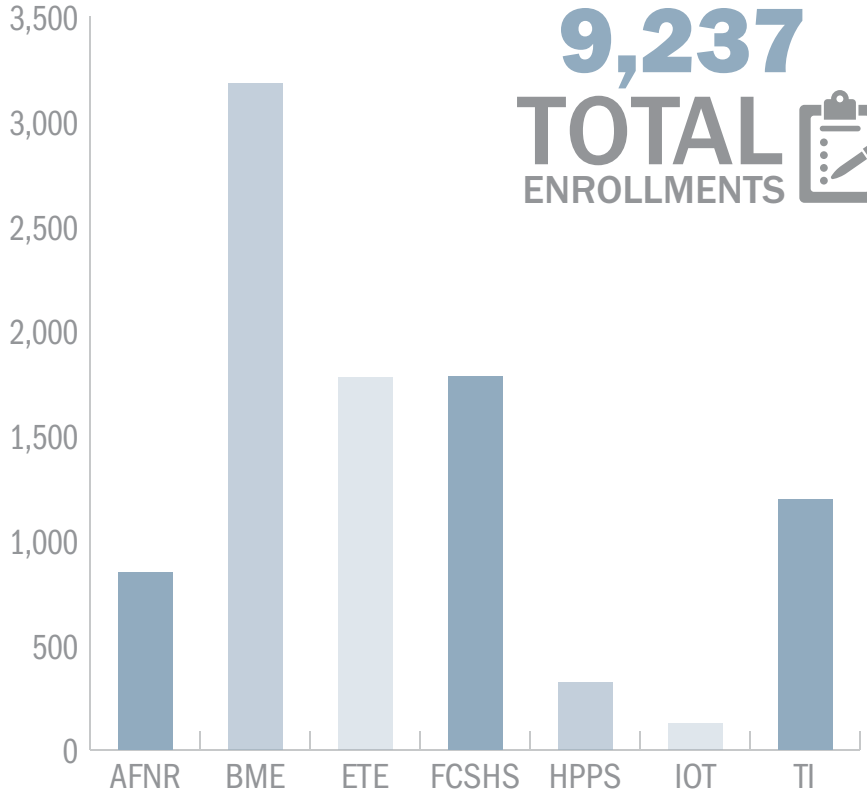


503 CTE CONCENTRATORS

91 TOTAL PROGRAMS

9,237 TOTAL ENROLLMENTS

1,331 SKILL STACK® BADGES ISSUED



TOTAL ENROLLMENTS IN CTE PROGRAMS

AFNR: Agriculture, Food and Natural Resources; BME: Business and Marketing Education; ETE: Engineering and Technology Education; FCSHS: Family and Consumer Sciences and Human Services; HPPS: Health Professions and Public Safety; IOT: Individualized Occupational Training; TI: Trades and Industry

16 LOCAL EDUCATION AGENCIES (**LEAs**) WERE RURAL

88%

1 CAREER TECHNICAL CENTER

37 CTE DIPLOMAS AWARDED

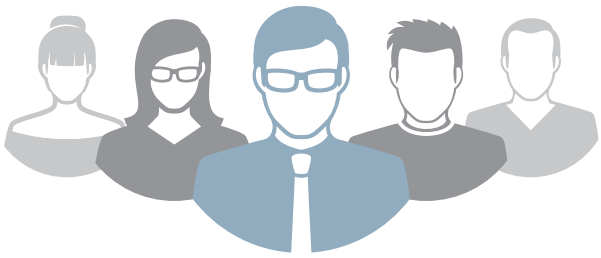
AS REPORTED BY LEAs

TECHNICAL COLLEGE—NORTH IDAHO COLLEGE

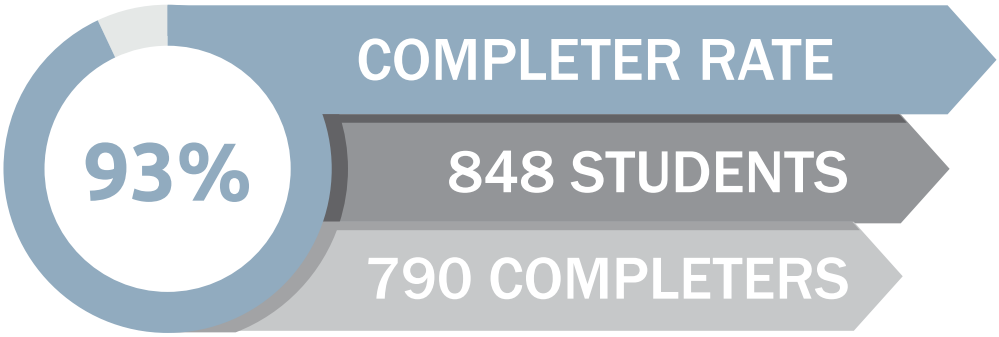
44	570	8,443	199	281
Active programs	Students enrolled in CTE programs (headcount)	Year-end credits	Students awarded degrees/ certificates	Technical college FTE enrollments

WORKFORCE TRAINING CENTER (WTC)

6,684
HEADCOUNT



APPRENTICESHIPS



EMPLOYER SPOTLIGHT

Northwest Line Joint Apprenticeship and Training Committee

Type of industry: Line construction

Training need: Northwest Line Joint Apprenticeship and Training Committee (NW Line JATC) provides quality training for the outside line construction industry. The increased demand for lineworkers, coupled with fewer new lineworkers entering the field as older lineworkers retire, has led to challenges in finding qualified workers. After the only line training program in the area closed down during the pandemic with no plans to reopen, NW Line JATC needed someone to run its vocational outside line training academy (VOLTA) program. This entry-level training prepares students for powerline work, powerline tree clearance, and power ground positions.

How the WTC delivered: In addition to supplying some equipment and personnel support, the college rents the space for VOLTA, providing classrooms and an area to erect an array of poles and other training equipment on the Rathdrum Prairie next to the Parker Technical Center.

> The industry is growing. Older people are retiring and there's more need now than ever. In the past, there hasn't been much of a push for kids to go on this track. But now there's movement in this direction and I'm glad to be a part of it.
>
> —Terry Lowen, director, NW Line JATC

North Idaho College

Digital media production program shapes future leaders in broadcasting

Davey Steele was always an athlete, so it was a natural fit when he got a work-study job running the video board, replay system, and shot clock for Vandal games at the University of Idaho's Kibbie Dome.

After he graduated with a degree in advertising in 2012 and had trouble finding a job in his field, he started teaching economics, business, and merchandising at Lewiston High School (LHS). Before long, Steele found himself in a familiar spot: running the scoreboard, video board, and shot clocks at LHS's basketball games. One night, Steele struggled to run all the equipment, plus play music during time outs on his own.

"It was absolutely crazy, and I needed help," Steele recalls. "At some point, I thought, 'I could teach my students to do this.'"

Steele approached his principal about teaching the kids video production so they could help run games, and with his support, Steele started a sports broadcasting class as part of the school's digital media production pathway. Soon after, Steele requisitioned some lighting and a Tricaster production system for doing live video and graphics, and students started going live on YouTube with their school announcements every morning. This initial investment in equipment allowed the sports broadcasting students to stream the 2022 Golden Throne basketball game, an annual charity event held at Lewis-Clark State College. Their high-quality production received an incredible number of views on YouTube. Steele and his students were so excited they started live-streaming all of LHS's basketball games.

> "With the mobile studio, we'll be able to live stream our games on YouTube, and I believe we're in a position to get enough views that we can sell ads."
>
> –Davey Steele

"Games would end around nine or 9:30 p.m., and we'd have to wheel everything back to the studio to record the daily announcement the next morning. I didn't like the wear and tear on the equipment," said Steele.

Then, one of Steele's students told him about a school in Mississippi with a mobile TV studio in a semi-truck. Steele had heard about Governor Little's Leading Idaho initiative, so he wrote a grant for $104,000 to create LHS's own mobile TV studio, complete with a trailer, replay system, monitors, Tricaster, and 300-foot cables.

"With the mobile studio, we'll be able to live stream our games on YouTube, and I believe we're in a position to get enough views that we can sell ads," said Steele.

But Steele's students' ambition extends far beyond the studio. As LHS's Business Professionals of America, yearbook, and Associated Student Body advisor, Steele also encourages his students to flex their entrepreneurial muscles. One of his students took pictures at school dances and sold flash drives of the unedited images for $20; she raised $1,000 in a single night. Another student developed a marketing plan for the athletic department and used the school's large-format Epson printer to print banners on sticky vinyl and windscreens to hang in the gym and outdoor facilities. They were sold to local businesses, and she raised $80,000 in a year.

Steele's innovation and entrepreneurial drive were among the many factors that led to his program receiving an honorable mention in IDCTE's 2023 Exemplary Program Awards.

"I hope schools across Idaho can see what we've done here and be inspired to do the same," said Steele.

EXEMPLARY PROGRAM AWARDS CELEBRATE THE BEST OF THE BEST IN IDAHO CTE

IDCTE's Exemplary Program Awards recognize outstanding secondary and technical college programs in Idaho. These accolades spotlight initiatives dedicated to equipping the state's youth and adults with the skills needed for high-skill, in-demand careers. Selected by IDCTE's program quality team and agency partners, these recipients meet stringent criteria outlined by the IDCTE Quality Program Measures and ACTE High-Quality CTE Program of Study Framework self-evaluation tool.

These exemplary programs align seamlessly with institutional and IDCTE missions, offer students meaningful opportunities, forge diverse partnerships, incorporate innovative elements, and showcase replicable best practices. Their staff's commitment to ongoing professional development fosters student growth and program engagement through a systematic, data-driven approach.

Beyond mere recognition, these programs are pivotal in shaping Idaho's workforce. They transcend conventional educational models by creating immersive learning environments that promote comprehensive growth and a robust educational experience, setting a standard for institutions across the state.

Driven by collaborations spanning various industries, these programs emphasize innovation by pushing educational boundaries with cutting-edge equipment, visionary courses, and pioneering teaching methods. They serve as blueprints for success and champion inclusivity by ensuring equal opportunities for all students.

These programs' dedication to excellence is reflected in their continuous improvement strategies, employing systematic data-driven processes. The IDCTE Exemplary Program Awards celebrate their outstanding achievements and serve as beacons of inspiration, illuminating the path for Idaho's future in career technical education. For information on the 2023 Exemplary Program Award honorees, see p. 3.

REGION 2

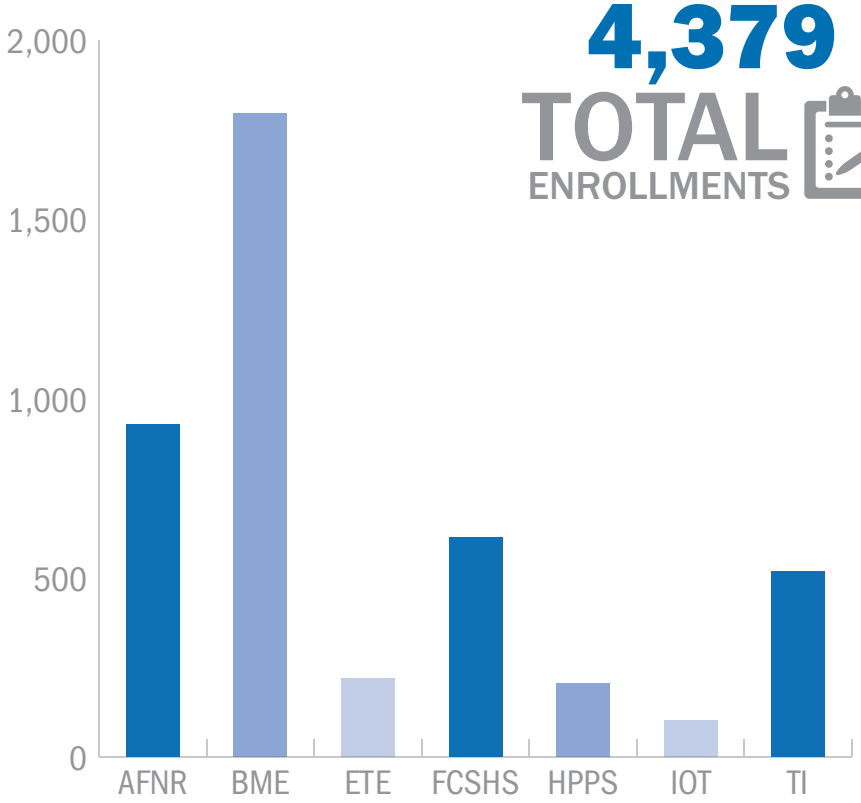
SECONDARY

197 CTE CONCENTRATORS

57 TOTAL PROGRAMS

4,379 TOTAL ENROLLMENTS

947 SKILL STACK® BADGES ISSUED



TOTAL ENROLLMENTS IN CTE PROGRAMS

AFNR: Agriculture, Food and Natural Resources; BME: Business and Marketing Education; ETE: Engineering and Technology Education; FCSHS: Family and Consumer Sciences and Human Services; HPPS: Health Professions and Public Safety; IOT: Individualized Occupational Training; TI: Trades and Industry

17 LOCAL EDUCATION AGENCIES (LEAs) WERE RURAL

88%

1 CAREER TECHNICAL CENTER

343 CTE DIPLOMAS AWARDED

AS REPORTED BY LEAs

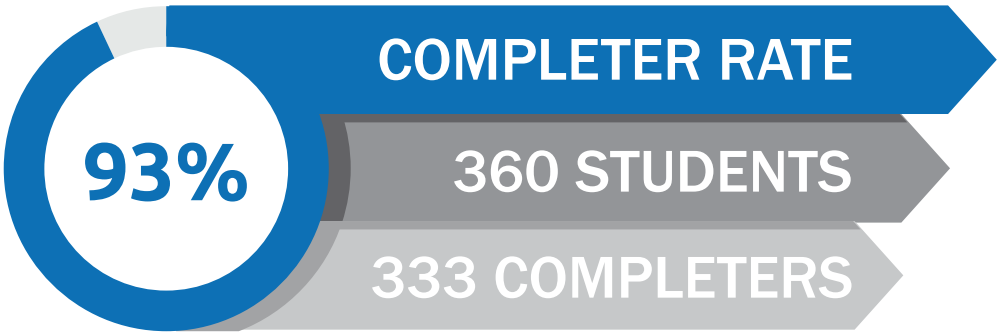
TECHNICAL COLLEGE—LEWIS-CLARK STATE COLLEGE

31	342	8,459	99	282
Active programs	Students enrolled in CTE programs (headcount)	Year-end credits	Students awarded degrees/ certificates	Technical college FTE enrollments

WORKFORCE TRAINING CENTER (WTC)

1,854
HEADCOUNT

APPRENTICESHIPS



EMPLOYER SPOTLIGHT

Gritman Medical Center

Moscow, Idaho

Type of industry: Healthcare

Employees: 700

Training need: Certified nursing assistants (CNAs) provide essential support to patients and nurses alike. Their contributions in assisting with daily activities, monitoring vital signs, and offering emotional support significantly impact patient well-being and recovery. With fewer CNAs available, nurses become overburdened, leading to increased workloads, potential burnout, and less time for individual patient attention. This shortage can also delay response times, limit patient mobility, and hinder the delivery of timely care, ultimately impacting the overall quality and efficiency of healthcare services within hospitals.

How the WTC delivered: LCSC's WTC has partnered with Gritman Medical Center to pair Gritman's nursing expertise and available classroom space with LCSC's curriculum and administrative knowledge. This ensures that students have access to quality education and training, fostering a skilled and competent workforce ready to meet the healthcare challenges of today and tomorrow.

> This helps to meet the growing demand for healthcare professionals, support local healthcare facilities, and contribute to the economic development of the community.
>
> **—Arika Jensen, director of education, Gritman Medical Center**

LEWIS CLARK STATE COLLEGE

Diesel technology teacher bridges gap between industry and education

Paul Rood always liked cars, so it came as no surprise that after high school graduation in the late 1980s, he enrolled in Universal Technical Institute's two-year auto diesel degree program and discovered his niche in heavy duty diesel repair.

"I never thought about being a diesel mechanic. Back then, it really wasn't on my radar for a career," said Rood. "But I took a diesel class for the heck of it and ended up really liking it."

After 30 years working for top-tier employers like Peterbilt and Knife River, Rood had never considered teaching. But somehow, towards the end of the COVID-19 pandemic, the CTE administrator at Kuna's Swan Falls High School got a hold of his resume. The person who had been teaching diesel technology resigned unexpectedly, leaving a vacancy for a teacher with industry experience.

"All of my family and friends thought I'd be perfect for teaching, but I'd never really considered it until then," said Rood. "When I went in for the interview, I was so impressed with the facility, I thought, 'what the heck?' and gave it a shot."

Though Rood immediately took to the classroom and found students liked and respected him because of his experience, he found pursuing his Degree Based Career Technical Certification to fulfill the certification requirements was the most challenging part of his transition from industry veteran to educator. Fortunately, Rood's mentors from the Division,

> "I'm very tenacious, and what I envisioned when I took the job three years ago is pretty much where we're at right now."
>
> –Paul Rood

Bill Brown and Sandy Murin, helped him navigate the expectations of college-level work while simultaneously acclimating to being a new teacher.

“That first year was pretty challenging, but I always felt like Bill and Sandy were in my corner,” said Rood. “Bill especially helped me learn to play the game, and he’s talked me off the ledge more than once.”

In addition to his mentors, Rood also received strong support from the community and his technical advisory committee.

“Western States Cat, Knife River, Sun Rock, and Western Trailer have all been so helpful since I’ve started this program. They donate parts and loan me equipment and give the kids opportunities like job shadowing, mentorship positions, and academies that lead to paid positions when they graduate,” said Rood. “I want my kids to aim high and feel comfortable rubbing elbows with people in prestigious shops. These partnerships really give them that.”

With only two classes left to complete his coursework at Idaho State University, Rood sees the light at the end of the tunnel and has worked to build relationships with local employers and gain their support.

“I’m very tenacious, and what I envisioned when I took the job three years ago is pretty much where we’re at right now.”

MENTORS HELP INDUSTRY PROFESSIONALS BECOME CERTIFIED TEACHERS

IDCTE offers multiple pathways to becoming certified as a CTE educator, along with two distinct options for obtaining the necessary training. Prospective educators can either pursue university coursework tailored to CTE classroom teaching at their own expense or opt for IDCTE’s InSpIRE Ready! program. This program, a blend of coursework and mentorship, caters specifically to industry professionals seeking to transition from industry into teaching. Notably, InSpIRE Ready! is provided to Idaho CTE educators at no expense.

To facilitate the transition of new teachers from industry to the classroom, IDCTE assigns mentors who offer ongoing coaching and access to resources until they obtain their standard teaching certificate. These mentors encompass elements of a counselor and a motivator, underscoring the profound influence teachers wield over students and communities.

The Division dedicates three full-time employees to support incoming CTE educators. However, given that IDCTE supported more than 300 new LOS teachers at secondary and technical college system levels, IDCTE supplements this support with a network of five strategically positioned contractors. These contractors, predominantly comprised of retired CTE educators and administrators, provide targeted assistance to help increase retention. This support is especially crucial in smaller communities where there aren’t enough people with industry experience to step into a classroom and teach CTE programs.

Ultimately, IDCTE aims to support technical colleges, local educational agencies, administrators, and educators to improve teacher retention.

INSPIRE READY!

INDUSTRY SPECIALISTS IMBEDDING REAL-WORLD EXPERIENCE

REGION 3

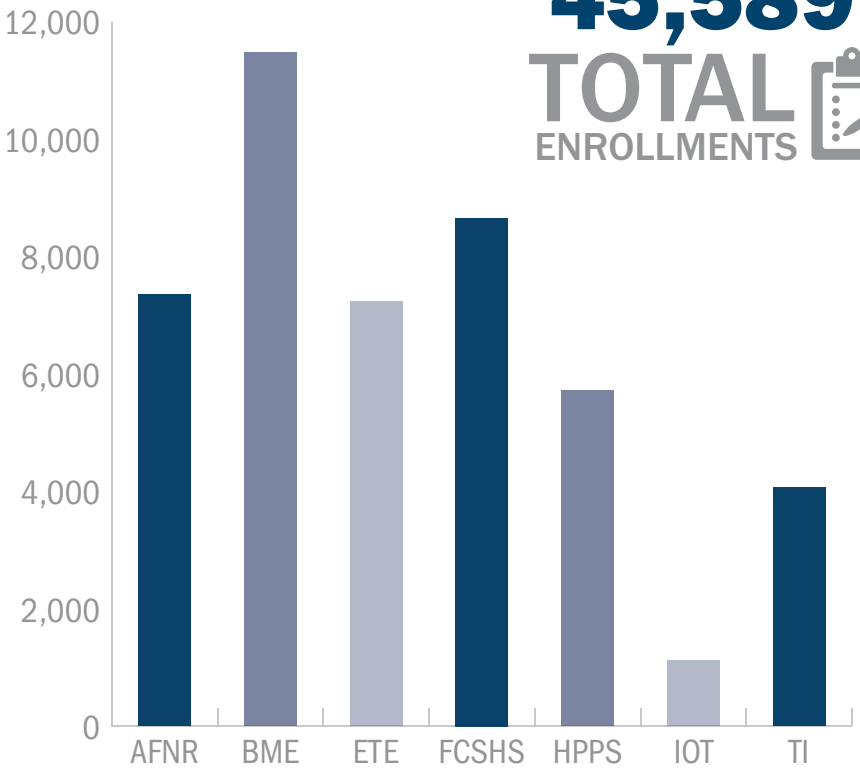
SECONDARY

3,391 CTE CONCENTRATORS

404 TOTAL PROGRAMS

45,589 TOTAL ENROLLMENTS

18,851 SKILL STACK® BADGES ISSUED



TOTAL ENROLLMENTS IN CTE PROGRAMS

AFNR: Agriculture, Food and Natural Resources; BME: Business and Marketing Education; ETE: Engineering and Technology Education; FCSHS: Family and Consumer Sciences and Human Services; HPPS: Health Professions and Public Safety; IOT: Individualized Occupational Training; TI: Trades and Industry

53 LOCAL EDUCATION AGENCIES (LEAs)

45% WERE RURAL

8 CAREER TECHNICAL CENTERS

1,578 CTE DIPLOMAS AWARDED

AS REPORTED BY LEAs

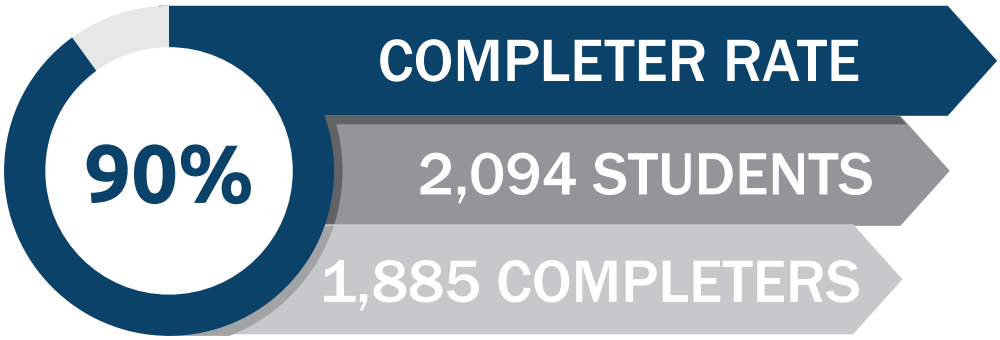
TECHNICAL COLLEGE—COLLEGE OF WESTERN IDAHO

42	1,415	25,534	376	851
Active programs	Students enrolled in CTE programs (headcount)	Year-end credits	Students awarded degrees/ certificates	Technical college FTE enrollments

WORKFORCE TRAINING CENTER (WTC)

6,046
HEADCOUNT

APPRENTICESHIPS



EMPLOYER SPOTLIGHT

Commercial Tire

Boise, Idaho

Type of industry: Automotive service

Training need: Commercial Tire is an independently owned chain of tire stores founded in Boise, Idaho. To be successful, new employees need to cultivate a strong foundation in automotive theories and fundamentals to service and maintain vehicles. They needed training to be able to identify, demonstrate, and use automotive theories and fundamentals to service and maintain vehicles.

How the WTC delivered: CWI's Department of Transportation Technology Chair, John Thompson, developed an 80-hour training course for Commercial Tire employees based on the three-credit Auto Maintenance (AUTO 115) course, which covered automotive service, maintenance, light repair, and more. Commercial Tire employees had to apply to their stores' leadership team and provide three letters of reference to be considered for the six-week course. Commercial Tire paid for their textbooks, tools, and toolbox. Throughout the training, Commercial Tire employees were able to earn wages while learning.

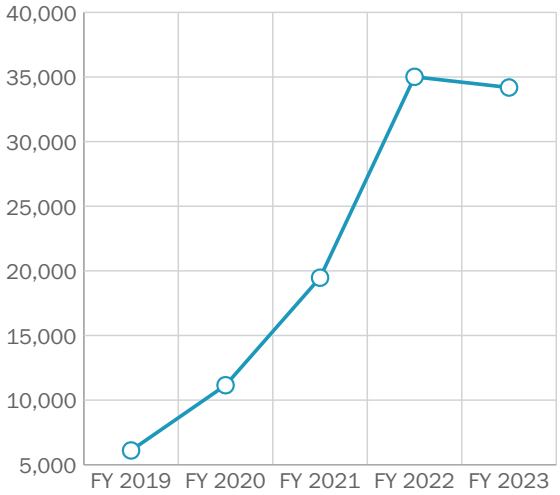
> By partnering with CWI, we can begin to develop a relationship with a promising group of individuals who are working to grow in the industry, continue their education, and find means to support their needs and dreams.
>
> **—Brandy Sielaff, vice president of HR and safety, Commercial Tire**

CWI COLLEGE OF WESTERN IDAHO

SKILL STACK®

>32,000 UNIQUE STUDENTS EARNING **>115,000** MICROCREDENTIALS

In December 2022, the Idaho State Board of Education amended Policy III.E, which defines certificates and degrees, including microcredentials for CTE and academic programs. The updated definition emphasizes that microcredentials reflect academic and CTE skills that learners demonstrate through a variety of methods, and defines digital badges as a visual representation of a microcredential. Defining a stacked microcredential allows postsecondary institutions the flexibility to award credit for students' prior learning, creating more on-ramps into postsecondary programs focusing on the learners' demonstrated skills rather than program completion.



IDCTE RECEIVES GLOBAL RECOGNITION FROM 1EDTECH CONSORTIUM

IDCTE earned a Power Learner Potential Organization Award from 1EdTech Consortium™ at the 2023 Learning Impact Conference on June 7 in Anaheim, California, for their work in digital credentials and microcredentials. The newly created award is given to organizations leading the way in creating innovative ecosystems that power learner potential.

SkillStack® is Idaho's microcredential platform. Competencies are developed through a collaborative process that engages employers, educators, and other critical stakeholders to ensure that microcredentials represent the technical and durable skills learners need to succeed. Learners acquire these skills and have multiple opportunities to demonstrate them, such as assessments and hands-on activities that are validated and tracked using SkillStack®. Learners then earn digital badges, which are a visual representation of microcredentials embedded with data verifying an earner's achievements. These credentials are recognized by the Idaho State Board of Education. Verified industry partners can log in, identify microcredentials specific to their hiring needs, and send customized emails to potential candidates that possess the desired skills.

Since its inception in 2015, Idaho educators have issued over 100,000 badges via the SkillStack® platform.

"Getting to the future of education requires cross-boundary leadership spanning IT and curriculum and instruction from stakeholders across K-12, higher education, suppliers, governments, and philanthropic funders," said Rob Abel, 1EdTech's CEO. "Our Power Learner Potential Awards recognize those organizations that go above and beyond to take those collaborations to the next level to address the key educational leadership imperatives of our time."

"It's exciting to see how far we've come to make the vision of our digital credential platform a reality," said Dr. Clay Long, IDCTE's state administrator. "Having our team's work acknowledged by experts around the globe gives additional validation for the work we're doing and the opportunities it will continue to provide Idaho learners."

Left to right: Chief Program Officer Adrian San Miguel, Chief Performance and Accountability Officer Heather Luchte, Special Projects Coordinator Taylor Stump, State Administrator Dr. Clay Long

CTSO highlights

12,403 AFFILIATED MEMBERS

Left to right: Jesse Saunders, Callie Sue Costello, Taylor Stapp, Adalea Williams, Kearney Adams, Sarah Osborne, Bella Overall, Liberty McGuire, Madi Leavitt, Andrew Hazen, Jentri Van Ackern, Elijah Zimmerman, Alexis Black, Susannah (Susie) Christensen, Noor Abdulkareem, Luke Crosby, Andrew Gordon, Sara Street, Kurtis Park, Or Bruchim, Job Wohali, Cara Shuldberg, Dallin Romrell, Mia Price, Anastasia Taylor, Kelton Dillard, Cree Milliron, Evalynn Dance, Delanie Ellsworth, Carson Suchan, Josiah Knapp, Hallye Duckett, Kamille Mirkin, Clayton Moore, James Sullivan, Bailey Jensen, Ryan Howson, Kenzie Banks. Not pictured: Drew Peppley, Sarah Curtis, Kathy Nie, Thomas Nam, Grace Vo, Solana Inzunza

- 400 total chapters
- 4,686 State Conference attendees
- 1,481 National/ International Conference attendees
- 3 national officers elected

Career technical student organizations (CTSOs) are intra-curricular programs designed to help students develop skills and connections needed for their future careers. They're also a key component of quality CTE programs. CTSOs allow students to develop leadership skills through chapter, community, and statewide involvement. Through CTSO competitive and leadership events, students hone their technical and professional skills and can gain a competitive advantage when applying for college and jobs. Idaho's seven CTSOs align with our six program areas and provide support and growth from secondary to postsecondary and beyond.

Business Professionals of America

- **1,910** secondary and **69** postsecondary members.
- **34** members earned Statesman Torch Awards.
- **1,352** members attended the State Leadership Conference (SLC).
- **326** secondary and **32** postsecondary members attended the National Leadership Conference (NLC).
- **2** national officers were elected.

DECA

- **482** secondary and **12** postsecondary members.
- **362** members attended the State Career Development Conference.
- **187** secondary and **6** postsecondary members attended the International Career Development Conference.

Family, Career, and Community Leaders of America

- **1,134** members.
- **68** secondary and **2** postsecondary chapters.
- **421** members attended SLC.
- **124** members attended NLC.
- **5** Outstanding Chapter Awards were earned.
- **21** members completed the Power of One program.
- **1** student was selected for the **Japanese exchange.**

FFA

- **6,220** secondary and postsecondary members.
- **100** chapters.
- **1,639** State Convention attendees.
- State participants received **273** special awards or recognition.

HOSA—Future Health Professionals

- **976** members.
- **43** secondary and **1** postsecondary chapters.
- **777** members attended SLC and **219** members attended the International Leadership Conference.
- Earned the **Gold Standards of Excellence International** award.

SkillsUSA

- **1,381** members.
- **673** State Leadership and Skills Conference attendees and **103** National Leadership and Skills Conference qualifiers.
- Earned the national **Gold State Standards of Excellence** award.
- Dennis Technical Education Center (DTEC) earned the **Gold Chapter of Excellence** award.
- Meridian Technical Charter High School earned the **Silver Chapter of Excellence** award.
- K. Kirkendall from DTEC earned the **Advisor of the Year** award.
- **1** national officer was elected.

Technology Student Association

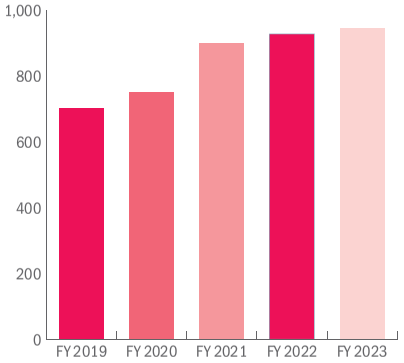
- **216** members.
- **172** SLC attendees.
- Meridian High School, Mountain View High School, and Rocky Mountain High School were **designated as Premiere Chapters.**
- One student from Mountain View High School and two students from New Plymouth High School were inducted into the **TSA Honor Society.**
- Renaissance High School was designated as a **Top Performing Chapter.**
- Joseph Wax from Renaissance High School was named **Advisor of the Year.**

2022 | 2023

Year in Review

secondary

35% TOTAL PROGRAMS OVER FIVE YEARS



27% CLUSTER PROGRAMS

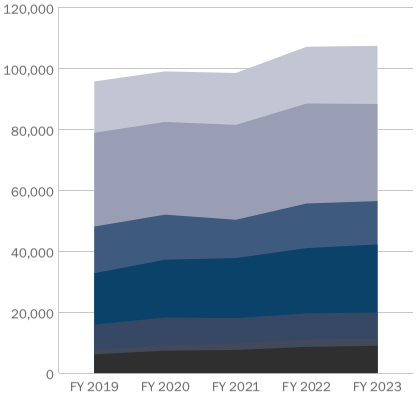
NEARLY 72K
STUDENTS ENROLLED IN CTE PROGRAMS

72% RURAL

145 LOCAL EDUCATION AGENCIES (LEAs)

71% OF ALL HIGH SCHOOL STUDENTS TAKE CTE COURSES

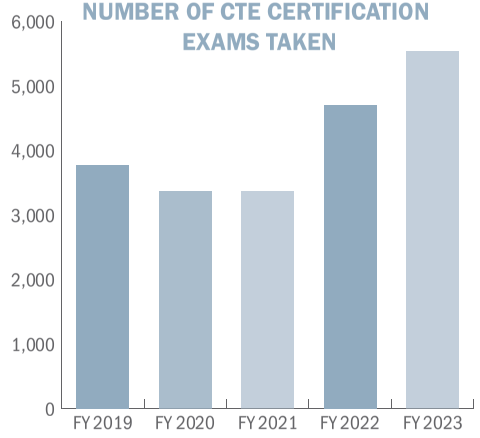
14% GROWTH IN SECONDARY CTE STUDENTS OVER 5 YEARS COMPARED TO 9% GROWTH STATEWIDE



18% Agriculture, Food and Natural Resources
30% Business and Marketing Education
13% Engineering and Technology Education
21% Family and Consumer Sciences and Human Services
8% Health Professions and Public Safety
2% Individualized Occupational Training
8% Trades and Industry

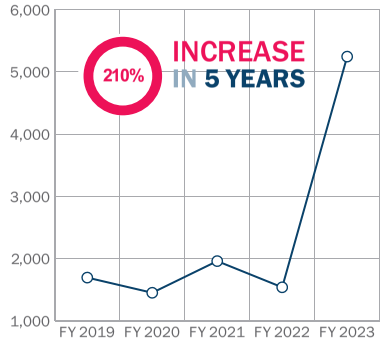
Includes duplicates.

NUMBER OF CTE CERTIFICATION EXAMS TAKEN



15 CAREER TECHNICAL CENTERS WITH 20,631 STUDENTS ENROLLED

STUDENTS ENROLLED IN DIGITAL CTE COURSES
(Idaho Digital Learning Alliance)



210% INCREASE IN 5 YEARS

CTE CONCENTRATORS

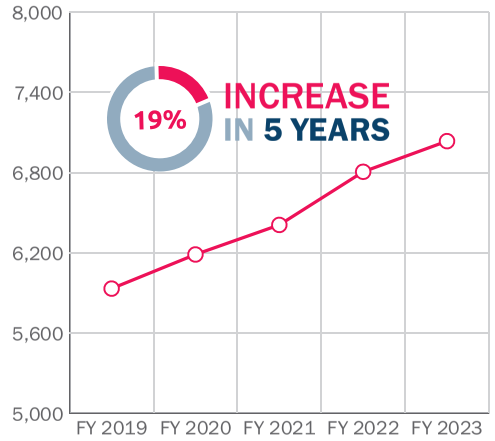
A CTE CONCENTRATOR IS A JUNIOR OR SENIOR

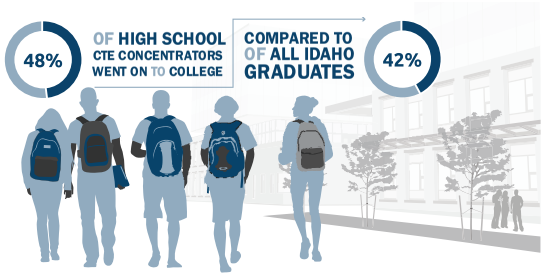
ASSESSMENT PASS RATES

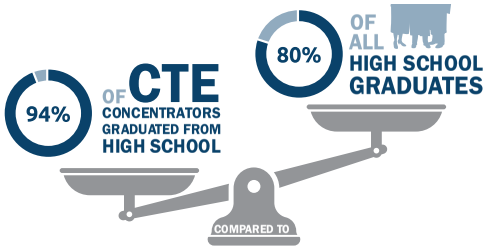
DIPLOMA 2,394 CTE DIPLOMAS AWARDED AS REPORTED BY LEAs

42% INCREASE IN ONE YEAR

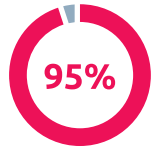
IN A CAPSTONE CLASS







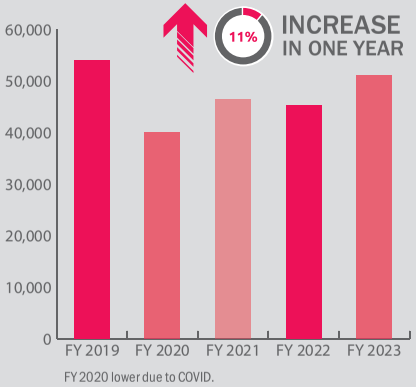
One year data lag due to appeals.



FOUND A JOB, MOVED INTO POSTSECONDARY EDUCATION, OR WENT INTO THE MILITARY

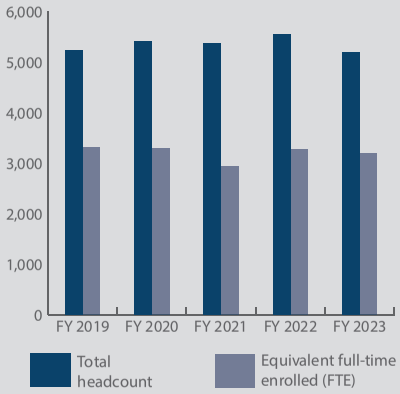
technical college system

WORKFORCE TRAINING CENTERS (WTC)



FY 2020 lower due to COVID.

CERTIFICATE/DEGREE PROGRAMS



>5,100 STUDENTS ENROLLED AND NEARLY 3,200 FTE

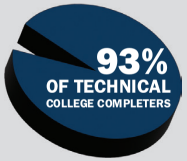
215 ACTIVE PROGRAMS

A FIVE-YEAR AVERAGE OF OVER **47,000** WTC ENROLLMENTS

95,675 YEAR-END CREDITS

1,708 STUDENTS AWARDED CERTIFICATES AND DEGREES

2% INCREASE IN FIVE YEARS

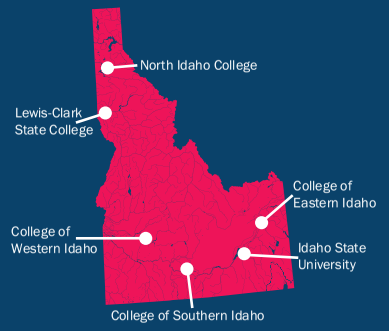


FOUND JOBS, CONTINUED THEIR EDUCATION, OR WENT INTO THE MILITARY

OBTAINED EMPLOYMENT RELATED TO THEIR **CTE TRAINING**

4 TECHNICAL COLLEGES at COMMUNITY COLLEGES

2 TECHNICAL COLLEGES at FOUR-YEAR COLLEGES



IDAHO
Division of Career Technical Education

650 W. State St., Suite 324
Boise, Idaho 83702
208-429-5500
cte.idaho.gov

Educator Services empowers and supports educators at all stages of their careers

Idaho is experiencing a surge in demand for educators—especially in CTE. IDCTE aims to provide timely and robust support to Idaho's CTE educators at every stage of their careers.

Whether individuals are contemplating a career shift or transitioning from high school or college to the classroom, our Educator Certification team is dedicated to helping them navigate the certification process. New teachers can pursue a Degree Based Career Technical Education Certification through an approved Idaho university or college to fulfill certification requirements. Alternatively, they can complete the requirements of the Limited Occupational Specialist Certificate via our InSpIRE Ready! program.

While candidates pursuing a degree-based certificate must do so at their own expense, there is no cost to participate in our InSpIRE Ready! program for qualified new teachers. This comprehensive program delivers ongoing and timely training and support for transitioning from industry roles to teaching positions. InSpIRE Ready! helps to equip new teachers with essential tools and methods, insights and pedagogy, and a mentor dedicated to help them thrive in their teaching roles.

Our Professional Development team offers First Camp for teachers in their first or second year. This intensive four-day training is designed to help new teachers translate their knowledge and skills from a CTE-related career to the classroom. Topics covered include classroom management, planning for instruction, and occupational analysis (OA). Upon completion of First Camp, new teachers are paired with mentors who provide regular check-ins, answer questions, troubleshoot problems, and offer encouragement and coaching.

CTE educators and administrators of all experience levels are encouraged to participate in our annual Connect Summer Conference. This premier professional development opportunity aims to foster connections among CTE peers, programs, and industry professionals. Along with program area and Division updates, the Connect Summer Conference encourages attendees to explore regional programs and resources while forging meaningful connections within Idaho's CTE ecosystem.

For individuals interested in CTE leadership at local, regional, state, and national levels, we offer the Leadership Institute (LI). Launched in 2000, LI was created to enable educators and administrators to develop leadership skills, understand CTE-related state and national policies, and network with other emerging leaders. LI's seminars, conferences, and professional development opportunities empower participants to influence CTE in their schools, institutions, regions, and beyond. Applications are accepted each year for new cohort members to participate in the three-year program.

268 FIRST CAMP
PARTICIPANTS | 2022-2023
(Includes First Camp and First Camp OA)

FST streamlines processes to improve firefighter readiness

In fiscal year 2023, Fire Service Training (FST) focused on managing training assets, testing updates, and streamlining administrative processes to improve firefighter readiness.

Since FST returned to IDCTE in 2021, one major focus has been identifying, cataloging, and maintaining training assets. These specialized tools and equipment are used in firefighter instruction and preparation to simulate real-world situations like extrication, fire suppression operation, forcible entry, and hazardous material handling. They can include driver simulators, live fire training facilities, towers for multi-story exercises, extrication trailers for vehicle rescue training, and tools for practicing forcible entry. Due to their expense, these training assets are shared across the state and are available for fire departments to use at no charge.

FST established three regional hubs for duplicated assets like extrication, technical rescue, and forcible entry trailers to streamline resource sharing. Other key assets, such as the Dräger fire trailer and driver simulator, will be rotated through these hubs every two months. By January 2024, an asset tracker system will be implemented to simplify the borrowing process.

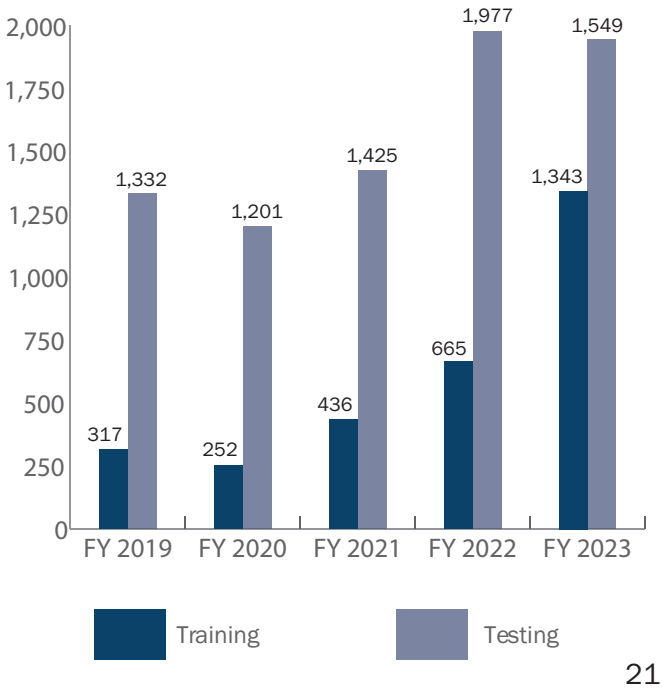
Once firefighters have completed their training, FST also oversees testing and certification. Based on feedback from the field, FST revised its Standard Operating Guidelines to allow entry-level firefighters to take the first three levels of tests simultaneously. This greatly reduces processing delays and scheduling conflicts.

Additionally, FST is poised to pilot online assessments for the Fire Officer I certification. Shifting from paper testing to online evaluation ensures immediate results and flexibility in scheduling without travel or time constraints.

Another improvement implemented in FY 2023 was the implementation of scoring automation software, which allows for test item analysis. This pinpoints areas for instructional improvement and test question refinement, enhancing training program effectiveness.

Finally, FST cleared a backlog of transcript data entry and certifications, leading to more current and accurate records for all trainees. These achievements underscore FST's steadfast dedication to supporting and advancing the firefighting community.

TESTING AND TRAINING COUNTS



Supportive staff and the CND help NIC students pursue nontraditional careers

When North Idaho College's Center for New Directions (CND) needed a Santa Claus for its family Christmas party, Machining and CNC Technology instructor Kurt Kimberling—and his wife—were happy to oblige.

"How could we say no?" said Kimberling.

Kimberling's willingness to step in and do whatever is needed is emblematic of his devotion to his job at NIC. A seasoned machinist with 45 years of experience, Kimberling found immense satisfaction and financial success in his career, and he's eager to share that passion with his students.

"Not only has this career fed my bank account but it has fed my soul," said Kimberling. "I have done many things in my life, but being an instructor at NIC is by far the most rewarding."

As an educator, Kimberling offers students the opportunity to enter the industry early. Some start work within their first semester and potentially secure up to three days of work weekly by the second semester while they earn partial lab credit. Due to the need for trained machinists, Kimberling boasts a remarkable 100% job placement rate for those pursuing machining and manufacturing careers. One of these students is Morgan. As a second-year student in the program, she's working for a local aerospace company while she's in school.

"The possibilities are endless within this trade," she said. "If you put in the time and effort to learn, the outcome is amazing. I love being able to have an idea and then make that idea happen."

Despite the earning potential and opportunities in machining, Morgan is the only female student in her program. She thinks more women should consider the trades.

"As a society, I think we should be more open towards women in this industry," she said.

NIC's Dean of Instruction and Workforce Education, Vicki Isakson, agrees.

"Women bring varied perspectives and skills to the workforce," said Isakson. "It challenges stereotypes, promotes equality, and helps address the skilled labor shortage by tapping into a larger talent pool."

A nontraditional career refers to occupations in which one gender comprises less than 25% of the current workforce. Students entering nontraditional careers face challenges ranging from social stigma, feelings of isolation, and scarcity of role models. Overcoming these challenges requires inclusive environments, diverse representation, mentorship programs, and efforts to challenge stereotypes within nontraditional career pathways. That's why the CND holds a monthly lunch at Parker Technical Center for students like Morgan to gather with staff to gain support and encouragement to complete their programs.

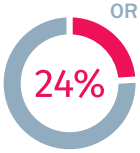
"The services provided by the CND at Parker Technical Center have been the saving grace for many of our nontraditional students," said Isakson. "Whether it's assistance with gender-specific clothing or simply a listening ear, the CND helps ensure these students are successful."

> "It challenges stereotypes, promotes equality, and helps address the skilled labor shortage by tapping into a larger talent pool."
>
> –Vicki Isakson

IN FY 2023, 547 IDAHOANS WERE SERVED BY CNDs

OVER 107K CONTACT HOURS WITH PARTICIPANTS THROUGH CND WORKSHOPS

415 CHILDREN WERE INDIRECTLY SERVED BY CNDs

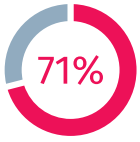


OR 132 PARTICIPANTS EARNED <$10,000 ANNUALLY FOR THEIR HOUSEHOLD

PARTICIPATED IN OR COMPLETED EDUCATIONAL TRAINING

OF PARTICIPANTS GRADUATED HIGH SCHOOL OR EARNED A GED PRIOR TO WORKING WITH CNDs

OF PARTICIPANTS WERE UNEMPLOYED PRIOR TO WORKING WITH CNDs



OF PARTICIPANTS WERE WOMEN

OF PARTICIPANTS WERE BETWEEN 25 AND 34

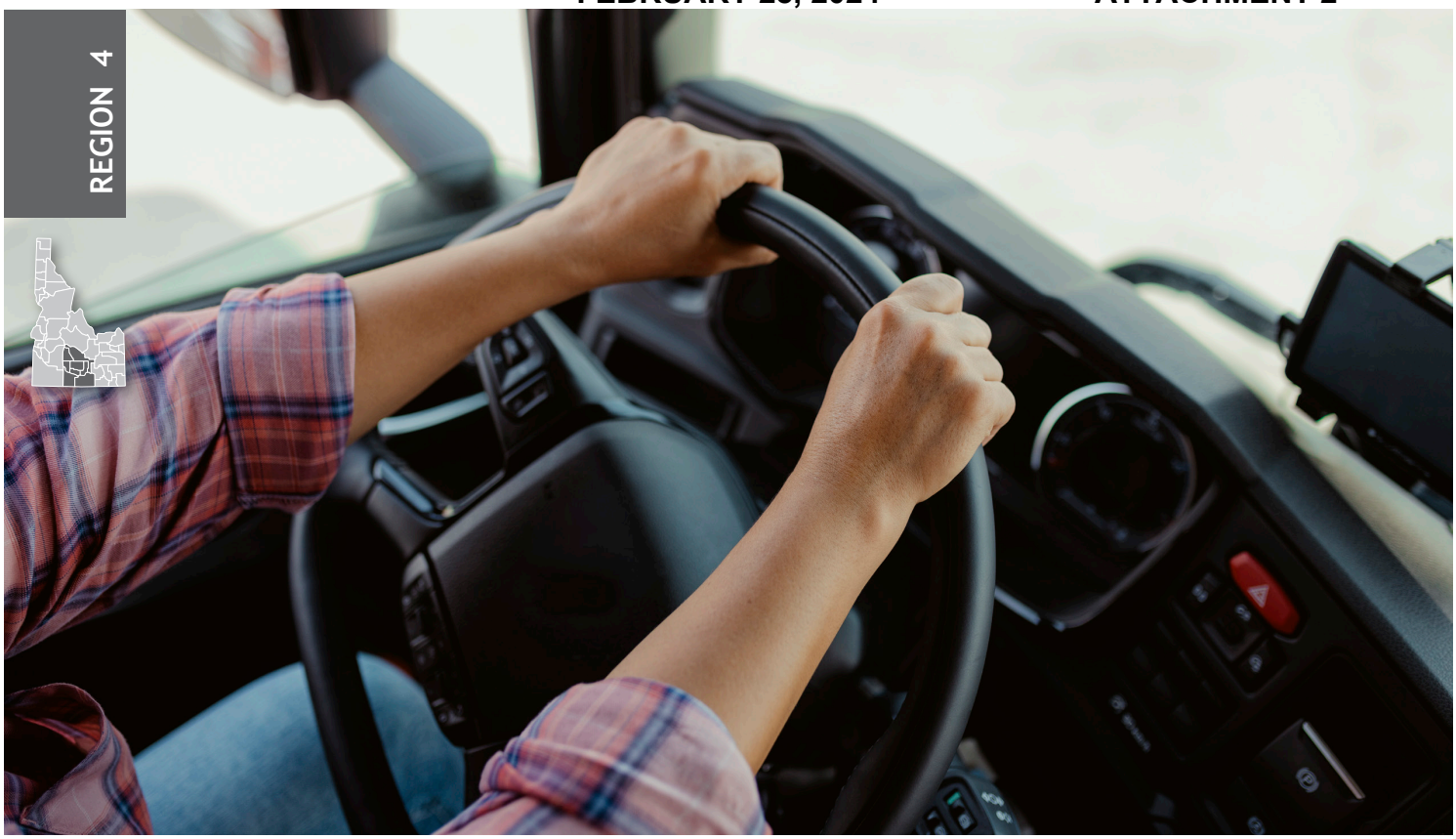
WHAT ARE THE CENTERS FOR NEW DIRECTIONS?

Idaho's six CNDs are located at each technical college and are designed to help students who are single parents or displaced homemakers receive the job training and skills they need to become self-sufficient. Less than half of Idaho's single parents are in the labor force, demonstrating a real need for CNDs to help these students overcome barriers to completing their courses or program.

CNDs are supported by dedicated funds generated by a $20 fee for each divorce filing, totaling $150,000 in fiscal year 2023. Each CND collaborates with the Department of Commerce, Department of Labor, Department of Health and Welfare, local job service offices, workforce investment boards, correctional facilities, and technical colleges to avoid duplication of efforts and ensure each participant has access to:

- Job counseling services designed to leverage their existing skills and job experiences.
- Job training and placement services developed in cooperation with public and private employers.
- Assistance in gaining admission to public and private job training programs.
- Health education and counseling services concerning preventative health care, mental health, substance abuse, and other health care matters.
- Financial management services, including assistance regarding insurance, taxes, estate and probate problems, mortgages, loans, and other related financial matters.
- Information about courses offering credit through secondary and postsecondary education programs.

REGION 4



Integrated education training prepares student for rewarding career in trucking

Since Sandra Cortes was a child, she wanted to drive big trailers. However, her mother believed it was a job suited only for men. So, Cortes put her dream aside and settled for driving 10-wheel trucks, water trucks, and tractors with trailers on a dairy farm in Jerome, Idaho. Everything changed when she learned about the College of Southern Idaho's (CSI) commercial driver's license program (CDLP).

In Idaho, aspiring commercial truck drivers need a commercial learner's permit (CLP) to enroll in truck driving school. Getting this permit involves filling out an application and taking a written test, but Cortes faced a language barrier that prevented her from meeting these requirements. However, CSI's CDLP is part of its integrated educational training (IET) programs. This specialized Adult Education model tailors learning experiences to a particular profession. In addition to learning job-specific skills, students enrolled in an IET program also benefit from an additional instructor in the classroom providing English language instruction and support. Students learn relevant vocabulary as well as basic reading, study, and test-taking skills needed to pass the state certification exams. It was a perfect fit for Cortes' needs and interests.

"At CSI, our IET programs focus on careers in high demand for our region," said Jennifer Hall, director of College and Career Readiness and Adult Education at CSI.

> The CDLP program helped me understand there is more to driving than just getting on a trailer and moving forward. I use what I learned from this program every day; it's changed the way I drive.
>
> –Sandra Cortes

Other programs that follow the IET model include welding and certified nursing assistant.

According to the Idaho Department of Labor's August 2023 labor market report for South Central Idaho, heavy and tractor-trailer truck drivers were among the occupations with the most job postings.

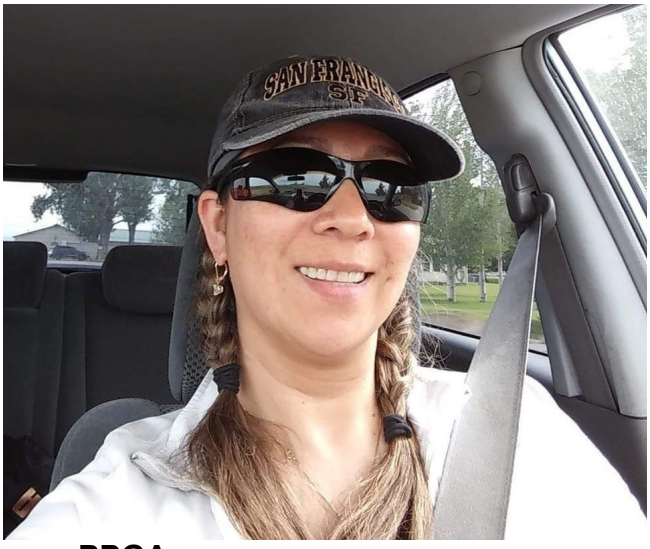
When students enroll in the program, they're assessed on their skills so support can be tailored to their current needs and abilities. The eight-week program includes learning job-specific skills like safety protocols, traffic laws, basic vehicle inspection, and general education skills such as vocabulary tailored to commercial truck driving.

"The CDLP program helped me understand there is more to driving than just getting on a trailer and moving forward," said Cortes. "I use what I learned from this program every day; it's changed the way I drive."

After completing the program, students earn their CLP and can enroll in one of CSI's partner driving schools for their commercial driver's license. After Cortes finished the intensive four-week driving course with an endorsement in doubles and triples, CSI extended job placement aid, leading her to her current role as a long-haul truck driver at Riverence, an Idaho-based sustainable aquaculture company.

Cortes is thrilled with her new career and deeply appreciates the support she received.

"I started with little experience, but they gave me a chance to learn," Cortes said. "Riverence feels like my second school; landing this job has been an incredible experience."



EXPLORING THE SPECTRUM OF ADULT EDUCATION PROGRAMS

When most people hear "Adult Education" (AE), they think of pursuing a General Educational Development (GED) certificate. But today's AE programs encompass a wide range of learners with distinct needs and goals, including:

College and career preparation:
College and career preparation programs provide specialized training and education tailored to specific industries or professions. Whether mastering new technologies or developing leadership skills, these programs empower adults to advance their careers, embark on new professional journeys, and thrive in the rapidly evolving job market.

Basic literacy:
Adult basic literacy programs aim to empower individuals by providing fundamental skills in reading, writing, and math, fostering confidence and employability. These programs also facilitate improved communication, enabling better integration into society and offering pathways for further education or vocational training.

English language acquisition:
Adult Education programs focusing on English language acquisition help non-native speakers enhance their communication skills. From everyday conversation to professional correspondence, these initiatives facilitate integration into English-speaking communities and open doors to other educational and employment opportunities.

Integrated educational training: Integrated educational training programs combine basic skills development with occupational training, ensuring that learners acquire essential academic skills and gain practical knowledge relevant to their chosen fields. This integrated approach maximizes learning efficiency, equipping adults with a well-rounded skill set for success.

No matter where or when someone chooses to begin their journey, AE programs are designed to adapt to their diverse needs and aspirations, fostering a lifelong pursuit of knowledge and growth.

REGION 4

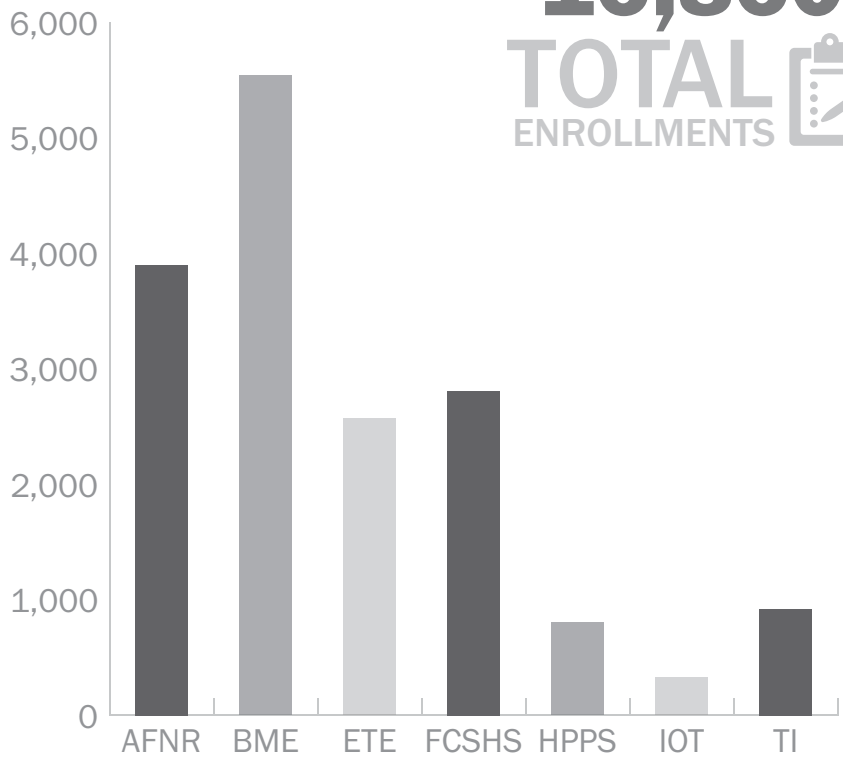
SECONDARY

938 CTE CONCENTRATORS

152 TOTAL PROGRAMS

16,860 TOTAL ENROLLMENTS

2,557 SKILL STACK® BADGES ISSUED



TOTAL ENROLLMENTS IN CTE PROGRAMS

AFNR: Agriculture, Food and Natural Resources; BME: Business and Marketing Education; ETE: Engineering and Technology Education; FCSHS: Family and Consumer Sciences and Human Services; HPPS: Health Professions and Public Safety; IOT: Individualized Occupational Training; TI: Trades and Industry

23 LOCAL EDUCATION AGENCIES (LEAs)

96% WERE RURAL

2 CAREER TECHNICAL CENTERS

148 CTE DIPLOMAS AWARDED

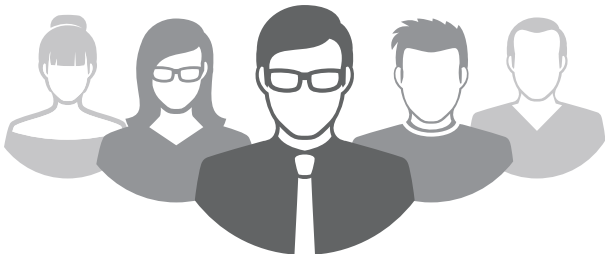
AS REPORTED BY LEAs

TECHNICAL COLLEGE—COLLEGE OF SOUTHERN IDAHO

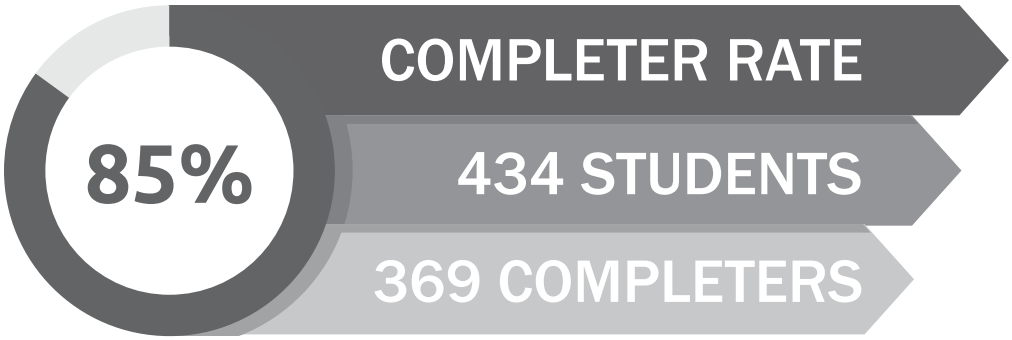
48	1,084	20,753	414	692
Active programs	Students enrolled in CTE programs (headcount)	Year-end credits	Students awarded degrees/ certificates	Technical college FTE enrollments

WORKFORCE TRAINING CENTER (WTC)

7,190
HEADCOUNT



APPRENTICESHIPS



EMPLOYER SPOTLIGHT

Idaho Milk Products

Jerome, Idaho

Type of industry: Milk protein manufacturing

Employees: 225

Training need: Idaho Milk Products (IMP) has been working with CSI's Workforce Development and Training program on developing its talent pipeline through a Student-to-Registered-Apprentice Program (STRAP) in cooperation with Jerome High School. Between labor shortages and the COVID-19 pandemic, the company experienced difficulty finding the skilled entry-level workers needed for its sophisticated manufacturing plant.

How the WTC delivered: STRAP provided a pathway for the company to access and educate high school students on opportunities in the milk products and food manufacturing industry. Students as young as 16 learned about safety and manufacturing in school, then worked at IMP during the summer. This initiative exposed them to the dairy industry and sparked their interest in pursuing careers within the company. STRAP equips students with valuable skills and experience while providing IMP with a pool of well-trained entry-level workers. IMP currently has five apprentices working at its Jerome plant, and the company recently promoted one to a maintenance technician apprentice.

> The ability to do the apprentice program has given us higher confidence that we can recruit and retain employees in the event we decide to expand.
>
> **— Steve Christiansen, vice president of human resources and organizational development, Idaho Milk Products**

COLLEGE OF SOUTHERN IDAHO

Automotive technology program bridges skills with industry demands

Growing up on a farm in Marsh Valley, Brock Gunter's curiosity drove him to tinker endlessly.

"I took auto all four years of high school," said Gunter. "My favorite classes were where I got to see how things worked and tear them apart."

That passion led Gunter to the College of Southern Idaho, where he earned a certificate in diesel technology. For 13 years, he worked in the service department of a Pocatello car dealership. Though he loved his work, a personal connection with Dave Treasure, chair of Idaho State University College of Technology's transportation department, changed the course of his career.

"They needed an automotive technology instructor, and it felt like a perfect fit," said Gunter. "Eighteen years later, it still is."

Gunter's curriculum, accredited by Automotive Service Excellence, primes students in engine repair, transmissions, steering, brakes, electrical systems, HVAC, and engine performance. He attributes the program's success and high job placement rates to plenty of hands-on learning opportunities.

"The last eight weeks of the program, our students focus on what we call live work," said Gunter. "Some of them work on the cars we have in the shop, and others work in a shop in the community."

Gunter leans on connections with his technical advisory committee (TAC) to help students find internships and job

> "Seeing former students return and witnessing their career growth in the industry after five or 10 years is truly satisfying."
>
> –Brock Gunter

opportunities. Comprised of representatives from local dealerships and independent shop owners, their insights help Gunter align his teaching methods with industry demands, leading to program enhancements and equipment upgrades. Recent feedback from the committee led Gunter to request new diagnostic equipment and electrical trainers using funds from Governor Little's Leading Idaho initiative. But it's not just the hands-on learning opportunities, state-of-the-art equipment, and active and engaged TAC that draw students to Gunter's program.

"ISU is kind of unique in that, in addition to technical certificates, students can earn an associate's degree in two years by completing general education requirements," explained Gunter. "There's also a path to a four-year Bachelor of Science degree, which draws a lot of students from out-of-state."

Gunter's program also attracts interest from area high schools by offering dual credit.

"I have about 10 students from all three high schools come up here for the last two hours of the day," said Gunter. "They get the whole first semester done while still in high school, saving them time and money if they choose to continue the program after graduation."

Regardless of where they come from or where they end up, Gunter takes immense pride in witnessing his students succeed.

"Seeing former students return and witnessing their career growth in the industry after five or 10 years is truly satisfying," said Gunter.

EXPLAINING THE DIFFERENCE BETWEEN TECHNICAL COLLEGES AND COMMUNITY COLLEGES

Idaho Code 33-2202 establishes the Division of Career Technical Education, entrusting it with the responsibility for all career technical education. Career technical education is defined as all secondary, postsecondary, and adult courses, programs, training, and services for occupations or careers requiring credentials or training less than a bachelor's degree.

The technical college system in Idaho operates under the statutory authority of the Division. The Division works to ensure each region houses a single technical college tailored to address regional labor needs and eliminate unnecessary duplication.

Idaho's technical colleges are housed within four community colleges and two four-year institutions. Technical colleges primarily focus on specific technical skills geared toward employment needs. Functions of the technical colleges include traditional applied associate degrees, technical certificates, noncredit programs like Workforce Training Centers, Adult Education, and support services such as the Center for New Directions. Community colleges offer a broader spectrum of programs encompassing academic courses and community education and often serve as a gateway to further education.

The Division oversees various administrative aspects of the technical colleges, encompassing the distribution and accountability of funding, program and administrative approvals, planning, policy formulation, alignment between secondary and postsecondary programs, and reporting system outcomes to policymakers to ensure these outcomes benefit the state.

The Division collaborates closely with the technical college leadership council to coordinate and optimize the entire system for the benefit of students, employers, and the state's workforce.

REGION 5

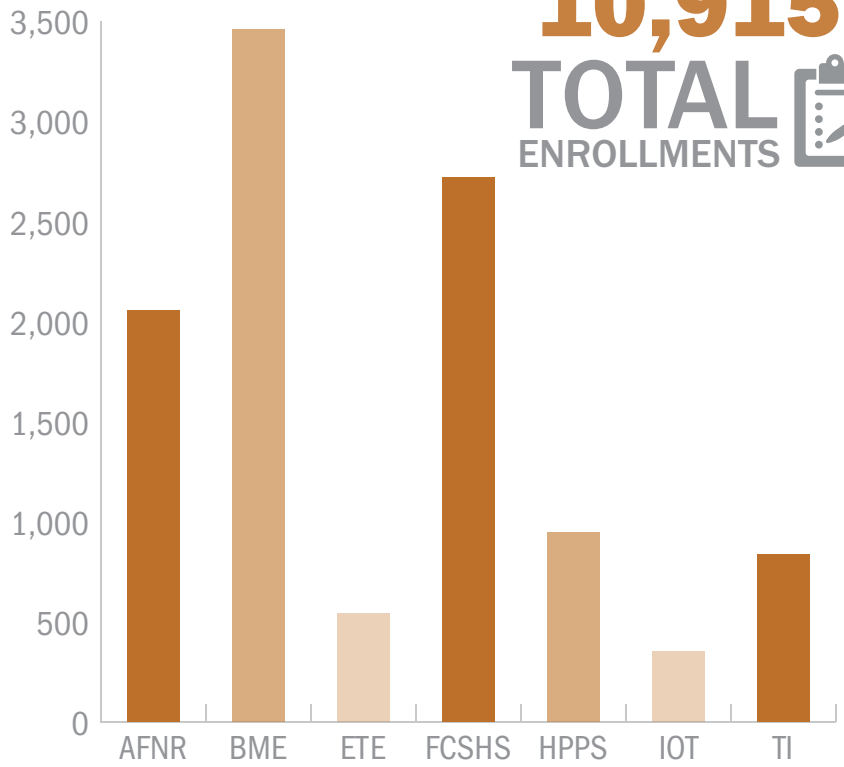
SECONDARY

742 CTE CONCENTRATORS

94 TOTAL PROGRAMS

10,915 TOTAL ENROLLMENTS

3,003 SKILL STACK® BADGES ISSUED



TOTAL ENROLLMENTS IN CTE PROGRAMS

AFNR: Agriculture, Food and Natural Resources; BME: Business and Marketing Education; ETE: Engineering and Technology Education; FCSHS: Family and Consumer Sciences and Human Services; HPPS: Health Professions and Public Safety; IOT: Individualized Occupational Training; TI: Trades and Industry

14 LOCAL EDUCATION AGENCIES (LEAs) WERE RURAL

86%

1 CAREER TECHNICAL CENTER

195 CTE DIPLOMAS AWARDED

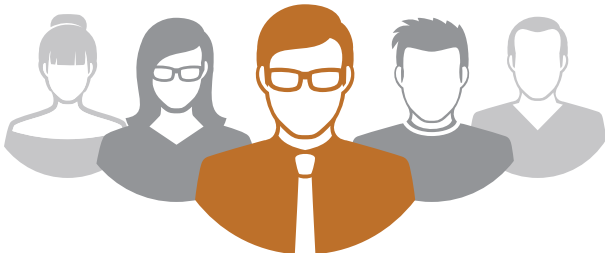
AS REPORTED BY LEAs

TECHNICAL COLLEGE—IDAHO STATE UNIVERSITY

28	1,108	20,081	372	669
Active programs	Students enrolled in CTE programs (headcount)	Year-end credits	Students awarded degrees/ certificates	Technical college FTE enrollments

WORKFORCE TRAINING CENTER (WTC)

9,236
HEADCOUNT



APPRENTICESHIPS

EMPLOYER SPOTLIGHT

Petersen, Inc.

Pocatello, Idaho
Type of industry: Metal fabrication
Employees: 60
Training need: Geometric dimensioning and tolerancing (GD&T) is a system for defining and communicating design intent and engineering tolerances that help engineers and manufacturers optimally control variations in manufacturing processes. Petersen Inc., a renowned specialist in custom metal fabrication, serves diverse industries, including nuclear, petrochemical, aerospace, and mining. They required GD&T training for select welders engaged in a project using these symbols.

How WTC delivered: The Computerized Machining Technology program at the ISU College of Technology provides training on GD&T. ISU's WTC regularly works with local companies to determine their training needs and then coordinates that training to be done with university resources. This fee-based service provides local companies and businesses access to the high-tech and effective learning programs without having to enroll their employees as students in the university. This training allowed Petersen, Inc. to access the training they needed without having to bring an expert from out of the region or state.

> Performing the training at our facility made it easy for our employees to attend and have hands-on, applicable training around ongoing work in the shop.
>
> —Jeff Schutte, Idaho production manager, Petersen, Inc.

Idaho State University

New cybersecurity program meets growing workforce need

Just four years after its inception, the cybersecurity program at Idaho Falls District No. 91's Career Technical Education Center is already impacting the growing need for cybersecurity professionals. According to the Idaho Department of Labor, cybersecurity job openings in Idaho have increased 160% since 2015.

"Because the Idaho National Laboratory (INL) is in our backyard, it seems like they never have enough people to fill all the jobs they have in cybersecurity," said Cathy Owen, who teaches the district's cybersecurity classes.

Fortunately, the constant need for employees has translated into a steady stream of support for Owen's program.

"The INL's Cybercore has been phenomenal from the start," said Owen. "They've provided everything from paid internships to equipment to mentors."

In fact, some of Owen's students discovered her program through the INL's Cybercore Summer Camp, which introduces junior and senior high school students and CTE teachers to cybersecurity and related topics. Students participate in hands-on learning activities, hear from industry mentors, and tour industrial facilities. The weeklong beginner course was held in Idaho Falls, Twin Falls, Boise, and Lewiston last summer, with an advanced course being held exclusively in Idaho Falls.

Through this program, Owen was introduced to Dr. Michael Haney, an assistant professor of computer science at the

> "It allows students to practice security techniques in a controlled, simulated space, offering hands-on experience without jeopardizing actual systems."
>
> –Cathy Owen

University of Idaho and a cybersecurity researcher at the INL. Haney, who serves on Owen's technical advisory committee, has been instrumental in procuring resources Owen needs, like access to cyber.org's cyber range, a virtual network environment used for teaching cybersecurity without impacting real networks.

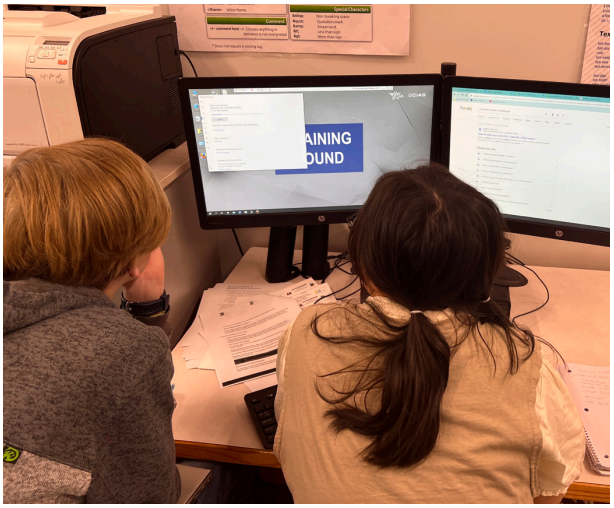
"It allows students to practice security techniques in a controlled, simulated space, offering hands-on experience without jeopardizing actual systems," said Owen. "These ranges facilitate basic security practices to advanced threat detection in a safe, virtual environment."

The summer camp has also facilitated partnerships with the College of Eastern Idaho, which offers dual credit opportunities for Owen's students and paves the way for Security+ certification, an industry-recognized validation of foundational cybersecurity expertise.

Beyond academics, students benefit from participation in four content-related clubs, including the Cyber Patriot Program, Cyber Start America, Business Professionals of America, and Idaho's first high school chapter of Women in Cybersecurity. These clubs foster practical application of the skills students learn in class and further their knowledge of cybersecurity.

The support and resources her students have access to have led to many promising opportunities in this growing field.

"I love hearing from my former students and having them share their experiences," said Owen. "One of them got a full-time position at INL's Help Desk; they're actually getting their tuition at ISU paid for."



IDCTE MAKES PROGRESS ON PROGRAM STANDARDS AND ALIGNMENT WORK

In the fiscal year 2023, IDCTE initiated a multi-year project to reassess program standards to ensure alignment between secondary and technical college programs, facilitate a seamless transition from high school to technical college programs, and increase the likelihood of students completing CTE programs or obtaining industry credentials. Ultimately, the primary objective is to equip students with skills that Idaho's employers consider vital for success in the workforce.

The process begins with gathering input from employers and CTE educators to establish program standards. These standards identify anticipated learning outcomes, skills, and knowledge for each CTE program and serve as the framework for curriculum design and assessments. They define the expected knowledge and capabilities students should attain upon program completion.

This input informs the creation of criticality surveys. During this phase, employers assess the relative importance of specific knowledge and skills required within their respective fields. Industry experts rank learning outcomes or skills as "Nice to Know," "Need to Know," or "Critical to Know," indicating their significance in the workplace.

By highlighting crucial skills for student learning, criticality surveys ensure that the standards closely align with industry needs and expectations, and assessments measure the essential skills identified by industry professionals. This feedback is used to create test items for the Technical Skills Assessment and to devise industry aligned badges or microcredentials, enabling students to demonstrate their accomplishments.

Moreover, this initiative spurs conversation about programs that could be consolidated or restructured, such as combining graphic design, digital communication, and digital technology, or welding and agricultural welding, to enhance efficiency and minimize resource duplication. It also identifies emerging or requested programs like cybersecurity, aviation, forestry, and veterinary science, potentially leading to the establishment of new programs.

Although it's a significant and lengthy process, this endeavor aims to streamline CTE programs, align them with industry demands, and provide students with clearer pathways from high school to rewarding careers.

REGION 6

SECONDARY

1,264 CTE CONCENTRATORS

147 TOTAL PROGRAMS

20,571 TOTAL ENROLLMENTS

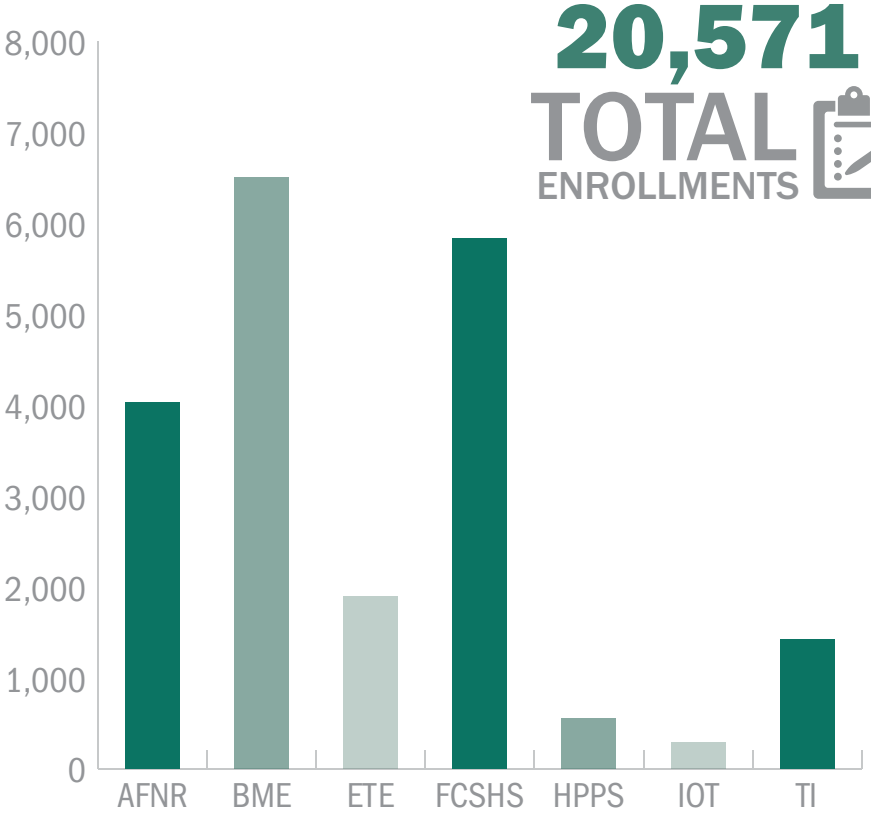
6,601 SKILL STACK® BADGES ISSUED

22 LOCAL EDUCATION AGENCIES (LEAs) WERE RURAL

77%

2 CAREER TECHNICAL CENTERS

93 CTE DIPLOMAS AWARDED
AS REPORTED BY LEAs



TOTAL ENROLLMENTS IN CTE PROGRAMS

AFNR: Agriculture, Food and Natural Resources; BME: Business and Marketing Education; ETE: Engineering and Technology Education; FCSHS: Family and Consumer Sciences and Human Services; HPPS: Health Professions and Public Safety; IOT: Individualized Occupational Training; TI: Trades and Industry

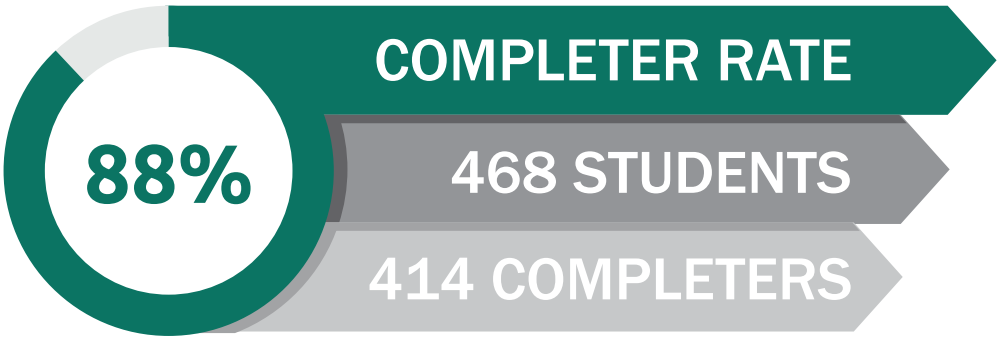
TECHNICAL COLLEGE—COLLEGE OF EASTERN IDAHO

22	673	12,405	248	414
Active programs	Students enrolled in CTE programs (headcount)	Year-end credits	Students awarded degrees/ certificates	Technical college FTE enrollments

WORKFORCE TRAINING CENTER (WTC)

19,982
HEADCOUNT

APPRENTICESHIPS



EMPLOYER SPOTLIGHT

HK Contractors

Idaho Falls, Idaho
Type of industry: Construction
Employees: 200
Description of training need: HK proposed developing an apprenticeship program for new recruits and existing staff members. This initiative aimed to enhance employee retention while allowing individuals to enhance their skills across various domains, encompassing construction-specific technical fields and essential workplace competencies.

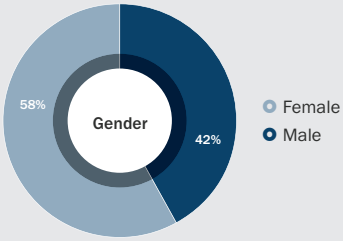
How the WTC delivered: Program managers from the WTC collaborated with the training managers from HK to develop a program encompassing 144 hours of technical instruction, including 2,000 hours of on-the-job training. Approximately 40 classroom hours covered communication skills and other vital workplace competencies.

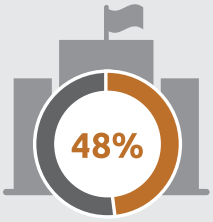
> The training that was developed by the Workforce Training team focuses on those core areas that addressed the needs of HK. The coordination and problem-solving process was instrumental in putting together a quality specialized program to meet the needs of HK and the construction industry.
>
> **—Trevor Elordi, vice president, CEI Workforce Training and Continuing Education**

College of Eastern Idaho

Adult Education

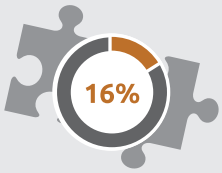
Adult Education (AE) collaborates with employers, workforce training, and CTE to prepare students for in-demand career pathways.
AE provides the following services to the six technical colleges and the Idaho Department of Correction:





OF IELCE* STUDENTS ATTAINED A **POSTSECONDARY CREDENTIAL**

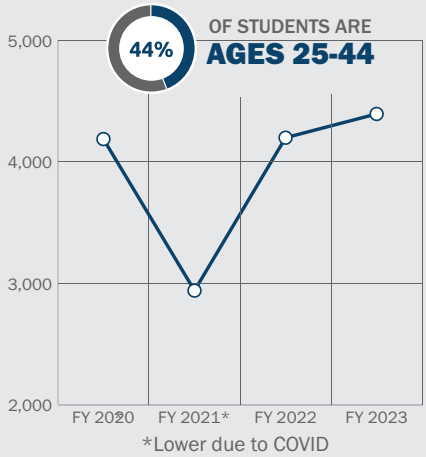
*Integrated English Language and Civics Education



OF **STUDENTS** ARE CO-ENROLLED IN **WIOA***

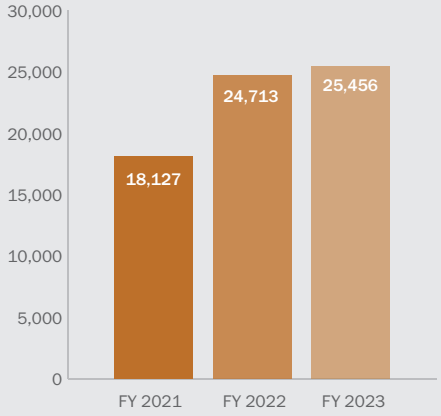
*WORKFORCE INNOVATION AND OPPORTUNITY ACT

NUMBER OF CLIENTS SERVED



*Lower due to COVID

INSTRUCTIONAL HOURS PROVIDED

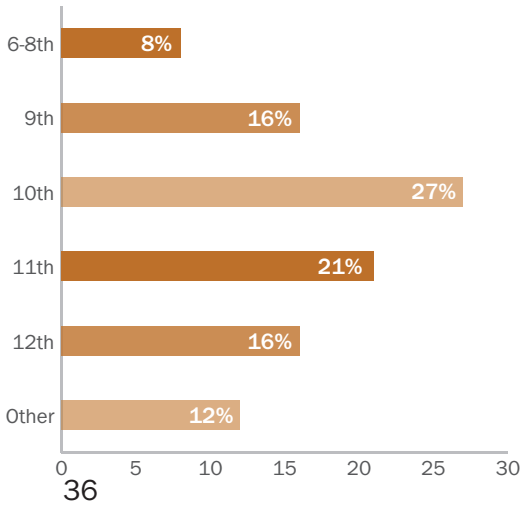


GED

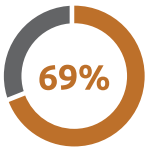
OF GED TEST TAKERS DID NOT FINISH HIGH SCHOOL DUE TO PERSONAL OR ACADEMIC REASONS

836 OF 1,046 GED COMPLETERS **PASSED THEIR GED TEST**

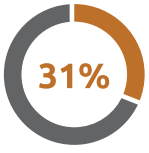
HIGHEST GRADE COMPLETED



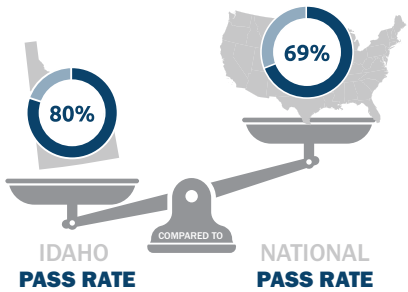
AGE GROUPS OF GED PASSERS



16-21



22+

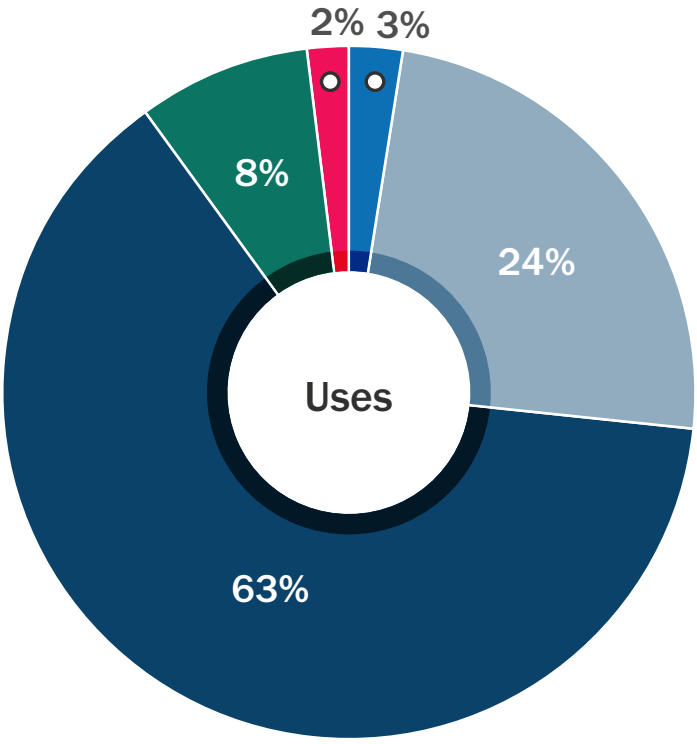


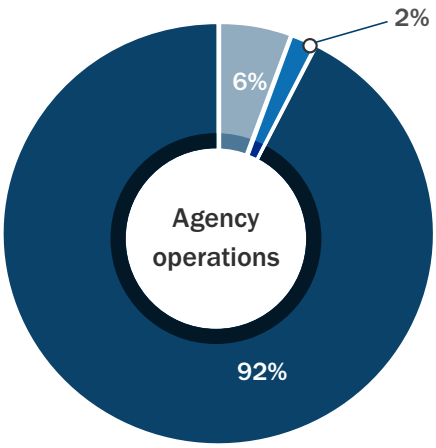
OF GED TEST TAKERS **USE AE TO PREPARE**

Financial overview

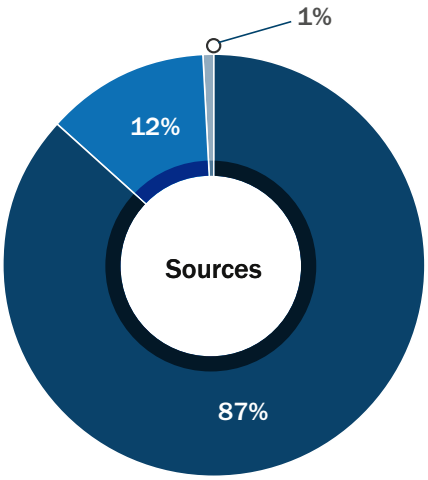
Administrative services	**$2,321,800**
Personnel costs	$1,939,600
Operating expenses	$382,200
Federal funds	$20,000
Secondary and general programs	**$20,178,400**
Personnel costs	1,746,100
Operating expenses	542,000
Program distribution	17,886,700
Added-cost operating support	
Secondary Perkins grant programs	
Agriculture and Natural Resources	
Workforce Readiness Incentives	
Program Quality Incentives	
Federal funds (duplicated)	3,986,000
Technical College System	**$53,445,600**
Federal funds	2,685,500
Related programs	**$6,786,300**
Personnel costs	815,400
Operating expenses	231,100
Program distribution	5,739,800
Adult Education	
Workforce Training Centers	
Apprenticeship programs	
Fire Service Training	
Centers for New Directions	
Dedicated funds	252,800
Federal funds	3,798,700
Educator services	**$1,506,500**
Personnel costs	294,900
Connect Summer Conferences	275,000
Operating expenses	234,100
Program distribution	702,500

IDCTE RECEIVED
$84,238,600
IN APPROPRIATIONS
AND HAD **49** EMPLOYEES
FOR FY 2023





- Program distribution
- Operating expenses
- Personnel costs



- State funds
- Federal funds
- Dedicated funds

IDAHO
Division of Career
Technical Education

650 W. State St., Suite 324, Boise, Idaho 83702

208-429-5500

info@cte.idaho.gov

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2023/1,000/AR23

SUBJECT

2023 Math Work Group Report

APPLICABLE STATUTE, RULE, OR POLICY

Idaho Code § 33-1627

BACKGROUND/DISCUSSION

In April 2022, the State Board's Accountability Oversight Committee (AOC) recommended that the Board establish a Math Work Group to review Idaho's K-12 math achievement data and provide recommendations to expand the math initiative and adjust systems and structures needed to improve statewide math performance. Between December 2022 and February 2023, individuals were identified and invited to participate in the Math Work Group. The Math Work Group held their first meeting in March 2023.

The Math Work Group was chaired by Board President Dr. Linda Clark and included twenty (20) other individuals from across Idaho, including representatives from the State Board of Education (Board), State Department of Education (Department), Division of Career Technical Education, STEM Action Center, higher education math experts, and K-12 educators from district and school administrators to math teachers. The work group met six (6) times as a full group and subgroups met three (3) to five (5) additional times to delve more deeply into their specific areas of focus. The subgroups included: Educator Effectiveness, Special Initiatives, What's Not Working, What's Working, and Statute. During full group meetings, the Math Work Group reviewed math achievement data and specific data pulled based at their request, discussed success and challenges, and developed actionable recommendations to present to the Board.

The 2023 Math Work Group Report (Attachment 1) includes an Executive Summary with priority recommendations from the Work Group. The full report includes math data and findings, and additional detailed recommendations divided between policy recommendations for the Board and implementation recommendations for the Department. The recommendations are further separated between short-term and long-term actions, and definitions of these timelines are provided in the introductory material. The 2023 Math Work Group Report includes two appendices: Appendix A, the Summary of LEA Survey Results; and Appendix B, Proposed Middle School Math and CTE 7th/8th Grade Programs Integration Project.

The following are highlighted recommendations from the Math Work Group's Report, with indication of the highest priority recommendations (as included in the report's Executive Summary):

Educator Effectiveness

Priority Recommendation

- The Board, Department, and Regional Math Centers should work together to develop professional learning pathways for educators to increase their mathematical knowledge for teaching. Consider use of micro-credentialing within the pathways and adjust renewal requirements and/or processes to support implementation and incentive educator preparation.

Other Highlighted Recommendation

- Create a Math Educator Preparation Work Group to 1) identify changes needed to ensure educators develop sufficient mathematical knowledge for teaching during preparation, and 2) review the approach currently used to fund the Idaho State Department of Education, and, if applicable, make recommendations for improvement.

Standards, Curriculum, Instruction, and Assessment

Priority Recommendation

- Engage a work group to develop a K-12 Comprehensive Math Plan and set a five-year update cycle.

Other Highlighted Recommendations

- Department should adjust the process for review of math curricular materials to provide more specific guidance regarding which materials are most aligned to the Idaho Math Instructional Framework and which should be avoided.

STEM and CTE Integration

Priority Recommendation

- Build a cross-agency collaboration between the Board, Department, CTE, STEM Action Center, Workforce Development Council, and the Regional Math Centers to create and implement a campaign to address math culture in the state.

Other Highlighted Recommendations

- Department should capitalize on existing, successful professional development structures within the STEM Action Center and CTE to provide expanded, integrated math training content.

Idaho Statute

Priority Recommendation

- Update Idaho statute to align to key recommendations in this report. Promote the development of budgets that will support state and LEA efforts to improve math achievement.

IMPACT

The recommendations outlined in the 2023 Math Work Group Report are intended to guide the Board, Department, CTE, and partnering agencies to adjust policies and practices to collaboratively support improved student achievement in math. The recommendations in the report will be reviewed individually by the appropriate agency to determine timelines and appropriate actions. Any recommendations that relate to statute or rule will be reviewed by Board staff, and legislative ideas will be brought to the Board for consideration, as appropriate.

If the Board adopts the recommendations in Attachment 2, Board and Department staff will begin the planning processes to begin work related to these recommendations.

ATTACHMENTS

Attachment 1 – 2023 Math Work Group Report, January 2024, with appendices
Attachment 2 – Math Work Group Recommendations for Board Adoption

BOARD STAFF COMMENTS AND RECOMMENDATIONS

The Middle Grades Math Work Group met diligently and provided a thorough report of their findings and specific recommendations for action plans and deliverables for Board consideration.

Some of the recommendations presented in the report require the allocation of significant staff time across multiple agencies. These include the establishment of a math educator preparation work group as well as the continued work of this math workgroup. The proposed goals and deliverables of these workgroups that require Board approval to proceed are presented for Board consideration in Attachment 2.

Board staff recommend approval.

As an additional note, recommendations for statutory changes proposed by the Middle Grades Math Workgroup to help facilitate this success of this work are in progress and will be brought back to the Board for consideration when the Board takes up 2025 legislative ideas in June of 2024.

BOARD ACTION

I move to adopt the Math Work Group recommendations outlined in Attachment 2.

Moved by _____ Seconded by _____ Carried Yes _____ No _____

2023 Math Work Group

Findings and Recommendations Report

January 2024

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Appendix A: Summary of LEA Survey Results

Appendix B: Proposed Middle School Math & CTE 7th - 8th Grade Programs Integration Project

DISCLAIMER

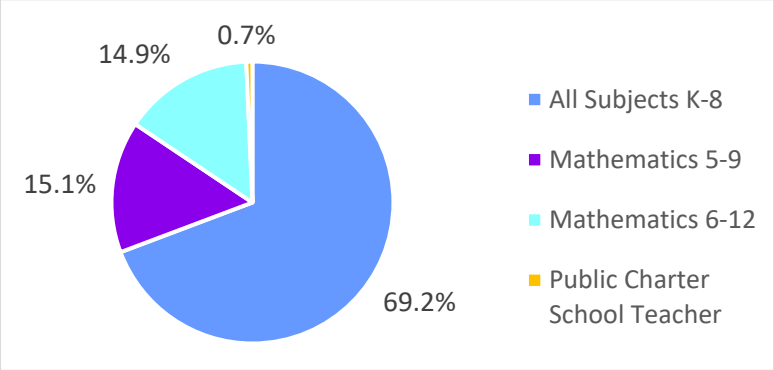
This report is a working document produced by the 2023 Math Work Group, a temporary work group convened to provide the Idaho State Board of Education with recommendations to improve math achievement. The recommendations presented here are the opinions of the 2023 Math Work Group and not necessarily that of the Board unless explicitly accepted by them.

SECTION 1: EXECUTIVE SUMMARY

The purpose of this section is to provide a compact overview of the highest priority findings and recommendations found in the Middle Grades Math Work Group Report.

Educator Effectiveness

Figure 1: Certifications of MS / Jr High Math Teachers (n=1,447)



Findings

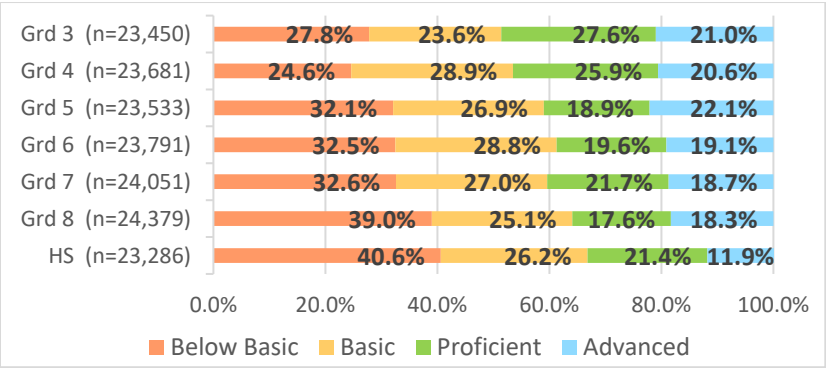
- The majority (69%) of middle school and junior high math teachers have an All Subjects K-8 certificate.
- Our data process does not currently enable tracking of non-endorsement math learning by educators.

Priority Recommendation

Work together with the Department and Regional Math Centers to develop professional learning pathways for educators to increase their mathematical knowledge for teaching. Consider use of microcredentialing within the pathways and adjust renewal requirements and/or processes to support implementation and incentivize educator participation.

Standards, Curriculum, Instruction, and Assessment

Figure 2: 2022-23 ISAT Math, by Grade and Performance Category



Findings

- Given that less than 50% of students in all tested scored proficient or advanced, it is clear that supports are needed to improve K-12 instruction and achievement.

Priority Recommendation

Engage a work group to develop a K-12 Comprehensive Math Plan and set a 5-year update cycle.

STEM and CTE Integration

Figure 3: Percentage of Students Engaged, 2018-2021

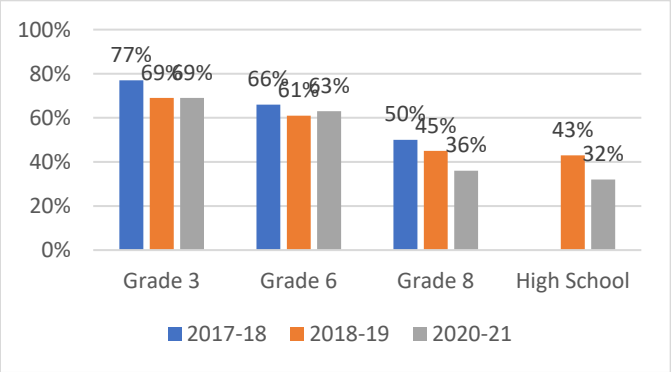
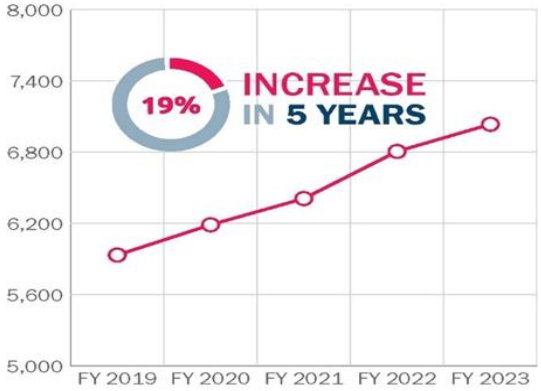


Figure 4: CTE Concentrators, 2018-2023



Findings

- Idaho educators face challenges in addressing student engagement and math self-perception and motivation. National data indicates these factors impact students' math achievement.[1]
- Engagement survey data from the FY 22 AOC Report (Figure 3) shows a decrease in student engagement in the middle and high school grades. However, CTE concentrations increased during this time and qualitative reports indicate engagement is strong in STEM programs.

Priority Recommendation

Build a cross-agency collaboration between the Board, SDE, CTE, STEM Action Center, Workforce Development Council, and the Regional Math Centers to create and implement a campaign to address math culture in the state.

Idaho Statute

Priority Recommendation

Update Idaho statute to align to key recommendations in this report. Promote the development of budgets that will support state and LEA efforts to improve math achievement.

Additional Information

The 2023 Math Work Group's Statute Subgroup will provide the Board office with proposed statutory language and a complementary Fiscal Impact related to the following:

- Establishment of the Comprehensive Math Plan and associated requirements for K-12 and higher education to align practices to it;
- Expectations for regional math centers and provision of professional learning to improve educators' mathematical knowledge for teaching; and
- Funds and support for LEAs to improve math achievement.

[1] Rimm et al, 2014; Xiao and Sun, 2021; Zhang et al, 2021

SECTION 2: RECOMMENDATIONS

Introduction

Organization of the Report

This report is organized into recommendations within the following categories:

- Educator Effectiveness
  - Preparation, Certification, and Renewal
  - Mentoring, Professional Development, and New Certifications or Endorsements
- Standards, Curriculum, Instruction, and Assessment
- Career Technical Education (CTE) and STEM Integration

Each category's section begins with summarized background information "Findings." This section is followed by the recommendations, which are divided between Policy Recommendations for the State Board of Education and Implementation Recommendations for the State Board of Education. The recommendations are further designated as Short-term Actions or Long-term Actions.

Recommendations Definitions

Based on Board staff's experience with the time and energy it takes to implement recommendations, the following definitions are used when referring to Short-term Actions and Long-term Actions in the Recommendations tables in Section 2.

- ✓ Short-term Actions: Work on this recommendation should begin as soon as possible, with the goal that the recommendation be completed within approximately two (2) years after the Board's approval.
- ✓ Long-term Actions: While planning can begin sooner, these are recommendations that generally are expected to take more than two (2) years to come to fruition. Sometimes, these recommendations first require the completion of a Short-term Action.

EDUCATOR EFFECTIVENESS

Middle Grades Educator Data

Figure 5: Certifications of MS / Jr High Math Teachers (n=1,447)

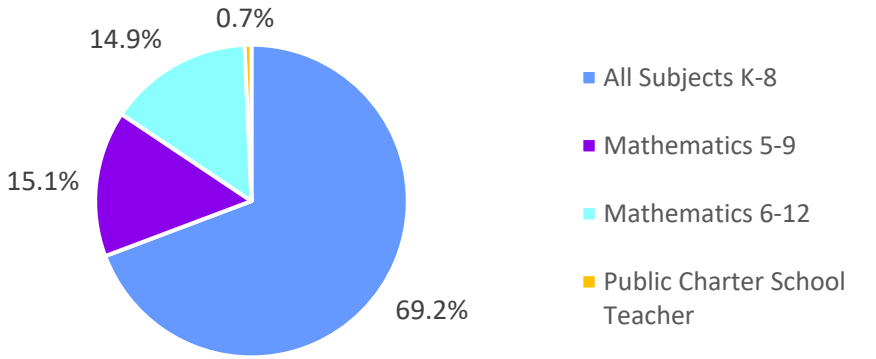


Figure 6: Traditional vs. Non-Traditional Certifications of Middle Grades Math Teachers (n=1,447)

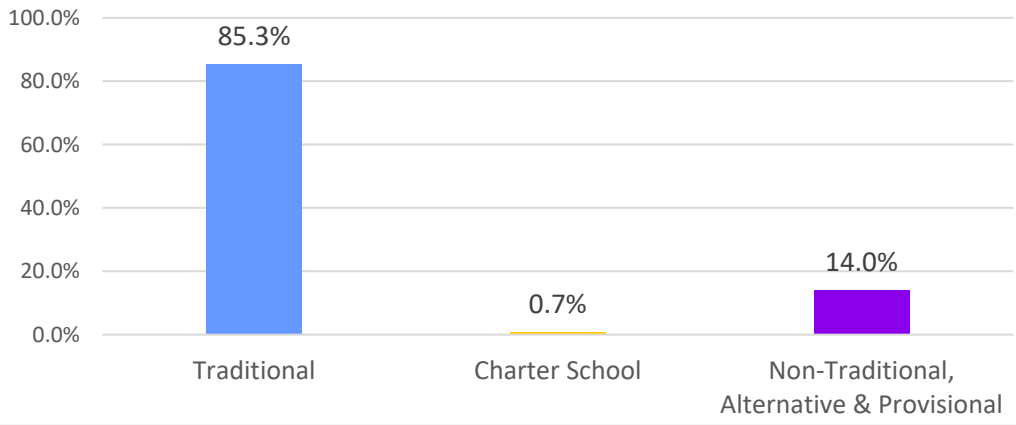
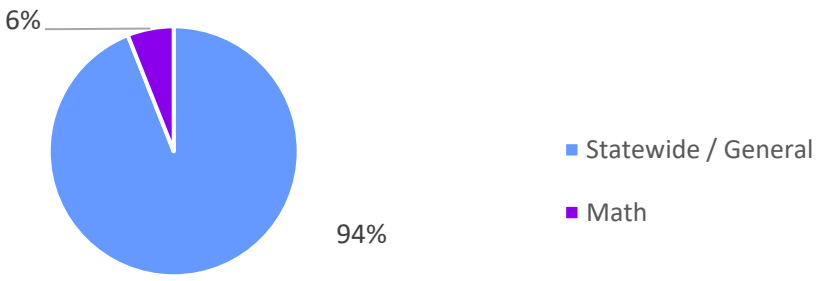


Figure 7: Endorsements of MS / Jr. High Administrators (n=314)



Findings

- As shown above, the majority (69%) of educators assigned to middle school and junior high mathematics courses have a K-8 generalist certification.
    - In Idaho, the K-8 generalist certificate is often achieved with only one math methods course (typically called Math for Elementary Teachers).
- 14% of middle grades math teachers have a non-traditional certification.
    - This is higher than the national average (10%) and of concern since research indicates that schools with high percentages of low socioeconomic students tend to have higher percentages of non-traditionally certified teachers.[2,3]
- Similarly, only a small percentage of middle school and junior high administrators have a math specific endorsement.

Educator Preparation and Certification

Findings

- Idaho's educator pipeline for mathematics is limited.
    - As outlined in the December 2023 Educator Pipeline report Idaho has reported a shortage of mathematics teachers, including basic and advanced math for grades 6 through 12. Further, while Idaho "had teacher shortage areas before the pandemic, but the shortage areas were exacerbated by the pandemic."[4]
    - Concerns related to the educator pipeline have prevented the Work Group from recommending more stringent certification requirements at this time.
    - The current model for funding departments of education is based on program enrollments. This may leave small, but crucial, teacher preparation programs vulnerable to closure before their impact can be realized.
- Mathematical Knowledge for Teaching (MKT) is essential for teachers to provide effective instruction, but Idaho's current certification system does not ensure that teachers receive adequate training in MKT during preparation.[5]

[2] National Center for Education Statistics, n.d.
[3] Sutcher, Darling-Hammond & Carver-Thomas, 2016; Carver-Thomas & Darling-Hammond, 2017
[4] Idaho State Board of Education, 2023
[5] Mathematical Knowledge for Teaching (MKT) is the specialized knowledge that teachers need to effectively teach mathematics (Hill & Ball, 2009). Effective teaching of mathematics requires more than just knowing the subject matter of mathematics; it also involves a deep understanding of how students learn and how to convey mathematical concepts in a way that makes sense to them (Hill et. al., 2008), and this knowledge impacts student math achievement (Hill et. al., 2005). Taking traditional college math courses does not sufficiently prepare teacher candidates to teach K-12 mathematics topics well.

Recommendations – Educator Preparation and Certification

Policy Recommendations – State Board of Education

Short-term Actions

1. Create a Math Educator Preparation Work Group.
   a. The work group should be primarily comprised of experts in math educator preparation and in-the-field educators.
   b. The work group's first area of focus should be to review preparation and identify how to ensure educators develop sufficient mathematical knowledge for teaching (MKT).
      - Review the preparation requirements of traditional preparation programs and alternate route programs.
        - Consider alternative methods to onboarding teachers (i.e. look at CTE onboarding approach and/or allow some PD to be completed during certification and possibly count for certification).
        - Review the requirements for teachers certified out of state.
   c. The work group's second area of focus should be to review the approach currently used for funding Idaho's public departments of education and, if applicable, make recommendations for improvement.
      - Review other approaches to funding and identify whether a method that aligns with the purpose of educator preparation programs.

Long-term Actions

1. Based on recommendations of the Math Preparation Work Group, develop and implement plans to increase the amount of MKT training educators receive during preparation.
2. Based on recommendation of the Educator Preparation Funding Work Group, work with the institutions of higher education to develop and implement plans adjust how colleges / departments of education are funded.

Implementation Recommendations – State Department of Education

Short-term Actions

1. Participate in the Math Preparation Work Group

Long-term Actions

1. Based on recommendations of the Math Preparation Work Group, develop and implement plans to increase the amount of MKT training educators receive during preparation.

Ongoing Professional Learning:

Mentoring, Professional Development, Renewal, and New Certifications / Endorsements

Findings

- The Math Educator data shows a systematic gap in the level of MKT training K-8 educators receive pre-service; considerable mentoring and professional development is needed.
- Some K-8 generalists have worked to increase their math instructional practices, but have not pursued a math endorsement.
    - Current data tracking does not allow us to identify non-math endorsed K-8 generalists with substantial MKT.
    - Potential reasons educators may not complete the endorsement could include cost and availability of coursework.
    - Board policy III.E. includes a definition of microcredentials and could act as a foundation for tracking educators' microcredentials related to math.[6]

Recommendations – Ongoing Professional Learning

Policy Recommendations – State Board of Education

Short-term Actions

1. Jointly develop budgets with the SDE and request legislature support for funds to expand math professional learning.
2. Prioritize math in the new mentoring / professional development platform.
3. Outline professional learning expectations in the Comprehensive Math Plan.
4. Work with the SDE and RMCs to support the development of MKT professional development pathways for educators.
    a. The pathways could include microcredentials and may or may not result in math endorsements.
    b. Require or incentivize MKT sequence courses for renewal certification for educators with the following certificates who are teaching math: K-8 generalists, K-12 special education, secondary math.

Long-term Actions

1. Consider incentivizing and/or requiring Idaho's Teacher Leader- Mathematics endorsement or microcredentialing for math instructional coaches and mentors of math teachers.

[6] State Board of Education, 2022

Implementation Recommendations – State Department of Education

Short-term Actions

1. Identify and implement actions to improve mentoring for math teachers (K-8).
   a. Reinforce the Idaho mentoring standards to ensure mentor pairings are content-specific.
   b. Explore ways to facilitate mentoring and coaching across LEAs.
   c. Identify the training expectations of mentors to ensure effectiveness. Provide trainings via multiple mediums (in-person, online, and at varied times).
2. Identify teachers with strong MKT to build a wider network of mentors and coaches.
   a. Ensure the initial cadre of mentors in the state's new mentoring platform includes educators with strong MKT.
3. Build upon previous efforts to engage districts and schools in quality, ongoing, focused professional development to improve math instruction.
   a. Professional development efforts must be embedded and content connected.
      – Promote use of the ISAT interims and data to support instruction.
      – Train educators to engage in the depth and rigor of the standards.
      – Train LEAs on developing an effective PLC system.
   b. Ensure professional development is appropriately differentiated across roles (teachers, vs. administrators, etc.).
4. Work with the Board and RMCs to develop professional development pathways to help educators gain MKT.
   a. Limit implementation of the pathways to the RMCs and consider a pilot program or incentivized cohort model.
   b. Identify appropriate ways to integrate CTE educators into the pathways.
   c. Support any identified renewal requirements and work with RMCs and providers to ensure course availability.

Long-term Actions

1. Work with the Board to use funds in alignment with statute and the mentoring and professional development recommendations in the Comprehensive Math Plan.

STANDARDS, CURRICULUM, INSTRUCTION, AND ASSESSMENT

ISAT Math Data

Figure 8: Longitudinal Comparison of Mean Scale Score vs. Proficiency, 2021-22 Grade 7 Cohort (n = 18,550)

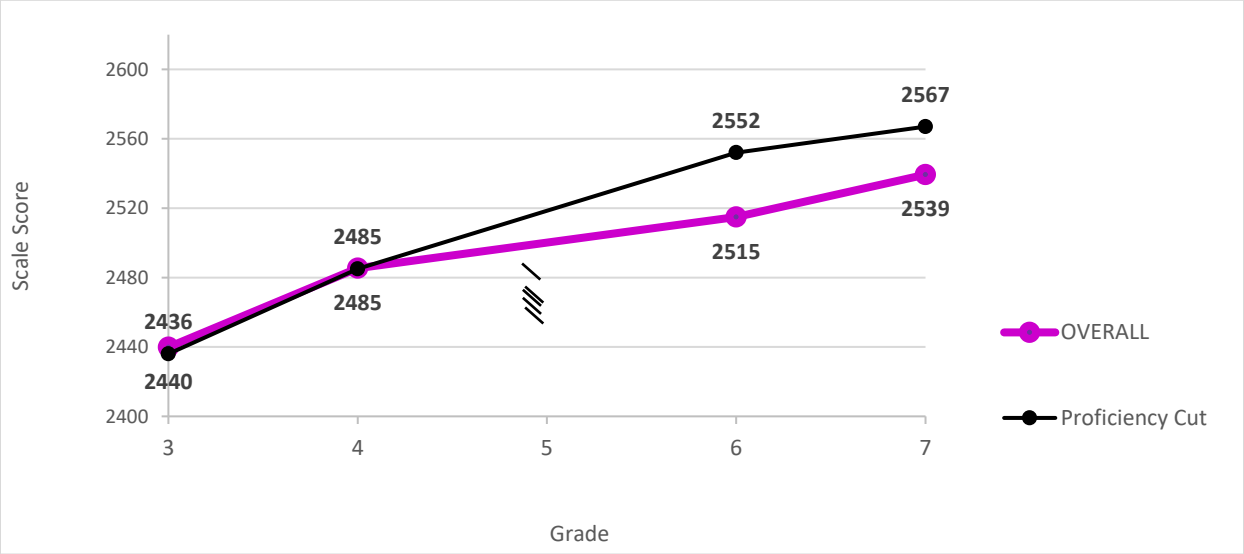


Figure 9: 2022-23 ISAT Math, by Grade and Performance Category

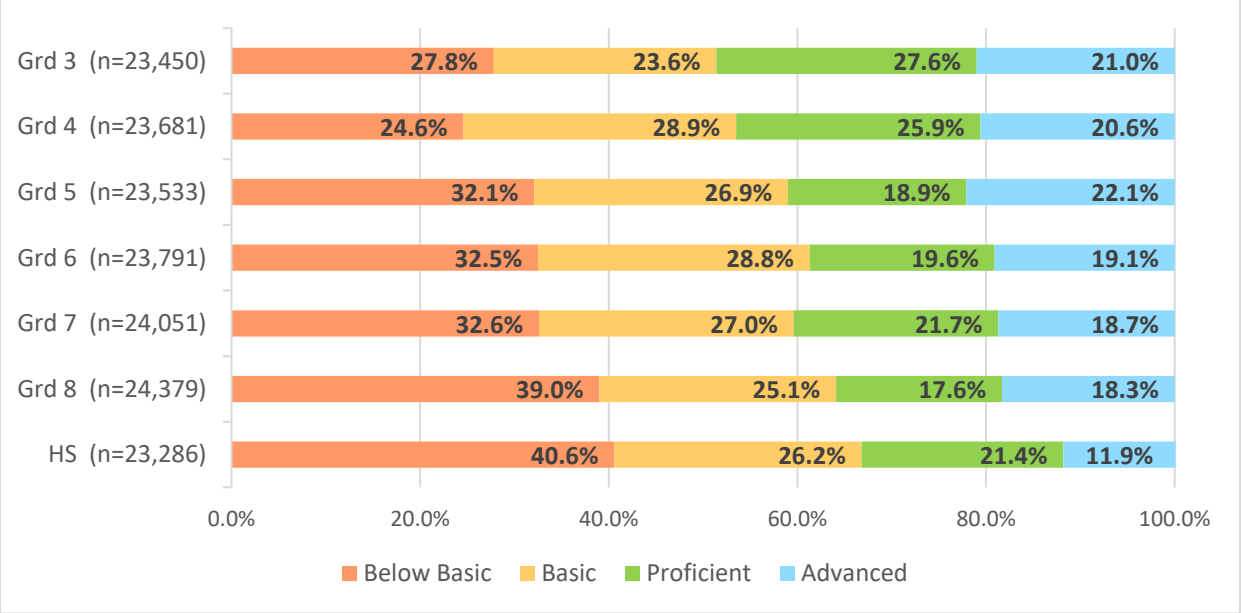


Figure 10: 2022-23 ISAT Math, by Ethnicity, all grades (3-8 and 11)

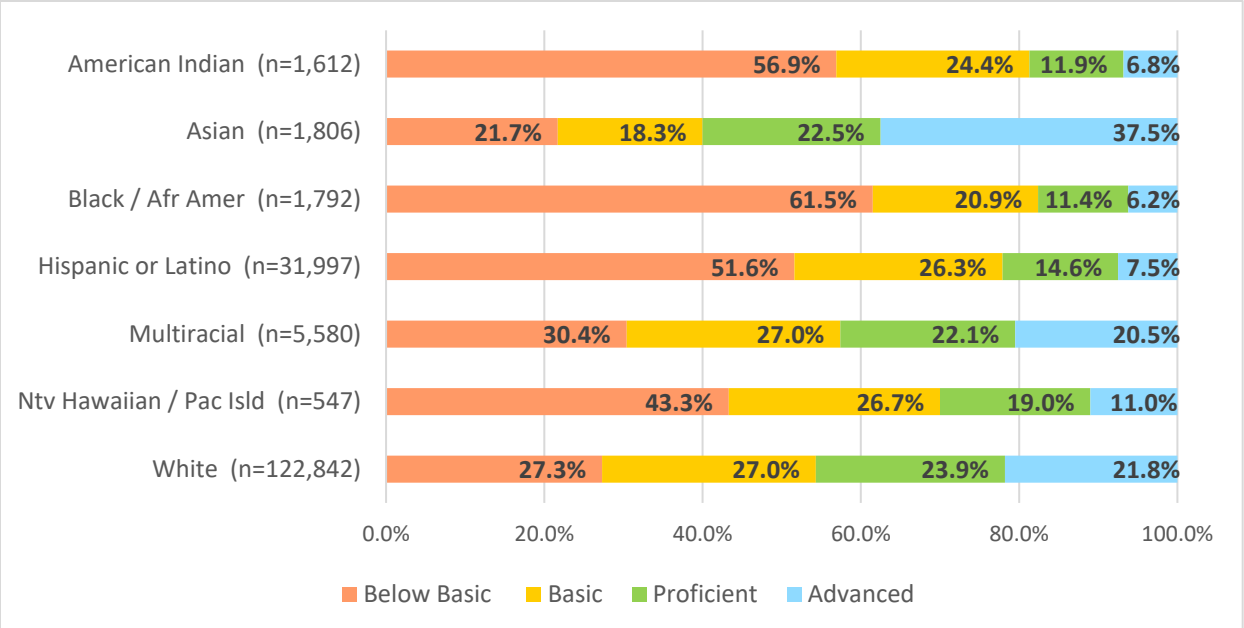
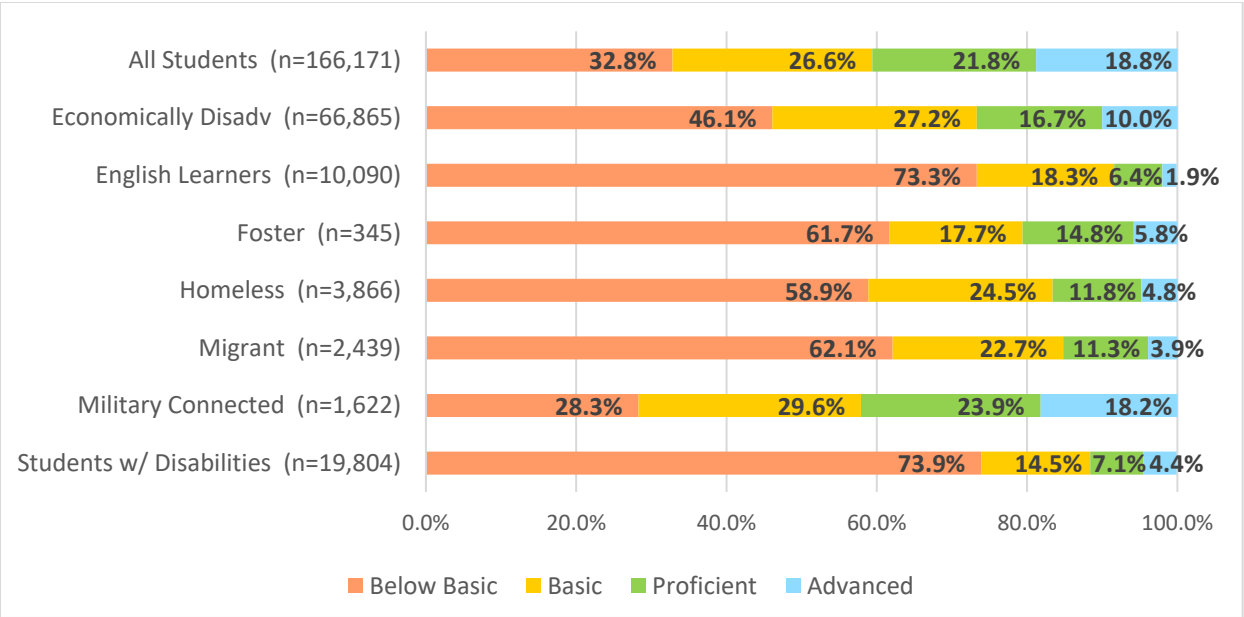


Figure 11: 2022-23 ISAT Math, by Student Group, all grades (3-8 and 11)



Findings

- Across multiple cohorts of data (shown in Figure 4 and provided in the FY 23 AOC Report), Idaho students' mean math scale score is at or very near the proficiency cut in grades 3 and 4, but drops below the cut by grade 5 and continues to follow away from the proficiency cut score as students progress through the K-12 system.

- While scores show the biggest declines beginning in the middle grades, only 48.6% of 3rd grade students were proficient in 2023 (Figure 5). Thus, lower scores in the middle and upper grades likely stem from issues starting earlier in elementary (i.e. K-3).
- There are substantial differences in student performance based on ethnicity, with performance gaps between white students and students of color ranging from 3.1 to 28.1 percentage points.
    - The state's second largest ethnicity group, Hispanic or Latin, had 22.1% of students score proficient or advanced in 2022-23, a rate 23.6 percentage points below their White peers.
    - 18.7% of identified American Indian students scored proficient or advanced in 2022-23, a rate 27 percentage points lower than their White peers.
- ISAT Math performance gaps also exist between the all student population and students in specific subgroups, with differences ranging from 13.9 to 32.3 percentage points.
    - English Learners had the lowest rate of math proficiency amongst student groups, at 8.3%. Students' ability to participate in a language-based mathematics test likely impacts their scores.
    - Students who are economically disadvantaged, the state's largest subgroup, had a ISAT math proficiency rate of 26.7%, 13,9 percentage points lower than the all students subgroup.
    - 11.5% of students with disabilities (those receiving special education services) scored proficient or advanced in 2022-23, a rate 29.1 percentage points lower than the all students group.

Recommendations – Standards, Curriculum, Instruction, and Assessment

Policy Recommendations – State Board of Education

Short-term Actions

1. Collaboratively develop budgets with the SDE and request legislative support for funds for LEAs to improve math core instruction and interventions.
2. Engage a work group to develop an Idaho Comprehensive Math Plan and set a 5 year cycle for updating it.
    a. The work group should include robust representation from individuals with expertise in math education research.
    b. The work group should include representation and/or feedback from stakeholder groups committed to serving specific student populations (EL, SPED, racial / ethnicity groups, etc.).
    c. This plan should address both core math instruction and interventions.
    d. This plan should include recommendations related to the amount of and use of math instructional time.
3. Maintain commitment to high quality assessment that measures deeper mathematical knowledge and skills by continuing to administer the ISAT by Smarter Balanced.
    a. Consider incentivizing use of the interim assessments and/or other resources provided through the consortium.

Long-term Actions

1. Continue to work to maintain and expand state funding focused on improving math core instruction and interventions.

Implementation Recommendations – State Department of Education

Short-term Actions

1. Work with the Board to develop budgets and engage with the legislature to request funds to support LEAs in improving math core instruction and interventions.

Long-term Actions

1. Work with the Board to ensure LEAs are using funds in alignment with statute and the Idaho Comprehensive Math Plan.

2. Adjust process for review of math curricular materials to provide more specific guidance regarding which materials are most aligned to Idaho Math Instructional Framework.
    a. Clearly identify if there are curricula / instructional materials that districts should avoid due to substantial misalignment with Idaho's Content Standards or Instructional Framework.
3. Ensure all students are receiving on grade level core instruction.
    a. Conduct a study (internally or via a contractor) to examine the prevalence of ability grouping during core (Tier 1) math instruction in elementary schools.
    b. Work with LEAs to ensure all students (including subgroups such as SPED, EL, Title I) receive grade-level core math instruction.
4. Ensure math performance data is widely shared and provide targeted data literacy professional development.
    a. Provide training to support educators in understanding different types of assessments and how to consistently and effectively use data.
    b. Districts and schools need to understand how to use ISAT claim and target level analyses to guide professional development and curricular and instructional changes.
5. Conduct outreach to increase use of the full suite of tools and resources available through the ISAT by Smarter Balanced (interims, Tools for Teachers, etc.) and provide training on effective use.
6. Gather and provide resources to LEAs regarding best practices around implementing subject departmentalization within elementary schools[7].
7. Identify highly effective districts and schools with math performance above expectations. Recognize / reward them and share their strategies.

2. Based on the results of the study on ability tracking, develop and implement plans to reduce its prevalence in core math instruction, particularly in the elementary grades.
3. Continue to fund statewide intervention / extension materials (Ex. Imagine Learning) and provide professional development to expand LEAs' capacity of LEAs to use these materials.
4. Continue to work with Smarter Balanced staff and partner states to provide expanded support for multilingual learners (English Learners) within the ISAT.

[7] Chan & Jarman, 2004; Gerretson et. al., 2008; Hood, 2010

CAREER TECHNICAL EDUCATION AND STEM INTEGRATION

Career Technical Education (CTE) Data

Figure 12: CTE Concentrators, 2018-2023

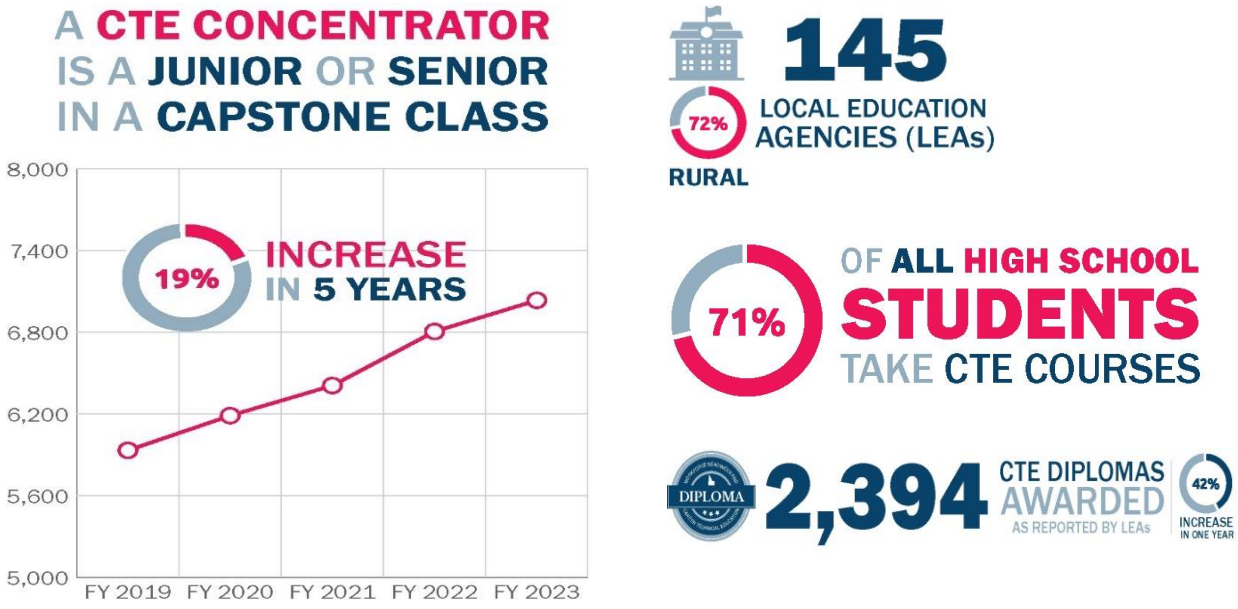
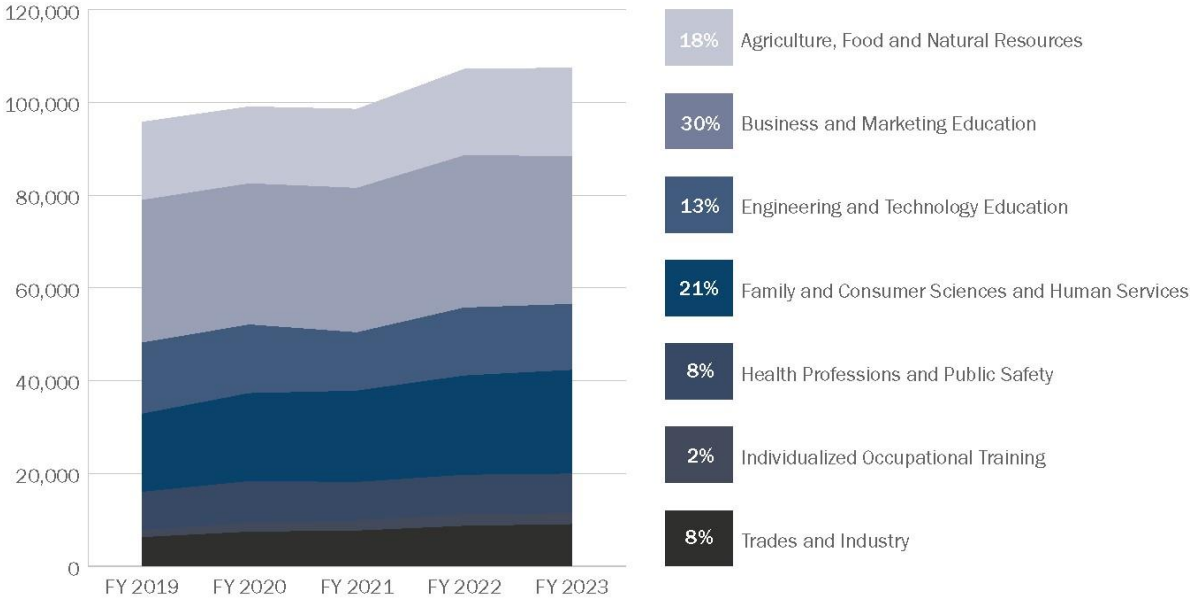


Figure 13: 2019 through 2023 CTE students by Focus Area



STEM Action Center – i-STEM Trainings Data

368
i-STEM 2023 Participants

79.6%
of Participants Completed Surveys

6
Regional i-STEM Sites

Figure 14: Subjects Taught by i-STEM 2023 Participants (duplicated)

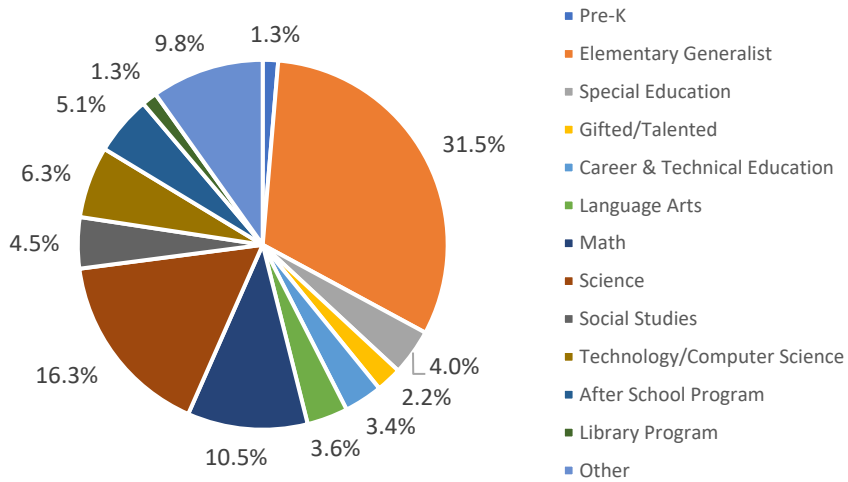
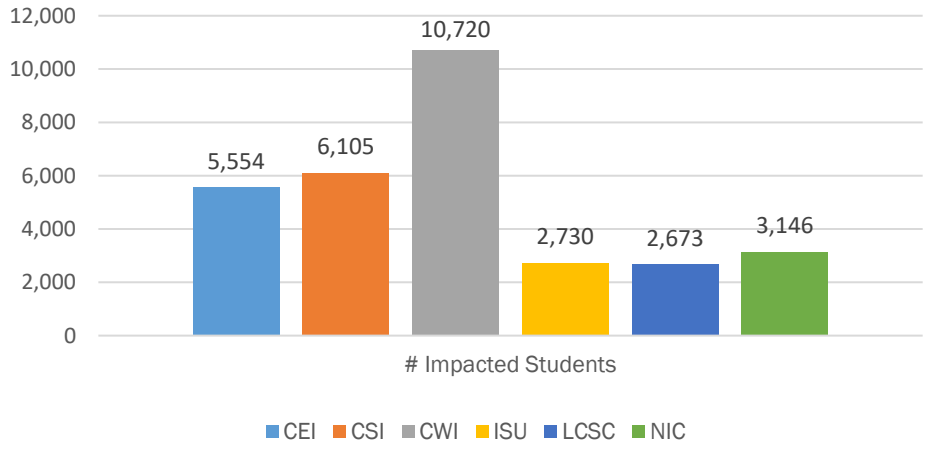


Figure 15: Minimum i-STEM Student Impact by Site, based on teacher surveys



Findings

- An increasing number of Idaho students are participating in CTE, so ensuring CTE math is solid, relevant, and engaging is critical.
- The Idaho STEM Action Center's i-STEM Summer Institutes, the annual STEM conference, and the Division of Career Technical Education's (CTE) Summer Conferences are well-established vendors for professional development that have regional branding.

Recommendations – Career Technical Education and STEM Integration

Policy Recommendations – State Board of Education

Short-term Actions

1. Work with CTE to ensure that guidance and templates provided to LEAs for students' career pathway plans (in alignment with I.C. 33-1614) include a section regarding the math students will need to achieve their future plans.
2. Work with the STEM Action Center to ensure that the STEM Strategic Plan and Comprehensive Math Plan are appropriately aligned.
3. Review Next Steps Idaho to identify places where future math coursework should be more detailed.

Long-term Actions

1. Work with CTE to develop budgets and engage with the legislature to request full funding for middle school CTE programs.
2. Based on the review of Next Steps Idaho, implement changes to address any identified gaps by making future math coursework information more detailed.

Implementation Recommendations – State Department of Education

Short-term Actions

1. In coordination with CTE, develop a plan to integrate math instruction with the development of 7th - 8th Grade CTE programs (see Appendix B).
2. Collaborate with CTE to ensure that math instruction provided through CTE is on-grade level and appropriately aligned to the state's math content standards.
   a. Work with CTE to facilitate cross-training between traditional and CTE educators to improve understanding of connections between the standards.
4. Capitalize on existing, successful professional development structures within the STEM Action Center and CTE to provide expanded, integrated math training content.

Long-term Actions

1. Work with the Board to support the development of budgets that sustain funding for CTE and STEM integration efforts.
2. Implement the initiative to integrate math instruction with middle school CTE programs.
3. In coordination with the Board, CTE, STEM Action Center, Workforce Development Council, and RMCs, create and implement a campaign to address math culture in the state.
   a. The campaign should include: every person is a math person; why math is important; how people use math in a variety of contexts and careers.

2023 MATH WORK GROUP MEMBERS

Linda Clark, Ed.D., Chair
President
State Board of Education

Alison Henken, MPP, Staff Support
K-12 Accountability and Projects Program Manager
Office of the State Board of Education

Cindy Siddoway
Member
State Board of Education

Ryan Cantrell
Deputy Superintendent
Department of Education

Cathy Beals, Ed.D
Math Coordinator
Department of Education

Katie Bosch-Wilson
STEM Education Coordination Officer
STEM Action Center

Meghan Wonderlich
Director of Academics
Department of Education

Chet Andes, M.Ed.
Assistant Director of Program Quality
Division of Career Technical Education

Julie Amador, Ph.D.
Regional Math Center Director
University of Idaho

Michele Carney, Ph.D.
Regional Math Center Director
Boise State University

JoDee Cook
Director of Curriculum and Instruction
Westside School District

Ryan Erickson
Vice Principal, Rigby Middle School
Jefferson County School District

Joanne Huber
Math Teacher, Alameda Middle School
Pocatello Chubbuck School District

Adam Johnson
Assistant Superintendent
Blaine County School District

Jodie Mills
Chief Academic Officer
Boise Independent School District

Mike Nelson, Ph.D.
Deputy Superintendent
Coeur d'Alene School District

Justin Pickens
Math and Science Teacher, Maple Grove Elementary
Boise Independent School District

Philip Stevens
Director of American Indian Studies
University of Idaho

Christi Thompson
Director
Syringa Mountain Charter School

Jessica Vanderwall
5th Grade Teacher, Grangeville Middle School
Mountain View School District

Leigh Wilson, M.Ed.
Math and Science Teacher, Potlatch Elementary
Potlatch School District

Our thanks to the following individuals who contributed to our subgroup discussions:

Rhonda Birnie, Regional Math Specialist
Veronica Blackham, Regional Math Specialist
Christa Carver, Regional Math Specialist
Ramey Uriarte, Regional Math Specialist

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APPENDIX A

Summary of LEA Survey Results

Methodology

The What's Working Subgroup issued a survey to approximately 30 public school districts and public charter schools (or local education agencies – LEAs) who had outperformed the State of Idaho averages on the middle school math ISAT exam two out of the past three years, or who had shown above average growth during that time. Issues with the state's free and reduced lunch data (used to identify low socioeconomic students) during the pandemic years prevented the subgroup from controlling for this demographic factor.

Demographics of Surveyed LEAs:

- 18 LEAs responded to the survey
- LEA size varied between 1A and 5A
- All LEAs had below 50% low socioeconomic students

The purpose of this survey was to identify commonalities that could be characterized as indicators of success. Most districts reported that the composition of their teacher populations were experienced to veteran and that their math departments have experienced average to above average stability in personnel over the past five years. Most districts reported offering professional development opportunities specifically to math instruction or math curriculum over the past five years, and many districts identified a collaborative professional environment as part of the professional development focus. Many districts responded that their above average performance in mathematics could in part be attributed to alignment of standards and curriculum horizontally and vertically, and an MTSS type structure to monitor individual student achievement and needs. Most districts acknowledged that while they were encouraged by performing above state averages, they felt they had room for improvement and continued growth regarding student achievement in mathematics. The survey results are summarized in Figure 1.

After reviewing the survey results, LEAs were invited to participate in a virtual "round-table" to further discuss and explain factors that have been contributing to their district's success. Nine districts participated in this discussion. Feedback gathered during this session is demonstrated in Figure 2.

APPENDIX A

Highlighted Results

The following are all of the factors from the survey that had an average score of 3.5 or higher.

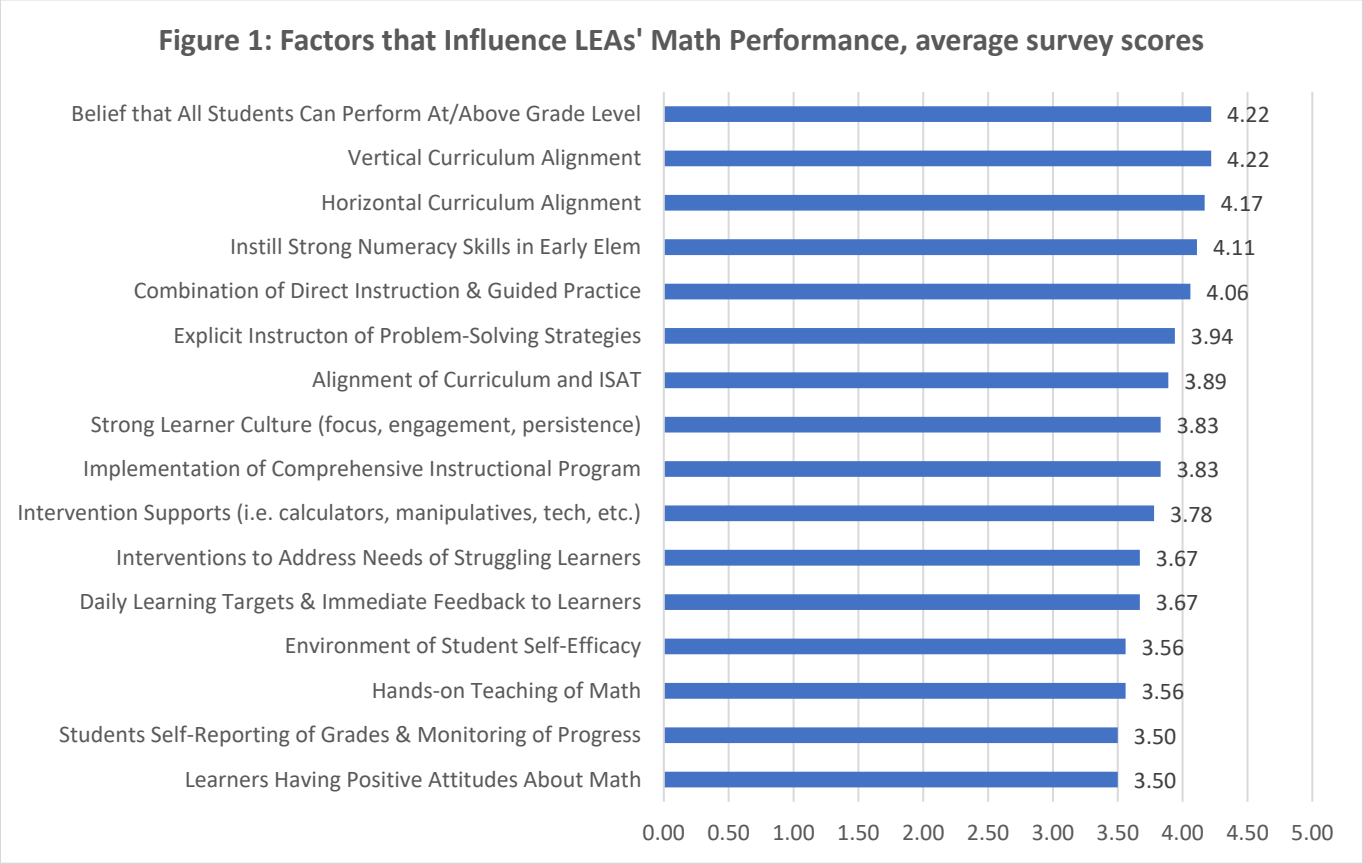


Figure 2: Common LEA Practices Impacting Success, based on round-table discussion

APPENDIX B

Proposed Middle School Math & CTE 7th – 8th Grade Programs Integration Project

Project Goal: Foster middle school career exploration through engaging middle school mathematics instruction.

Inputs	Activities	Outputs	Outcomes	Impacts
Political support: • Legislative • OSBE • CTE • SDE Funding: $2 million / yr for 3 years = $6 million • Project Manager and Administrative Assistant Support. • Development of Middle School CTE programs that will integrate mathematics instruction. • Professional Development costs, teacher time, credits and travel costs. Math content specialists who create resources and provide professional development for MS Math and CTE teachers.	• Create a vision graphic to articulate a statewide vision for cross-disciplinary middle school mathematics instruction. • Create standards crosswalks that show how middle school math standards and CTE standards align. • Provide focused professional development for MS CTE and Mathematics teachers that engages them in cross-disciplinary planning, delivery of instruction and supporting students who struggle. • Create a collection of resources to support MS Math and CTE teachers. • Enhance Next Steps platform to create middle school resources and more specific guidance on math courses needed for careers.	• Improved teacher confidence in teaching mathematics. • Increased understanding of middle school math standards and alignment. • Engaging, cross-disciplinary, math lessons. • Student math portfolios. • Student Career plans that include their "math path" for high school and awareness of how math will be a part of their chosen career.	**Short-term Outcomes** • Increased student interest in mathematics • Career Exploration • Improved mathematics instruction **Long-term Outcomes** • Improving math instruction • Supporting teachers in rural high schools • Improved student learning opportunities in mathematics. • Improved student engagement in mathematics • Improved student math identity • Increase in CTE enrollment at the middle school level	• Gains in student achievement • Improvement in student math identity • Enhanced CTE courses at the middle school level

Actions for Board Adoption

The Board directs Board and Department staff to engage appropriate individuals or work groups to begin work on the following tasks:

1. Develop a K-12 Comprehensive Math Plan.
2. Engage in a study of educator preparation requirements and provide the Board with recommendations to improve the mathematical knowledge for teaching that educators receive during preparation.
3. Develop professional learning pathways to support current educators in increasing their mathematical knowledge for teaching.
4. Support the Department's efforts to improve the math curricular review process.
5. Develop a cross-agency campaign to improve math culture in Idaho.
6. Promote and support existing successful professional development structures that exist in Idaho.

SUBJECT

Accountability Oversight Committee Recommended Approach to Amending the Consolidated State Plan Long-Term Goals

REFERENCE

August 2017	Board approved Idaho's ESSA-aligned Consolidated State Plan, including a new state and federal accountability system that utilizes multiple measures to identify schools for recognition and support, including a high school measure on college and career readiness.
February 2019	Board approved amendments to the ESSA-aligned Consolidated State Plan, based on recommendations from the Assessment and Accountability team at the SDE and the AOC.
April 2021	Board adopted recommendations from the AOC related to the K-8 school quality measure used for school identification, thus initiating the negotiated rulemaking process for IDAPA 08.02.03 – Section 112, Accountability.
April 2023	Board approved amendments to the ESSA-aligned Consolidated State Plan to adjust the school quality measure to include chronic absenteeism and to extend the state's long-term goals for an additional year (through school year 2023-24) to allow the state time to identify a new approach to setting these goals.

APPLICABLE STATUTE, RULE, OR POLICY

Idaho Code § 33-110
Idaho Administrative Code, IDAPA 08.02.03.111, 112, and 114
Idaho State Board of Education Governing Policies and Procedures, Section I.Q. Accountability Oversight Committee

BACKGROUND/DISCUSSION

The Board's Accountability Oversight Committee (AOC) was established in April 2010 as an ad-hoc committee. Board policy I.Q. assigns two responsibilities to the committee:

a. Provide recommendations to the Board on the effectiveness of the statewide student achievement system and make recommendations on improvements and/or changes as needed.
b. Develop and review an annual report of student achievement. This report shall be compiled collaboratively by Board and State Department of Education (Department) staff and submitted to the committee for review. The committee will forward the report to the Board with recommendations annually.

During the process of creating Idaho's Consolidated State Plan aligned to the Every Student Succeeds Act (ESSA), the Board requested that the AOC be involved in providing feedback on the initial version and be consulted any time amendments are made. Per ESSA, the Consolidated State Plan must include established long-term goals and measurements of interim progress for the following: student achievement (proficiency) on the statewide assessments in English Language Arts (ELA) and Mathematics, Graduation rates, and English Learners' growth towards English proficiency.

In April 2023, the Board approved amendments to the Consolidated State Plan that included an extension of the state's long-term goals and measurements of interim progress for one additional year, with the acknowledgement that the state would need to set new long-term goals and interim progress targets for the 2024-2025 school year and forward.

In May 2023, the AOC began the work to develop a new approach to creating the state's long-term goals and measurements of interim progress. The AOC has involved Department staff throughout the process, particularly as draft goals have been developed.

Based on substantial discussions in the recent years, the AOC recommends that the state establish goals that will push the state to improve performance while also ensuring that the interim targets are meaningful and achievable for all groups. However, the state's long-term goals must also be developed in alignment with federal law, which requires them to be ambitious and include a component that will aid in reducing performance gaps between subgroups. Goals are required for all students and for subgroups, and the calculation used to create the goals must be the same for all groups.

The AOC has developed several potential formulas for calculating the long-term goals, and worked with a consultant to model what state and school performance would have been in 2022 if one of the draft approaches was used. After further discussion, the AOC has revised the model to include a more substantial gap closure component.

The proposed approach for setting the long-term goals for ISAT proficiency in English Language Arts and Math and for graduation rates sets the expectation that all groups will improve their performance by seven (7) percentage points over seven (7) years and will close the gap between their group and the all-students' group by ten (10) percent over the same period. If a gap does not exist between the group and the all-students' group, only the seven (7) percentage point increase is expected. After the long-term goals are calculated, the measurements of interim progress are identified by dividing the long-term goal by seven (7) to create annual targets.

On January 12, 2024 the AOC voted to submit the proposed approach for creating new long-term goals to the Board for feedback. The AOC also suggested that the proposal be shared with Idaho's assessment technical advisory board (TAC), to ensure that the formula behind it is sound. Idaho's TAC includes experts in psychometrics and standardized assessments, including a nationally recognized growth model expert. On January 22, the AOC Chair, Board staff, and Department staff met with the TAC and provided detailed information regarding the proposed approach. The TAC confirmed that the formula is mathematically and theoretically sound. They also suggested pulling additional data on schools who are demonstrating success with specific subgroups to ensure that the proposed subgroup goals are appropriate.

If the Board is supportive, Board and Department staff will engage in a robust public feedback process. Staff will then provide the AOC with a summary of the community feedback and the approach and long-term goals will be revised if necessary. The proposed goals and interim targets will then be presented to the Board for approval as a part of a substantial Consolidated State Plan amendment.

IMPACT

Board support of the proposed model will result in the initiation of a stakeholder feedback process before the AOC and Department bring the final, proposed long-term goals and measurements of interim progress to the Board for adoption.

The long-term goals and measurements of interim progress are a required part of Idaho's Consolidated State Plan. The final proposed goals will be presented to the Board as an amendment to the Consolidated State Plan. This amendment does not require any changes to Idaho statute or Administrative Code.

ATTACHMENTS

Attachment 1 – Draft Changes to the Consolidated State Plan Long-Term Goals for Achievement and Graduation

BOARD STAFF COMMENTS AND RECOMMENDATIONS

Board staff are supportive of the proposed approach to creating new long-term goals and of the proposed plan for gathering stakeholder feedback.

BOARD ACTION

This item is for informational purposes.

Idaho State Board of Education

DRAFT CHANGES TO THE CONSOLIDATED STATE PLAN LONG-TERM GOALS FOR ACHIEVEMENT & GRADUATION

ESSA Requirements for Long-Term Goals

Per ESSA, the state must have long-term goals and measurements of interim progress for:

- ELA Proficiency, all students and subgroups
- Math Proficiency, all students and subgroups
- Graduation rate (can do 4 year and 5 year)
- English Learners Growth Towards Proficiency (on the ELPA)

The long-term goals MUST:

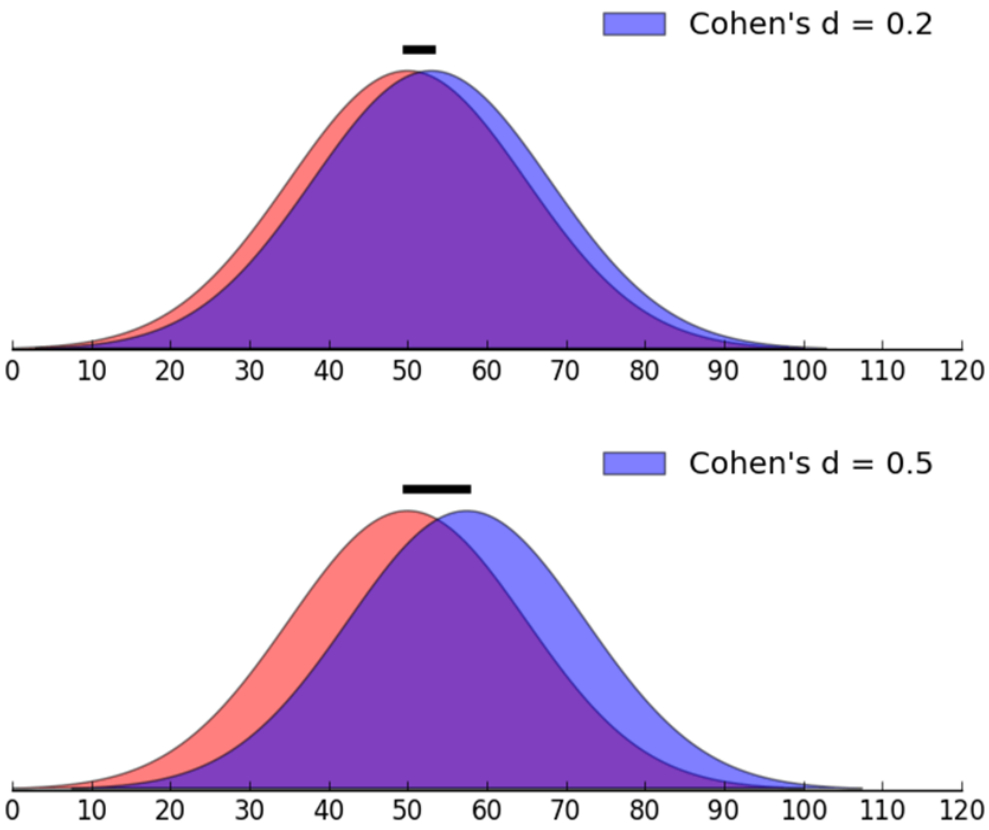
1. Be “ambitious”
2. Take into account the “improvement necessary… to make significant progress in closing statewide proficiency and graduation rate gaps.
3. Use the same calculation for All Students and all subgroups.

Planned Process for Revising Idaho's Long-Term Goals & Interim Targets

1. AOC Drafts Proposed Approach to Set New Goals
2. Technical Advisory Committee (TAC) Feedback
3. Board Feedback
4. Integrate Goals for English Learners' Progress Towards Proficiency
5. Stakeholder Feedback
5. Revisions
6. Present Consolidated State Plan Amendment with new Long-term Goals and Interim Targets

Effect Sizes (ES)

- If we set goals based on the idea of improving performance by a certain effect size, we are essentially proposing that we attempt to move the entire performance bell curve to the right.
- The idea is to support improved performance for all individual students, and in doing so, to improve the statewide proficiency rates.
- To determine the effect size(s) we might use, we have focused on reviewing historical statewide trends.



AOC Process

- AOC reviewed several iterations of long-term goals based on the effect size concept.
- Throughout the process, the AOC communicated with SDE staff
- The following equal improvement Approach 1 was treated as our first potentially viable option and was presented to the Technical Advisory Committee (TAC).

Draft Consolidated State Plan Goals – ISAT Math, 7 percentage points (1 per year)								
	2023 Baseline	2024 Interim Target	2025 Interim Target	2026 Interim Target	2027 Interim Target	2028 Interim Target	2029 Interim Target	2030 Long-term Goal
All Students	40.6%	41.6%	42.6%	43.6%	44.6%	45.6%	46.6%	47.6%

Modeling Summary - ISAT Goals Approach 1

- Used 2021 data as the baseline and 2022 as the target
- Determined if the state groups met the target
  - All Students: Yes ELA, Yes Math
  - English learners (EL): Yes ELA, Yes Math
  - Students with disabilities (SWD): Yes ELA, Yes Math
- Determined the # and % of schools who met the target
  - All Students: 52% ELA, 62% Math
  - English learners: 57% ELA, 58% Math
  - Students with disabilities (SWD): 47% ELA, 47% Math
- Checked for gap reduction for two student groups
  - EL vs. non-EL: 60% ELA, 52% Math
  - SWD vs. non-SWD: 47% ELA, 44% Math

Refining Our Approach

- AOC questioned whether the "Equal Improvement" Approach would lead to adequate reductions in performance gaps.
- Staff developed the Gap Closure Approach.
  - The Gap Closure Approach uses the Base of 7 percentage points over 7 years + 10% closure of the gap between the All Students baseline and the Group baseline.
  - AOC expressed being more comfortable in this new model, since it puts a focus on supporting students in subgroups who are struggling.

Approach 2: Gap Closure, ISAT Math

Draft Consolidated State Plan Goals – ISAT Math, 7 pct pts + 10% Gap Closure								
	2023 Baseline	2024 Interim Target	2025 Interim Target	2026 Interim Target	2027 Interim Target	2028 Interim Target	2029 Interim Target	2030 Long-term Goal
All Students	40.6%	41.6	42.6	43.6	44.6	45.6	46.6	47.6
Econ Disadv	26.7%	27.9	29.1	30.3	31.5	32.7	33.9	35.1
English Learners	8.3%	9.8	11.2	12.7	14.1	15.6	17.1	18.5
Stdts w/ Disab	11.5%	12.9	14.3	15.7	17.2	18.6	20.0	21.4
Hispanic / Latin	22.1%	23.4	24.6	25.9	27.2	28.4	29.7	31.0
Amer Indian	18.7%	20.0	21.3	22.6	24.0	25.3	26.6	27.9

Approach 2: Gap Closure, 4 year Cohort Graduation Rate

Draft Consolidated State Plan Goals – 4 Year Grad, 7 pct pts + 10% Gap Closure								
	2023 Baseline (2022 grad cohort)	2024 Interim Target	2025 Interim Target	2026 Interim Target	2027 Interim Target	2028 Interim Target	2029 Interim Target	2030 Long-term Goal (2029 grad cohort)
All Students	79.9%	80.9	81.9	82.9	83.9	84.9	85.9	86.9
Econ Disadv	69.6%	70.7	71.9	73.0	74.2	75.3	76.5	77.6
English Learners	65.4%	66.6	67.8	69.0	70.2	71.4	72.6	73.9
Stdts w/ Disab	56.6%	57.9	59.3	60.6	61.9	63.3	64.6	65.9
Hispanic / Latin	73.0%	74.1	75.2	76.3	77.4	78.5	79.6	80.7
Amer Indian	73.4%	74.5	75.6	76.7	77.8	78.9	80.0	81.1

Approach 2: Gap Closure, 5 year Cohort Graduation Rate

Draft Consolidated State Plan Goals – 5 year Grad, 7 pct pts + 10% Gap Closure								
	2023 Baseline (2021 grad cohort)	2024 Interim Target	2025 Interim Target	2026 Interim Target	2027 Interim Target	2028 Interim Target	2029 Interim Target	2030 Long-term Goal (2028 grad cohort)
All Students	82.3%	83.3	84.3	85.3	86.3	87.3	88.3	89.3
Econ Disadv	73.4%	74.5	75.7	76.8	77.9	79.0	80.2	81.3
English Learners	66.2%	67.4	68.7	69.9	71.1	72.4	73.6	74.8
Stdts w/ Disab	59.8%	61.1	62.4	63.8	65.1	66.4	67.7	69.1
Hispanic / Latin	75.6%	76.7	77.8	78.9	80.0	81.1	82.2	83.3
Amer Indian	72.7%	73.8	75.0	76.1	77.2	78.4	79.5	80.7

TAC Feedback and Next Steps

TAC Feedback

- Both approaches are mathematically and theoretically sound
- Suggest you pull data for some exemplar LEAs

Next Steps

1. Pull exemplar LEA data, particularly for subgroups
2. Build out the draft goals for ELA and add all required subgroups
3. Work with SDE EL Assessment and EL Program staff and advisory groups to develop a proposed approach for the English Learners Progress Towards Proficiency goal.
4. Robust public feedback – suggest a collaborative process that includes Board staff and SDE staff

SUBJECT

Accountability Oversight Committee Recommended Changes to the Trajectory Growth Model

REFERENCE

August 2017	The Board approved Idaho's ESSA Plan, including a new state and federal accountability system that utilizes multiple measures to identify schools for recognition and support, including a high school measure on college and career readiness.
December 2018	The Board received the AOC's fiscal year 2019 report, including student achievement data and an analysis on the first year of implementation of the state's new K-12 school accountability system.
February 2019	The Board approved amendments to the ESSA Plan, based on recommendations from the AOC and Department staff.
April 2021	The Board adopted recommendations from the AOC related to the K-8 school quality measure used for school identification, thus initiating the negotiated rulemaking process for IDAPA 08.02.03 – Section 112, Accountability.

APPLICABLE STATUTE, RULE, OR POLICY

Idaho State Board of Education Governing Policies and Procedures, Section I.Q. Accountability Oversight Committee
Idaho Code § 33-110
Idaho Administrative Code, IDAPA 08.02.03.111, 112, and 114

BACKGROUND/DISCUSSION

The Board's Accountability Oversight Committee (AOC) was established in April 2010 as an ad-hoc committee. Board policy I.Q. assigns two responsibilities to the committee:

a. Provide recommendations to the Board on the effectiveness of the statewide student achievement system and make recommendations on improvements and/or changes as needed.
b. Develop and review an annual report of student achievement. This report shall be compiled collaboratively by Board and State Department of Education (Department) staff and submitted to the committee for review. The committee will forward the report to the Board with recommendations annually.

Based on previous AOC recommendations to adjust the trajectory growth model, in early 2023, the Board office requested that the AOC take the lead in providing the Board with a more detailed proposal. The AOC began this work in spring 2023 and has collaborated with Department staff throughout. Department staff and the

AOC have also worked with an external contractor who has provided data modeling support for the project.

The trajectory growth model is used as a part of Idaho's K-12 school accountability system. Once students' individual growth targets are identified, the percentage of students who met their targets is calculated for each school. This is then used as the growth indicator in the state's formula to identify schools for comprehensive support and improvement. However, because so many students have not had meaningful targets under the current model, these growth targets are not often used at the school or individual student level. The AOC is hoping to change this by first updating the way that growth targets are identified and then providing support and feedback to Department staff as they revise the ISAT individual student reports.

Over the past ten months, the AOC has reviewed and discussed many potential methods to improve the state's trajectory growth model by:

- Creating more achievable targets for non-proficient students; and
- Creating more meaningful targets for students who are proficient or advanced.

The proposed model breaks the ISAT performance categories into sub-categories and sets each student's trajectory growth target based on the expectation that the student will move up one sub-category until they reach the advanced level.

On January 12, 2024 the AOC voted to submit the proposed model to the Board for feedback. The AOC also suggested that the proposed model be shared with Idaho's assessment technical advisory board (TAC), to ensure that the method is sound. Idaho's TAC includes experts in psychometrics and standardized assessments, including a nationally recognized growth model expert. On January 22, the AOC Chair, Board staff, and Department staff met with the TAC and provided them with detailed information regarding the proposed model. The TAC confirmed that the model is mathematically and theoretically sound. However, they did note that staying within the same sub-category from spring to spring does represent a full academic year of growth, so we may want to consider adjusting the expectation for students who are proficient.

If the Board is supportive, Board and Department staff will engage in a robust public feedback process. Dependent on Board and AOC feedback, staff will either present only the proposed model or will also include a model that expects proficient students to maintain performance within their sub-category. Staff will then provide the AOC with a summary of the community feedback and the model will be revised if necessary. The proposed model will then be presented to the Board for approval as a part of a substantial Consolidated State Plan amendment.

IMPACT

Board support of the proposed model will result in the initiation of a stakeholder feedback process before the AOC and Department bring a final model to the Board for adoption.

The trajectory growth model is a part of the school identification process outlined in Idaho's Consolidated State Plan and in IDAPA 08.02.03.112. The current approach to adjusting the model would require amendments to the Consolidated State Plan, but would not require changes to Administrative Code.

ATTACHMENTS

Attachment 1 – Draft Trajectory Growth Model Changes Presentation

BOARD STAFF COMMENTS AND RECOMMENDATIONS

Board staff are supportive of the proposed adjustments to the trajectory growth model and of the proposed plan for gathering stakeholder feedback.

BOARD ACTION

This item is for informational purposes.

Idaho State Board of Education

DRAFT CHANGES TO THE TRAJECTORY GROWTH MODEL

Trajectory Growth Targets Indicator

Creates Individual Student Goals

Calculation

Individual Student Trajectory Growth Target =

Proficient Scale Score 3 years after Baseline – Student's Baseline (previous year) Scale Score / 3

Used in School Identification Calculation

- State calculates the per school % of students who hit their target
- The per school % is 1 part of the School Identification Calculation
- The growth targets are calculated annually

Reasons AOC Recommends Changes

In their FY 19 AOC Recommendations Report, the AOC identified the following issue:

- Students who are proficient can have a growth target that requires little to no growth to maintain proficiency (depending on the individual student's scale score)
- Students who are advanced can have a growth target that is a negative slope, since the expectation is that they just need to stay above the proficiency cut score to hit their target

In FY 22 and FY 23, the AOC also noted:

- Students who score lower on the test (i.e. Below Basic) often have a growth target that is too ambitious to be achievable

Planned Process for Revising Idaho's Trajectory Growth Indicator

1. AOC Drafts Proposed Method for Calculating New Trajectory Growth Targets
2. Technical Advisory Committee (TAC) Feedback
3. Board Feedback
4. Stakeholder Feedback
5. Revisions
6. Present Consolidated State Plan Amendment with new Trajectory Growth Targets Calculation

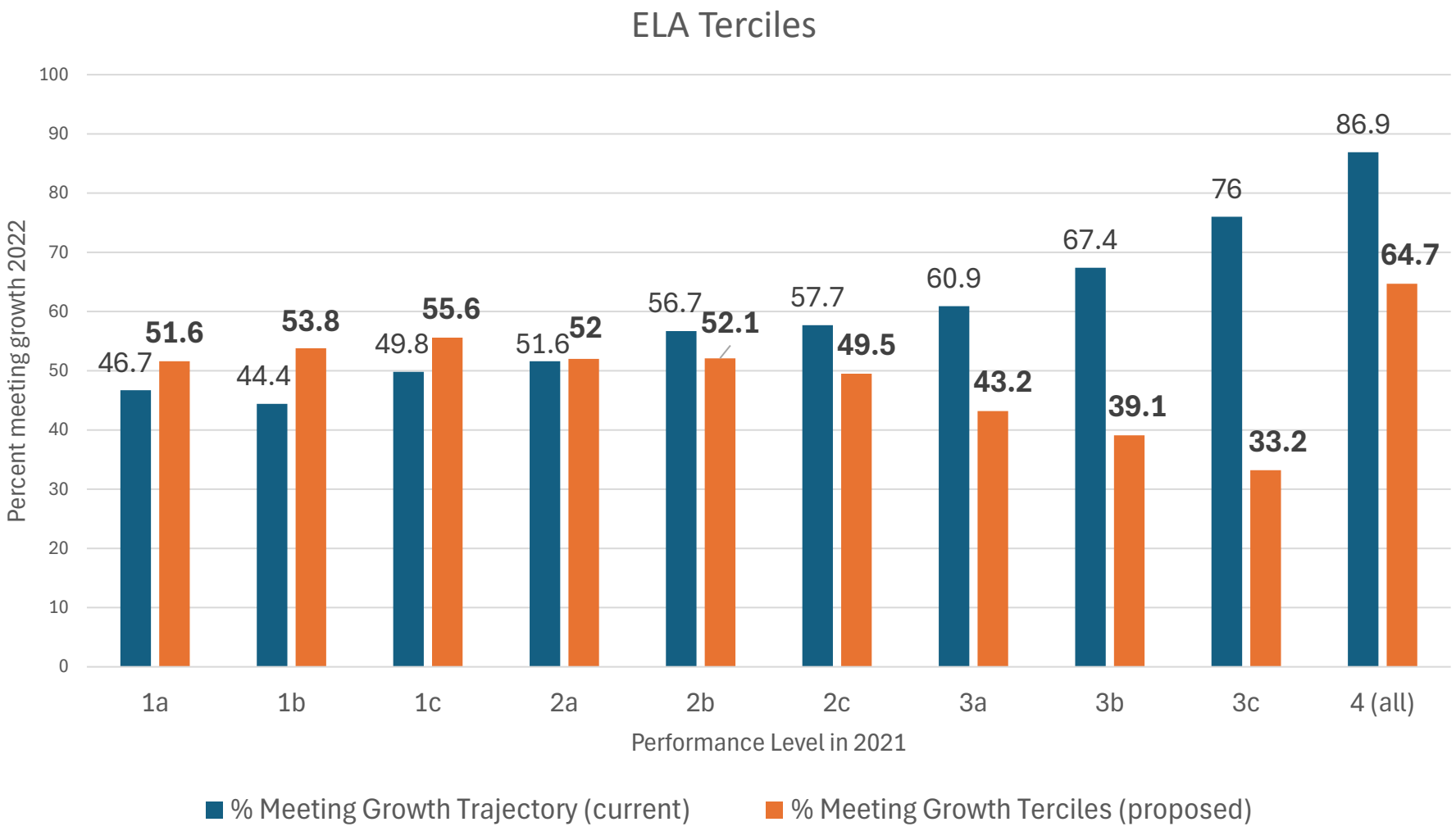
Proposed Model - Terciles

	Level 1			Level 2			Level 3			Level 4		
Prior Year	1a	1b	1c	2a	2b	2c	3a	3b	3c	4a	4b	4c
Current year	1b	1c	2a	2b	2c	3a	3b	3c	4a	Maintain		

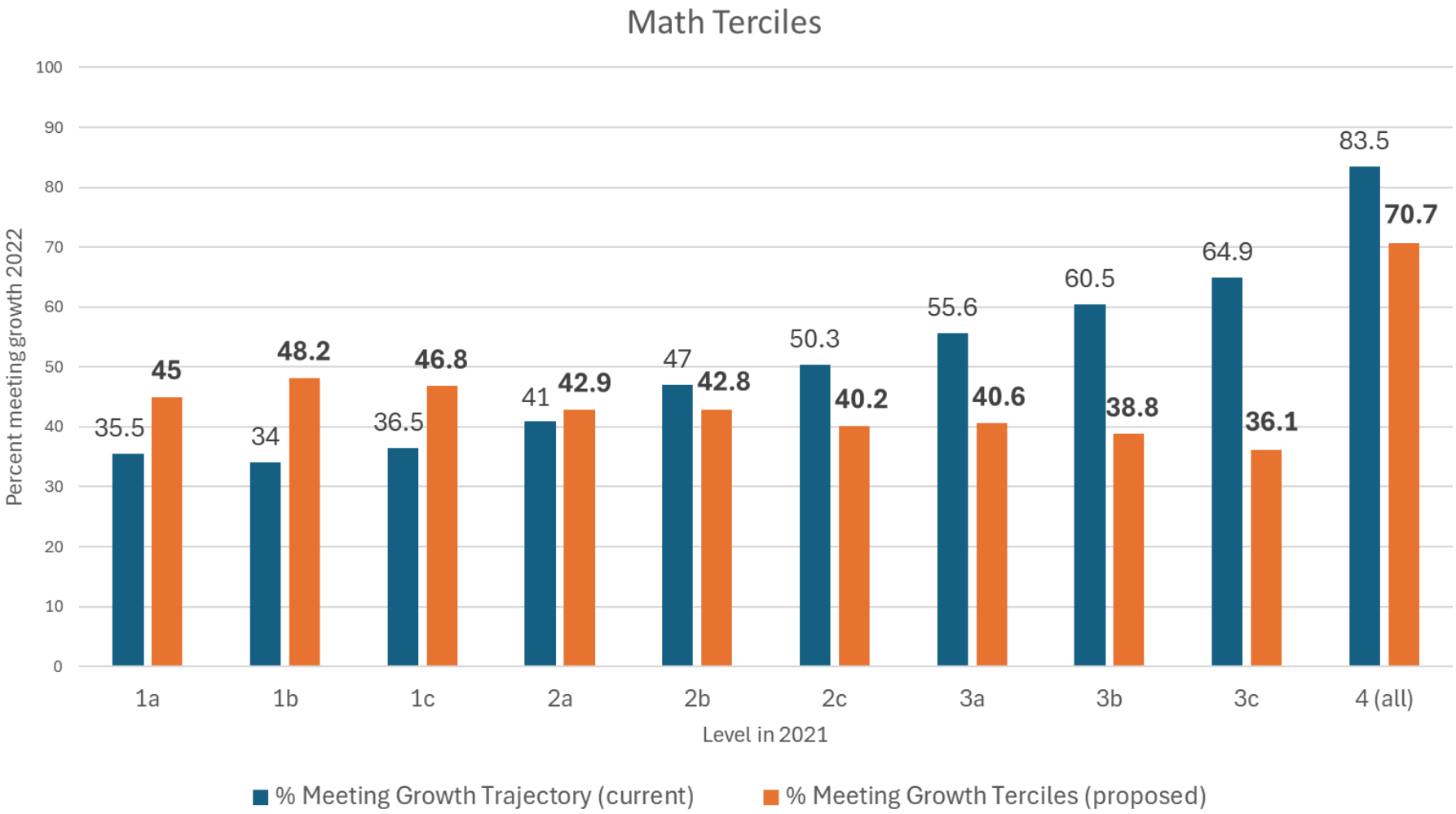
This model uses sub-categories of performance to establish students' individual growth targets.

- Each ISAT performance category is broken into 3 sub-categories (exception is Level 4, Advanced)
- Student targets = enter the next sub-category (or higher)
- Advanced students targets = stay in Advanced category

Data Modeling: ISAT ELA % Making Growth, using tercile cuts



Data Modeling: ISAT Math % Making Growth, using tercile cuts



TAC Feedback and Next Steps

TAC Feedback

- This approach is mathematically and theoretically sound
- May want to look at some individual school performance (i.e. high performing schools, schools identified for improvement, high schools vs. elementary schools)
- Staying the in the same sub-category is still 1 year growth, so may want to consider adjusting the model for proficient students

Next Steps

1. Pull student data
2. Do data modeling with the proficient maintain sub-category
3. Robust public feedback – suggest a collaborative process that includes Board staff and SDE staff

SUBJECT

2023-2028 K-20 Education Strategic Plan

REFERENCE

October 2018	The Board reviewed the K-20 Educational System performance measures and directed staff to remove several performance measures and bring forward annual degree production targets for consideration in the updated K-20 Education Strategic Plan for the December 2018 Board meeting.
December 2018	The Board reviewed the draft K-20 Education Strategic Plan and discussed setting institution level credential production goals by level of credential.
February 2019	The Board approved updated K-20 Education Strategic Plan and reviewed data on Idaho's workforce education gap and potential credential production targets. Directed staff to do additional work with the Department of Labor, Department of Commerce, Workforce Development Council, and Governor's Office on identifying workforce need and production targets.
October 2019	The Board reviewed K-20 Education System performance during the Work Session and Literacy Growth Targets during the Planning, Policy and Governmental Affairs portions of the agenda
February 2020	The Board approved amendments to the FY21 K-20 Education Strategic Plan.
May 2020	The Board discussed amendments to the Board's K-20 Strategic plan as part of a facilitated Board retreat.
August 2020	The Board approved a new mission and vision statement for the K-20 Education Strategic plan.
October 2020	The Board reviewed K-20 Education System performance measures.
December 2020	The Board discussed possible amendments to the FY 22 K-20 Education Strategic Plan.
February 2021	The Board approved amendments to the FY22 K-20 Education Strategic Plan.
May 2021	The Board discussed identifying three focus areas for K-12 Education, K-4 Literacy, 5-8 Math, and HS credit recovery.
June 2021	The Board approved the institutions and agencies' strategic plans and delegated approval of the health and special program plans to the Executive Director.
October 2021	The Board reviewed K-20 Education System performance measures, including an update on IRI performance based on student cohorts.

December 2021	The Board discussed possible amendments to the FY 23 K-20 Education Strategic Plan, including the addition of three focus areas for postsecondary education.
February 2022	The Board approved amendments to the K-20 Education Strategic Plan
October 2022	Board reviewed K-20 Education System performance measures, including an update on IRI performance and growth based on student cohorts.
December 2022	The Board reviewed the current K-20 Education Strategic Plan and provided direction on potential amendments.
February 2023	The Board approved amendments to the K-20 Education Strategic Plan
October 2023	The Board reviewed the current K-20 Education System performance measures.
December 2023	The Board reviewed proposed amendments to K-20 Education Strategic Plan

APPLICABLE STATUTE, RULE, OR POLICY

Idaho State Board of Education Governing Policies & Procedures, Section I.M. Planning and Reporting
Idaho Code § 67-1903

BACKGROUND/ DISCUSSION

Idaho State Constitution, Article IX, Section 2, provides that the general supervision of the state educational institutions and public school system of the State of Idaho, "shall be vested in a state board of education, the membership, powers and duties of which shall be prescribed by law." Through obligations set in the State Constitution and Idaho statutes, the State Board of Education (Board) is charged with the general supervision, governance and control of all educational institutions and agencies supported in whole or in part by the state. This includes public schools, colleges and universities, the Department of Education, the Division of Career Technical Education, Idaho Public Television, and the Division of Vocational Rehabilitation. The Board and its executive agencies are charged with enforcing and implementing the education laws of the state.

Due to these broad responsibilities, the Board serves multiple roles. The Board sits as a policy-making body for all public education in Idaho, provides general oversight and governance for public K-20 education, and has a direct governance role as the Board of Regents for the University of Idaho and the board of trustees for the other public four-year college and universities. The K-20 Education strategic plan must encompass and serve all of these aspects of Idaho's public education system.

Idaho Code § 67-2903 sets out minimum planning elements that are required to be in every agency and institution strategic plan as well as the annual review and updating requirement that is the basis for the Board's strategic planning cycle.

In October the Board reviews performance measure outcomes from the K-20 Education Strategic Plan as well as the performance of the agencies and institutions under its governance. The data review and work session discussion help to guide revision efforts on the strategic plan for the next cycle. Board staff then work with stakeholders and the PPGA committee to refine proposed revisions. In December, the Board reviews any proposed revisions to the the K-20 strategic plan and provides feedback on the proposal. In February the board finalizes any revisions to the K-20 strategic plan going forward.

IMPACT

If the Board approves the proposed strategic plan today, it will be submitted to the Division of Financial Management (DFM) and posted on the Board's website. The Board approved K-20 strategic plan also helps inform the strategic plan development process for agencies and institutions under the Board's governance. Historically, the Board has reviewed drafts of agency and institution strategic plans in April and approved final plans in June. All strategic plans are due to DFM in mid-June.

ATTACHMENTS

Attachment 1 – FY 2025-2029 K-20 Strategic Plan Summary
Attachment 2 - FY 2025–2029 K-20 Education Strategic Plan – Proposed (Clean Copy)
Attachment 3 – FY2025-2029 K-20 Education Strategic Plan – Showing Redline

BOARD STAFF COMMENTS AND RECOMMENDATIONS

The Board reviewed performance data across K-20 and the performance reports for each institution and agency under Board governance in October of 2023.

Board feedback at that time was incorporated into proposed revisions. Proposed revisions were first considered by the PPGA Committee in November of 2023. After revisions based on Committee feedback, the proposed revisions were brought to the full Board for a work session in December of 2023. During the work session the Board members provided feedback and generally expressed support for finalizing the revision ideas for adoption consideration in February.

Since then, Board staff has worked with representatives from the Idaho Department of Education, the Accountability Oversight Committee, and institutional researchers from the colleges and universities to gather feedback for finalizing the proposed revisions. Board staff has also worked with the OSBE research, college and career, academic affairs, and IT teams to discuss the viability and efficacy of the proposed measures.

The result is a proposal for the Board to adopt 3 goals with 9 objectives and 17 performance measures. This plan is summarized in Attachment 1. Attachment 2 presents the strategic plan as it will be submitted to the Division of Financial Management if approved today. Attachment 3 shows the redline mark-up of the proposed revisions to the existing plan.

As the highest level strategic plan, these measures aim to serve as a spotlight on key areas of the Board's work and the efficacy of Board initiatives. Next steps for Board staff will include:

- aligning existing supplemental reports to the categories identified in the strategic plan, establishing a comprehensive timeline for those reports, and evaluating the depth and breadth of exiting reporting;
- supporting agencies and institutions in developing their strategic plans;
- working with PPGA and institutions to review performance measures and systemwide measures to consider whether revisions for improvement or efficiency may be brought forward for Board consideration at a future date.

Staff recommends approval of the K-20 education strategic plan.

BOARD ACTION

I move to approve the FY 2025-2029 K-20 Education Strategic plan as provided in Attachment 2.

Moved by _____ Seconded by _____ Carried Yes _____ No _____

GOAL 1: EDUCATIONAL READINESS

Objective A – Literacy

***Measure 1 – Proficiency:** Statewide aggregated % of K-3 students achieving proficiency on the spring administration of the statewide literacy assessment (IRI).
Target: 75% Actual: 66%

Measure 2 – Growth: Statewide aggregated % of K-3 students whose performance on the statewide literacy assessment increased by at least one sub-category between the fall and spring administrations of the assessment.
New measure, target TBD in 2024

Objective B – Mathematics

***Measure 1 - Proficiency:** Statewide aggregated % of 6-8 students who achieve proficiency on the spring administration of the statewide mathematics assessment (ISAT).
Target: 43% Actual: 39%

Measure 2 - Growth: Statewide aggregated % of students in grades 6-8 whose performance on the statewide mathematics assessment increased by at least one sub-category between spring-to-spring administrations of the assessment.
New measure, target TBD in 2024

Objective C – Graduation

***Measure 1- 5 YR ACGR:** 5 Year Adjusted Cohort Graduation Rate (ACGR).
Target: 87% Actual: 83%
(4-Yr ACGR 81%)

Measure 2 – College Entrance Exam: % of Idaho high school graduates who took the ACT or SAT and achieved the composite benchmark on the assessment taken.
Target: 45% Actual: ACT 30%; SAT 40%

GOAL 2: EDUCATIONAL ACCESS

Objective A – Advanced Opps.

***Measure 1 – Advanced Opps:** % of graduates from Idaho public high schools who were funded for one or more advanced opportunity.
Target: 90% Actual: 75%

Objective B – Engagement

***Measure 1 – FAFSA:** % of Idaho public high school seniors who complete the Free Application for Federal Student Aid (FAFSA).
Target: 60% Actual: 42%

Measure 2 – Apply Idaho: % of Idaho public high school seniors who submit at least one application through Apply Idaho.
New measure, target TBD in 2024

Objective C – College Going

***Measure 1 – Fall Immediate College Going:** % of graduates from Idaho public high schools who enroll in and Idaho public postsecondary institution in the fall immediately following graduation.
Target: 60% Actual: 42%

Measure 2 – 3 YR Go-On Rate: % of graduates from Idaho public high school who enroll in an Idaho public postsecondary institution within 36 months of high school graduation.
Target: 80% Actual: 52%

GOAL 3: EDUCATIONAL ATTAINMENT

Objective A – Retention

***Measure 1 – First-Year Retention:** % of new full-time degree-seeking students who return for a second year in an Idaho public postsecondary institution (or who graduated).
Target: 80% Actual: 52%

Measure 2 – Adequate Progress: % of undergrad, degree-seeking students completing 2 full-time semesters per academic year at the institution reporting (30 credits at 4yr; 24 at 2yr).
Target: 55% Actual: 50%

Objective B–Timely Completion

***Measure 1 – 100% of Time:** % of full-time first-time freshman graduating within 100% of the allotted time. (e.g. 4-year degree in 4 years; 2-year degree in 2 years)
Target: 30% Actual: 2YR 23%
4YR 34%

Measure 2 – 150% of Time: % graduating within 150% time.
Target: 50% Actual: 2YR 32%
4YR 53%

Objective C – Attainment

***Measure 1 - STEM:** % of total credentials conferred that are STEM field.
Target: 25% Actual: 24%

Measure 2 – Count: Unduplicated headcount of graduates, by highest level credential attained by academic year. (including workforce credentials, certificates, and associate, baccalaureate, and graduate degrees.)
Target: 18,000% Actual: 17,473%

FY2025-FY2029

Idaho K-20 Public Education – Strategic Plan

An Idaho Education: High Potential – High Achievement

MISSION STATEMENT

To drive improvement of the K-20 education system for the citizens of Idaho, focusing on quality, results, and accountability.

VISION STATEMENT

A student-centered education system that creates opportunities for all Idahoans to improve their quality of life.

GUIDING VALUES

- Access
- Innovation
- Preparedness
- Resilience

MID-TERM PRIORITY FOCUS AREAS

Elementary and Secondary Education

- Literacy Proficiency and Growth – Kindergarten through grade 3
- Mathematics Proficiency and Growth – Grades 6 through 9
- High School Credit Recovery, Completion, and Transition (Workforce or Postsecondary)

Postsecondary Education

- Recruitment and Access
- Retention
- Transfer and Completion

GOAL 1: EDUCATIONAL READINESS (student-centered) – Provide a rigorous, uniform, and thorough education that empowers students to be lifelong learners and prepares all students to fully participate in their community and postsecondary and workforce opportunities by assuring they are ready to learn at the next educational level.

Objective A: Literacy - Provide effective literacy instruction across grades K-3. L

Performance Measures:

I. **Proficiency: Statewide aggregated % of K-3 students achieving proficiency on the spring administration of the statewide literacy assessment (currently the Idaho Reading Indicator, IRI).**
Benchmark: 75%[1]

II. **Growth: Statewide aggregated percentage of K-3 students whose performance on the statewide literacy assessment increased by at least one sub-category between the fall and spring administrations of the assessment.**
Benchmark: New Measure[2]

Objective B: Mathematics - Provide effective mathematics instruction across grades 6-8. M

Performance Measures:

I. **Proficiency: Statewide aggregated percentage of 6-8 students who achieved proficiency on the spring administration of the statewide mathematics assessment (currently the Idaho Standards Achievement Test, ISAT).**
Benchmark: 43%[3]

II. **Growth: Statewide aggregated percentage of students in grades 6-8 whose performance on the statewide mathematics assessment increased by at least one sub-category between spring-to-spring administrations of the assessment.**

Benchmark: New Measure

Objective C: Graduation: Increase Idaho's high school graduation rate. HS

Performance Measures:

I. **5-Year Adjusted Cohort Graduation Rate (ACGR)**[4]
Benchmark: 87% or more

II. **College Entrance Exams: Percentage of Idaho high school graduates**[5] **who took the ACT or SAT and who met the college placement/entrance exam college readiness composite score benchmarks.**
Benchmark: 45%[6]

GOAL 2: EDUCATIONAL ACCESS - Increase access to Idaho's robust educational system for all Idahoans, regardless of socioeconomic status, age, or geographic location**.**

Objective A: Advanced Opportunities – Increase high-school student participation in advanced opportunities.

HS	R/A

Performance Measures:

I. **Percent of high school graduates who were funded for or more advanced opportunities.**
Benchmark: 90% or more

Objective B: Student Engagement - Increase high-school student engagement in exploring postsecondary opportunities.

HS	R/A

Performance Measures:

I. **Percent of Idaho public high school seniors who complete the Free Application for Federal Student Aid (FAFSA).**
Benchmark: 60% or more

II. **Percent of Idaho public high school seniors who submit at least one application through Apply Idaho.**
Benchmark: New Measure

Objective C: College-Going - Increase the rate at which high school graduates pursue postsecondary opportunities.

HS	R/A

Performance Measures:

I. **Percent of high school graduates who enroll in an Idaho public postsecondary institution in the fall immediately following graduation.**
Benchmark: 60%[7] or more

II. **Percent of high school graduates who enroll in an Idaho public postsecondary institution** Within 36 months of high school graduation.
Benchmark: 80%[8] or more

GOAL 3: EDUCATIONAL ATTAINMENT (opportunity) – Idaho's public colleges and universities and career technical education programs fuel a strong workforce pipeline evidenced through a greater numbers of student completing certificates and/or degrees, including workforce credentials.

Objective A: First-Year Student Retention: Increase the retention rate of first-year students into the second year.

R

Performance Measures:

I. **Percentage of new full-time degree-seeking students who return (or who graduate) for second year in an Idaho postsecondary public institution.**
Benchmark: 75%[9] or more

II. **Percent of undergraduate, degree-seeking students completing two full-time semesters[10] per academic year at the institution reporting.**
Benchmark: 55%[11] or more

Objective B: Timely Degree Completion – Increase on-time degree completion.

T/C

Performance Measures:

I. **Percent of full-time first-time freshman graduating within 100% of the allotted time (e.g. 4-year degree in 4 years; 2-year degree in 2 years).**
Benchmark: 30%

II. **Percent of full-time first-time freshman graduating within 150% of the allotted time (e.g. 4-year degree in 6 years; 2-year degree in 3 years).**
Benchmark: 50%

Objective C: Educational Attainment – Increase completion of certificates and degrees through Idaho's educational system.

T/C

Performance Measures:

I. **Percent of total credentials conferred in STEM fields[12].**
Benchmark: 25%

II. **Unduplicated headcount of graduates, by highest level attained.**
Benchmark: 18,000[13]

KEY EXTERNAL FACTORS

The Board's responsibility of governance and oversight of public education in Idaho is focused on providing a high-quality educational system with opportunities and access for all Idaho residents regardless of where they intersect with the educational system. The structure of public education in Idaho provides an opportunity of focusing work towards common goals, however, the work of communicating out these common focus areas and helping each segment of the public education system to understand and make progress in those areas can be difficult when the system or parts of the system are not adequately resourced or there is not a common vision of success or accountability.

EVALUATION PROCESS

The Board convenes representatives from the institutions, agencies, and other interested education stakeholders to review and recommend amendments to the Board's Planning, Policy and Governmental Affairs Committee regarding the development of the K-20 Education Strategic Plan. Recommendations are then presented to the Board for consideration in December. Additionally, the Board reviews and considers amendments to the strategic plan annually, changes may be brought forward from the Planning, Policy, and Governmental Affairs Committee, Board staff, or other ad hoc input received during the year. This review and re-approval takes into consideration performance measure progress reported to the Board in October.

Performance towards meeting the set benchmarks is reviewed and discussed annually with the State Board of Education in October. The Board may choose at that time to direct staff to change or adjust performance measures or benchmarks contained in the K-20 Education Strategic Plan. Feedback received from the institutions and agencies as well as other education stakeholders is considered at this time.

[1] Benchmark is based on the FY2023 statewide, spring administration, all students, composite outcome of 66%.
[2] New measures are expected to collect baseline data in the first year, and to establish a target and report outcomes in the second year.
[3] Benchmark is based on Accountability Oversight Committee recommendations and reflects the FY23 6-8 aggregated baseline proficiency ate of 38.8%.
[4] 5-Year ACGR considers students who graduate within 4 years of entering 9th grade, plus the summer after 12th grade. Benchmark is based on Accountability Oversight Committee recommendations.
[5] The term "graduate" for this measure includes the summer after the conclusion of a student's senior year and considers whether the student achieved the composite benchmark across all attempts of the exam.
[6] Both ACT and SAT composite score benchmarks of 45%
[7] Outcomes over the past five years have fallen by approximately 10% and are most recently reported at 42%. The benchmark remains at 60%.
[8] Outcomes over the past five years have fallen by approximately 10% and are most recently reported at 52%. The benchmark remains at 80%.
[9] The 2021-2022 systemwide outcome was 70%.
[10] A full-time semester at a four-year institution is 30 credit hours. A full-time semester at a two-year institution is 24 credit hours.
[11] The 2021-2022 systemwide outcome was 50%.
[12] For the purpose of this measure, STEM fields will use the CCA/IPEDS Definition.
[13] A supplemental report will separate graduates by credential issued for further analysis. The benchmark for the aggregated total is based on a fiscal year 2023 aggregated total of 17,483 graduates.

FY2025-FY2029

Idaho K-20 Public Education – Strategic Plan

An Idaho Education: High Potential – High Achievement

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To drive improvement of the K-20 education system for the citizens of Idaho, focusing on quality, results, and accountability.

VISION STATEMENT

A student-centered education system that creates opportunities for all Idahoans to improve their quality of life.

GUIDING VALUES

- Access
- Innovation
- Preparedness
- Resilience

MID-TERM PRIORITY FOCUS AREAS

Elementary and Secondary Education

- Literacy Proficiency and Growth – Kindergarten through grade 3
- Mathematics Proficiency and Growth – Grades 6 through 9
- High School Credit Recovery, Completion, and Transition (Workforce or Postsecondary)

Postsecondary Education

- Recruitment and Access
- Retention
- Transfer and Completion

GOAL 1: EDUCATIONAL READINESS (student-centered) – Provide a rigorous, uniform, and thorough education that empowers students to be lifelong learners and prepares all students to fully participate in their community and postsecondary and workforce opportunities by assuring they are ready to learn at the next educational level.

Objective A: Literacy - Provide effective literacy instruction across grades K-3. L

Performance Measures:

I. **Proficiency: Statewide aggregated % of K-3 students achieving proficiency on the spring administration of the statewide literacy assessment (currently the Idaho Reading Indicator, IRI).**
Benchmark: 75%[1]

II. **Growth: Statewide aggregated percentage of K-3 students whose performance on the statewide literacy assessment increased by at least one sub-category between the fall and spring administrations of the assessment.**
Benchmark: New Measure[2]

Objective B: Mathematics - Provide effective mathematics instruction across grades 6-8. M

Performance Measures:

I. **Proficiency: Statewide aggregated percentage of 6-8 students who achieved proficiency on the spring administration of the statewide mathematics assessment (currently the Idaho Standards Achievement Test, ISAT).**
Benchmark: 43%[3]

II. **Growth: Statewide aggregated percentage of students in grades 6-8 whose performance on the statewide mathematics assessment increased by at least one sub-category between spring-to-spring administrations of the assessment.**

Benchmark: New Measure

Objective C: Graduation: Increase Idaho's high school graduation rate. HS

Performance Measures:

I. **5-Year Adjusted Cohort Graduation Rate (ACGR)[4]**
Benchmark: 87% or more

II. **College Entrance Exams: Percentage of Idaho high school graduates[5] who took the ACT or SAT and who met the college placement/entrance exam college readiness composite score benchmarks.**
Benchmark: 45%[7]

GOAL 2: EDUCATIONAL ACCESS - Increase access to Idaho's robust educational system for all Idahoans, regardless of socioeconomic status, age, or geographic location**.**

Objective A: Advanced Opportunities – Increase high-school student participation in advanced opportunities.

HS	R/A

Performance Measures:

I. **Percent of high school graduates who were funded for or more advanced opportunities.**
Benchmark: 90% or more

Objective B: Student Engagement - Increase high-school student engagement in exploring postsecondary opportunities.

HS	R/A

Performance Measures:

I. **Percent of Idaho public high school seniors who complete the Free Application for Federal Student Aid (FAFSA).**
Benchmark: 60% or more

II. **Percent of Idaho public high school seniors who submit at least one application through Apply Idaho.**
Benchmark: New Measure

Objective C: College-Going - Increase the rate at which high school graduates pursue postsecondary opportunities.

HS	R/A

Performance Measures:

I. **Percent of high school graduates who enroll in an Idaho public postsecondary institution in the fall immediately following graduation.**
Benchmark: 60%[11] or more

II. **Percent of high school graduates who enroll in an Idaho public postsecondary institution** Within 36 months of high school graduation.
Benchmark: 80%[12] or more

GOAL 3: EDUCATIONAL ATTAINMENT (opportunity) – Idaho's public colleges and universities and career technical education programs fuel a strong workforce pipeline evidenced through a greater numbers of student completing certificates and/or degrees, including workforce credentials.

Objective A: First-Year Student Retention: Increase the retention rate of first-year students into the second year.

R

Performance Measures:

I. **Percentage of new full-time degree-seeking students who return (or who graduate) for second year in an Idaho postsecondary public institution.**
Benchmark: 75% or more[13]

II.

II. **Percent of undergraduate, degree-seeking students completing two full-time semesters[14] per academic year at the institution reporting.**
Benchmark: 50% or more

Objective B: Timely Degree Completion – Increase on-time degree completion.

T/C

Performance Measures:

I. **Percent of full-time first-time freshman graduating within 100% of the allotted time (e.g. 4-year degree in 4 years; 2-year degree in 2 years).**
Benchmark: 30%

II. **Percent of full-time first-time freshman graduating within 150% of the allotted time (e.g. 4-year degree in 6 years; 2-year degree in 3 years)**
Benchmark: 55%[15]

Objective C: Higher Level of Educational Attainment – Increase completion of certificates and degrees through Idaho's educational system.

T/C

Performance Measures:

I. **Percent of total credentials conferred in STEM fields[16].**
Benchmark: 25%

II. **Unduplicated headcount of graduates, by highest level attained.**
Benchmark: 18,000[18]

KEY EXTERNAL FACTORS

The Board's responsibility of governance and oversight of public education in Idaho is focused on providing a high-quality educational system with opportunities and access for all Idaho residents regardless of where they intersect with the educational system. The structure of public education in Idaho provides an opportunity of focusing work towards common goals, however, the work of communicating out these common focus areas and helping each segment of the public education system to understand and make progress in those areas can be difficult when the system or parts of the system are not adequately resourced or there is not a common vision of success or accountability.

EVALUATION PROCESS

The Board convenes representatives from the institutions, agencies, and other interested education stakeholders to review and recommend amendments to the Board's Planning, Policy and Governmental Affairs Committee regarding the development of the K-20 Education Strategic Plan. Recommendations are then presented to the Board for consideration in December. Additionally, the Board reviews and considers amendments to the strategic plan annually, changes may be brought forward from the Planning, Policy, and Governmental Affairs Committee, Board staff, or other ad hoc input received during the year. This review and re-approval takes into consideration performance measure progress reported to the Board in October.

Performance towards meeting the set benchmarks is reviewed and discussed annually with the State Board of Education in October. The Board may choose at that time to direct staff to change or adjust performance measures or benchmarks contained in the K-20 Education Strategic Plan. Feedback received from the institutions and agencies as well as other education stakeholders is considered at this time.

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[1] Benchmark is based on the FY2023 statewide, spring administration, all students, composite outcome of 66%.
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[4] 5-Year ACGR considers students who graduate within 4 years of entering 9th grade, plus the summer after 12th grade. Benchmark is based on Accountability Oversight Committee recommendations.
[5] The term "graduate" for this measure includes the summer after the conclusion of a student's senior year and considers whether the student achieved the composite benchmark across all attempts of the exam.
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[13] The 2021-2022 systemwide outcome was 70%.
[14] A full-time semester at a four-year institution is 30 credit hours. A full-time semester at a two-year institution is 24 credit hours.
[15] The 2021-2022 systemwide outcome was 50%.
[16] For the purpose of this measure, STEM fields will use the CCA/IPEDS Definition.
[18] A supplemental report will separate graduates by credential issued for further analysis. The benchmark for the aggregated total is based on a fiscal year 2023 aggregated total of 17,473 graduates.

SUBJECT

2024 Legislative Update

REFERENCE

June 2023	The Board approved legislative ideas for the 2024 legislative session.
August 2023	The Board approved legislative proposals and proposed administrative rules for the 2024 legislative session.
November 2023	The Board approved pending administrative rules for the 2024 legislative session.
February 2024	The Board received an update on the Board's legislative agenda and education related bills introduced during the 2024 legislative session.

APPLICABLE STATUTE, RULE, OR POLICY

Idaho Code § 33-107(5)(b)

BACKGROUND/DISCUSSION

This agenda item will provide the Board with an update on the education related legislation being considered by the 2024 Idaho Legislature.

Board Submitted Legislation:

At the August 2023 Regular Board meeting the Board approved three (3) legislative proposals. As part of the Executive Agency Legislative process, the Division of Financial Management (DFM) approved all three (3) of the Board's legislative proposals to be introduced to the 2024 Legislature. As of the time these materials were finalized for the PPGA Committee Meeting, the Board approved legislation were in the following stages:

- SB 1246 – State Board of Ed, Retirement - printed
- HB 411 - Educational Data – Returned to House Ed.
- Transfer Credit Report – Withdrawn

Administrative Code (rules)

In November 2023, the Board approved six pending administrative rules. Pending administrative rules have the force and effect of law and go into effect when the Legislature adjourns sine die of the legislative session in which they are approved by the Legislature. The Legislature may accept a rule in whole or in part, only those rules or sections of non-fee rules that are approved by both chambers go into effect.

As of the time these materials were finalized for the PPGA Committee Meeting, all pending rules have been presented to both the House Education Committee and the Senate Education Committee. House Education has voted on rules as noted below.

House Education – Pending Rules

- Docket No. 08-0112-2301 – Rules Governing the Postsecondary Credit Scholarship
- Docket No. 08-0203-2301 – Rules Governing Thoroughness
- Docket No. 55-0103-2301 – Rules Governing Career Technical Schools
- Docket No. 55-0104-2301 – Rules Governing Idaho Quality Program Standards Incentive Grants and Agricultural Education Program Start-up Grants
- Docket No. 08-0401-2301 – Rules Governing the Idaho Digital Learning Academy
- Docket No. 08-0113-2302 – Rules Governing the Opportunity Scholarship

The House Education Committee approved all pending rules with the exclusion of proposed revisions to revisions to 08.04.01.112.03.

The Senate Education Committee approved all pending rules as presented.

Education/Agency Related Legislation

Attachment 1 lists all of the education-related legislation that was introduced at the time of meeting materials production. An updated list will be provided at the Board meeting and Board staff will be prepared to walk the Board through any of the listed legislation to answer questions regarding the impact that a given piece of legislation may have on the state educational system or explain specific details of the legislation. The Board may choose to support, oppose, or remain neutral/silent on any of the legislation discussed.

Idaho Code § 33-107(5) charges the Board with enforcing the education laws of the state, in accordance with this duty, it is necessary from time to time for the Board to issue procedural orders or agency guidance where clarification is necessary, and no rulemaking authority has been granted to the Board. Pursuant to Idaho Code § 67-5250, "unless otherwise prohibited by any provision of law, each agency shall index by subject all agency guidance documents…." "Agency guidance" means all written documents, other than rules, orders, and pre-decisional material, that are intended to guide agency actions affecting the rights or interests of persons outside the agency.

Board staff will provide additional updates for the Board at the conclusion of the legislative session.

IMPACT

This update provides the Board with the status of education and agency-related legislation that has been introduced, or the Board has been requested to weigh in on. Any items the Board chooses to support or oppose will provide Board staff

with the authorization to share the Board's position with legislators, including authorization to testify for or against bills based on the Board's action(s).

ATTACHMENTS

Attachment 1 – Introduced Education/Agency Related Legislation

BOARD STAFF COMMENTS AND RECOMMENDATIONS

Attachment 1 provides a list of education-related legislation and legislation impacting state agencies and institutions, including those under the Board's governance as of the due date for meeting materials for this meeting.

Board staff will review the potential impacts of proposed legislation for informational purposes, but do not have any recommendations.

BOARD ACTION

No Action

OR

I move to [*support or oppose*] bill number [*insert bill number here]* and instruct Board staff to provide testimony to that effect.

	Bill #	Short Title	Status 2/19/27	Sponsor	Committee Originated	Description
High Interest	415	Concealed Weapons School property	House Floor 53-13-1 Pendig hearing Senate Staet Affairs	Rep Hill. Sen Lakey	House State Affairs	Provides for concealed carry on school campuses with principal knowledge.
	416	State Govt, Org Funds	Printed, State Affairs	Rep Scott	House State Affairs	Would prohibit the use of public funds to pay membership fees or due to any organization unless required to do so by law.
	447	Parental Choice Credit Grant	Printed, Rev and Tax	Horman, Monks, Grow, Ricks	Rev and Tax	Establishes a tax credit up to $5,000 with additional for children with special needs. Up to $50,000,000 in year one, to be administered by the Idaho Tax Commission
	500	Opportunity Scholarship	3rd Read House	Clow, Mathias	Education	Would allow community colleges to be recipients of the opportunity scholarship funds. Would also increase the credit completion rates for eligibility to renew from the existing federal minimum, to on track to complete in 100% of time levels.
	521	Taxation, School Facilities Funds	Printed, Rev and Tax	40 cosponsors	House Rev and Tax	First, it dedicates $125 million in ongoing sales tax revenue to the new School Modernization Facilities Fund for bonding, while providing the legislature with expanded options to cover annual service on the bonds in the event of economic downturns. Second, this legislation increases the funding to the School District Facility Fund in two ways. It increases the sales tax revenue directed to the fund from 2.25% to 3.25% which is projected to be $25 million in FY 2025, and redirects existing lottery dividends to the fund, which is projected to be approximately $50 million in FY 2025. This fund will help school districts with paying down school bonds, levies, and plant facility levies, with any remaining funds being used at the district level for additional school facility projects. Third, this legislation reduces income taxes from 5.8% to 5.695%, allowing Idahoans to have more money to better support local bonds and levies related to school facilities.
	557	Outcome – based funding, education	Reprinting	Petzke	Education	Amends existing law to revise provisions regarding funding of public schools and to provide for outcomes-based funding.
	HCR026	University of Idaho, Corporation	Printed, State Affairs	Crane, Gannon	State Affairs	States findings of the Legislature regarding the University of Idaho's proposed affiliation with the University of Phoenix and authorizes the Speaker of the House and the President Pro Tempore to act as agents of the Legislature in a potential legal action.
	1242	Diversity, Inclusion Higher Ed	Printed, State Affairs	Brent	Senate State Affairs	Would prohibit the use of DEI statements in admissions or hiring processes.
	1261	State employee telework	Senate Floor 19-16-0	Guthrie, Raybould, Moyle	State Affairs	Establishes a 15% max for remote work across each state agency's workforce on any given day, with exceptions for field work. Does not allow for remote work if an employee's duties has contact with the public.
	1274	Diversity Statements, prohibition	3rd Read Senate	Brent, Petzke	State Affairs	This bill will make clear Idaho's state policy that hiring, and admissions decisions must be made on merit. This bill will also guarantee that hiring and admissions decisions made by state agencies, including public colleges and universities, are not "conditioned on a requirement that applicants submit or ascribe to a diversity statement."
	1357	Higher ed, diversity, funds	Printed, State Affairs	Lenney, Herndon, Price	Education	Adds to existing law to establish the Higher Education Fairness Act to prohibit diversity, equity, and inclusion positions, diversity training, and political loyalty tests in higher education.
	1358	Empowering parents grant	Printed, Education	Hartog, Horman	Education	Amends existing law to provide that certain qualified expenses for the Empowering Parents Grant program will be reimbursed, to establish provisions for reimbursements, and to provide that unused funds may be forfeited by a participant
	1289	Libraries, harmful materials	3rd Read Senate	Crane, Schroeder	State Affairs	Combines two earlier library bills 384 and 1221. Requires libraries and schools to take steps in restricting children's access to obscene or harmful materials. Establish a materials review committee. Establish policy. And provides for injunctive relief.

K-12 Impact	529	Charter School Funding	3rd Read House	Horman, Hartog	Education	Public Charter School Revolving Fund – IHFA loans
	566	Reading Assessment, Exemption	3rd Read House	Galaviz	House Ed	Provides an exemption from the IRI for English language learning students, who have not been enrolled for two (2) full school years in the United States and who score less than a level two (2) on the state's English language proficiency test.
	420	School Board Vacancies	Printed, State Affairs	Rep Sauter	House Education	Would allow for a majority of the board trustees in office to be considered a quorum.
	422	Public Charter Schools	House Floor 66-3-1; Senate Floor 32-1-2	Rep Boyle	House Education	Repeal and rewrite of Title 33 Chapter 52, Idaho Code.
	450	School district activity funds	House Floor 66-0-4; Senate Education Pending	Galaviz	House Education	This bill adds the option of a debit or credit card to be associated with an Activity Fund account set up by the school district or school district's designee.
	454	Advanced Opportunities	House Floor 65-0-5; Senate Education Pending	McCann	House Education	Would allow for a higher proportion of a student's advanced opportunities funds to be spent on single courses. Intent is to accommodate for courses that cost more than the current ceiling.
	539	School harassment and bullying	3rd Read House	Mathias	Education	EDUCATION-Amends existing law to require school principals to notify parents and guardians of a student's involvement in harassment, intimidation, bullying, violence, or self-harm and to provide empowering materials and requires school districts to report incidents and confirm the distribution of the materials to the State Department of Education
	579	Behavioral telehealth, schools	Printed, Education	Healey	Health and Welfare	BEHAVIORAL HEALTH – Adds to existing law to allow for telehealth behavioral health services on public school premises.
	580	Military leave, public schools	Printed, Education	Bundy, Lent	Education	Adds to existing law to establish military leave for public school and public charter school employees.
	581	Teachers, corporal punishment	Printed, Education	Erickson, McCann	Education	Amends existing law to revise the powers of teachers in the classroom to provide when a teacher may physically escort a student out of class and when restraint or seclusion of a student must cease.
	HCR 025	Holocaust Education	Printed, Education	Wheeler, Mickelsen	Education	Encourages IDE to adopt age-appropriate Holocaust education in social Studies classes and develop resources and guidance for educators
	1239a	School District Trustee Quorum	3rd Read Senate, as amended	Herndon	Senate Education	RELATING TO SCHOOL BOARDS OF TRUSTEES; AMENDING SECTION 33-510, IDAHO CODE, 3 TO REVISE A PROVISION REGARDING THE MAJORITY REQUIREMENT FOR A QUORUM 4 AND TO MAKE TECHNICAL CORRECTIONS; AND DECLARING AN EMERGENCY AND PRO5 VIDING AN EFFECTIVE DATE.
	1249	Teacher Spending Accounts	Printed, Education	Herndon	Senate Education	All certificated teachers would receive funds for eligible classroom (not administrative) expenses. Amount subject to appropriation/# of certificated teachers.
	1306	Parent as Teacher micro-school	Printed, Education	Adams	Education	Adds to existing law to establish parent-as-teacher microschools sponsored by public school districts.
	1356	School strategic plans	Printed, Education	Lent	Education	Amends and adds to existing law to provide for a strategic plan for school districts and public charter schools and to provide for a certain training for school district board of trustee members and public charter school board of directors members.
	1359	Education, advanced opportunities	Printed, Education	Toews, Hartog, Horman	Education	Amends existing law to increase the Advanced Opportunities funding for both public school students and nonpublic school students, to remove a spending cap for certain courses eligible for the public school Advanced Opportunity funding, and to revise provisions regarding the administration of the program for nonpublic school students
	1360	Teacher debit cards	Printed, Education	Semmelroth	Education	Adds to existing law to provide public school teachers with $500 per year to spend on classroom and education expenses on behalf of their students
	1361	School district boards	Printed, Education	Carlson, Nelsen	Education	Amends existing law to require school district boards of trustees and public charter schools to adopt certain rules of procedure for the conduct of their meetings, which shall include provisions allowing members of the public to comment and offer up items for the agenda.
	scr116	Civics education	Printed	Carlson	Education	States findings of the Legislature, declares the importance of civics education, and supports teaching responsible citizenship in Idaho public schools.
Office Operations	458	Appropriations Board of Ed	House Floor 56-11-3; 3rd Read Senate Floor	Bundy, Herndon	JFAC	FY2025 Maintenance Appropriation. Includes Agricultural Research and Extension Services, College and Universities, Community Colleges, OSBE, Health Ed Programs, CTE, IPTV, Special Programs, SDE, Voc Rehab, and the Charter School Commission.
	460	Appropriations Public School	House Floor 53-14-3; 3rd Read Senate Floor	Blanksma	JFAC	FY2025 maintenance appropriation for the Public School Support Program
	463	State Agencies, Donations	Printed, State Affairs	Monks	JFAC	Would prohibit state agencies from sponsoring any non-governmental event without written consent from the governor. Requires executive level approval before receipt of donation.
	517	Freedom of Religion, speech, action	Printed, Jud and Rules	Towes, Skaug	Judiciary, rules and administration	This bill provides a private civil action for damages under the Freedom of Speech (article I section 9) and Guaranty of Religious Liberty (article I section 4) clauses of the Idaho Constitution.
	1225	Interagency Contracts with State institutions of Higher Ed	Senate floor 34-0-1; Commerce and HR Pending	Rep Bailey	Senate State Affairs	State agencies must determine the interest of all institution of higher education when pursuing a contract with one.
	1246	State Board of Ed, Optional Retirement Program	Commerce and HR	Cook	Senate Commerce & Human Resources	Amends existing law to revise provisions regarding an optional retirement program.

TAB	DESCRIPTION	ACTION
1	**BOARD POLICY III.N. STATEWIDE GENERAL EDUCATION – FIRST READING**	Action Item
2	**BOARD POLICY III.Q. ADMISSIONS STANDARDS – FIRST READING**	Action Item
3	**BOARD POLICY III.L. PRIOR LEARNING AND III.Y. ADVANCED OPPORTUNITIES – SECOND READING**	Action Item
4	**BOISE STATE UNIVERSITY – PH.D., ENGINEERING**	Action Item
5	**LEWIS-CLARK STATE COLLEGE – MSN, NURSING LEADERSHIP IN HEALTHCARE**	Action Item

SUBJECT

Board Policy III.N., Statewide General Education – First Reading

REFERENCE

October 2020	The Board approved the first reading of proposed amendments to Board Policy III.N. designating the Executive Director or designee as chair of the GEM Committee.
December 2020	The Board approved the second reading of proposed amendments to Board Policy III.N.
August 2021	The Board approved the first reading of proposed amendments to Board Policy III.N. expanding membership of the GEM Committee to representatives from digital learning, dual credit, and open education. This included amendments to GEM competency areas.
October 2021	The Board approved the second reading of proposed amendments to Board Policy III.N.
December 2022	The Board approved the first reading of proposed amendments to Board Policy III.N that changed the GEM Oral Communication requirement from a minimum of 2 to a minimum of 3 credits and the institutionally-designated credits from a minimum of 6 to a minimum of 5.
February 2023	The Board approved the second reading of proposed amendments to Board Policy III.N.
August 2023	The Board approved the first reading of proposed amendments to Board Policy III.N. to allow institutions to propose specialized baccalaureate degree programs that require fewer than 36 general education credits in rare instances.
October 2023	The Board approved the second reading of proposed amendments to Board Policy III.N..

APPLICABLE STATUTE, RULE OR POLICY

Idaho State Board of Education Governing Policies & Procedures, Section III.N. and III.V.
Idaho Code § 33-3729

BACKGROUND/DISCUSSION

Board Policy III.N., General Education, outlines the statewide General Education Framework, which provides guidance to Idaho's public institutions in identifying courses that meet the General Education Matriculation (GEM) competencies for the facilitation of seamless credit transfer for students. It also provides initial guidance for the establishment of the General Education Committee. This Committee has an important role in shaping the continued consistency of these courses across our institutions as well as in providing leadership for innovation in

this curricular space.

The proposed amendments further clarify two areas related to General Education. First, they provide a unified purpose for the rubrics that have been developed for each Way of Knowing or disciplinary area in General Education. Board staff had, at the request of the General Education Committee, gathered input on the effective use of the rubrics from the faculty representative groups during Spring 2023. The General Education Committee proposed this change at the October 2023 General Education Summit and approved the change in January 2024. While the rubrics may continue to be used for a variety of purposes on campus, including for instruction and assessment, the policy now more clearly describes their utility as a guide for on-campus decisions about assigning general education courses to the various Ways of Knowing categories.

Secondly, the Committee worked collaboratively throughout last year to describe roles and term limits, as reflected in the policy amendments, and to develop Committee Bylaws to help shape the roles and responsibilities of the Committee.

The policy amendment and the Bylaws have also been reviewed by CAAP at their February 1, 2024 meeting.

IMPACT

Approval of the proposed amendments will facilitate Committee processes and allow the Committee to fulfill its intended purpose.

ATTACHMENTS

Attachment 1 - Board Policy III.N., Statewide General Education – First Reading
Attachment 2 – General Education Committee Bylaws

BOARD STAFF COMMENTS AND RECOMMENDATIONS

The policy amendments and bylaws were reviewed by CAAP on February 1, 2024 and by the Instruction, Research, and Student Affairs Committee of the Board on February 15, 2024. Board staff recommends approval.

BOARD ACTION

I move to approve the first reading of proposed amendments to Board Policy III.N., Statewide General Education, as submitted in Attachment 1.

Moved by _____ Seconded by _____ Carried Yes _____ No _____

ATTACHMENT 1

Idaho State Board of Education
GOVERNING POLICIES AND PROCEDURES
SECTION: III. POSTSECONDARY AFFAIRS
SUBSECTION: N. Statewide General Education ~~February~~ April **2024**

In our rapidly-changing world, students need to understand how knowledge is generated and created. They need to adapt to new opportunities as they arise as well as effectively communicate and collaborate with increasingly diverse communities and ways of knowing. In combination with major coursework, general education curriculum prepares students to use multiple strategies in an integrative manner to explore, critically analyze, and creatively address real-world issues and challenges. General education coursework provides students with an understanding of self, the physical world, and human society—its cultural and artistic endeavors as well as an understanding of the methodologies, value systems, and thought processes employed in human inquiries. General education helps instill students with the personal and civic responsibilities of good citizenship, and prepares them to be adaptive, life-long learners.

This policy shall apply to the University of Idaho, Boise State University, Idaho State University, Lewis-Clark State College, College of Eastern Idaho, College of Southern Idaho, College of Western Idaho, and North Idaho College (hereinafter "institutions").

1. The state of Idaho's general education framework for Associate of Arts, Associate of Science, and Baccalaureate degrees, outlined below in Figure 1, shall be:

    a. Thirty-one (31) credits or more of the general education curricula must fit within the Gg~~g~~eneral E~~e~~ducation Matriculation (GEM) competency areas defined in subsection 4 of this policy, and
    b. Five (5) or more credits of the general education curricula, which are reserved for institutions to address the specific mission and goals of the institution. For this purpose, institutions may create new competency areas or they may choose to count additional credits from GEM competencies. Regardless, these institutionally designated credits must have learning outcomes linked to Association of American Colleges and Universities (AAC&U) Essential Learning Outcomes.

2. The intent of the general education framework is to:

    a. Establish statewide competencies that guide institutions' determination of courses that will be designated as GEM courses,
    b. Establish shared disciplinary/Ways of Knowing rubrics that guide ~~course/general education program assessment;~~institutional decision-making about designating courses to GEM competency areas, and
    c. Create a transparent and seamless transfer experience for undergraduate students.

3. There are six (6) GEM competency areas. The first two (2) emphasize integrative skills intended to inform the learning process throughout general education and major. The final four (4) represent ways of knowing and are intended to expose students to ideas and engage them in a broad range of active learning experiences.

   The GEM competency areas are as listed:

   a. Written Communication
   b. Oral Communication
   c. Mathematical Ways of Knowing
   d. Scientific Ways of Knowing
   e. Humanistic and Artistic Ways of Knowing
   f. Social and Behavioral Ways of Knowing

4. GEM courses in each area shall include the following competencies:

   a. Written Communication
      Upon completion of a course in this category, students are able to demonstrate the following competencies:

      i. Use flexible writing process strategies to generate, develop, revise, proofread, and edit texts.
      ii. Adopt strategies and genre appropriate to the rhetorical situation.
      iii. Use inquiry-based strategies to conduct research that explores multiple and diverse ideas and perspectives, appropriate to the rhetorical context.
      iv. Use rhetorically appropriate strategies to evaluate, represent, and respond to the ideas and research of others.
      v. Address readers' biases and assumptions with well-developed evidence-based reasoning.
      vi. Use appropriate conventions for integrating, citing, and documenting source material.
      vii. Read, interpret, and communicate key concepts in writing and rhetoric.

   b. Oral Communication
      Upon completion of a course in this category, students are able to demonstrate the following competencies:

      i. Research, discover, and develop information resources and structure spoken messages to increase knowledge and understanding.
      ii. Research, discover, and develop evidence-based reasoning and persuasive appeals for ethically influencing attitudes, values, beliefs, or behaviors.
      iii. Adapt spoken messages to the diverse personal, ideological, and emotional needs of individuals, groups, or contexts.
      iv. Employ effective spoken and nonverbal behaviors that support communication goals and illustrate self-efficacy.

v. Listen in order to effectively and critically evaluate the reasoning, evidence, and communication strategies of self and others.
vi. Demonstrate knowledge of key theories, perspectives, principles, and concepts in the Communication discipline, as applied to oral communication.

c. Mathematical Ways of Knowing
Upon completion of a course in this category, a student is able to demonstrate the following competencies:

i. Interpret mathematical concepts.
ii. Represent information/data.
iii. Use appropriate strategies/procedures when solving mathematical problems.
iv. Draw reasonable conclusions based on quantitative information.

d. Scientific Ways of Knowing
Upon completion of a non-lab course in this category, a student is able to demonstrate competencies i-iv. A student is able to demonstrate all five competencies, i-v, upon completion of a lab course.

i. Apply foundational knowledge and models of a discipline in the physical or natural sciences to analyze and/or predict phenomena.
ii. Apply scientific reasoning to critically evaluate assertions.
iii. Interpret and communicate scientific information via written, spoken and/or visual representations.
iv. Describe the relevance of specific scientific principles to the human experience.
v. Test a hypothesis in the laboratory or field using discipline-specific tools and techniques for observation, data collection and analysis to form a defensible conclusion.

e. Humanistic and Artistic Ways of Knowing
Upon completion of a course in this category, students are able to demonstrate at least five (5) of the following competencies:

i. Recognize and describe humanistic, historical, or artistic works within problems and patterns of the human experience.
ii. Distinguish and apply methodologies, approaches, or traditions specific to the discipline.
iii. Differentiate formal, conceptual, and technical elements specific to the discipline.
iv. Analyze, evaluate, and interpret texts, objects, events, or ideas in their cultural, intellectual or historical contexts.
v. Interpret artistic or humanistic works through the creation of art, language, or performance.
vi. Develop critical perspectives or arguments about the subject matter, grounded in evidence-based analysis.

vii. Demonstrate self-reflection, widened perspective, and respect for diverse viewpoints.

f. Social and Behavioral Ways of Knowing
Upon completion of a course in this category, students are able to demonstrate all five (5) of the following competencies.

i. Demonstrate knowledge of the theoretical and conceptual frameworks of a particular Social Science discipline.
ii. Describe self and the world by examining the dynamic interaction of individuals, groups, and societies as they shape and are shaped by history, culture, institutions, and ideas.
iii. Utilize Social Science approaches, such as research methods, inquiry, or problem-solving, to examine the variety of perspectives about human experiences.
iv. Evaluate how reasoning, history, or culture informs and guides individual, civic, or global decisions.
v. Identify the impact of the similarities and differences among and between individuals, cultures, or societies across space and time.

5. General Education Requirements

a. This subsection applies to Associate of Arts, Associate of Science, and Baccalaureate degrees. For the purpose of this policy, disciplines are indicated by course prefixes.

General education curricula must reflect the following credit distribution:

Competency Area	**Minimum Credits**
Written Communication	6
Oral Communication	3
Mathematical Ways of Knowing	3
Scientific Ways of Knowing	7 (from two different disciplines with at least one laboratory or field experience)
Humanistic and Artistic Ways of Knowing	6 (from two different disciplines)
Social and Behavioral Ways of Knowing	6 (from two different disciplines)
Institutionally-Designated Credits	5

i. GEM courses are designed to be broadly accessible to students regardless of major, thus college-level and non-GEM pre-requisites to GEM courses should be avoided unless deemed necessary by the institution.

ii. Additional GEM courses, beyond the general education curricula, may be required within the major for degree completion.

b. In rare instances, a specialized associate degree program might better serve students by distributing general education requirements differently than those listed above. Proposals for such programs shall be submitted to the Board office for review and approval on a case-by-case basis. Proposals must describe the demonstrable benefits that the alternative general education distribution will have for transfer students, the institutions' plans for additional advising, and any other information that will demonstrate how students will not be harmed by this alternative structure.

c. This subsection pertains to Associate of Applied Science (AAS) degrees.

The general education curricula for the AAS degree must contain a minimum of fifteen (15) credits, so distributed in the following areas:

Competency Area	Minimum Credits
Written Communication	3
Oral Communication	3
Mathematical Ways of Knowing	3
Social and Behavioral Ways of Knowing	3
Any general education course including institutionally-designated courses	3

d. GEM courses and institutionally-designated courses shall transfer as meeting an associated general education competency requirement at any institution pursuant to Board policy Section III.V.

6. Governance of the General Education Program and Review of Courses

a. GEM courses are developed by faculty and approved via the curriculum approval process of the institution delivering the courses. Faculty discipline groups representing all institutions shall meet at least annually or as directed by the Board, to ensure consistency and relevance of general education competencies and courses approved for their respective GEM competency areas.

b. Common Course Indexing is developed for courses offered within the GEM framework to provide greater transparency and seamlessness within transfer processes at Idaho's postsecondary institutions. Common-indexed courses are accepted as direct equivalents across institutions for transfer purposes. Common course indexing shall include common course prefix, common course number, common course title, and common GEM discipline area designation. The common

course number shall be three digits in sequence, but can be preceded by a single digit if four numbers are utilized by the institution (x###).

The common course list shall be approved by the Board on an annual basis and shall be maintained by the Board office. Changes to the list may be proposed by faculty discipline groups to the General Education ~~Matriculation~~ Committee. Proposed additions or removal of courses on the common course list must be reviewed by the General Education ~~Matriculation~~ Committee prior to Board approval. The request to remove a common-indexed course from an institution's academic catalog must be approved by the Board. The request to discontinue a course must be submitted in writing by the institution to the Board office. The request shall be submitted no less than a year in advance and provide rationale for the inability to offer the course.

c. The General Education ~~Matriculation (GEM)~~ Committee shall consist of a Board-appointed representative from each of the institutions (Institutional Representatives), as well as one Subject Representative from each of the following communities: ~~from~~ the Division of Career Technical Education, ~~from~~ the Idaho Registrars Council, ~~from~~ the digital learning community, ~~from~~ the dual credit community, ~~from~~ the open education community; and the Executive Director of the Board, or designee, who shall serve as the chair of the committee. Institutional Representatives are generally the directors or deans of general education (or equivalent). Upon Board approval, appointments for Institutional Representatives will be for the duration of the representative's term as general education director. Subject Representative terms are for three years, commencing on July 1st. If Subject Representatives are amenable to continuing, they are affirmed by their respective groups prior to their term's end. To ensure alignment with AAC&U Essential Learning Outcomes and subsection 1, the Committee shall meet at least annually to review the competencies and rubrics of the general education framework. The Committee shall make recommendations to the Board regarding the general education framework and the common course list. The Committee shall review and make recommendations on the general education competencies as necessary. GEM Committee duties are prescribed by the Board, including those that may involve addressing issues related to competency areas and course offerings. The GEM Committee reports to the Council on Academic Affairs and Programs.

d. The institutions shall identify all general education courses in their curricula and identify them in a manner that is easily accessible by the public via their respective websites, as well as relevant web resources maintained by the Board office.

General Education Committee Bylaws

Mission and Purpose

General education courses are a particularly powerful part of a college education. This set of courses provide students with the opportunity to cultivate the habits of mind associated with academic inquiry, to gain experience with disciplinary inquiry and communication, and to navigate a variety of perspectives. Further, general education courses have a direct and positive impact on student retention, persistence, and eventual graduation. Since general education courses are offered at all public postsecondary institutions in Idaho, providing coordinated guidance is especially important.

The General Education Committee is guided by a spirit of open inquiry and a shared interest in collaboration. The General Education Committee advocates for, supports, and coordinates general education among all Idaho public postsecondary institutions. As leaders of general education from each institution, the committee members individually contribute extensive institutional knowledge and disciplinary expertise to the shared commitment to continually improving general education across the state of Idaho.

A. Powers and Duties

The General Education Committee is responsible for collaborating on a statewide vision of general education, making recommendations about general education, reviewing the competencies and other supporting materials for the general education framework, making recommendations to the Board regarding the general education framework and common course list, revising and making recommendations on the general education competencies, and other duties as prescribed by the Board. The General Education Committee reports to the Council on Academic Affairs and Programs.

B. Meetings

1. The Committee holds two full Committee standing meetings annually. The two meetings are in person whenever possible; at least one of the meetings coincides with the annual GEM Summit. Follow-up remote meetings occur as needed. A quorum of the Committee consists of a simple majority of current voting members. A quorum shall be present to conduct any official business.

2. Meeting locations shall be determined by the Committee.

C. Membership

1. Committee membership is established by Idaho Board of Education policy III.N.

2. Committee members must uphold the goals and objectives of the Committee. Decision-making is a collective action and all members have a joint responsibility for decisions and actions.

D. Nominating Process

1. Institutional Representatives are generally the directors or deans of general education on campus (or equivalent). Upon Board approval, appointments for Institutional Representatives will be for the duration of the representative's term as general education director.

2. Subject Representatives (registrar, technical college leadership, dual credit, open education, and digital learning) terms are for three years, commencing on July 1st. If Subject Representatives would like to serve additional terms, they are affirmed by their respective groups prior to their term's end.

3. All official Committee members shall have equal voting privileges.

E. Committee Officers and Duties

1. There are two officers of the Committee: Chair and Vice Chair.

2. The Chair is a designee of the Executive Director of the Board. This role has historically been filled by the Associate Academic Officer. The Chair, in consultation with the committee, advocates for general education at the state level, coordinates proposed policy changes, plans the GEM Summit, coordinates the GEM Innovative Teaching Awards, and coordinates general education-related activities that arise.

3. The Vice Chair is elected by the voting members of the General Education Committee from among the Institutional Representatives. The Vice Chair is elected at a regular meeting for a three-year term. Whenever possible, the Vice Chair terms alternate between the four-year and two-year institutions. Vacancies are filled by election for the remainder of the unexpired term. The Vice Chair advises the Chair on meeting agendas and provides recommendations on matters related to the General Education Committee's mission and the Chair's general education responsibilities.

4. Committee representatives who serve on working groups and similar bodies are appointed by the Committee Chair.

F. Adoption, Amendment, and Repeal of By-laws

1. Recommendations for amendments or repeals of bylaws may occur at any regular or special meeting of the Committee and approved by a majority vote of the Committee, provided notice has been presented at the preceding meeting of the Committee.

SUBJECT

Board Policy III.Q., Admissions Standards – First Reading

REFERENCE

June 2007	Board approved the first reading of amendments to Board Policy III.Q.
August 2007	Board approved the second reading of amendments to Board Policy III.Q.
December 2013	Board approved the first reading of amendments to Board Policy III.Q.
February 2014	Board approved the second reading of amendments to Board Policy III.Q.
April 2017	Board approved the first reading of amendments to Board Policy III.Q.
June 2017	Board approved the second reading of amendments to Board Policy III.Q.
June 2020	Board approved a temporary waiver of the College Entrance Exam minimum admission requirement in response to the COVID-19 pandemic.
June 2021	Board approved removing College Entrance Exam minimum admission requirements.

APPLICABLE STATUTES, RULE OR POLICY

Idaho State Board of Education Governing Policies & Procedures, Section III.Q, Admissions Standards

BACKGROUND / DISCUSSION

The proposed changes update and streamline this policy in several ways. First, the high school course requirements are clarified through removing specific course limitations that are no longer appropriate. Secondly, changes to Career Technical Education (CTE) program admissions clarify CTE admission procedures and remove descriptions of advising processes that are better described elsewhere. Third, revisions to the provisional (proposed "alternative") admissions process better reflect options for admitting and serving students, and in particular, high-achieving students from high schools without high school accreditation from a Board-recognized accreditor.

IMPACT

Approval of the policy amendments will improve readability and interpretability of the policy. Additionally, amendments provide clearer guidance to admissions offices on acceptable approaches for high school admissions.

ATTACHMENTS

Attachment 1 – Board Policy III.Q, Admissions Standards – First Reading

STAFF COMMENTS AND RECOMMENDATIONS

The proposed policy amendments were reviewed by Board staff, enrollment/admissions staff at all eight institutions, career technical college deans, the Council on Academic Affairs and Programs at their February 1, 2024 meeting, and the Instruction, Research, and Student Affairs Committee of the Board at their February 15, 2024 meeting. Staff recommends approval.

BOARD ACTION

I move to approve the first reading of proposed amendments to Board Policy III.Q, Admission Standards as presented in Attachment 1.

Moved by _____ Seconded by _____ Carried Yes _____ No _____

ATTACHMENT 1

Idaho State Board of Education
GOVERNING POLICIES AND PROCEDURES
SECTION: III. POSTSECONDARY AFFAIRS
SUBSECTION: Q. Admission Standards ~~June 2021~~April 2024

1. Institution Policies

   Each postsecondary institution must establish institutional policies which meet or exceed the following minimum academic and career technical admission standards. Additional and more rigorous requirements also may be established by the institutions for admission to specific programs, departments, schools, or colleges. Consistent with institutional policies, admission decisions may be appealed by applicants to the institutional admissions committee. Career Technical Education program admission requirements apply to all technical colleges, including the College of Eastern Idaho, the College of Southern Idaho, the College of Western Idaho, Lewis-Clark State College, Idaho State University College of Technology, and North Idaho College.

2. Institutional Academic ~~Program~~ Admission

   a. Academic ~~Program~~ Regular Admission

   Students attending an Idaho public school, or Idaho private school that has entered a Direct Admission participation agreement with the Board, may be notified of their admission to an Idaho public college or university through the State Board's Direct Admission Program. Admission awarded through the program is contingent on the verified level of achievement in high school curriculum and successful completion of Idaho high school graduation requirements.

   An applicant who is not admitted under the Board's Direct Admission Program must graduate from a high school accredited by a body recognized by the Board and complete the Admission Standards Core Courses with a minimum 2.00 cumulative grade point average. Cognia is the Board's recognized high school accrediting body. Applicants who graduated from high school prior to ~~1989~~ 1995 will be subject to the admission standards at the time of their high school graduation. Each institution may develop a separate policy for the admissions and placement of international students.

   Admission Standards Core Courses

Subject Area	Minimum Requirement	Select from These Subject Areas
Secondary Language Arts and Communication	8 credits	Composition, Literature, and Oral Communication

Mathematics	6 credits	A minimum of six (6) credits. Secondary Mathematics includes Integrated Mathematics, Applied Mathematics, Business Mathematics, Algebra, Geometry, Trigonometry, Fundamentals of Calculus, Probability and Statistics, Discrete Mathematics, and courses in Mathematical Problem Solving and Quantitative Reasoning. A total of 8 credits are strongly recommended. Four (4) of the required mathematics credits must be taken after 9th grade. Courses not identified by traditional titles, (i.e., Algebra I or Geometry), may be used as long as they contain all of the critical components of higher math functions prescribed by the State Mathematics Content Standards. Institutions may recognize other Mathematics courses as meeting this requirement if those courses are taken in compliance with the Idaho state minimum graduation requirements.
Social Studies	5 credits	American Government (state and local), Geography, U.S. History, and World History. Other courses may be selected from Economics, including Consumer Economics, if it aligns to the state content standards, Psychology, and Sociology.
Science	6 credits	Secondary sciences include instruction in Applied Sciences, Earth and Space Sciences, Physical Sciences, and Life Sciences. ~~A maximum of two (2) credits may be derived from career technical science courses when courses are aligned to state career technical content standards, and/or Applied Biology, and/or Applied Chemistry. (Maximum of two (2) credits).~~ Institutions may recognize other Science courses as meeting this requirement if those courses are taken in compliance with the Idaho state minimum graduation requirements. Must have laboratory science experience in at least two (2) credits. A laboratory science course is defined as one in which at least one (1) class period per week is devoted to providing students with the opportunity to manipulate equipment, materials, or specimens; to develop skills in observation and analysis; and to discover, demonstrate, illustrate, or test scientific principles or concepts.
Arts and Humanities (including world languages)	2 credits	Humanities courses include instruction in Visual Arts, Music, Theatre, Dance, or World Language aligned to the Idaho content standards for those subjects. Other courses such as Literature, History, Philosophy, Architecture, or Comparative World Religions may satisfy the humanities standards if the course is aligned to the Interdisciplinary Humanities Content Standards. History courses beyond those required for state high school graduation may be counted toward this category. World Language is strongly recommended. The Native American Languages may meet the world language credit requirement
Other College Preparation	3 credits	Speech or Debate [no more than one (1) credit]. Debate must be taught by a certified teacher.

		Studio/Performing Arts (art, dance, drama, and music). Foreign Language (beyond any foreign language credit applied in the Humanities/Foreign Language category). Secondary Career Technical courses. ~~(no more than two (2) credits) in Agricultural Science and Technology; Business Technology Education; Computer Science Technology; Engineering; Family and Consumer Sciences; Marketing Technology Education; Technology Education, and individualized occupational training.~~

If the student graduated from a high school that does not offer a required course, applicants may contact the institutional admission officer for clarification of provisional admission procedures.

High school credit counted in one (1) category (e.g., Humanities/World Languages) may not also count in another category.

b. Academic ~~Provisional~~ Alternative Admission

i. ~~A d~~Degree-seeking applicants who do~~es~~ not qualify for admission based on subsection ~~4~~2.a. above~~, but who~~ may be granted alternative admission if they ~~satisfies~~ satisfy one (1) or more of the criteria below~~, may seek provisional admission by petitioning the institutional admissions officer~~:

1) Graduated from a secondary school accredited by a body recognized by the Board but has not completed the Admission Standards Core courses set forth above;

2) Did not graduate from a secondary school accredited by a body recognized by the Board, [e.g. ~~including~~ home~~-~~schooled students, ~~and has acceptable performance on either the~~ General Educational Development (GED) diploma holders], and have acceptable predictive indicators of academic success approved~~test or another standardized diagnostic test accepted~~ by the institution;

3) Deserves consideration by the institution because of special status (e.g., ~~disadvantaged or minority students, delayed entry students,~~ returning veterans, ~~or~~ gifted and talented students wishing to enter college early, or other students in unique circumstances as determined by the institution). Each institution may develop a separate policy for the admission of special status students.

~~A student seeking provisional admission to any public postsecondary institution must take at least one (1) assessment indicator that will allow the institution to~~

~~assess competency and placement.~~

ii. ~~If provisionally admitted, a student will enroll with provisional standing and is subject to the institutional grade retention~~. Students granted alternative admission may have conditions placed on their admission, subject to institutional policies. ~~A provisionally admitted student may change to regular admission status upon satisfactory completion of~~ Students may be granted admission and be required to satisfactorily complete up to fourteen (14) baccalaureate level credits, twelve (12) of which must be general education ~~courses~~ credits. Regular admission status must be attained within three (3) registration periods or the student will be dismissed, subject to institutional committee appeal procedures.

c. Academic Transfer Admission

i. A degree-seeking student who, after graduating from high school or earning a GED, has earned at least fourteen (14) or more semester hours of transferable academic college level credit from a regionally accredited college or university with a minimum cumulative GPA of 2.00 may be admitted.

ii. A student not meeting the requirement in subsection ~~6~~2.a. may petition the institutional admissions officer to be admitted. If admitted, the student ~~must enroll on probation status, meet all conditions imposed by the institutional admissions committee, and complete the first semester with a minimum 2.00 GPA, or may be dismissed.~~may have conditions placed on their admission, subject to institutional policies as described in subsection 2.b.ii.

d. Academic Program Placement

Placement assessment indicating potential for success may be required for some academic programs. Placement requirements vary according to the program. Each institution shall establish academic program placement policies and publish these policies in an accessible manner on the institution's website.

3. Career Technical Program Admission~~s~~

~~a. Admission Standards~~

~~Regular or Provisional~~ Institutional academic admission standards apply to individuals who seek a technical certificate or Associate of Applied Science (A.A.S.) degree through a career technical program. The admission standards and placement criteria do not apply to workforce development or short-term training programs. Career technical programs employ program admission and student advising/navigation processes in addition to institutional ~~program~~ academic admission.

~~b. Student Advising~~

~~i. Clarify the importance of career planning and preparation: high school students should be actively engaged in career planning prior to entering the 9th grade. Career planning assures that students have sufficient information about self and work requirements to adequately design an education program to reach their career goals.~~

~~ii. Emphasize that career technical courses in high school, including career technical advanced opportunities and work-based learning connected to school-based learning, are beneficial to students seeking continued education in career technical programs at the postsecondary level.~~

~~iii. Clarify the kind of educational preparation necessary to successfully enter and complete postsecondary studies. Mathematics and science are essential for successful performance in many career technical programs. Programs of a technical nature generally require greater preparation in applied mathematics and laboratory sciences.~~

~~iv. Clarify that career technical programs of one or two years in length may require additional time if applicants lack sufficient educational preparation.~~

~~c. Career Technical Program Regular Admission~~

~~Students desiring Regular Admission to any of Idaho's technical colleges must meet the following standards. Students planning to enroll in programs of a technical nature are also strongly encouraged to complete the recommended courses.~~ Admission to a specific career technical program is based on the capacity of the program and specific academic and/or physical requirements established by the technical college/program.

~~i. Standards for students who graduated from high school in 1997 or earlier~~

~~1) High School diploma with a minimum 2.0 GPA[1] from a high school accredited by a body recognized by the Board; and~~

~~2) Placement examination as determined by the institution. Scores may also be used to determine placement eligibility for specific career technical programs; and~~

~~3) Satisfactory completion of high school coursework that includes at least the following:~~

~~[1]An institution may substitute a composite index placement exam score and high school GPA for the GPA admission requirement.~~

a) Mathematics — 4 credits (6 credits recommended) from challenging math sequences of increasing rigor selected from courses such as Algebra I, Geometry, Applied Math I, II, and III, Algebra II, Trigonometry, Discrete Math, Statistics, and other higher-level math courses. Two (2) mathematics credits must be taken in the 11th or 12th grade. Less rigorous mathematics courses taken in grades 10-12 after 1998, such as pre-algebra, review mathematics, and remedial mathematics, shall not be counted.

b) Science — 4 credits (6 credits recommended, with 4 credits in laboratory science) including at least 2 credits of laboratory science from challenging science courses including applied biology/chemistry, principles of technology (applied physics), anatomy, biology, earth science, geology, physiology, physical science, zoology, physics, chemistry, and agricultural science and technology courses (500 level and above).

c) Secondary Language Arts and Communication — 8 credits. Applied English in the Workplace may be counted for English credit.

d) Other — Career technical courses, including postsecondary credits earned pursuant to Board Policy III.Y. Advanced Opportunities and organized work-based learning experiences connected to the school-based curriculum, are strongly recommended. High School Work Release time not connected to the school-based curriculum will not be considered.

ii. Standards for Others Seeking Regular Career Technical Program Admission

Individuals who graduated from high school, received their GED prior to 1997, or who are at least 21 years old and who desire Regular Admission to the technical colleges must have a:

1) High School diploma with a minimum 2.0 GPA from a high school accredited by a body recognized by the Board; or

2) General Educational Development (GED) certificate; and

3) Diagnostic/placement tests as determined by the institution. Scores may also be used to determine admission eligibility for specific career technical programs.

d. Career Technical Program Provisional Admission

Students who do not meet all requirements for Regular Admission may apply to a

~~technical program under provisional admission. Provisionally admitted students who are conditionally admitted must complete appropriate remedial, general and/or technical education coursework related to the career technical program for which Regular Admission status is desired, and to demonstrate competence with respect to that program through methods and procedures established by the technical college. Students desiring Provisional Admission must meet the following standards:~~

~~i. High School diploma or GED certificate; and~~

~~ii. diagnostic/placement tests as determined by the institution. Scores may also be used to determine placement eligibility for specific career technical programs.~~

~~iii. Institutions may allow individuals who do not have a high school diploma or GED to be admitted if the applicant can demonstrate the necessary ability to succeed in a career technical program through appropriate tests or experiences as determined by the institution.~~

~~e~~a. Career Technical Program Placement Criteria

Placement test scores indicating potential for success ~~are generally~~ may be required for enrollment in a career technical program of choice. Placement score requirements vary according to the program.

Each institution shall establish career technical program placement policies and publish these policies in an accessible manner on the institution's website.

Specific career technical programs may require different levels of academic competency and admission requirements. Students must also be familiar with the demands of a particular occupation and how that occupation matches individual career interests and goals. Therefore, before students can enroll in a specific program, the following placement requirements must be satisfied:

i. Specific program requirements (including placement exam scores) established by the technical program. A student who does not meet the established requirements for the program of choice will have the opportunity to participate in remedial education to improve their skills; and

ii. Formal procedures and definitions for program admission employed by the technical college. Program admission requirements and procedures shall be clearly defined and published for each program.

IDAHO DIVISION OF CAREER TECHNICAL EDUCATION (Division)

SUBJECT

Board Policy III.L. Prior Learning and III.Y. Advanced Opportunities – Second Reading

REFERENCE

October 2014	The Board approved the first reading of amendments to Board Policy III.Y. replacing Tech Prep with Technical competency credit.
February 2015	The Board approved the second reading of amendments to Board Policy III.Y.
June 2018	The Board approved the first reading of amendments to Board Policy III.Y. establishing system-wide policy for awarding credit for AP exams.
August 2019	The Board approved the first reading of Board Policy III.L, which includes how PLA is administered and how different forms of credit are awarded to meet degree requirements.
October 2019	The Board approved the second reading of Board Policy III.L.
February 2020	The Board approved the first reading of Board Policy III.L. rewriting the majority of the existing policy, including the removal of continuing education from the policy, adding references to institution developed crosswalks identifying how credit will be award for identified exams.
April 2020	The Board approved the second reading of Board Policy III.L.
December 2023	Board approved first reading of Board Policy III.L calling out the use of the Divisions microcredentialing platform as a prior learning assessment and awarding credits and III.Y replacing technical competency credit with the micro-credentialing platform.

APPLICABLE STATUTE, RULE, OR POLICY

Idaho State Board of Education Governing Policies & Procedures, Sections III.E., III.L, and III.Y.

BACKGROUND/DISCUSSION

The Division is requesting amendments to Board Policy III.Y. Advanced Opportunities and III.L. Prior Learning. The amendments to Policy III.Y would replace what is now referred to as technical competency credit with microcredentials as established in Board policy III.E. Amendments to Board Policy III.L. would call our microcredentials as an allowable methodology for prior learning

assessment. The Divisions microcredentialing platform referenced in Board Policy III.E. is SkillStack®.

The Division received no comments or concerns regarding the requested amendments between the first and second readings. There have been no changes to the proposed policies between the first and second readings.

IMPACT

Proposed amendments to Board policy will provide clarification on how microcredentials can be used to show how students are meeting the same outcomes that were previously referred to in technical competency credit eligible programs and highlight their use for evaluating credit for prior learning.

ATTACHMENTS

Attachment 1 – Board Policy III.L. – Second Reading
Attachment 2 – Board Policy III.Y. – Second Reading

BOARD STAFF COMMENTS AND RECOMMENDATIONS

Board staff recommends approval.

BOARD ACTION

I move to approve the second reading of amendments to Board policies III.L and III.Y. as provided in attachments 1 and 2.

Moved by _____ Seconded by _____ Carried Yes _____ No _____

ATTACHMENT 1

Idaho State Board of Education
GOVERNING POLICIES AND PROCEDURES
SECTION: III. POSTSECONDARY AFFAIRS
SUBSECTION: L. Prior Learning ~~April 2020~~February 2024

This policy establishes the foundation by which institutions shall provide students with opportunities to demonstrate competencies through established assessment processes to earn credit for prior learning. This policy applies to the University of Idaho, Boise State University, Idaho State University, Lewis-Clark State College, College of Eastern Idaho, College of Southern Idaho, College of Western Idaho, and North Idaho College (hereinafter "institutions").

1. Definitions

   a. Crosswalk: An equivalency table that identifies how credit for prior learning articulates to direct course equivalencies and general education requirements as provided in Board Policy III.N General Education, or to microcredentials as defined in Board Policy III.E Certificates and Degrees.

   b. Prior Learning Assessment (PLA): The process by which an individual's prior learning is assessed and evaluated for purposes of granting college credit, certification, or advanced standing toward further education or training. There are four generally accepted approaches to PLA and, when properly conducted, all ensure academic quality:

      i. National standardized exams in specific disciplines, including but not limited to:
         a) College Level Examination Program (CLEP)
         b) DANTES Subject Standardized Test
         c) Excelsior College Exams (UExcel)
         d) Advanced Placement (AP)
         e) International Baccalaureate (IB)

      ii. Challenge exams for local courses at the student's college or university

      iii. Individualized assessments or experiential learning, particularly portfolio-based assessments whereby students demonstrate learning acquired through experiences including but not limited to:
         a) Work or employment
         b) Employer training programs
         c) Independent study
         d) Non-credit courses
         e) Volunteer or community service
         f) Travel
         g) Non-college courses or seminars

h) Apprenticeships

iv. Evaluated non-college or non-credit courses and programs, such as:
a) The National College Credit Recommendation Service (NCCRS)
b) The American Council on Education's ACECREDIT service and evaluations of corporate and military training
c) microcredentials pursuant to Board Policy III.E.

2. Standards

a. Institutional Policies

i. Each institution is responsible for determining how best to implement PLA and should do so within the context of its mission, culture, student needs, academic programs, and career technical education programs.

ii. Each institution will ensure students have access PLA methods as deemed appropriate by its faculty.

iii. Each institution will provide professional development for faculty members, administrators, and staff working with students to ensure transparency and consistency in evaluating and awarding credit through PLA.

iv. Institutional policies and procedures must include the awarding of credit for education, training or service completed by an individual as a member of the armed forces or reserves pursuant to Section 33-3727, Idaho Code

v. Each institution will track PLA data, including student demographics, credits earned, type of PLA awarded, and associated costs to students.

b. Student Eligibility

i. To be eligible to earn PLA credits, undergraduate students must be admitted and enrolled in a public Idaho college or university.

a. Awarding Credit

i. Credit is awarded when a student successfully demonstrates evidence of college-level learning. Credit will be identified on the student's transcript as credit for prior learning.

ii. PLA credit will count as course credit and may be applied toward a degree, certificate, or other credential.

iii. Each institution shall include in its written policy on PLA the maximum number of credits earned through PLA that can be counted toward a degree or certificate.

b. Transferability

i. Once recorded on a student's transcript, PLA credit is transferable among Idaho institutions on the same basis as if the credit had been earned as a regular student at the awarding institution.

c. Fees

i. Fees for credit for prior learning shall be assessed consistently with Board Policy Section V.R. and must be based on and reflect the operational costs of administering a PLA. Fees may not be based on the number of credits awarded and shall be made publicly available in a single online location. Fees for transcribing credit shall not be applied for the transcription of credit awarded through the assessment of prior learning. Transcription fees are allowed for Workforce Training courses pursuant to Board Policy Section V.R.

ii. To ensure transparency for prospective students and students seeking transfer between institutions each institution shall develop and publish in a central location on its website and in other materials clearly stated and understandable policies on credit for prior learning. This information must include the cost and the process for students to pursue credit for prior learning and how credit that is awarded may satisfy course and degree requirements.

3. Crosswalks

a. Each institution will make available to students crosswalks identifying how credit for AP exams, CLEP exams, or military training will be awarded for common indexed general education courses. Where applicable, institutions will work together to identify areas within the crosswalks where credit for AP exams, CLEP exams, and military training can be applied consistently across institutions for meeting general education requirements. Crosswalks for AP exams, CLEP exams, and military training will include how exams and training are articulated to general education requirements and common indexed courses as provided in Board Policy III.N. For AP and CLEP exams, crosswalks will include minimum scores necessary for awarding credit across all institutions and will adhere to the AP exam credit requirement established in Board policy III.Y. For military training, crosswalks will include how equivalent college credit will be awarded.

~~a.~~b. Each institution will make available to students crosswalks identifying how credits for microcredentials will be awarded. Crosswalks specific to

microcredentials shall be developed in collaboration with the Division of Career Technical Education to assure alignment with the microcredentials platform.

ATTACHMENT 2

Idaho State Board of Education
GOVERNING POLICIES AND PROCEDURES
SECTION: III. POSTSECONDARY AFFAIRS
SUBSECTION: Y. Advanced Opportunities ~~August 2018~~February 2024

Boise State University, Idaho State University, University of Idaho, Lewis-Clark State College, College of Eastern Idaho, North Idaho College, College of Southern Idaho, and College of Western Idaho are covered by these policies. Postsecondary programs intended for transfer come under the purview of the Board.

1. Purpose

The State Board of Education is committed to improving the educational opportunities available to Idaho citizens by creating a seamless system of public education. The purpose of this policy is to provide program standards for advanced opportunities for secondary students. To this end, the intent of Advanced Opportunities is:

a. For postsecondary institutions to provide educational programs and training to their respective service regions;
b. Support and enhance regional and statewide economic development;
c. Facilitate collaboration between all school levels, including public elementary and secondary schools;
d. Prepare secondary graduates for postsecondary programs;
e. Enhance postsecondary goals;
f. Reduce duplication and provide for an easy transition between secondary and postsecondary education; and
g. Reduce the overall cost of educational services and training to the student.

2. Definitions

The State Board of Education recognizes four advanced opportunities programs. They are: Advanced Placement®, dual credit, technical competency credit (formerly known as Tech Prep), and the International Baccalaureate program.

a. Advanced Placement® (AP)

The Advanced Placement® Program, administered by the College Board, is a series of courses in a variety of subjects. AP courses are not tied to a specific college curriculum, but rather follow national College Board curricula. While taking the AP exam is optional, students may earn college credit by scoring well on the national AP exams. Individual postsecondary institutions have the discretion to accept the scores from the AP exams to award college credit or advanced standing.

b. Dual Credit Courses

i. Dual credit courses are courses allowing high school students to simultaneously earn credit toward a high school diploma and a postsecondary degree or certificate. Dual credit is awarded to a student on his or her postsecondary and high school transcript for the successful completion of a single course. Postsecondary institutions work closely with high schools to deliver college courses that are identical to those offered on the college campus. Credits earned in a dual credit class become part of the student's permanent college record. Students may enroll in dual credit courses taught at the high school or on the college campus.

ii. Two types of postsecondary credit may be earned: *Academic* and *Technical*. Academic credits apply to postsecondary academic programs and some postsecondary technical programs. Technical credits generally only apply to postsecondary technical programs and are not applicable toward academic postsecondary programs. Students must work closely with their advisor(s) to ensure the credit earned in their dual credit course will apply to their intended postsecondary degree program.

c. ~~Technical Competency Credit (TCC)~~ Microcredentials

~~i. Technical Competency Credit (TCC) allows secondary students to document proficiency in the skills and abilities they develop in approved high school career technical programs to be evaluated for postsecondary transcription at a later date. In addition to the standards outlined in section 4.d below, additional policies of the transcribing postsecondary institution may also apply.~~

~~Technical Competency Credits are awarded for skills and competencies identified as eligible TCC through a TCC Agreement with at least one Idaho postsecondary institution. Eligible skills and competencies are included in approved high school career technical programs and approved by the postsecondary institution in advance. Students participating in a high school program approved for TCC are not considered postsecondary students until they matriculate to a postsecondary institution.~~ Microcredentials as defined in Board Policy III.E. Microcredentials replace technical competency credits (TCC). Students who have completed a secondary program previously approved for technical competency credits shall be awarded credit when they matriculate to the participating postsecondary institution in accordance with the TCC articulation agreement that was in place at the time they entered the TCC program.
~~ii.~~

d. International Baccalaureate (IB)

Administered by the International Baccalaureate Organization, the IB program provides a comprehensive liberal arts course of study for students in their junior and senior years of high school. IB students take end-of-course exams that may qualify for college-credit. Successful completion of the full course of study leads to an IB diploma.

3. Idaho Programs Standards for Advanced Opportunities Programs

All advanced opportunities programs in the state of Idaho shall be developed and managed in accordance with these standards which were designed to help school districts, colleges and universities plan, implement, and evaluate high quality advanced opportunities programs offered to high school students before they graduate. Students must work closely with their advisor(s) to ensure the credit earned in their Advanced Opportunities course will apply to their intended postsecondary degree program.

a. Dual credit Standards for Students Enrolled in Courses Taught at the High School

Curriculum

Curriculum 1 (C1**)**	Courses administered through a dual credit program are catalogued courses and approved through the regular course approval process of the postsecondary institution. These courses have the same departmental designation, number, title, and credits; additionally these courses adhere to the same course description and course content as the postsecondary course.
Curriculum 2 (C2)	Postsecondary courses administered through a dual credit program are recorded on students' official academic record of the postsecondary institution.
Curriculum 3 (C3)	Postsecondary courses administered through a dual credit program reflect the pedagogical, theoretical and philosophical orientation of the sponsoring faculty and/or academic department at the postsecondary institution.

Faculty

Faculty 1 (F1)	Instructors teaching college or university courses through a dual credit program must meet the academic requirements for faculty and instructors teaching at a postsecondary institution or provisions are made to ensure instructors are capable of providing quality college-level instruction through ongoing support and professional development.
Faculty 2 (F2)	The postsecondary institution provides high school instructors with training and orientation in course curriculum, student assessment criteria, course philosophy, and administrative requirements before certifying the instructors to teach the college/university's courses.
Faculty 3 (F3)	Instructors teaching dual credit courses are part of a continuing collegial interaction through professional development, such as seminars, site visits, and ongoing communication with the postsecondary institutions' faculty and dual credit program administration. This interaction addresses issues such as course content, course delivery, assessment, evaluation, and professional development in the field of study.
Faculty 4 (F4)	High school faculty is evaluated by using the same classroom performance standards and processes used to evaluate college faculty.

Students

Students 1 (S1)	High school students enrolled in dual credit courses are officially admitted as degree-seeking, non-degree or non-matriculated students of the sponsoring postsecondary institution.
Students 2 (S2)	High school students are provided with a student guide that outlines their responsibilities as well as guidelines for the transfer of credit.
Students 3 (S3)	Students and their parents receive information about dual credit programs. Information is posted on the high school's website regarding enrollment, costs, contact information at the high school and the postsecondary institution, grading, expectations of student conduct, and other pertinent information to help the parents and students understand the nature of a dual credit course.
Students 4 (S4)	Admission requirements have been established for dual credit courses and criteria have been established to define "student ability to benefit" from a dual credit program such as having junior standing or other criteria that are established by the school district, the institution, and State Board of Education Governing Policies and Procedures.
Students 5 (S5)	Prior to enrolling in a dual credit course, provisions are set up for awarding high school credit, college credit or dual credit. During enrollment, the student declares what type of credit they are seeking (high school only, college only or both high school and college credit). To earn college credit, the student must be enrolled at the postsecondary institution.

Assessment

Assessment 1 (A1)	Students enrolled in dual credit courses are held to the same course content standards and standards of achievement as those expected of students in postsecondary credit only courses.
Assessment 2 (A2)	Every course offered through a dual credit program is annually reviewed by postsecondary faculty from that discipline and dual credit teachers/staff to assure that grading standards meet those in on-campus sections.
Assessment 3 (A3)	Students enrolled in dual credit courses are assessed and awarded credit using the same methods (e.g. papers, portfolios, quizzes, labs, etc.) as their on-campus counterparts.

Program Administration and Evaluation

Admin & Evaluation 1 (AE1)	The dual credit program practices are assessed and evaluated based on criteria established by the school, institution and the State Board of Education to include at least the following: course evaluations by students, follow-up of the graduates who are college or university freshmen, and a review of instructional practices at the high school to ensure program quality.
Admin & Evaluation 2 (AE2)	Every course offered through a dual credit program is annually reviewed by faculty from that discipline and dual credit staff to assure that grading standards meet those in postsecondary sections.

Admin & Evaluation 3 (AE3)	Students enrolled in dual credit courses are assessed using the same methods (e.g. papers, portfolios, quizzes, labs, etc.) as their on-campus counterparts.
Admin & Evaluation 4 (AE4)	A data collection system has been established based on criteria established by the high school, institution and State Board of Education to track students enrolled in dual credit courses to provide data regarding the impact of dual credit programs in relation to college entrance, retention, matriculation from high school to college, impact on college entrance tests, etc. A study is conducted every 5 years on dual credit graduates who are freshmen and sophomores in a college or university.
Admin & Evaluation 5 (AE 5)	Costs for high school students have been established and this information is provided to students before they enroll in a dual credit course. Students pay a reduced cost per credit that is approved annually at the Board's fee setting meeting and defined in Board Policy V.R. Fees. .
Admin & Evaluation 6 (AE 6)	Agreements have been established between the high school and the postsecondary institution to ensure instructional quality. Teacher qualifications are reviewed, professional development is provided as needed, course content and assessment expectations are reviewed, faculty assessment is discussed, student's costs are established, compensation for the teacher is identified, etc.
Admin & Evaluation 7 (AE 7)	Postsecondary institutions have carefully evaluated how to provide services to all students regardless of where a student is located.

b. Dual Credit Standards for Students Enrolled in Courses at the College/University Campus

A.	The student is admitted by the postsecondary institution as a non-degree seeking student.
B.	The student is charged the part-time credit hour fee or tuition and additional fees as established by the institution.
C.	Instructional costs are borne by the postsecondary institution.
D.	Four (4) semester college credits are typically equivalent to at least one (1) full year of high school credit in that subject.
E.	As part of the enrollment process, institutions must ensure the student and the student's parent/guardian receive counseling that outlines the risks and possible consequences of enrolling in postsecondary courses, including but not limited to the impacts on future financial aid, and the consequences of failing or not completing a course in which the student enrolls. It is the responsibility of the postsecondary institution to provide advising for all students taking courses on the postsecondary campus.
F.	Students under the age of 16 who are enrolled in a secondary school may seek admission to enroll in courses provided on the postsecondary campus by submitting a petition to the high school principal's office and to the admissions office of the postsecondary institution.

c. Advanced Placement Standards

Advanced Placement (AP) courses are taught by high school teachers following the curricular goals administered by The College Board. These courses are academically rigorous and conclude with the optional comprehensive Advanced Placement exam in May. Students taking Advanced Placement courses accept the challenge of a rigorous academic curriculum, with the expectation of completing the complex assignments associated with the course and challenging the comprehensive Advanced Placement exam. The Advanced Placement examination is a national assessment based on the Advanced Placement curriculum, given in each subject area on a specified day at a specified time, as outlined by the College Board. Students and parents are responsible for researching the Advanced Placement policy of the postsecondary institution the student may wish to attend. Each institution shall publish their credit award policy, including course credit awarded, on their institutional webpage and report the policy annually to the Board office.

College/university credit is based on the successful completion of the Advanced Placement exam, and dependent upon institutional Advanced Placement credit acceptance policy. Each institution shall award academic credit for scores of 3, 4, and 5 on the AP exam. Institutions may choose to award more credit for scores of 4 or 5. Institutions shall strive to align Advanced Placement credit awards to courses that fulfill general education or program credit. Elective credit shall only be awarded when a general education or program credit is not available. The Board office shall review, no less than every three years, the validity of such credits awarded to assess student performance based on this policy.

Institutions may seek an exception to the score requirement in the policy if the institution has evidence that students are not performing adequately in the subsequent course or are in some way disadvantaged academically based on their placement within the Advanced Placement policy. Each institution's chief academic officer or designee shall present the evidence to the Board office. The Board office will convene a committee comprised of faculty, staff, and others to review the findings and render determination as to whether the minimum Advanced Placement score threshold should be increased.

Curriculum

Curriculum 1 (C1**)**	Postsecondary institutions evaluate AP scores and award credit reflecting the pedagogical, theoretical, and philosophical orientation of the sponsoring faculty and/or academic department at the institution.
Curriculum 2 (C2)	High school credit is given for enrollment and successful completion of an AP class.

Faculty

Faculty 1 (F1)	AP teachers shall follow the curricular materials and goals outlined by The College Board.

Faculty 2 (F2)	The AP teacher may attend an AP Institute before teaching the course.

Students/Parents

Students 1 (S1)	A fee schedule has been established for the AP exam. Students and their parents pay the fee unless other arrangements have been made by the high school.
Students 2 (S2)	Information must be available from the high school counselor, AP coordinator or other faculty members regarding admission, course content, costs, high school credit offered and student responsibility.

Assessment

Assessment 1 (A1)	Students are assessed for high school credit according to the requirements determined by the high school.

Program Administration and Evaluation

Admin & Evaluation 1 (AE1)	To evaluate the success of the programs and to improve services, the school district must annually review the data provided by The College Board.
Admin & Evaluation 2 (AE2)	The school district must carefully evaluate how to provide services to all students, regardless of family income, ethnicity, disability, or location of educational setting.

d. ~~Technical Competency Credit (TCC)~~Microcredential Standards

Career technical education programs in Idaho are delivered through comprehensive high schools, career technical ~~schools~~centers, and the technical college system. ~~Technical Competency Credit allows secondary career technical students the opportunity to earn secondary and postsecondary technical credits. Technical Competency Credit is offered through approved secondary career technical programs with an articulation agreement between the high school and a postsecondary institution. Technical Competency Credit is an advanced learning opportunity that provides a head start on a technical certificate or an applied science degree.~~Pursuant to Board Policy III.E. all microcredentials are tracked as digital badges through a platform approved and maintained by the Division of Career Technical Education. Idaho's educators may validate skills their students demonstrate proficiency in through the awarding of badges in the platform. Industry-relevant badges are awarded based on the validated skills. Program standards are developed for each badge through a collaborative process that engages industry, college/university faculty, secondary faculty, applicable agency staff and other stakeholders. As students provide evidence of the competencies for each skill, educators evaluate the competencies based on common assessments. Once all skills are validated for a particular badge, the information is entered into the platform and badges are issued. Microcredentials may be stacked and used toward credit for prior learning or the awarding of a certificate or degree.

~~**Curriculum**~~

Curriculum 1 (C1)	The high school career technical program must have competencies comparable with a postsecondary institution technical program and be identified as eligible for TCC consideration through a TCC Agreement (e.g., articulation agreement) with at least one Idaho postsecondary institution.
Curriculum 2 (C2)	Secondary and postsecondary educators must agree on the technical competencies, the student learning outcomes, and the level of proficiency to be demonstrated by the student.

Faculty

Faculty 1 (F1)	Secondary educators must hold appropriate career technical certification in the program area for which credit is to be awarded.

Students

Students 1 (S1)	Technical Competency Credit (TCC) students are high school students; they are neither enrolled in the postsecondary institution nor counted as dual credit students. Students may request transcription of TCCs onto a postsecondary transcript after demonstrating the required level of proficiency; they must follow the transcribing institution's TCC transcription policy and pay the transcription fee discussed in standard AE1. After completing a TCC course or sequence according to the articulation agreement, the credits must be transcribed within the time period required by the transcribing institution and in no instance longer than two years.
Students 2 (S2)	High school students are provided with a student guide that outlines their responsibilities, guidelines for credit transfer and information regarding how the technical credit will apply to postsecondary certificates and degree requirements. The student guide must include an explanation of the difference between technical and academic credit, how a career technical course is a part of a career technical program sequence, and how the courses may impact their academic standing when they fully matriculate after high school.
Students 3 (S3)	At the completion of the Technical Competency Credit program, the instructor shall identify students who have met program competencies.

Assessment

Assessment 1 (A1)	The students are assessed for postsecondary technical credit according to the requirements of the Technical Competency Credit agreement.

Program Administration and Evaluation

Admin & Evaluation 1 (AE1)	When the student requests the transcription of a TCC credit, they are assessed a transcription fee consistent with Board Policy Section V.R for qualifying TCC earned in high school.
Admin & Evaluation 2 (AE2)	TCC agreements between a secondary career technical program and a postsecondary institution must be reviewed annually by the institution.

BOISE STATE UNIVERSITY

SUBJECT

Ph.D. in Engineering

APPLICABLE STATUTE, RULE, OR POLICY

Idaho State Board of Education Governing Policies & Procedures, Section III.G and III.Z

BACKGROUND/DISCUSSION

Boise State University proposes to offer a Ph.D. program in Engineering. Initially, there will be four tracks: Infrastructure Systems, Water and Environment Systems, Energy Systems, and Mechatronics and Control Systems.

The vision for the Ph.D. in Engineering program is to create an interdisciplinary doctoral program that integrates engineering research with non-engineering disciplines to improve the research products, economic return, and community impact. The College of Engineering currently hosts two disciplinary Ph.D. programs in Electrical Engineering and Material Science Engineering and participates in the Ph.D. programs in Computing and Biomedical Engineering. While these programs incorporate faculty members from engineering, science, mathematics, and computer science disciplines, they are focused on specific fields of study of science and engineering, and do not fully serve the College of Engineering faculty, nor do they offer inclusive engineering opportunities to Idaho students to compete in a growing and changing job market. The Ph.D. in Engineering program is proposed with a broad agenda that can include all engineering fields of research and bring non-engineering perspectives into engineering research. The program offers great flexibility in designing an education that fits student needs and is conducive to cutting-edge, interdisciplinary scientific discovery and societal impact.

IMPACT

A doctorate in engineering allows students to conduct groundbreaking research in various fields with significant social and economic outcomes in the region and nationally, including infrastructure, environment, energy, and mechatronic systems. Engineering research impacts all walks of life, but the traditional engineering programs generally miss a broader opportunity to serve society and the environment by taking a siloed technical approach. To broaden engineering education and impact, research must be informed by expertise from non-engineering fields, including ecology, environmental studies, and public policy. The proposed program will include the latter aspects that are missing in the traditional engineering curriculum to prepare Idaho students for tackling complex problems of the present and future.

The program has three broad objectives that will support the career advancement of Idaho residents and stimulate economic growth in the State of Idaho.

1. Expand the postdoctoral workforce in the State of Idaho.
2. Create engineering researchers with transdisciplinary technical skills who can work seamlessly across interdisciplinary boundaries.
3. Increase research and creativity in and for Idaho.

Since 2005, the College of Engineering (COEN) at Boise State has seen enrollment of engineering majors increase nearly 60 percent, making Boise State's COEN the largest engineering college in the State of Idaho. With more than 450,000 square feet dedicated to classrooms, research labs, innovation studios, and collaboration space, Boise State's COEN is primed to offer students state-of-the-art facilities for an inclusive, innovative, and integral education. Over 80% of the undergraduate students in the college hold internships or work in research in one of COEN's 57 laboratories before graduating, preparing them for success on day one in any graduate program or industry job.

A Ph.D. in Engineering program at Boise State can help fill an opportunity gap for Idahoans. Ph.D. holders earn 21% and 43% more than master's and bachelor's degree holders, respectively. Currently, most Ph.D.-level jobs in Idaho are filled by out-of-state job seekers. Lack of local opportunities for Idahoans to obtain skills for Ph.D.-level jobs is a workforce concern and this degree program helps fill this gap with opportunities to compete for high-paying jobs. Boise State projects that the program will reach a size of 11-12 students by the fifth year, graduating approximately 4 students per year once the program is up and running.

The program will utilize existing faculty lines to support graduate advising as faculty seek Ph.D. students to support research plans. Additional funding will be needed for administrative support to maintain the program. The college is planning to hire a joint part-time Ph.D. program coordinator to support existing Ph.D. programs in Electrical Engineering and Biomedical Engineering to include the proposed program. The program will use existing college Graduate Assistant (GA) resources and anticipates generating additional new resources through federally supported GA lines. Total expenditures are $26,507 - $28,965 of ongoing funds and $275,712 - $510,822 of one-time funds. This represents a combination of state and federal funding.

ATTACHMENTS

Attachment 1 – Ph.D. in Engineering Proposal and External Peer Review Report

STAFF COMMENTS AND RECOMMENDATIONS

Boise State University projects six enrollments in its first year, reaching 11 by year five and graduating two by year four. Estimations are informed by current enrollments and graduation rates in existing Ph.D. programs in Boise State's College of Engineering to include feeder pools from BS/MS Civil and Mechanical

Engineering programs. Projections are also based on existing undergraduate students from Boise State that go on to seek Ph.D. programs out of state. The program identified that six enrollments will be needed to maintain sustainability. This is based on the resources needed to support the program. If minimums are not met within the first four years, the program will re-evaluate recruiting efforts as well as focus on expanding program faculty. If after three consecutive years enrollments are below the minimum numbers, the graduate college will evaluate for potential discontinuation of the program.

Consistent with Board Policy III.G., the proposed Ph.D. in Engineering program was reviewed by an external review panel consisting of Dr. Chandra Kothapalli, Cleveland State University and Dr. Jeffery Heys, Montana State University. Based on their review, reviewers believed that "*the lack of a broad, interdisciplinary PhD in Engineering is limiting opportunities for Idaho students and faculty*. *The establishment of the degree program will support Boise State's strategic goals to increase PhD awards, research expenditures, and support recruitment and retention of faculty*." Reviewers were overall very supportive of the proposed program. Recommendations related to the proposal were largely connected with challenges associated with interdisciplinary graduate programs. These included tailored policies for graduate student admissions, remedial coursework requirements, graduate committee composition, examination requirements, etc. that recognize the interdisciplinary nature of the proposed program. As provided in the report, program assessment may also require unique measures because the program crosses departmental boundaries. The reviewers shared these key observations and potential challenges and provided recommendations. Boise State provided a response (also included with attached materials) and amended their proposal to include some of the information the panel recommended, with some items in progress.

Boise State University's request to offer a Ph.D. in Engineering is consistent with their Service Region Program Responsibilities and their current institution plan for Delivery of Academic Programs in Region III. In accordance with Board Policy III.Z., no institution has the statewide program responsibility specifically for engineering programs.

Currently, the University of Idaho offers a Ph.D. in Mechanical Engineering and in Civil Engineering. Idaho State University offers a Ph.D. in Engineering and Applied Science. As provided in the program proposal, ISU's program focuses on traditional disciplines like Chemistry, Geosciences, Mathematics, and Mechanical Engineering and does not have the same focus areas/tracks as the proposed Ph.D. in Engineering (Infrastructure Systems, Water and Environment Systems, Energy Systems, and Mechatronics and Control Systems). Based on enrollment and graduation data provided on page 8 of the proposal:

- U of I has 1-2 graduates per year for the Mechanical Engineering program with enrollment between 13-20 over a four-year period.

- U of I has 1-4 graduates per year for their Civil Engineering program with enrollment of 9-13 over a four-year period.
- ISU has about 1-3 graduates for the Engineering and Applied Science program with 18-24 enrollments over a four-year period.

The proposal completed the program review process and was presented to the Council on Academic Affairs and Programs on December 7, 2023; and to the Instruction, Research, and Student Affairs on February 15, 2024.

Board staff recommends approval.

BOARD ACTION

I move to approve the request by Boise State University to create a Ph.D. in Engineering, as presented in Attachment 1.

Moved by _____ Seconded by _____ Carried Yes _____ No _____

Institutional Tracking No. _____

Idaho State Board of Education

FULL PROPOSAL FORM

Academic Degree and Certificate Program

Date of Proposal Submission:	October 6, 2023			
Institution Submitting Proposal:	Boise State University			
Name of College, School, or Division:	College of Engineering			
Name of Department(s) or Area(s):	Civil Engineering, and Mechanical Engineering			
Official Name of the Program:	Ph.D. in Engineering			
Implementation Date:	Fall 2024			
Degree Information:	Degree Level: Graduate	Degree Type: Ph.D.		
CIP code (consult IR /Registrar):	14.0101			
Method of Delivery: Indicate percentage of face-to-face, hybrid, distance delivery, etc.	100% Face-to-Face			
Geographical Delivery:	Location(s)	Boise	Region(s)	III
Indicate (X) if the program is/has: (Consistent with Board Policy V.R.)	☐ Self-Support fee	☐ Professional Fee	☐ Online Program Fee	
Indicate (X) if the program is: (Consistent with Board Policy III.Z.)	X Regional Program Responsibility	☐ Statewide Program Responsibility		

Proposed Action

X **New program offering**
- ☐ Undergraduate program
- X Graduate program
- ☐ Undergraduate certificate (30 credits or more)
- ☐ Graduate certificate (30 credits or more)

☐ **New branch campus or change in location**

☐ **Modification of Existing Academic Programs**
- ☐ Converting one program option to a stand-alone program
- ☐ Consolidating two or more undergraduate programs into one
- ☐ Consolidating two or more graduate programs into one
- ☐ Splitting an existing program into two or more programs
- ☐ Program expansion outside an institution's Designated Service Region as defined in Board Policy III.Z.
- ☐ Adding certificate or degrees to existing programs

College Dean	09/27/2023 Date	Vice President for Research (as applicable)	Date 11/1/2023
Graduate Dean/other (as applicable)	Date	Academic Affairs Program Manager, OSBE	Date 11/02/2023
SAVP/Deputy CFO	Jo Ellen DiNucci (Sep 28, 2023 13:25 MDT) 09/28/202 Date	Chief Financial Officer, OSBE	Date
Provost/VP for Instruction	John Buckwalter (Sep 27, 2023 16:17 MDT) 09/27/2023 Date	Chief Academic Officer, OSBE	11/13/23 Date
President	10/06/2023 Date	SBOE/Executive Director or Designee Approval	Date

Before completing this form, refer to Board Policy Section III.G., Postsecondary Program Approval and Discontinuance. This proposal form must be completed for the creation of each new program. All questions must be answered.

Rationale for Creation of the Program

1. **Describe the request and give an overview of the changes that will result.** What type of substantive change are you requesting? Will this program be related or tied to other programs on campus? Identify any existing program that this program will replace. If this is an Associate degree, please describe transferability.

Overview

Boise State proposes the creation of a new interdisciplinary program leading to the degree of ***Doctor of Philosophy in Engineering***. Faculty members participating in the program will be primarily drawn from the College of Engineering, while the program is open to all Boise State faculty and has interest in multiple colleges across campus. This program will not replace, or be tied to other PhD programs on campus.

A doctorate in engineering allows students to conduct groundbreaking research in various fields with significant social and economic outcomes for the region and nationally, including infrastructure, environment, energy, and mechatronic systems. Engineering research impacts all walks of life, but the traditional engineering programs generally miss a broader opportunity to serve the society and the environment by taking a silo technical approach. To broaden engineering education and impact, research must be informed by expertise from non-engineering fields, including ecology, environmental studies, and public policy. The proposed program will include the latter aspects that are missing in the traditional engineering curriculum to prepare Idaho students for tackling complex problems of the present and future.

Initially, there will be four tracks in the proposed program:

- The ***Infrastructure Systems track*** focuses on innovative solutions that support the fundamental needs and functions of a society including food, water, transportation, communications, and energy. Students can conduct inter/trans-disciplinary research that include opportunities in both built and natural infrastructure systems and their interconnections.
- The ***Water and Environment Systems Track*** adopts quantitative and qualitative methods from various fields of study to solve the most pressing natural resources issues of our time. The program offers great flexibility in designing an education course that fits student needs and is conducive to cutting edge, interdisciplinary scientific discovery and societal impact.
- The ***Energy Systems Track*** focuses on modern energy systems, particularly on energy generation, transmission, storage, and conversion technologies. This emphasis considers a wide range of scales from the material level up to grid scale applications.
- The ***Mechatronics and Control Systems Track*** deals with combinations of electronic, mechanical, and material systems to achieve a desired function or outcome. This multidisciplinary approach includes product design, electrical engineering, mechanical engineering, computing and materials science. This track pursues "smart" applications by the inclusion of sensors, actuators, and control systems directly.

Why Ph.D. in Engineering?

The vision for the Ph.D. in Engineering program is to create an interdisciplinary doctoral program that integrates engineering research with non-engineering disciplines to improve the research products, economic return, and community impact. The College of Engineering currently hosts

two disciplinary Ph.D. programs in Electrical Engineering and Material Science Engineering, and participates in Ph.D. programs in Computing and Biomedical Engineering. While these programs incorporate faculty members from engineering, science, mathematics, and computer science disciplines, they are focused on specific fields of science and engineering, and do not fully serve the College of Engineering faculty, nor do they offer inclusive engineering opportunities to Idaho students to compete in the growing and changing job market. The Ph.D. in engineering program is proposed with a broad agenda that can include all engineering fields of research and bring non-engineering perspectives into engineering research. The program offers great flexibility in designing an education that fits student needs and is conducive to cutting-edge, interdisciplinary scientific discovery and societal impact.

Objectives

This program has three broad objectives that will support the career advancement of Idaho residents and stimulate economic growth in the state of Idaho.

1. Expanding the postdoctoral workforce in the state of Idaho

With the changing weather patterns and socio-environmental conditions, and the need to be more resilient and sustainable, there is a need for a workforce that is capable of understanding these changes and designing infrastructure that lasts. It is paramount to develop this workforce within the state of Idaho so that they can better cater to the local needs. Recent investment by the National Science Foundation in the Innovation Corps Hubs program, of which Boise State is a part, requires that future workforce has the necessary entrepreneurial and leadership skills to engage in this and similar programs and help Idaho take advantage of the increasingly abundant opportunities in this arena. This PhD program intends to fill this gap.

2. Create engineering researchers with transdisciplinary technical skills who can work seamlessly across interdisciplinary boundaries

The primary goal of any engineering project is human welfare and thriving communities. So, it is paramount that engineers develop the necessary skills to appreciate the community impacts of their research projects. Producing engineers that not only have the technical skills to lead technological advancements and revolution, but also have the fundamental understanding of the impacts of the technology on the society and the environment is a fundamental responsibility of the engineering schools. This kind of engineer will be able to cross the disciplinary boundaries with ease and conduct research in a responsible and effective manner. The proposed PhD program aims to achieve this through mandatory convergence courses that will broaden students' perspectives and their understanding of the implications of their research. For example, a student conducting research to mitigate congestion in cities should have the fundamental knowledge of transportation engineering but also be able to account for the community preferences and the local culture to ensure the end product meets the functional and emotional needs of the community. By exposing students to courses, such as those offered by the School of Public Service, along with course work in transportation engineering, students will have the skills and knowledge to account for community impact.

3. Increased research and creative activity in and for Idaho

This program will undoubtedly strengthen external funding applications from researchers involved in the program. Federal research funding agencies, such as the National Institutes of Health (NIH), National Science Foundation (NSF), National Aeronautics and Space Administration (NASA), and Department of Defense (DoD) are actively interested in funding collaborative, transdisciplinary projects that tie together expertise across departments, colleges, and communities. Some of the civil and mechanical engineering faculty at Boise State currently involved in establishing this PhD program have had success with federal funding, but can be more successful if the PhD in Engineering program is established. Furthermore, this PhD program opens up frontiers of federally-funded research opportunities for a wide group of faculty. Successfully funded awards from researchers involved in steering this program include an NSF Improving Undergraduate STEM Education (IUSE), Idaho Global Entrepreneurial Mission (IGEM) Council, Idaho NASA EPSCoR, Bureaus of Land Management and Reclamation, Department of Energy, and Department of Defense awards, totaling $1.95 million in extramural funding. These same researchers applied for $7.9 million in funding in 2021, and they're targeting $7.3 million in grant submissions for the upcoming year. However, the ability to compete for research funding has been severely hindered by the absence of PhD programs accessible to Civil and Mechanical Engineering faculty. This PhD program will address this limitation and stand as a tangible demonstration of collaboration and transdisciplinary engagement across the Boise State campus. This type of transdisciplinary initiative will be critical to success in driving Boise State towards a very high research activity status. Additionally, the proposed program will serve recent and new hires in Mechanical Engineering and Civil Engineering. This PhD program will strengthen the competitiveness of the research environment at Boise State, and we anticipate it will contribute to the success of future submissions.

2. **Need for the Program**. Describe evidence of the student, regional, and statewide needs that will be addressed by this proposal to include student clientele to be served and address the ways in which the proposed program will meet those needs.

   a. **Workforce and economic need:** Provide verification of state workforce needs that will be met by this program. Include job titles and cite the data source. Describe how the proposed program will stimulate the state economy by advancing the field, providing research results, etc.

Total employment opportunities across the nation are projected to grow by 8.3 million jobs between 2021 and 2031, and "*Occupations that Need More Education for Entry are Projected to Grow Faster Than Average*" according to the US Bureau of Labor Statistics (BLS). A sizable fraction of employment opportunities requires a PhD degree. For example, 5.8% of "architectural and engineering managers", 4.4% of "civil engineers", 5.7% of "environmental engineers", 3.6% of "mechanical engineers" and 7.4% of "engineers, all other" hold a PhD degree (source: BLS). Although seemingly low in percentage, these statistics translate to large absolute numbers, when considering that 158.1 million jobs were available in 2021 (projected to increase to 166.5 million by 2031, source: BLS). Importantly, PhD degree holders earn a considerably larger salary (43% more than a BS degree holder and 21% more than an MS degree holder; (Figure 1), and they have a notably smaller unemployment rate (57% and 42% less than a BS and an MS degree holder, respectively; Figure 1). Hence, not only PhD degree holders contribute more to the economy, but also rarely do they rely on unemployment benefits. Moreover, future economic growth is critically dependent on increased productivity of American workers. According to the BLS, total factor

productivity increases "*can be from technological improvements, increases in the education or quality of the workforce, improvements in management practices, and economies of scale*". An Engineering PhD program at Boise State is decisive in keeping Idaho's economy in par with the national demand growth.

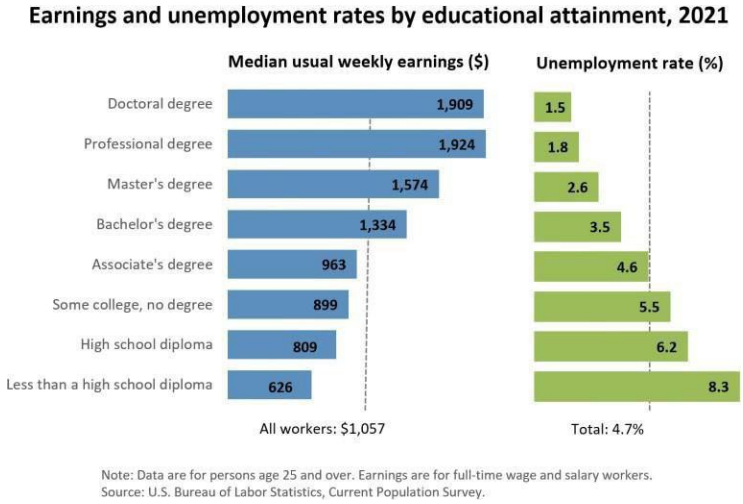


Figure 1: Median weekly earnings and unemployment rate nationally based on education attainment. Source: Bureau of Labor Statistics, available at:
https://www.bls.gov/emp/images/ep_chart_001.png

Idaho's economy urgently needs a PhD in Engineering program at Boise State to ensure projected jobs in Idaho with a PhD requirement are filled with a trained workforce. Specifically, job opportunities that require a doctoral degree are projected to increase from 16,756 in 2020 to 19,290 in 2030, adding 2,534 jobs with a PhD requirement (Table 1). Among all available employment opportunities in Idaho in 2020 (811,381), 15.2% were engineering-related. In a conservative calculation, if we assume 15.2% of new PhD requiring jobs by 2030 are engineering-related, it sums to 385 new PhD graduates required to fill the available engineering jobs in Idaho. Idaho universities are currently far behind in generating the state needs of PhD graduates.

Table 1: Employment projections in Idaho. Source: Idaho Department of Labor.

	Employment		Change, 2020-2030	
	2020	2030	Number	Percentage
Engineering related jobs				
Engineering + Construction + Production	123,622	153,041	29,419	23.8%
Educational requirement				
Doctoral or professional degree	16,756	19,290	2,534	15.1%

Additionally, current investments in Idaho, including the $15 billion manufacturing lab by Micron, $800 million data center by Meta/Facebook, and Idaho Power's 100% clean energy plan by

2035, will require a highly skilled workforce. Many of these companies are currently hiring PhD graduates from out-of-state universities, while Boise State University has the capacity to train local students to fill these high-paying jobs.

b. Student demand. What is the most likely source of students who will be expected to enroll (full-time, part-time, outreach, etc.). Provide evidence of student demand/ interest from inside and outside of the institution.

Since 2005, the College of Engineering (COEN) at Boise State has seen enrollment of engineering majors increase nearly 60 percent, making Boise State's COEN the largest engineering college in the state of Idaho. With more than 450,000 square feet dedicated to classrooms, research labs, innovation studios, and collaboration space, Boise State's COEN is primed to offer students state-of-the-art facilities for an inclusive, innovative, and integral education. Over 80% of the undergraduate students in the college hold internships or work in research in one of COEN's 57 laboratories before graduating, preparing them for success day one in any graduate program or industry job. These graduates continue to help drive economic growth in Idaho as over 70% stay in Idaho after graduation. In the last five years, research expenditures in the College of Engineering have more than doubled to over $14 million. These statistics point to the interest of Boise State's undergrad and graduate students to get involved in research, and the capacity of the faculty to secure external funding opportunities for these students to conduct state-of-the-art and applied investigations with significant societal benefits.

Several federally funded graduate training programs at Boise State also attest to the need for an Engineering PhD. For example, the Bridge to the Doctorate Fellowship program prepared student candidates from domestic underrepresented minority backgrounds who are pursuing graduate studies in science, technology, engineering, and mathematics (STEM) programs. However, due to lack of an engineering PhD program at Boise State many of these talented students move to other states to pursue their doctoral degree. Another example of such programs is the Stellar Engineering Students Graduate Program Scholarship which is dedicated to providing financial, cultural (academic culture), and academic support to MS level engineering students. In response to the external review comments, the National Science Foundation's (NSF) scholarships in STEM suggested that Boise State should request additional funding for supporting PhD level students; an opportunity that was missed due to lack of an Engineering PhD program at Boise State. Furthermore, highly talented Boise State students are pursuing PhDs at out-of-state universities, which amounts to a large loss for Idaho. One such student is Ulises Trujillo-Garcia, a recent Civil Engineering graduate from Boise State who was frequently highlighted nationally for his accomplishments, but is now pursuing his NSF-funded PhD studies at Arizona State University. Student support letters (attached) also attest to an urgent need for a PhD in Engineering program that can serve Idahoans.

c. Societal Need: Describe additional societal benefits and cultural benefits of the program.

A PhD in Engineering program at Boise State can contribute to equity and equality in Idaho. As shown in the previous section, PhD holders earn 21% and 43% more than master and bachelor degree holders. Currently, a majority of PhD-level jobs in Idaho are filled by out-of-state job seekers. While attracting talent and skill to Idaho is of greatest economic benefit to the state, lack of local opportunities for Idahoans to obtain skills for the PhD-level jobs create an equity concern. It is of utmost importance that Boise State fulfills its duty to provide Idahoans with opportunities to compete for the high-paying jobs.

Idaho is experiencing one of the largest population increase rates in the country, creating new opportunities for the growth of its infrastructure and industry. Furthermore, federal, state and

private investments in the growth of various industries in the Gem state create new demand for highly skilled workforce. Providing opportunities to local students not only will ensure culturally sensitive outcomes, but also enhances the societal acceptance of these projects. These are among many examples of the societal and cultural benefits of the PhD in Engineering program.

3. Program Prioritization

Is the proposed new program a result of program prioritization?

Yes_____No_X____

If yes, how does the proposed program fit within the recommended actions of the most recent program prioritization findings.

4. Credit for Prior Learning

Indicate from the various cross walks where credit for prior learning will be available. If no PLA has been identified for this program, enter 'Not Applicable'.

Not Applicable.

5. Affordability Opportunities

Describe any program-specific steps taken to maximize affordability, such as: textbook options (e.g., Open Educational Resources), online delivery methods, reduced fees, compressed course scheduling, etc. This question applies to certificates, undergraduate, graduate programs alike.

Like most PhD programs in engineering, our program will utilize a variety of funding opportunities (NSF, NASA, etc.) to provide enrolled students with graduate tuition support and stipends. This reduces the cost of attendance burden and provides students with funding to support living in Boise.

Enrollments and Graduates

6. Existing similar programs at Idaho Public Institutions. Using the chart below, provide enrollments and numbers of graduates for similar existing programs at your institution and other Idaho public institutions for the most past four years.

Table 2 represents the enrollment and graduation data for programs similar to the proposed PhD in Engineering program. It can be noted from this table that yearly the state is producing 2 to 3 PhDs in civil and mechanical engineering on an average. If we assume 10% of the 385 jobs projected (see response to item 2 above) that is an estimated need of over 35 PhDs by 2030. These numbers clearly show that existing programs will not be able to meet the need which clearly establishes a need for the proposed program.

Table 2: Enrollment and graduation data for similar existing programs

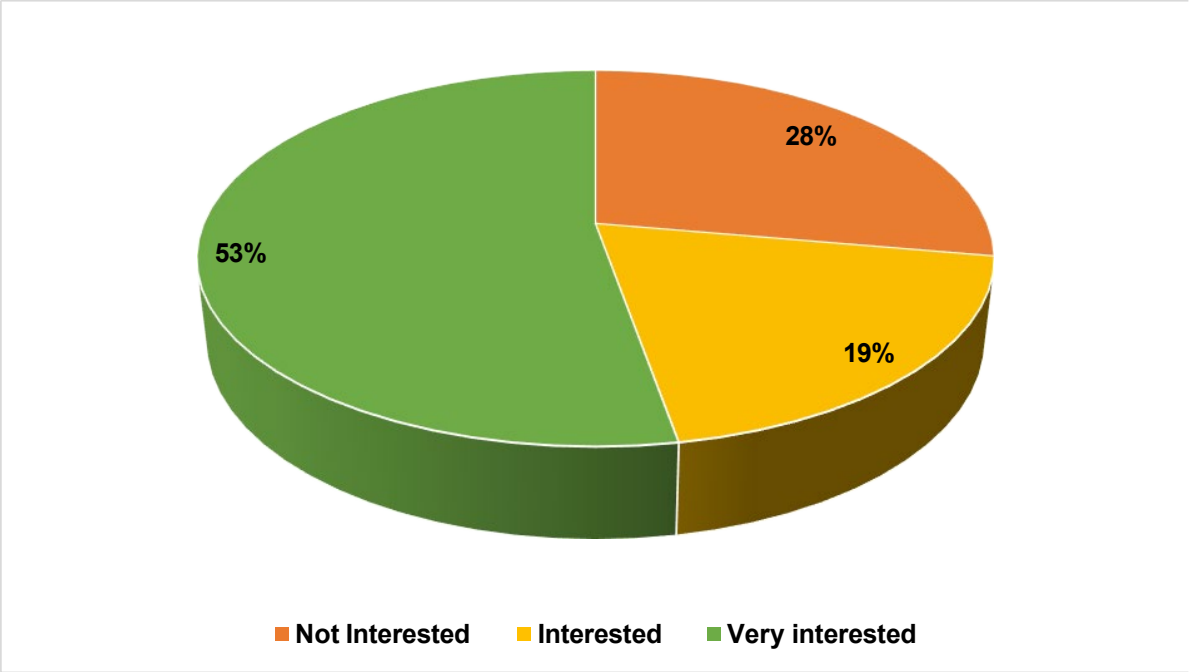
Instit.	Program Name	Fall Headcount Enrollment in Program				Number of Graduates from Program (Summer, Fall, Spring)			
		FY19	FY20	FY21	FY22 (most recent)	FY19	FY20	FY21	FY22 (most recent)
UI	PhD in Mechanical Engineering	13	14	20	18	2	2	1	1
UI	PhD in Civil Engineering	13	12	8	9	1	4	1	4
ISU	PhD in Engineering and Applied Science	18	19	23	24	1	2	1	3

7. **Justification for Duplication** (if applicable). If the proposed program is similar to another program offered by an Idaho public higher education institution, provide a rationale as to why any resulting duplication is a net benefit to the state and its citizens. Describe why it is not feasible for existing programs at other institutions to fulfill the need for the proposed program.

Idaho State University offers a PhD in Engineering and Applied Science. However, ISU's program does not offer the focus areas/tracks we propose in this program. Additionally, the ISU program is arranged around traditional disciplines such as Chemistry, Geosciences, Mathematics, and Mechanical Engineering. While these programs do have similarities, students enrolling in PhD engineering programs are typically selecting a school for the advisor and the particular research, which limits the competition and actually adds to the base of PhD students created in Idaho.

A survey conducted among current undergraduate and graduate (MS) students in the Civil and Mechanical engineering programs showed huge interest in this program. 72% of the survey respondents indicated they are "interested to very interested" in the program, while 28% showed no interest. This demonstrates both the need and interest in the program. This data can be seen in Figure 2.

Figure 2: Pie chart showing the interest of current BS and MS students in CE and ME programs in PhD in Engineering



8. **Projections for proposed program:** Using the chart below, provide projected enrollments and number of graduates for the proposed program:

Table 3 presents the projected enrollment and graduations for the first five years for the proposed program. These estimations are informed by the current enrollments and graduation rates in existing PhD programs in College of Engineering as well as the feeder pools from the BS and MS programs in Civil and Mechanical engineering. This data is presented in Table 4.

Table 3: Enrollment and graduation projections for the proposed program

Proposed Program: Projected Enrollments and Graduates First Five Years									
Program Name: PhD in Engineering									
Projected Fall Term Headcount Enrollment in Program					**Projected Annual Number of Graduates from Program**				
FY25 (first year)	FY26	FY27	FY28	FY29	FY25 (first year)	FY26	FY27	FY28	FY29
6	7	9	11	11	-	-	-	2	4

Table 4: Enrollment and graduation data for PhD programs in COEN, and BS and MS programs in Civil Engineering (CE) and Mechanical Engineering (ME) departments

Program Name	Fall Headcount Enrollment in Program				Number of Graduates from Program (Summer, Fall, Spring)				
	Fall 2019	Fall 2020	Fall 2021	Fall 2022 (most recent)	FY19	FY20	FY21	FY22	FY23 (most recent)
PhD in Material Science and Engineering	47	53	55	55	6	5	9	9	5
PhD in Biomedical Engineering	5	7	13	19	-	-	-	-	-
PhD in Electrical and Computer Engineering	37	31	26	19	2	5	7	7	3
PhD in Computing	42	52	66	62	-	3	3	5	7
BS in Civil Engineering	254	259	246	236	45	40	44	39	50
MS in Civil Engineering	6	12	18	21	9	4 3	4	4	6
BS in Mechanical Engineering**	481	447	444	467	98	91	80	93	78
MS in Mechanical Engineering	16	16	13	15	6	10	8	5	3

**Note: Enrollment numbers include students declared as a BS in Mechanical Engineering and Pre-Mechanical Engineering

9. **Describe the methodology for determining enrollment and graduation projections.** Refer to information provided in Question #2 “Need for the Program” above. What is the capacity for the program? Describe your recruitment efforts? How did you determine the projected numbers above?

Our projected enrollment in the program is based upon existing undergraduate students from Boise State University in mechanical and civil engineering that go on to seek PhD programs. Typically, this number is on the order of 5% for each major resulting in a pool of Boise State University graduates of 10 per year. Additionally, considering that each program faculty is likely to advise 1-2 PhD students at a given time and enrollment of 10-12 within the first four years is

expected. This is also similar to the recently created PhD in Biomedical Engineering which has roughly 10 PhD students enrolled after a few years of being offered and a similar number of faculty. Additionally, based on the programs evaluated in question 6 achieving an enrollment of 10-12 students within the first four years is within range. We expect the program to see further growth as additional hires occur and as the program gains popularity due to its flexibility, and project the potential to grow towards an enrollment in the 20s similar to the Computing and the Materials Science PhD programs at Boise State University. Student support will be driven primarily through external funding with the long-term goal of external funding/internal funding reaching a 2:1 ratio in maturity.

Recruitment to the program will be coordinated with the recruiting staff of the graduate college. Recruitment at a local level will occur primarily by informal contact between faculty members and local professionals and their organizations. We anticipate some recruitment of highly qualified Boise State undergraduate and master's-level students. Because of the interdisciplinary and flexible nature of the Engineering PhD program, we believe that the program will have broad appeal, enabling us to recruit students nationally and internationally as well. In all engineering fields, students are primarily motivated to apply to graduate programs because of the faculty research reputation. To enable recruitment, we propose the following formal and informal recruiting efforts:

1. Graduate recruiting visits (formal): Support of top tier student candidates to visit the university and interact with program faculty. This provides an opportunity for interaction between faculty and students to judge quality but also allows students to return to home with details they can share with peers about Boise State University.
2. Faculty and student conference travel (informal): Since one of the key mechanisms is faculty research reputation, enabling students and faculty to travel to conferences to present their research will be a critical "word of mouth" approach to recruiting future students.
3. Faculty collaborations (informal): Another key recruitment mechanism is through collaboration, as faculty are more likely to suggest other faculty members they collaborate with as potential schools for their students. Because of this the program will encourage faculty to develop collaborations outside Boise State University. This effort fits extremely well within the recently launched Mountains and Plains University Innovation Alliance.

10. Minimum Enrollments and Graduates.

a. What are the minimums that the program will need to meet in order to be continued, and what is the logical basis for those minimums?

The minimum enrollment would be six students based on the resources needed to support the program. Since the program leverages a number of existing courses and requires minimal new resources, continuation of the program with a low number of students is viable.

b. If those minimums are not met, what is the sunset clause by which the program will be considered for discontinuance?

The program director will evaluate enrollment and strategize with the program faculty to enhance enrollment on an annual basis. If the minimum number is not met with the first four years we will re-evaluate our recruiting efforts as well as focus on expanding program faculty. Because of the long-time horizon of completing a PhD program, three consecutive years with enrollment below the minimum would result in an evaluation by the graduate college for discontinuing the program.

11. Assurance of Quality. Describe how the institution will ensure the quality of the program. Describe the institutional process of program review. Where appropriate, describe applicable

specialized accreditation and explain why you do or do not plan to seek accreditation.

The following measures will ensure the high quality of the proposed program:

Regional Institutional Accreditation: Boise State University is regionally accredited by the Northwest Commission on Colleges and Universities (NWCCU). Regional accreditation of the university has been continuous since initial accreditation was conferred in 1941. Boise State University is currently accredited at all degree levels (A, B, M, D).

Specialized Accreditation:
Engineering: The Boise State University undergraduate engineering programs (e.g., civil engineering, computer science, electrical and computer engineering, materials science and engineering, and mechanical engineering) have been accredited by ABET, Inc. Engineering disciplines are normally only accredited by the Accreditation Board for Engineering and Technology (ABET) at the undergraduate level. The Civil and Mechanical Engineering program underwent a successful accreditation in fall 2016, and was reaccredited in fall of 2022.

Program Review: Internal program evaluations will take place every five years as part of the normal departmental review process conducted by the Office of the Provost.

Graduate College: The program will adhere to all policies and procedures of the Graduate College, which is a member of the Council of Graduate Schools (Washington, D.C.), the leading authority on graduate education in the United States. The Graduate College has broad institutional oversight of all graduate degree and certificate programs.

Program Oversight: The proposed new PhD in Engineering will build on a significant foundation of experience within two departments (Mechanical and Biomedical Engineering (MBE) and Civil Engineering). Both departments successfully manage MS programs, and the MBE department also manages PhD in Biomedical Engineering.
.
The graduate student community within these two departments currently includes approximately 60 MS students, and 20 PhD students (through various PhD programs on campus). The governance structure, policies and procedures of the PhD program will ensure that students receive the individual mentoring, guidance, and professional development needed to progress through their programs in a timely manner.

Student Mentoring and Program Assessment: On-going program evaluation and assessment at the program level will provide essential information to help ensure the long-term quality of the program. Assessment activities will allow monitoring of individual student progress in the program so challenges can be recognized early and managed effectively. Integrated and evaluated over time, this feedback can also be used to fine-tune and adjust the overall program design, as needed to maintain excellence. Components of the student mentoring and outcomes assessment plan include:

- Appointment of a major advisor who has the primary responsibility for day-to-day mentoring and professional development of their students – Identification of the advisor will be strongly encouraged for admission to the program.
- Planning of academic coursework – Students will work with their advisor and supervisory committee to complete a Program Development Form (PDF), which identifies the calendar of course work necessary for students to complete their degree requirements. Each student's PDF is up-dated on an annual basis, providing an opportunity for the advisor and student to track progress.

12. In accordance with Board Policy III.G., an external peer review is required for any new doctoral program.
Please see attached the peer review report as **Appendix A**.

13. Teacher Education/Certification Programs All Educator Preparation programs that lead to certification require review and recommendation from the Professional Standards Commission (PSC) and approval from the State Board of Education.

Will this program lead to certification?

Yes_____No__X_____

If yes, on what date was the Program Approval for Certification Request submitted to the Professional Standards Commission?

14. Three-Year Plan: If this is a new proposed program, is it on your institution's approved 3-year plan?

Yes X No _____

If yes, proceed to question 15. If no:

a. Which of the following statements address the reason for adding this program outside of the regular three-year planning process.

Indicate (X) by each applicable statement:

	Program is important for meeting your institution's regional or statewide program responsibilities.
	The program is in response to a specific industry need or workforce opportunity.
	The program is reliant on external funding (grants, donations) with a deadline for acceptance of funding.
	There is a contractual obligation or partnership opportunity related to this program.
	The program is in response to accreditation requirements or recommendations.
	The program is in response to recent changes to teacher certification/endorsement requirements.

b. Provide an explanation for all statements you selected.

Educational Offerings: Curriculum, Intended Learning Outcomes, and Assessment Plan

15. Curriculum. Provide descriptive information of the educational offering.

a. Summary of requirements. Provide a summary of program requirements using the following table.

Credit hours in required courses offered by the department (s) offering the program.	9 - 30

Credit hours in required courses offered by other departments:	0 - 21
Credit hours in institutional general education curriculum	0
Credit hours in free electives	3
Total credit hours required for degree program:	62

b. Curriculum. Provide the curriculum for the program, including credits to completion, courses by title and assigned academic credit granted.

Doctoral of Philosophy in Engineering	
Course Number, title and credits	**Credits**
Convergence Course (select 3 credits of course in a transdisciplinary area of study. Suggested courses are below, or alternative convergence course as approved by the graduate program coordinator and advisor) CORE500: Cyber Systems Thinking (3) EEB 616: The Carbon Dilemma (3) HES 500: Foundations in Human Environment-System Science (3) PUBADM542: Science, Democracy and the Environment (3) PUBADM545: U.S. Energy Policy (3) PUBADM546: Climate Change Policy and Administration (3) PUBADM547: Water Resources Policy and Management (3) CS523: Cyber Physical Systems (3)	3
Track Courses (choose a minimum of 6 credits of course approved by the graduate program administrator in one of the following track areas) Students must select from the following four tracks: Infrastructure Systems Water & Environment Energy Systems Mechatronics & Control Systems	6
Technical Elective Courses (choose a minimum of 9 credits in graduate level elective courses in engineering, science or math as approved by the graduate program coordinator)	9
Elective course (choose a minimum of 3 credits outside of your emphasis area or an additional convergence course in consultation with your advisor)	3
ENGR 620 Public Dissemination of Scientific Research	1
ENGR 696 Directed Research	2
Experiential Learning (at least two credits must be filled by ENGR 610, remaining can be filled by one or more of the following) ENGR 590: Internship ENGR 610: Teaching Experience	4
Seminar (Take 2 semesters of 1 cr seminar) ENGR 598: Graduate Seminar (1 cr)	2
Graduate Orientation (1 cr) ENGR 601: Graduate Orientation	1
Comprehensive Exam ENGR 691: Doctoral Comprehensive Examination	1

Dissertation Research ENGR 693: Dissertation	30
Total	62

Course Number and Title
Students must select one of the following 4 tracks and complete a minimum of 6 credits in this area selecting from the following list of suggested courses, or as approved by the graduate program coordinator
Infrastructure Systems Track
The Infrastructure Systems program focuses on innovative solutions that support the fundamental needs and functions of a society including food, water, transportation, communications, and energy. Students can conduct inter/trans-disciplinary research that include opportunities in both built and natural infrastructure systems supporting transportation (highways, waterways, and airways), water, energy and their interconnections.
CE 567 Advanced Soil Mechanics – 3 credits
CE 566 Ground Improvement Design – 3 credits
CE 542 Microstructure properties of concrete – 3 credits
CE 597 Infrastructure Monitoring –3 credits
CE540 - Pavement Analysis and Design – 3 credits
CE552 - Structural Steel Design – 3 credits
CE502 - Computational Techniques – 3 credits
CE560 - Geotechnical Engineering Design I – 3 credits
CE562 - Geotechnical Engineering Design II – 3 credits
CE570 - Highway Systems Design – 3 credits
CE572 - Transportation Planning – 3 credits
CE575 - Traffic Systems Design – 3 credits

Water and Environment Track
Environmental and water systems are increasingly pressured by a myriad of natural and anthropogenic factors, impacting fundamentals of societal well-being and growth. Furthermore, natural systems are interdependent with built infrastructure, with compounding or attenuating impacts on one another. The Water and Environment Track adopts quantitative and qualitative methods from various fields of study to solve the most pressing natural resources issues of our time. The program offers great flexibility in designing an education course that fits student needs and is conducive to cutting edge, interdisciplinary scientific discovery and societal impact.
GEOS516 - Hydrology – 3 credits
GEOS620 - Coupled Land-Atmosphere Modeling – 3 credits
GEOG570 - Earth System Science and Global Warming – 3 credits

HES500 - Foundations in Human-Environment Systems Science – 3 credits
MATH571 - Data Analysis – 3 credits
MATH527 - Introduction to Applied Mathematics for Scientists and Engineers – 3 credits
CE538 - Water Resources Engineering – 3 credits
EEB618 - Earth's Biogeochemical Cycles and Climate Change – 3 credits
GEOPH522 - Data Analysis and Geostatistics – 3 credits

Energy Systems Track **This track focuses on modern energy systems, particularly on energy generation, energy and energy conversion technologies. This emphasis considers a wide range of scales from the material level all the way up to grid scale applications.**
ME 526: Renewable Energy Systems – 3 credits
ME 522: Advanced Thermodynamics – 3 credits
CE 538: Water Resources Engineering – 3 credits
MSE 562: Energy Materials – 3 credits
ECE 573: Power System Analysis 1 – 3 credits
ECE 570: Electric Machines – 3 credits

Mechatronics and Control Systems Track **This track deals with combinations of electronic, mechanical, and material systems to achieve a desired function or outcome. This multidisciplinary approach includes product design, electrical engineering, mechanical engineering, computing and materials science. Many applications are described as "smart" by the inclusion of sensors, actuators, and control systems directly.**
ME578: Design and Analysis of Mechatronic Systems – 3 credits
ME 564: Robotics and Automated Systems – 3 credits
ECE 660: Linear Systems – 3 credits
ME 561: Control Systems – 3 credits
ME566: Dynamic Modeling and Control of Engineering Systems – 3 credits
CS 523: Cyber-physical systems – 3 credits

c. Additional requirements. Describe additional requirements such as comprehensive examination, senior thesis or other capstone experience, practicum, or internship, some of which may carry credit hours included in the list above.

Comprehensive Examination: The objective of the comprehensive examination is to judge depth and breadth of knowledge in the biomedical field. The student must enroll in ENGR 691-Doctoral Comprehensive Examination for the semester during which they plan to take the comprehensive examination. The comprehensive examination includes a written and oral

component. The written component must demonstrate a comprehensive understanding and synthesis of peer-reviewed literature in their emphasis area, identify a gap in knowledge in this area, and design a research study to fill this gap. In the oral component, the student must present their study design to their supervisory committee and be able to justify the decisions made in the formulation of their study, demonstrate an understanding of the limitations of their study, and competently address questions from the committee. The supervisory committee will determine if the student passes or fails. The student needs to pass both the written and oral components. If a student fails the written component, the student is allowed to revise the written examination one time. If a student fails the oral component, the supervisory committee has the option of allowing a student to repeat the oral exam one time. This must be done within the time period specified by the supervisory committee. Failure of the comprehensive examination will result in dismissal from the PhD program.

Dissertation Proposal: The objective of the dissertation proposal and oral defense is to assess the suitability of a PhD student to conduct research in the selected engineering track in a manner that meets rigorous peer-reviewed standards. Satisfactory completion is required for the student to become a PhD candidate. The dissertation proposal should be presented within one year of satisfactory completion of the comprehensive examination. The student must submit a written dissertation proposal to the supervisory committee two weeks before the oral proposal defense. The proposal should describe in sufficient detail the proposed scope of work, anticipated scientific impact, timeline, and a plan for obtaining and utilizing the resources necessary to complete the research. After the supervisory committee reviews the proposal they can give their approval to proceed with scheduling the dissertation proposal defense or they can ask the student to make changes to the proposal and to resubmit it. The dissertation proposal defense consists of the student presenting their proposed doctoral research and answering questions about the proposal, related background material and decisions made in the formulation of their proposal. Majority approval of the supervisory committee is required to pass the proposal defense. If a student fails the oral defense, they may be allowed to reinitiate the dissertation proposal once with the approval of the supervisory committee. Students who fail a second time or do not receive approval to resubmit the proposal will be administratively withdrawn from the program. After the student passes both the written and oral portions of the dissertation proposal, they are admitted to candidacy and should work on their proposed research. Major deviation from the proposed research requires majority approval of the supervisory committee.

Dissertation Requirements: The dissertation must be the result of independent and original research by the student and must constitute a significant contribution to the current knowledge in the selected engineering track, equivalent to multiple peer-reviewed publications. The style and format of the dissertation are to conform to the standards of the Graduate College.

Dissertation Defense: A public defense of the dissertation is scheduled after the supervisory committee has reviewed a draft that is considered to be a nearly final version. The date of the defense is determined jointly by the supervisory committee and the student and must be consistent with any guidelines provided by the Graduate College. The first part of the defense will be a public oral presentation of the dissertation. The second part will be an oral exam administered by the supervisory committee who will decide whether the student passes or fails the defense. A student who fails the defense may be permitted to try again but failure a second time will result in dismissal from the PhD program.

Final Approval of the Dissertation: If the defense is completed with a result of pass, the supervisory committee prepares a statement describing final requirements such as additions or modifications to the dissertation and any additional requirements such as archival of data. When these requirements have been met to the satisfaction of the supervisory committee, the approval

page of the dissertations signed by the members of the committee.

16. Learning Outcomes: Expected Student Learning Outcomes and Connection to Curriculum.

a. Intended Learning Outcomes. List the Intended Learning Outcomes for the proposed program, using learner-centered statements that indicate what students will know, understand, and be able to do, and value or appreciate as a result of completing the program.

Graduates will:
1. Be able to formulate relevant hypotheses and conduct independent research using scientific methods to answer those hypotheses.
2. Be able to effectively communicate their results of scientific research to public audiences.
3. Demonstrate proficiency in new methods for solving problems
4. Demonstrate a high level of expertise in their discipline through contributions to the scientific literature.
5. Demonstrate mastery of knowledge in their chosen emphasis area

17. Assessment plans.

a. Assessment Process. Describe the assessment plan for student learning outcomes that will be used to evaluate student achievement and how the results will be used to improve the program.

Assessment Process: On-going program student mentoring and assessment will ensure that students receive the individual mentoring, guidance, and professional development needed to progress through their programs in a timely manner and achieve the program's intended learning outcomes.

Student Mentoring and Assessment: On-going student mentoring and assessment will provide essential information to help ensure the long-term quality of the program. Assessment activities will allow monitoring of individual student progress in the program so challenges can be recognized early and managed effectively. Integrated and evaluated over time, this feedback can also be used to fine-tune and adjust the overall program design, as needed to maintain excellence. The program director will collect direct and indirect measures to ensure students are achieving the intended learning outcomes. Components of the student mentoring and outcomes assessment plan include:

● Appointment of a major advisor who has the primary responsibility for day-to-day mentoring and professional development of their students – Identification of the advisor will be strongly encouraged for admission to the program.

● Planning of academic coursework – Students will work with their advisor and the supervisory committee to complete a Program Development Form (PDF), which identifies the calendar of course work necessary for students to complete their degree requirements. Each student's PDF is up-dated on an annual basis, providing an opportunity for the advisor and student to review the plan and make corrections, additions, etc., as necessary. Completed PDFs are placed in each student's departmental file.

● Progress and competency in graded coursework – How students perform in the classroom will provide a direct metric of progress and achievement, particularly in the early portion of

the program when much of the required course work is typically taken by students.

● Comprehensive examination - The comprehensive exam represents a significant milestone and an important assessment tool for monitoring how well students have assimilated information from various sources and integrated it into comprehensive knowledge of the Engineering track. It will have both an oral and written component.

● Dissertation proposal – The dissertation proposal and oral defense assess the suitability of a PhD student to conduct research in the selected Engineering track in a manner that meets rigorous peer-reviewed standards. Satisfactory completion is required for the student to become a PhD candidate.

● Dissertation defense – The culminating activity of the program is the oral presentation and public defense of the dissertation.

● Exit interview – Students will work with the program director and faculty steering committee to complete an exit interview. The exit interview will be used to collect student feedback to fine-tune and adjust the overall program design to maintain excellence.

b. Closing the loop. How will you ensure that the assessment findings will be used to improve the program?

Program assessment and review: The program will undergo an annual assessment and internal review every five years (discussed further below). These assessments are the responsibility of the program director and will be used to improve the program by providing recommendation and/or actions to be undertaken by the program to maintain excellence.

c. Measures used. What direct and indirect measures will be used to assess student learning?

Assessment Measures: The program will annually collect direct and indirect measures to evaluate whether students are achieving each of the intended learning outcomes.

Direct Measures: The program director will assess student progress and competency in graded coursework, comprehensive exam, dissertation proposal and defense, compilation of student publications, bibliometrics, awards, and special activities (such as internships, workshops, and extended visits to other institutions). Further, the program will monitor of initial post-graduate employment and ongoing career development, and key metrics of the student pipeline including data for admission, enrollment, degree progress, overall time-to-degree, student financial support, and attrition (including analysis of reasons for attrition).

Indirect Measures: The program will assess the student success indirectly by collecting exit interviews, observations and feedback from faculty, and presentations at professional meetings and conferences.

d. Timing and frequency. When will assessment activities occur and at what frequency?

Assessment activities: The program and student assessment will be conducted annually, while a program-level review will occur every five years.

Program assessment: The program will undergo an annual assessment. This assessment

is the responsibility of the program director assisted by Institutional Effectiveness and the Graduate College. The assessment report will collect and evaluate the direct and indirect measures of student success (as discussed above). The report must include a description of previous actions used to improve the program, the results of those actions, and any newly recommended or modified actions to be undertaken by the program in response to the most recent assessment. The deans are responsible for discussing the report with the provost and for administrative actions necessary for implementation of the improvement plan by the program.

Program Review: Internal program evaluations will take place every five years as part of the normal departmental review process conducted by the Office of the Provost.

Resources Required for Implementation – fiscal impact and budget.

Organizational arrangements required within the institution to accommodate the change including administrative, staff, and faculty hires, facilities, student services, library; etc.

18. **Physical Facilities and Equipment:** Describe the provision for physical facilities and equipment.

a. Existing resources. Describe equipment, space, laboratory instruments, computer(s), or other physical equipment presently available to support the successful implementation of the program.

Sustainable and Resilient Geotechnical Engineering (SuRGE) laboratory consists of a space of 90 m^2 on the fourth floor of Environment Research Building (ERB). This lab includes standard laboratory facilities such as fume hood with acid and solvent storage cabinets, bench space, and chemical storage accompanied by office space with computers and a printer for student use. The lab houses a cyclic triaxial testing machine, which is capable of conducting static and dynamic triaxial tests along with resilient modulus testing on fine grained soils (10.2 cm diameter and 20.3 cm height specimen size). Also available, is an Atomic Absorption Spectrophotometer (Shimadzu AA 6800), which can determine elemental concentrations of various metals in organic and inorganic materials. The AA-6800 is designed and optimized to operate with a flame and graphite furnace and an ASC-6100 auto sampler is utilized for both flame and graphite furnace testing. This lab also has capabilities to conduct various chemical tests on soils including cation exchange capacity, specific surface area, total potassium and soluble sulfate tests. The lab also houses four treatment solution delivery systems which are needed to send nutrients to microorganisms in the compacted soil.

Additionally, the SuRGE group has another lab space in the second floor of ERB that is about 45 m^2 which is well equipped to conduct the tests such as isolating and culturing bacteria. This lab consists of a shaking incubator, spectrophotometer, autoclave, centrifuge, water bath, vortex mixer, and fume hood retrofitted with UV lights to provide clean working space for microbial cultures. This lab also houses Micromeritics Mercury intrusion porosimeter capable of determining pore size and distribution of any solid material.

The Ceramic Microelectrical Mechanical Systems (C-MEMs) Laboratory supports research in Ceramic Micro-Electro-Mechanical systems. The C-MEMs lab supports research in the fabrication of devices from 'green' ceramic tape through the use of laser driven cutting, x-y plotter-cutters, presses, and ovens. The lab has produced a wide variety of devices, including thermoelectric modules, miniature electric propulsion ion thrusters, both chemical and electrical micro-propulsion thrusters, devices that scavenge energy from vibration, and ion mobility

spectrometers.

The Energizing Engineering Education (E3) lab is focused on engineering education research serving as an engine to explore novel classroom techniques that can help the professional formation of engineers through understanding of the formal and informal education and value systems by which people become engineers. Our lab's research focus is in innovative teaching and learning strategies, use of emerging technologies, and mobile teaching and learning strategies.

The mission of the Robot Control Lab (RCL) is to enable robots to efficiently and robustly perform desired manipulation and locomotion tasks by designing low-level feedback control and estimation algorithms. RCL is located on the first floor of Micron Engineering Building and occupies approximately 1,000 square foot in room 103. The lab houses several robots, some of which have been built in house and a few purchased for robotics education in the Boise State University. In particular, RCL houses an air-hockey playing robot, whose playing strategy is being developed right now using machine learning techniques. We have recently purchased a computer with a great graphics processing unit (NVIDIA GeForce 2080 and 3080 RTX) in order to perform machine learning computations rapidly in parallel.

The overall objective of the Smart Materials and Systems (SMS) Lab is to investigate the potential of advanced smart materials in structural health or human health monitoring. The on-going projects cover both fundamental research and applied research. The SMSL consists of approximately 900 ft^2 of total research space, primarily in MEC 305. It has the capability of modeling, designing, fabricating, and testing smart materials and systems. The finite element modeling in SMSL is enabled by two workstations with COMSOL Multiphysics and INL MOOSE software access. Lab includes: load cells, signal conditioners, power supplies, drying oven, NI data loggers, and miscellaneous power electronics.

The Thermal Transport and Solar Energy (TTSE) Lab is focused on the intersection of thermal and mass transport with a variety of different energy systems. Our research has investigated radiative properties of nanoparticles, erosion in high temperature environments, desalination, and the design of hybrid thermal/photovoltaic solar collectors. This 1,200 square foot lab space includes: a Shimadzu UV-VIS scanning wavelength spectrophotometer including integrating sphere attachment, Perkin Elmer Spectrum Two Fourier transform infrared (FTIR) spectrometer, spin coater, dip coater, blade coater, and a HotDisk TPS2500S thermal conductivity measurement system capable of measurements up to 1000°C, with accessories for use in a muffle furnace and a vacuum tube furnace.

The goal of the Computational Materials Design (CMD) lab is to develop physics-based and data-driven models to understand the inter-relationships between chemistry, processing, structure, and property in materials. The goal of the CMD group research is to accelerate the process of materials design and discovery through advancing the science and engineering of materials microstructure. CMD lab utilizes a range of computational supercomputing resources available to Boise State.

b. Impact of new program. What will be the impact on existing programs of increased use of physical resources by the proposed program? How will the increased use be accommodated?

Currently, the two primary programs (Mechanical Engineering and Civil Engineering) have over 40 Masters students. Additionally, a few of the program faculty support PhD students in other

programs It is expected that some of the resources currently utilized by these Master's students will transition to incoming PhD students during the first two years of the program. It is expected that PhD students will act as mentors to undergraduate students, and this will facilitate additional undergraduates participating in research projects. Program faculty currently have access to multiple seating and laboratory spaces for graduate students. Any participating department will provide access to research space which includes multiple conference rooms and graduate research spaces to accommodate additional growth and foster interaction and peer learning across the student community. These spaces will be primarily organized by research advisors, not by degree program.

c. Needed resources. List equipment, space, laboratory instruments, etc., that must be obtained to support the proposed program. Enter the costs of those physical resources into the budget sheet.

No additional physical resources are required for the program.

19. Library and Information Resources: Describe adequacy and availability of library and information resources.

a. Existing resources and impact of new program. Evaluate library resources, including personnel and space. Are they adequate for the operation of the present program? Will there be an impact on existing programs of increased library usage caused by the proposed program? For off-campus programs, clearly indicate how the library resources are to be provided.

No additional library resources are needed. No new courses were added; therefore, no new textbooks are required. The research areas participating in the program are already active at the Masters level. Hence, required resources are already in place.

b. Needed resources. What new library resources will be required to ensure successful implementation of the program? Enter the costs of those library resources into the budget sheet.

None

20. Faculty/Personnel resources

a. Needed resources. Give an overview of the personnel resources that will be needed to implement the program. How many additional sections of existing courses will be needed? Referring to the list of new courses to be created, what instructional capacity will be needed to offer the necessary number of sections?

No new large lecture courses will be created in this program. While there are some "new courses" for dissertation research and professional development, the courses will not require new instructional resources. We anticipate 3-6 incoming students per year, and the vast majority of graduate courses are not capacity limited. Further, the interdisciplinary nature of the program means that courses are supported across a wide range of disciplines and utilize existing courses to build upon, limiting the need for increased instructional resources.

Additional support is needed for administrative support to maintain the program. The College of Engineering is planning to hire a joint Ph.D. program coordinator to support existing Ph.D.

programs in Electrical Engineering, and Biomedical Engineering with the plan to also support this program once launched. This position has an estimated salary of $56,000 and fringe at 42%, from which 33 percent of the effort will support this program and will come from ongoing support within the College of Engineering.

We will utilize existing College of Engineering GA resources which will be allocated according to a new policy under development within the college. Existing GA resources are to be allocated by faculty request and not to programs, the projected numbers here are estimates based on likely requests and not guaranteed GA allocations. We do expect the program to generate additional new resources in the form of federally supported GA lines (3 in FY 25 increasing to 8 by FY 28). Each federally supported GA line includes a stipend at $28,000, insurance at $7,000, fringe at 7% of the stipend and tuition at $10,062 for a total of $47,022 per student.

b. Existing resources. Describe the existing instructional, support, and administrative resources that can be brought to bear to support the successful implementation of the program.

Existing faculty lines will be used to support graduate advising as faculty seek PhD students to support their research agenda. Additionally, existing faculty lines throughout the college support the instructional requirements as the PhD program doesn't create new instructional needs, rather it leverages existing course offerings. The following faculty represent faculty who would actively recruit and support PhD students within the program.

Program Faculty:

1. Bhaskar Chittoori, Department of Civil Engineering, College of Engineering. Dr. Chittoori's area of expertise is in geotechnical engineering, more specifically, in expansive soils, developing environment-friendly solutions to mitigate the ill effects of these soils.

2. Mojtaba Sadegh, Department of Civil Engineering, College of Engineering. Dr. Sadegh's research interests encompass a broad range of hydroclimate extremes, including multi-hazard events, droughts, heatwaves, and specifically wildfires. He uses geospatial analysis, machine learning, statistical methods and data fusion/integration techniques, as well as satellite and airborne imagery and products, climate reanalysis data, gridded and in situ observations, and socioeconomic data to unravel mechanisms that drive climate extremes and their societal impacts.

3. Kevin Roche, Department of Civil Engineering, College of Engineering. Dr. Roche's research has spanned disciplines ranging from fluid mechanics to microeconomics, it is unified by a need for improved predictive models that respect the natural variability of hydrologic processes. His work involves a combination of (1) novel observations at scales ranging from the laboratory (mm – m) to the field (m – km); and (2) developing mechanistic models that establish a parsimonious link between these scales. He uses this combined experimental and modeling approach to improve the physical basis of stream- and watershed-scale models of contaminant and nutrient fate.

4. Nick Hudyma, Department of Civil Engineering, College of Engineering. Dr Hudyma's research interests include the characterization of brittle materials using destructive

testing, non-destructive testing, imaging, and simulations; imaging applications for geotechnical engineering and construction; and the assessment of surface roughness for quantifying weathering in rock.

5. Arvin Farid, Department of Civil Engineering, College of Engineering. Dr. Farid's research interests include Electromagnetic Stimulation of Geomechanisms, Effect of EM Waves and Soil Properties, Energy Piles in Clayey Soils, Sensor Fusion for Rapid Soil Characterization, Real-time monitoring of contaminant fate and transport, and Contaminant Transport Modeling.

6. Yang Lu, Department of Civil Engineering, College of Engineering. Dr. Lu's research integrates multimodal characterization and multiscale/multiphysics modeling techniques to unravel the link between composition, microstructure, and performance of transportation infrastructure materials under various environmental and mechanical loads
7. Sondra Miller, Department of Civil Engineering, College of Engineering. Dr. Miller's areas of expertise are in contaminant fate and transport in natural and engineered systems. She has taught or offered courses in environmental engineering principles, environmental chemistry, water and wastewater treatment design, and air pollution control. Dr. Miller's research includes emerging constituents within wastewater treatment facilities, impacts of drive through emissions on air quality, recycled earth products, and STEM education.

8. Daicong Da, Starting Fall 2023, Department of Mechanical and Biomedical Engineering, College of Engineering. Dr. Da's research is in the broad area of Mechanics of Materials and Structures with emphasis on multiscale modeling, structural and material design including lightweight structures, and sustainable and fracture-tolerant materials design for additive manufacturing. His work also utilizes explainable machine learning as well as data-driven techniques.

9. Zhangxian Deng, Department of Mechanical and Biomedical Engineering, College of Engineering. The fundamental goal of Dr. Deng's research is to tackle challenging engineering problems by utilizing novel functional/smart materials. The research advances understanding of smart materials via multiphysics experiments and modeling.

10. Mahmood Mamivand, Department of Mechanical and Biomedical Engineering, College of Engineering. The ultimate goal of Dr. Mamivand's research is to accelerate the process of materials design and discovery through developing multiscale multiphysics models. Specifically, Dr. Mamivand and his team are developing mesoscale models for materials phase transformation, nanoparticles growth, and materials performance in extreme environments.

11. Todd Otanicar, Department of Mechanical and Biomedical Engineering, College of Engineering. Dr. Otanicar directs the Thermal Transport and Solar Energy Laboratory. His work focuses on the role of heat transfer in novel energy generation and storage systems as well as fundamental investigations into thermal transport.

12. Krishna Pakala, Department of Mechanical and Biomedical Engineering, College of Engineering. Dr. Pakala's research is in innovative teaching and learning strategies, use of emerging technologies, and mobile teaching and learning strategies

13. Donald Plumlee, Department of Mechanical and Biomedical Engineering, College of Engineering. Dr. Plumlee directs the C-MEMS laboratory which focuses on developing microfluidic applications in Low Temperature Co-Fired Ceramics (LTCC). They also have

created a process to develop ceramic devices with embedded multi-layer fluidic channels, conductor electrodes, resistors and capacitors

14. Aykut Satici, Department of Mechanical and Biomedical Engineering, College of Engineering. Dr. Satici's research aims to enable robots to efficiently and robustly perform desired manipulation and locomotion tasks by designing low-level feedback control and estimation algorithms. This avenue of research lies in the intersection of dynamical systems, robotics, control, and applied mathematics.

c. Impact on existing programs. What will be the impact on existing programs of increased use of existing personnel resources by the proposed program? How will quality and productivity of existing programs be maintained?

Impact to existing programs will be minimal as existing faculty are already engaged in M.S. level programs and the proposed Ph.D. level program will only enhance research. Administrative needs will be provided in the way of part-time support through a Ph.D. coordinator.

d. Needed resources. List the new personnel that must be hired to support the proposed program. Enter the costs of those personnel resources into the budget sheet.

The program will require part time support for a Ph.D. coordinator, provided by the College of Engineering. The Ph.D. coordinator position will be shared across three Ph.D. programs across the college. The position is currently in the recruiting and search phase at the university.

Another critical resource will be support for graduate students in the form of graduate assistantships (GA). While we are not proposing new graduate assistantships, we will work within the existing College of Engineering GA allocations. The allocation process for the college GA positions is undergoing a college wide revision, this revision is considering the existence of the Ph.D. in Engineering being part of the decision structure. Furthermore, the goal of the program is to support students using grant support and not be reliant on appropriate GA lines except in the cases of recruiting and support of students whose grant funds might lapse. Existing GA resources are to be allocated by faculty request and not to programs, the projected numbers here are estimates based on likely requests and not guaranteed GA allocations.

21. Revenue Sources

a) **Reallocation of funds:** If funding is to come from the reallocation of existing state appropriated funds, please indicate the sources of the reallocation. What impact will the reallocation of funds in support of the program have on other programs?

Except for the grant-funded graduate assistantships, we anticipate that all funds for the program will derive from reallocation of funds within the college. As noted above, the College of Engineering is developing a new process for allocation of graduate assistantships, including the planned Ph.D. program here. Additionally, further reallocation will be used for the shared Ph.D. coordinator position discussed above.

b) **New appropriation**. If an above Maintenance of Current Operations (MCO) appropriation is required to fund the program, indicate when the institution plans to include the program in the legislative budget request.

At this time, we do not anticipate asking for a new appropriation to fund this program.

c) **Non-ongoing sources**:

i. If the funding is to come from one-time sources such as a donation, indicate the sources of other funding. What are the institution's plans for sustaining the program when that funding ends?

Not applicable.

ii. Describe the federal grant, other grant(s), special fee arrangements, or contract(s) that will be valid to fund the program. What does the institution propose to do with the program upon termination of those funds?

Grant funds will be the primary source of funding for graduate assistantships within the program and will be critical for the program success. The long-term viability depends upon continued grant writing success of program faculty, all of whom have demonstrated long-term funding success.

d) **Student Fees**:

i. If the proposed program is intended to levy any institutional local fees, explain how doing so meets the requirements of Board Policy V.R., 3.b.

N/A

ii. Provide estimated cost to students and total revenue for self-support programs and for professional fees and other fees anticipated to be requested under Board Policy V.R., if applicable.

N/A

22. Using the excel **budget template** provided by the Office of the State Board of Education, provide the following information:

- Indicate all resources needed including the planned FTE enrollment, projected revenues, and estimated expenditures for the first **four** fiscal years of the program.
- Include reallocation of existing personnel and resources and anticipated or requested new resources.
- Second- and third-year estimates should be in constant dollars.
- Amounts should reconcile subsequent pages where budget explanations are provided.
- If the program is contract related, explain the fiscal sources and the year-to-year commitment from the contracting agency(ies) or party(ies).
- Provide an explanation of the fiscal impact of any proposed discontinuance to include impacts to faculty (i.e., salary savings, re-assignments).

I. PLANNED STUDENT ENROLLMENT

		FY 25		FY 26		FY 27		FY 28	
		FTE	Headcount	FTE	Headcount	FTE	Headcount	FTE	Headcount
A. New enrollments	State Funded*	3	3	3	3	3	3	3	3
	Federal Funded	3	3	4	4	6	6	8	8
B. Shifting enrollments									
	Total Enrollment	6	6	7	7	9	9	11	11

II. REVENUE (includes any reallocated funding for students or coordinator)

		FY 25		FY 26		FY 27		FY 28	
		On-going	One-time	On-going	One-time	On-going	One-time	On-going	One-time
1. New Appropriated Funding Request		$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
2. Institution Funds		$26,506.67	$134,646.00	$27,301.87	$134,646.00	$28,120.92	$134,646.00	$28,964.55	$134,646.00
3. Federal		$0.00	$141,066.00	$0.00	$188,088.00	$0.00	$282,132.00	$0.00	$376,176.00
4. New Tuition Revenues from Increased Enrollments		$0.00	$0.00	$0.00	0 $0.00	$0.00	$0.00	$0.00	$0.00
5. Student Fees		$0.00	$0.00	$0.00	$0.00	$0.00	$0.00		$0.00
6. Other (i.e., Gifts)		$0.00	$0.00	$0.00	$0.00	$0.00	$0.00		$0.00
	Total Revenue	$26,507	$275,712	$27,302	$322,734	$28,121	$416,778	$28,965	$510,822

III. EXPENDITURES

	FY 25		FY 26		FY 27		FY 28	
	On-going	One-time	On-going	One-time	On-going	One-time	On-going	One-time
A. Personnel Costs								
1. FTE	0.33	0.00	0.33	0.00	0.33	0.00	0.33	0.00
2. Faculty	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
3. Adjunct Faculty	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
4. Graduate/Undergrad Assistants		$162,000.00		$190,000.00		$246,000.00		$302,000.00
5. Research Personnel	0	$0.00	0	$0.00	0	$0.00	0	$0.00
6. Directors/Administrators	$ 18,666.67	$0.00	$ 19,226.67	$0.00	$ 19,803.47	$0.00	$ 20,397.57	$0.00
7. Administrative Support Personnel	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
8. Fringe Benefits	$ 7,840.00	$53,340.00	$ 8,075.20	$62,300.00	$ 8,317.46	$80,220.00	$ 8,566.98	$98,140.00
9. Other: Tuition		$60,372.00		$70,434.00		$90,558.00		$110,682.00
Total Personnel and Costs	$26,507	$275,712	$27,302	$322,734	$28,121	$416,778	$28,965	$510,822

	FY 24		FY 25		FY 26		FY 27	
	On-going	One-time	On-going	One-time	On-going	One-time	On-going	One-time
B. Operating Expenditures								
1. Travel	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
2. Professional Services	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
3. Other Services	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
4. Communications	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
5. Materials and Supplies	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
6. Rentals	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
7. Materials & Goods for Manufacture & Resale	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
8. Miscellaneous	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Total Operating Expenditures	$0	$0	$0	$0	$0	$0	$0	$0

	FY 24		FY 25		FY 26		FY 27	
	On-going	One-time	On-going	One-time	On-going	One-time	On-going	One-time
C. Capital Outlay								
1. Library Resources	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
2. Equipment	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Total Capital Outlay	$0	$0	$0	$0	$0	$0	$0	$0

	FY 24		FY 25		FY 26		FY 27	
	On-going	One-time	On-going	One-time	On-going	One-time	On-going	One-time
D. Capital Facilities Construction or Major Renovation	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
E. Other Costs								
Utilities	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Maintenance & Repairs	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Other	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Total Other Costs	$0	$0	$0	$0	$0	$0	$0	$0
TOTAL EXPENDITURES:	$26,507	$275,712	$27,302	$322,734	$28,121	$416,778	$28,965	$510,822
Net Income (Deficit)	$0	$0	$0	$0	$0	$0	$0	$0

I.A	Headcount and FTE are equivalent for students as the assumption is they are full time students. Assumes 3 state funded GAs in first 4 years and 3 federally funded in first year increasing to 8 by 4th year. *State funded GA lines in the College of Engineering will be allocated via a new policy under development that goes with faculty not program. Projections here are estimates and not guaranteed.
II.2	On-going revenue is for 1/3rd of PhD coordinator at estimated salary of $56k and fringe at 42%, including 3% raise pool year over year. One-time institutional funds for 3 state GA lines at a stipend of $26k, insurance at $7,000, fringe at 7% of the stipend, and includes tuition at $10,062 (total is $44,882/student).
II.3	One-time federal revenue for corresponding number of federal GA lines at a stipend of $28k, insurance at $7,000, fringe at 7% of the stipend, and includes tuition at $10,062 (total is $47,022/student). Increasing number of federally supported GAs seen in numbers beyond FY25
III.A.1	0.33 FTE is shared PhD coordinator for Engineering, Biomedical, and Electrical PhD programs.
III.A.4	Includes stipend for state and federal students. In FY 25 this is 3*$26,000 (state GAs) + 3*$28,000 (federal GAs), increasing over program as more federal GAs are funded
III.A.6	PhD coordinator is based on $56K salary adjusted to 0.3 FTE for this program ($56,000/3). In future years includes a 3% assumed increase in pay as part of raise pool
III.A.8	Fringe estimate for PhD coordinator at 42% (0.42*$56,000/3) in the on-going column. Student fringe is based upon 7% of stipend ($1820/student on state GA, $1920/student on federal funds) and insurance at $7,000 per student, total is $8,820/student on state GA and $8,920 on federal GA. In FY 25 this is 3*$8,820 + 3*$8,920. Number is increasing beyond FY25 due to growth in projected number of federally funded GA positions.

Appendices:

Appendix A: External Peer Review Report

Appendix B: Response to External Peer Review Report

Appendix C: Letters of Support

Appendix D: Curricula Vitae of Participating Faculty

Appendix A

External Peer Review Report

BOISESTATEUNIVERSITY

SITE VISIT REPORT

Reviewing the proposal for Doctor of Philosophy (PhD) in Engineering

to be housed in the College of Engineering

with four tracks:

1. Infrastructure Systems
2. Water and Environment
3. Energy Systems
4. Mechatronics and Control Systems

Represented primarily by faculty from

Mechanical and Biomedical Engineering (College of Engineering)

Civil Engineering (College of Engineering)

Chandra Kothapalli, PhD, Professor, Director of PhD in Engineering, Cleveland State University

Jeffrey Heys, PhD, Professor, Assoc. Dean of Engineering, Montana State University

A. Executive Summary

Based upon the proposal, CVs, interviews, facility tour, and other information provided by the Boise State group, the review team is very supportive of the proposed Doctor of Philosophy (PhD) in Engineering. The current lack of a broad, interdisciplinary PhD in Engineering is limiting opportunities for students and faculty. For example, students wanting to pursue a PhD are limited to a few more specialized programs like the PhD in Material Science or the PhD in Computing. This limitation on students also impacts faculty because it can create challenges in recruiting prospective PhD students. Creating a PhD in Engineering will likely support goals in the Boise State strategic plan including increasing the number of PhDs awarded, increasing research expenditures, and supporting the recruitment and retention of faculty. Even though the proposed program is a PhD program, the students and faculty associated with the program will be able to expand and enhance the related undergraduate programs in engineering, which will improve workforce development.

The recommendations related to the proposal are largely connected with the challenges associated with interdisciplinary graduate programs. We recommend tailored policies for graduate student admissions, remedial coursework requirements, graduate committee composition, examination requirements, etc. that recognize the interdisciplinary nature of the proposed program. Program assessment may also require unique measures because the program crosses departmental boundaries.

B. Review Process

Drs. Chandra Kothapalli (Director of PhD in Engineering, Cleveland State University) and Jeff Heys (Assoc. Dean of Engineering at Montana State University) visited Boise State University on July 13 and 14, 2023. Prior to the visit, the reviewers were provided with the full proposal to be submitted to the Idaho State Board of Education for a PhD in Engineering program. The proposed program was 100% face-to-face and did not include an online component. Additionally, the reviewers received the CVs for the engineering faculty that were anticipated to be the primary participants in the PhD program initially, if it is approved. After reading the initial proposal, the reviewers met over Zoom on June 27, 2023 to discuss any concerns or major questions that were raised during the initial reading. The result of this discussion was that the reviewers did not have any major concerns that might require an initial response from the proposers at Boise State. The reviewers sent one question regarding the data used to estimate demand for graduates of the program.

On Thursday, July 13, 2023 and Friday, July 14, 2023, the reviews met with a number of Boise State University administrators, faculty, and students, including:

- Dr. JoAnn Lighty (Dean of the College of Engineering)
- Dr. Scott Lowe (Dean of the Graduate College)
- Dr. John Buckwalter (Provost & Vice President for Academic Affairs)
- Dr. Zeynep Hansen (Vice Provost for Academic Planning and Institutional Effectiveness)
- Numerous faculty in Mechanical and Biomedical Engineering, including the Chair, Dr. Todd Otanicar
- Numerous faculty in Civil Engineering, including the Chair, Dr. Bhaskar Chittoori
- Current graduate students in the College of Engineering

In addition to these meetings, the reviewers received a tour of facilities in the College of Engineering that would likely be utilized by the proposed program.

C. Observations

Boise State is a relatively young University (~50 years as a member of the State system) with a College of Engineering (COEN) that is approximately 25 years old. Research in the COEN has increased significantly over the past 6 years; growing from approximately $6M per year to nearly $18M per year. This growth in research is commendable and has a strong, positive impact on the regional economy.

Faculty in the COEN currently support PhD programs in numerous areas including the PhD in Material Science Engineering, Electrical Engineering, Computing, and Biomedical Engineering. ***However, there is a clear gap for students that want to pursue PhD-level research in engineering, but their interests fall outside the current, limited set of PhD programs. Our primary observation is that there is a clear need for a broad, engineering PhD program for students and faculty beyond the current set of PhD programs.*** The proposed PhD in Engineering will significantly benefit faculty in Civil Engineering, including Environmental Engineering, and Mechanical Engineering. These faculty are limited because they currently have to recruit PhD students into existing PhD programs outside their primary field of interest, and these outside programs may not be a good fit for the prospective students. Establishing a PhD in Engineering will help recruit new faculty, new students, and allow current faculty to expand their

research programs. These benefits will come at almost no cost because the required coursework largely exists for the current Masters programs.

Beyond this central observation, the reviewers made several additional observations while reviewing the program proposal and interviewing individuals at Boise State University.

- The COEN has a demonstrated track-record of successfully operating interdisciplinary graduate programs that serve faculty and students from multiple academic departments and academic areas. The PhD in Materials Science Engineering is a good example of such a program.
- The proposed PhD in Engineering will support several goals in the strategic plan including growing research expenditures, increase the number of PhDs award, and other measures that are important for growing into an R1 institution.
- Economic growth in Idaho has led to a need for more engineering graduates to join the workforce at both the undergraduate and graduate levels. The proposed program will support growth at both levels. We spoke with both a small business owner and leadership from a larger company and they were unanimous in their support for the proposed program and the need for additional, highly trained engineers.
- The current lack of PhD programs in engineering is making new faculty recruitment difficult. The proposed program is needed to help recruit and retain the best engineering faculty.
- While there is not a surplus of research space on the Boise State University campus, there appears to be adequate research space for the proposed program.
- We interviewed administrators, faculty from numerous departments, and students, and there was very consistent, unanimous support for the proposed program. The level of unified support for the proposed program is very encouraging for its future success.
- The students who we interacted with were unanimous in their desire to pursue a PhD in Engineering at Boise State. They intend to stay in and around Boise and contribute to the local workforce. They do recognize the professional and personal benefits of receiving a doctoral degree in their respective fields.

The proposed PhD in Engineering program will respond to the changing needs of the region served by Boise State, enhance college of engineering visibility and stature for better outcomes, increase the career options of engineering doctoral graduates from Boise State, utilize faculty resources more productively by reflecting their research interests, and contribute to the recruitment and retention of outstanding faculty into the program who will teach and train undergraduates enrolled in these programs.

D. Recommendations

The review team was very supportive of the proposed PhD in Engineering program, but we also have recommendations based on our experiences in managing similar programs and based on the information we learned during the interviews. Specific recommendations include:

- Establish a clear oversight plan for the PhD in Engineering for decisions including student admissions, dissertation committee composition, remedial course requirements for students entering the program without an undergraduate degree in engineering, and productivity

expectations of all the students prior to receiving the degree (e.g., two peer-reviewed journal publications or conference proceedings). One option that we have favorable experience with is having committees at the department level for these decisions. A second option is to have an interdisciplinary committee at the program level.

- Develop clear policies for dissertation defenses and comprehensive exams that minimize any possible bias. This could include the timing of the exams and the scope of the testing procedure.
- Include additional quantitative measures that can be used to assess the program. For example, time-to-degree measures and comprehensive exam pass rates. These measures will need to be independent of courses because the proposed degree can be individualized for students in the various tracks.
- The proposed Curriculum for the program should be differentiated between students entering the program directly after their bachelors versus those joining after receiving a MS degree. The exit strategy for those students who do not meet the expectations (e.g., fail comprehensive exam, receive lower grades) or who had a change of circumstances, should be included. One typical option is to award them a MS degree, and the requirements should be detailed.
- The opportunities available for student growth could be elaborated to recruit and retain a cohort of high-quality students. Examples include internal funding mechanisms that could support their travel to conferences, student recognition awards, and professional career development mentoring.
- A quick, formal survey of current students and alumni in the mechanical and civil engineering departments could be done to gauge their interest in (a) pursuing a doctoral degree in engineering, and (b) pursuing the doctoral degree at Boise State. Including their comments and quantitative feedback (as a Table or Figure) in section b of page 6 could further strengthen the proposal.
- Perhaps including a breakdown of the external funding received by the mechanical and civil engineering faculty (& from peripheral disciplines who might recruit these incoming PhD students into their labs) would strengthen the proposal.
- Some details on the admission requirements of the incoming students would be beneficial.
- Perhaps including a Table on the current enrollment and graduation rates of other PhD programs in with the College of Engineering would strengthen the proposal. In a similar vein, a table on the enrollment trends of BS and MS students in the civil and mechanical engineering departments would showcase the feeder channel to the proposed doctoral program.

Appendix B

Response to External Peer Review Report

Response to External Evaluator Comments

The review team was very supportive of the proposed PhD in Engineering program, but we also have recommendations based on our experiences in managing similar programs and based on the information we learned during the interviews. Specific recommendations include:

1. Establish a clear oversight plan for the PhD in Engineering for decisions including student admissions, dissertation committee composition, remedial course requirements for students entering the program without an undergraduate degree in engineering, and productivity expectations of all the students prior to receiving the degree (e.g., two peer-reviewed journal publications or conference proceedings). One option that we have favorable experience with is having committees at the department level for these decisions. A second option is to have an interdisciplinary committee at the program level.

   We are in the process of developing a comprehensive graduate program handbook for the PhD in Engineering. This handbook will include many of the policy questions outlined in this question as well as additional information on program expectations, resources, values, and how to navigate the program. Oversight of the Engineering PhD Program will be provided by a graduate committee formed of at least 3 faculty members from the graduate faculty supporting this program, with at least 2 different departments in the College represented. The Graduate Committee will be responsible for working with the Program Director on official policies and procedures that get implemented. At least once per year the Program Director will present a program update to the department heads of departments who have faculty on the graduate faculty within the program. Specific details are outlined below:
   - *Admissions: Admissions requirements are proposed as follow:*
     - *Prior to commencing graduate study, applicants must hold a minimum of a Bachelor of Science degree from an accredited institution. Although no single field of undergraduate specialization is required for admission, applicants to the program should have an undergraduate degree that is appropriate to the track area of interest. An applicant may be conditionally admitted where the graduate committee recommends completion of additional classes at a satisfactory level. Applicants must also satisfy the minimum admission requirements for the Graduate College, which includes having an undergraduate grade point average of at least 3.00 (based on a 4-point scale). International applications must also satisfy the international admissions requirements.*
     - *Admission to the doctoral program is competitive and requires submission of the following application materials:*
       - *Official transcripts from all colleges attended*
       - *A brief personal statement (no more than two pages) describing the applicant's academic and professional background, research experiences and interests, career goals, and motivation for graduate study. This statement should clearly state the study track(s) of interest and at least one Ph.D. faculty member as a prospective advisor.*
       - *A current resume or curriculum vitae*
       - *Three letters of recommendation from academic or professional references that address your preparation for graduate study.*
       - *(Optional) Official Graduate Record Examinations (GRE) General Test scores. Although the GRE is optional, it is highly recommended for*

students who may have weaknesses in other areas (e.g. GPA, prior research experience) or have transcripts from international schools

- *Dissertation Committee: The supervisory committee consists of a research advisor who serves as chair, and at least 2 but no more than 4 additional members. At least 2 members of the faculty must be faculty participating in the Engineering PhD program. The committee's members are selected by the student and the research advisor and approved by the program director. All committee members must be members of the Graduate Faculty.*
- *Productivity Expectations: Because of the differences in publications between fields there is no explicit productivity requirement. That being said it is expected that each dissertation contributes substantially to the body of knowledge in the field of work, and should be able to lead towards multiple scholarly publications.*

2. Develop clear policies for dissertation defenses and comprehensive exams that minimize any possible bias. This could include the timing of the exams and the scope of the testing procedure.

- *Dissertation Defense: A public defense of the dissertation is scheduled after the dissertation committee has reviewed a draft that is considered to be a nearly final version. The date of the defense is determined jointly by the dissertation committee and the student and must be consistent with any guidelines provided by the Graduate College. The first part of the defense will be a public oral presentation of the dissertation. The second part will be an oral exam administered by the dissertation committee who will decide whether the student passes or fails the defense. The defense should last no more than 3 hours. A student who fails the defense may be permitted to try again but failure a second time will result in dismissal from the PhD program. Majority approval of the Dissertation Committee is required to pass the defense. If the defense is completed with a result of pass, the Dissertation Committee prepares a statement describing final requirements such as additions or modifications to the dissertation and any additional requirements such as archival of data. When these requirements have been met to the satisfaction of the Dissertation Committee, the approval page of the dissertation is signed by the members of the committee. Additionally, PhD candidates are to nominate a Graduate Faculty Representative who serves as a symbol of campus-wide fairness, upholds the rigor of the graduate process, and is an impartial representative of the Graduate College to the doctoral student and their supervisory committee.*
- *Comprehensive Exam: The comprehensive exam is to judge the depth and breadth of knowledge within the engineering field. It has 2 elements, and includes a written component. The two elements are: completion of your track course requirements with a B or better, and a written examination. The written examination requires the student to complete a journal article review for an article submitted by each member of their committee. Majority approval of the committee is required to pass. If failed, the exam can be retaken 1 time before the student is dismissed from the program.*
- *Dissertation Proposal: The dissertation proposal is normally completed within one year of completing the comprehensive exam and typically approved by the dissertation committee one year before the dissertation defense. It is a comprehensive statement about proposed research that will contribute to the knowledge base of your focus area in the program. The dissertation proposal should be presented within one year of satisfactory completion of the comprehensive exam. The student must submit a written dissertation proposal to the Dissertation Committee prior to the oral proposal defense. The oral defense is to not exceed 2 hours. Majority approval of the committee is required*

to pass. If failed, the proposal can be redone 1 time before the student is dismissed from the program.

- *Dismissal from Program: Students who do not meet the requirements of the program will be dismissed from the Engineering PhD program (i.e. failing the comprehensive program). If allowed by the chosen program the student has the option to complete one of the M.S. programs within the college of Engineering (i.e. Civil Engineering or Mechanical Engineering), but is required to meet the program criteria of the program chosen.*

3. Include additional quantitative measures that can be used to assess the program. For example, time-to-degree measures and comprehensive exam pass rates. These measures will need to be independent of courses because the proposed degree can be individualized for students in the various tracks.
    - *Milestones and Timeline: The milestones of the PhD study include appointment of a major advisor and Supervisory Committee, formulation of plan of study, completion of course work, completion of the comprehensive examination, dissertation proposal defense, and final dissertation defense. The major advisor is appointed when the student is admitted to the program. An Appointment of Supervisory Committee form must be submitted before sitting for the comprehensive examination. A student will be eligible to sit for comprehensive examination after completing the Convergence and Track courses (9 credit hours), but the student must take the comprehensive examination prior to completing the dissertation proposal. Once the student has passed the comprehensive examination, the student is eligible to defend their dissertation proposal. The dissertation proposal should be complete within one year of the comprehensive examination. After successful proposal defense, the student is recommended for Advancement to Candidacy.*
    - *A majority "pass" vote is required for a student to pass the comprehensive exam, proposal defense and thesis defense.*
    - *Suggested timeline for the students is to complete their comprehensive exam and defend their proposal is by the end of year 1 and 2 of their PhD studies, respectively. Suggested time to graduation for traditional, full time students is 4 to 5 years from the start of the PhD program, starting from BS. PhD in Engineering coordinator should report any considerable deviation (more than one year) from this timeline to the program director, who will assess student's progress with the major advisor and committee, and put together a plan for timely graduation of the student.*
    - *Appeal Process: Students have the right to file a written appeal regarding the decisions on their comprehensive examination, dissertation proposal defense, and final dissertation defense. The faculty steering committee serves as an appeal mechanism for decisions made by student's supervisory committee. The program director offers an appeal mechanism for decisions and recommendations of the faculty steering committee. The Boise State University Graduate Council and Graduate Dean serves an appeal mechanism for decisions made by the program director.*

4. The proposed Curriculum for the program should be differentiated between students entering the program directly after their bachelors versus those joining after receiving a MS degree. The exit strategy for those students who do not meet the expectations (e.g., fail comprehensive exam, receive lower grades) or who had a change of circumstances, should be included. One typical option is to award them a MS degree, and the requirements should be detailed.
    - *Graduate coursework can be transferred to Boise State University and applied for credit the Engineering Ph.D. program in accordance with Graduate College Policy. Students with a master of science degree in a related field may transfer up to 21 credits toward the Ph.D. program degree requirements. For a student entering with a bachelor of science degree in a relevant field, a maximum of 9 credits of graduate coursework may be applied toward the Ph.D. program degree requirements. In all cases, the transfer credit must meet Graduate College requirements and be approved by the Program Director. Transfer credit accepted into the program will be applied on a course-by-course basis toward the degree requirements.*
    - *For questions relating to exit strategy see response to comment 2.*

5. The opportunities available for student growth could be elaborated to recruit and retain a cohort of high-quality students. Examples include internal funding mechanisms that could support their travel to conferences, student recognition awards, and professional career development mentoring.

    The opportunities available for student growth could be elaborated to recruit and retain a cohort of high-quality students. Examples include internal funding mechanisms that could support their travel to conferences, student recognition awards, and professional career development mentoring.
    - *Recruitment to the program will be coordinated with the recruiting staff of the graduate college. Recruitment at a local level will occur primarily by informal contact between faculty members and local professionals and their organizations. We anticipate some recruitment of highly qualified Boise State undergraduate and master's-level students. Because of the interdisciplinary nature of the program, we believe that the program will have broad appeal, enabling us to recruit students nationally and internationally as well. We recognize that students are motivated to apply to graduate programs because of the strength of faculty research and program reputation. Boise State Engineering faculty are establishing themselves among nationally renowned scientists.*
    - *Our recruitment plan has a 3-pronged approach for attracting high quality applicants:*
        - *Support of faculty travel to recruiting events. Faculty attendance at recruiting events such as conferences serves several important functions for research, including networking to recruit students into labs. Students attend conferences to meet potential mentors, and conferences provide excellent opportunities for faculty members to meet applicants in-person and to judge the quality of their past research experience by attending oral or poster presentations.*
        - *Create a highly visible and informative web presence. Potential applicants will likely make use of the internet to search for graduate programs. We intend to have a highly visible web presence. Our web presence will include websites for the PhD program as a whole, but also for each Engineering faculty member and their lab. These sites will include up-to-*

date information on opportunities, current students, success stories, and where-are-they-now information about graduates, as well as recent publications, presentations and funded research proposals.

- *Support the visits of colleagues from external institutions. We will host regular visits from colleagues at other research institutions to give seminars and have informal meetings with graduate students and faculty. Such visits are key to publicizing a strong and successful training program. These colleagues facilitate recruiting at their home institutions when they suggest their students apply to Boise State. Further, each engineering faculty member will be encouraged to travel to other institutions to give seminars and informal meetings to enhance our visibility at external institutions.*

- *We expect a majority of these activities to be funded through extramural grants, but will also leverage internal resources such as the Graduate College student travel grants. We will also encourage and support students to apply for external travel grant opportunities. Furthermore, we will leverage literature-grounded strategies of community building, providing opportunities for peer-to-peer and vertical mentoring, and other avenues to enhance the sense of belonging and increase retention.*

6. A quick, formal survey of current students and alumni in the mechanical and civil engineering departments could be done to gauge their interest in (a) pursuing a doctoral degree in engineering, and (b) pursuing the doctoral degree at Boise State. Including their comments and quantitative feedback (as a Table or Figure) in section b of page 6 could further strengthen the proposal.
   - Please see Figure 2 for results of a recently conducted informal survey of mechanical engineering and civil engineering students (both graduate and undergraduate) on interest in the program. Survey had over 30 students respond in under 24 hours!!

7. Perhaps including a breakdown of the external funding received by the mechanical and civil engineering faculty (& from peripheral disciplines who might recruit these incoming PhD students into their labs) would strengthen the proposal.
   - The table below represents research expenditures by program faculty affiliated with the program for fiscal year 2022. As can be seen, the faculty who would be affiliated with this program generated over $1.5 million in expenditures in FY22

PI	FY22 Expenditures ($)
Chittoori, Bhaskar (Bhaskar)	$220,511
Deng, Zhangxian (Zhangxian)	$150,650
Farid, Arvin (Arvin)	$248,369
Lu, Yang (Yang Frank)	$147,898
Mamivand, Mahmood (Mahmood)	$72,860
Miller, Sondra	$78,196
Otanicar, Todd (Todd)	$100,230
Pakala, Krishna	$253,579
Plumlee, Donald Gene (Donald)	$139,777
Sadegh, Mojtaba (Mojtaba)	$62,981
Satici, Aykut Cihan (Aykut)	$65,505
Grand Total	**$1,540,556**

8. Some details on the admission requirements of the incoming students would be beneficial.
    - *See response to comment 1.*

9. Perhaps including a Table on the current enrollment and graduation rates of other PhD programs in with the College of Engineering would strengthen the proposal. In a similar vein, a table on the enrollment trends of BS and MS students in the civil and mechanical engineering departments would showcase the feeder channel to the proposed doctoral program.
    - *Please see Table 4 in the full application for enrollment data on the program*

Appendix C

Letters of Support

Idaho National Laboratory

September 9, 2023 CCN 254405

Dr. Zeynep Hansen, Ph.D.
Vice Provost for Academic Planning & Institutional Effectiveness 1910
University Drive
Boise State University Boise, ID
83725-2060

SUBJECT: Letter of Support Dear

Dr. Hansen:

I am writing this letter to express my support for the establishment of a PhD program in Engineering at Boise State University.

As the Associate Laboratory Director (ALD) for Energy & Environment Science & Technology (EES&T) at Idaho National Laboratory (INL) I am providing my support for the development of a Ph.D. program in engineering at Boise State University. In my position, I have a good understanding of why Idaho needs this Ph.D. program. Here at INL and elsewhere in the state, opportunities are needed for students to receive a holistic approach to engineering. This program provides that for students. It also helps address the growing need for researchers in Idaho.

The vision for the Ph.D. in engineering program is to create an interdisciplinary doctoral program that integrates engineering research with non-engineering disciplines to improve the research products and their community impact. The Ph.D. in engineering program is proposed with a broad and inclusive agenda that can include all engineering fields of research and bring non-engineering perspectives into engineering research. The program offers great flexibility in designing an education that fits student needs and is conducive to cutting-edge, interdisciplinary scientific discovery, and societal impact.

Sincerely,

Todd E. Combs, Ph.D., Associate Laboratory Director Energy &
Environment Science & Technology

Todd E. Combs

BER

cc: M. C. Walck (w/o Att.)
Phil Reppert

United States Department of the Interior

BUREAU OF RECLAMATION
1150 North Curtis Road

IN REPLY REFER TO:

May 24, 2023

Dr. Zeynep Hansen, Ph.D.
Vice Provost for Academic Planning & Institutional Effectiveness
1910 University Drive,
Boise State University
Boise ID, 83725-2060

Dr. Hansen,

I am writing this letter to express my support for establishment of a PhD program in Engineering at Boise State University.

I am currently working as a civil engineer with the Bureau of Reclamation at the Columbia-Pacific Northwest Regional office in Boise Idaho. I perform inspections and examinations of critical infrastructure to include bridges, dams, canals, and buildings. From my experience, I believe that having PhD students from Boise State University is incredibly important to the success of the industry by utilizing competent individuals for examination of infrastructure. Many of the facilities that I examine are critical in nature and require a multidisciplinary approach from many experts. For example, examinations of Arrowrock Dam just north of Boise Idaho, require participation from mechanical, civil, and electrical engineers for gate operations, power plant functions, and structure analysis. Also, participants may include examiners with backgrounds in geoscience to perform analysis on topics such as water inflow, landslide susceptibility and seismic impact on the dam. Other disciplines may be required such as biology for fish and wildlife impact, security forces for national security and safety, and legal teams to determine public impact, land use and ownership responsibilities.

Having engineers with a PhD aids the total comprehensive review of infrastructure as it brings individuals with a research background into the examination teams. An example of this expert background can include but is not limited to research that is already being performed at Boise State University, such as Microbial-induced-calcite-precipitation (MICP). I am aware that currently the lead Reclamation office in Denver Colorado is looking into the use of MICP to potentially mitigate seepage issues in embankment dams. Having a PhD student directly from Boise State University who has familiarity with this research could significantly aid the Bureau of Reclamation's mission and goals.

The vision for the Ph.D. in Engineering program is to create an interdisciplinary doctoral program that integrates engineering research with non-engineering disciplines to improve the research products and their community impact. The Ph.D. in Engineering program is proposed

United States Department of the Interior

BUREAU OF RECLAMATION
1150 North Curtis Road

IN REPLY REFER TO:

with a broad and inclusive agenda that can include all engineering fields of research and bring non-engineering perspectives into engineering research. The program offers great flexibility in designing an education that fits student needs and is conducive to cutting- edge, interdisciplinary scientific discovery, and societal impact.

THOMAS ROBBINS

Digitally signed by THOMASROBBINS
Date: 2023.05.24 19:29:27 -06'00'

Thomas A. Robbins, P.E.

Boise State University COEN Alumni
Email: Trobbins@usbr.gov
Cell: (208).473.9234

Dave Sherman, P.E.
Vice President, Local Business Lead
WSP USA
1444 S. Entertainment Ave, Ste. 300
Boise, Idaho 83709
dave.sherman@wsp.com (M) 208-559-0932

23 August 2023

To Whom It May Concern,

I am writing to express my enthusiastic support for the establishment of the new PhD in Engineering program at Boise State University. As the Local Business Lead at WSP, I am acutely aware of the importance of advanced education in engineering and the positive impact it can have on both academia and industry.

The field of engineering is continuously evolving, demanding professionals who possess not only a deep understanding of existing principles but also the ability to innovate and adapt to new challenges. The introduction of the PhD in Engineering program is a commendable step towards nurturing a generation of engineers who are not only equipped with advanced technical knowledge but are also adept at pushing the boundaries of knowledge in their respective fields. One particularly appealing aspect of this program is its alignment with the dynamic needs of the industry. The specialized focus on infrastructure, with an emphasis on water and environment, holds significant promise for addressing real-world challenges in infrastructure development, environmental sustainability, and construction practices. This program demonstrates a forward-thinking approach that directly addresses industry demands, fostering a bridge between academia and practical application.

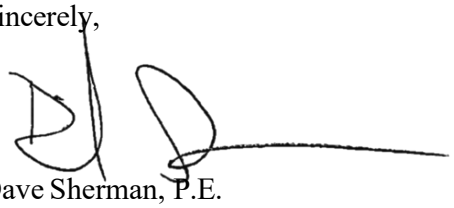
Furthermore, the research initiatives being pursued within this program have the potential to bring about transformative advancements in our understanding of fine-grained soils and their behavior. The collaboration between faculty, students, and industry partners in this research effort not only enriches academic discourse but also translates into tangible benefits for the engineering community at large.

As someone deeply invested in the growth of future engineers and the advancement of geotechnical engineering practices, I firmly believe that the PhD in Engineering program at Boise State University will contribute significantly to the educational landscape and the field of engineering as a whole. The program's commitment to excellence, innovation, and interdisciplinary collaboration is both commendable and inspiring.

In closing, I offer my full endorsement and support for the establishment of the Ph.D. in Engineering program. The potential impact of this program on the development of well-rounded, innovative engineers cannot be understated. I eagerly anticipate witnessing the program's initiation and success, and I am confident that it will be a beacon of excellence in engineering education.

Thank you for your dedication to advancing engineering education and for considering my perspective on this matter.

Sincerely,



Dave Sherman, P.E.
Vice President, Local Business Lead
WSP USA

GEoENGINEER

412 East Parkcenter Blvd, Suite 305
Boise, Idaho 83706

May 24, 2023

Dr. Zeynep Hansen, Ph.D.
Vice Provost for Academic Planning & Institutional Effectiveness
1910 University Drive
Boise State University
Boise ID, 83725-2060

Re: PhD Program in Engineering for Boise State University

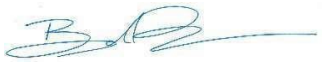
Dr. Hansen,

I am writing this letter to express my support for establishment of a PhD program in Engineering at Boise State University (BSU).

I am a Principal Geotechnical Engineer at GeoEngineers' Boise, Idaho, office, which is located less than five minutes away from the BSU campus. Our firm hires graduate level engineering students from universities across the county. We have also hired interns and gradutate level student engineers from BSU over the years, who have continued on in the engineering field across Idaho and beyond. Our firm routinely partners with academia to support both research and consulting projects. We would love to see BSU develop a PhD in Engineering program, helping grow the engineering fields and researching interdisciplinary scientific discoveries that could impact our regional and state communities. A local PhD program would enhance the level of practice in our local community and elevate the undergraduate and graduate programs already in place at BSU. BSU's civil engineering program has grown substantially since I moved to Boise 10 years ago and I would love to see the growth continue.

I'd be happy to discuss the importance of developing this program in further detail at any time. Thanks for all you're doing to advance this.

Sincerely,
GeoEngineers, Inc.



Braydan DuRee, PE, Principal Geotechnical Engineer
GeoEngineers, Inc. | E: bduree@geoengineers.com | P: 208.433.8098

Dynamik4 US
www.D4US.com | contact@D4US.com

DYNAMIK4
US & Canada BIM Consulting Services

August 28, 2023

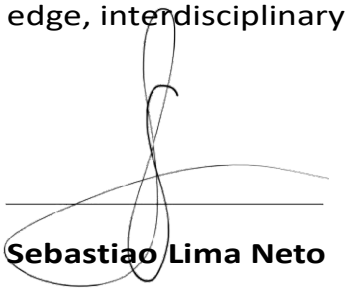
Sebastiao Lima Neto, BSE., MSc.
CEO & Co-Founder at Dynamik4
16376 Star Rd #200
Nampa, ID 83687

Dr. Hansen,

I am writing this letter to express my support for establishment of a PhD program in Engineering at Boise State University.

As the CEO & Co-Founder of Dynamik4 (one of the biggest BIM Consulting Companies in both North & South America), I feel compelled to send you this letter as I know, from more than a decade of experience working in this industry, that our challenges are getting harder and harder to overcome. Some of these challenges are driven by new technologies, lack of resources, political, and even environmental constraints. Either way, having more PhD student graduates from Boise State University would enable us to continue driving our industry forward while developing and implementing new processes instead of relying on off the shelf technologies that are available in the market.

The vision for the Ph.D. in Engineering program is to create an interdisciplinary doctoral program that integrates engineering research with non-engineering disciplines to improve the research products and their community impact. The Ph.D. in Engineering program is proposed with a broad and inclusive agenda that can include all engineering fields of research and bring non-engineering perspectives into engineering research. The program offers great flexibility in designing an education that fits student needs and is conducive to cutting-edge, interdisciplinary scientific discovery, and societal impact.



Sebastiao Lima Neto
bas@d4us.com | (208) 965-0109

PITCH
AERONAUTICS

\17 May 2023

Dr. Zeynep Hansen, Ph.D.
Vice Provost for Academic Planning & Institutional Effectiveness
1910 University Drive,
Boise State University
Boise ID, 83725-2060

Dr. Hansen,

I am writing this letter to express my support for establishment of a PhD program in Engineering at Boise State University.

I am the CEO and Co-Founder of Pitch Aeronautics. Our company has built a large ultra-precise drone for component installations on power lines and other infrastructure. We rely on engineers with the level of perception, research independence, technical communication and depth of knowledge that students obtain in PhD programs. It is presently difficult to locate robotics professionals with this level of experience in Idaho and prohibitively expensive to hire them from other places. We have been grateful to work with Boise State University students and faculty. I have personally seen students need to graduate in alternate programs because no PhD program existing in mechanical engineering.

I firmly believe that Idaho will be a better state by the establishment of more PhD level science and engineering programs. Please contact me or visit our facility in South East Boise (6323 S Federal Way, Unit 17) with any questions. I wholeheartedly support the establishment of a PhD mechanical engineering program at Boise State University.

Respectfully,

Zach Adams, **PhD**
CEO & Co-Founder, Pitch Aeronautics
303-710-5570

IGEO INNOVATE GEOTECHNICAL

August 31, 2023

Attention: Bhaskar Chittoori, Ph.D., P.E.

Subject: Boise State University
PhD in Engineering Support

I am writing to express my wholehearted support for the launch of the new PhD in Engineering program at Boise State University. As a practitioner in the field of geotechnical engineering at Innovate Geotechnical, a small yet dedicated firm specializing in geotechnical solutions, I recognize the significance of this program in advancing engineering education and fostering collaboration between academia and industry.

The geotechnical engineering landscape is marked by challenges that demand innovative approaches and a deep understanding of soil behavior and ground improvement techniques. The introduction of the PhD in Engineering program, with a specific focus on ground improvement and microbial-induced calcite precipitation, aligns perfectly with the practical needs of firms like ours that are engaged in solving complex soil-related issues.

One of the most appealing aspects of this program is its potential to bridge the gap between academic research and real-world application. The collaboration between faculty, students, and industry professionals fosters an environment where groundbreaking research can be translated into effective solutions that address the unique challenges faced by geotechnical engineers daily.

I wholeheartedly endorse the establishment of the PhD in Engineering program. The program's commitment to practical research, industry collaboration, and innovative thinking is commendable and aligns seamlessly with the values that our firm holds dear. I am confident that graduates of this program will contribute valuable insights to the geotechnical engineering community and drive positive change within our industry.

In conclusion, I extend my sincere appreciation to Boise State University for taking this bold step towards advancing engineering education and fostering a strong connection between academia and industry. The potential of the PhD in Engineering program to elevate the capabilities of geotechnical engineers is something that I wholeheartedly support and look forward to witnessing.

Sincerely,
Innovate Geotechnical

Seth P. Olsen, P.E.
Senior Geotechnical Engineer

GEOTECHNICAL ENGINEERING
2006 E Franklin Rd., #110 MERIDIAN, ID (208) 484-1090

27 January 2023

To whom it may concern:

My name is Jason Mick, and I am an engineering student at Boise State University. I earned my bachelor's degree in civil engineering from BSU before continuing toward a master's. While deciding upon graduate school I considered potential doctoral programs but realized they would require me to switch universities or switch disciplines.

My wife and I choose to live in Boise to be close to our families as we begin a family of own. We are local homeowners, and she has established herself in a successful career. I cannot uproot that investment to move to another university. Similarly, I have devoted much time and energy into the study of civil engineering. This is the academic field I am most interested in and the one I hope to make a career of. With these considerations in mind, I opted into the master's program.

If Boise State University were to offer a doctoral degree in engineering—one which would allow me to continue my focus in civil engineering—it would significantly influence my decision to pursue a PhD.

Thank you for your time,

Jason Mick

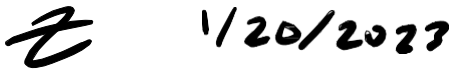
To whom it may concern,

My name is Matt Zuzelski and I am a master of science in mechanical engineering student at Boise State University. I am writing this letter to recognize the challenges that students at Boise State are facing due to the lack of a mechanical or general engineering PhD option at the university. I arrived in Boise in 2017 while looking for a good school to continue my education at. I toured at least 5 other campuses and looked at many more schools online yet, none of them had the same effect that Boise State had. I quickly decided to come to school here, not knowing what else may be in store for me in Boise.

Near the end of my undergraduate in mechanical engineering, I was fortunate to join Dr. Todd Otanicar's lab as an undergraduate research assistant which lead into my graduate program as well. Throughout these two experiences, I realized that I wanted to pursue a PhD along with the harsh reality that I would have to shift focus to biomechanical, electrical, or materials science engineering. This is unfortunate for someone who is particularly interested in things like heat transfer or design regarding applications unrelated to the previous PhD programs. Granted, materials science is a decent fit but the transition to graduate level materials science courses with a mechanical engineering background has been noted as nothing less than unpleasant.

The next option would be relocating to a school with a mechanical or general engineering program. This may work for some but, in my six years at Boise State University, I have developed meaningful friendships and relationships that make moving a massive disappointment. The lack of a mechanical or general engineering PhD affects both the student and faculty body. Many faculty members conducting research that requires a mechanical engineer at the PhD level struggle to find students since they are deterred by the lack of this program.

I hope these examples show how well a mechanical or general engineering PhD would be received here at Boise State University. If you would like to know anything more please feel free to contact me at mattzuzelski@u.boisestate.edu or (360)-620-9773. Thank you for your time.



Appendix D

Curricula Vitae for Participating Faculty

Yang Lu

EDUCATION

Degree	Discipline	Institution	Year
BS	Civil Engineering	Tianjin Institute of Urban Construction	2001
MS	Civil Engineering	Tsinghua University	2005
PhD	Civil Engineering	Virginia Polytechnic Institute and State University	2010

ACADEMIC EXPERIENCE

Boise State University – Civil Engineering Department, Associate Professor (2019 – present, Full Time)
Boise State University – Civil Engineering Department, Assistant Professor (2013 – 2019, Full Time)

NON-ACADEMIC EXPERIENCE

National Institute of Standards and Technology – Engineering Lab, Fellow Research Associate (2010 – 2013, Full Time)
Virginia Tech Transportation Institute – Smart Infrastructure Institute, Postdoctoral Research Associate (2010, Full Time)

CERTIFICATIONS and PROFESSIONAL REGISTRATIONS

Professional Engineer (P.E.) in State of Idaho, Registration Number: 15792

CURRENT MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS

- American Concrete Institute (ACI), Committee Member, since 2010
- American Society of Civil Engineers (ASCE), Committee Member, since 2008
- American Society for Nondestructive Testing, Committee Member, since 2019
- International Union of Laboratories and Experts in Construction Materials, Systems and Structures (RILEM), Committee Member, since 2019

HONORS and AWARDS

- Center for Advanced Energy Studies (CAES) Summer Visiting Faculty Program Awardee 2021
- NIST Distinguished Associate Award - For outstanding development and application of computational techniques to compute important structure-property relationships for cement-based composite materials. National Institute of Standards and Technology (NIST) for FY2013
- Best Paper Award (top one over 200+ papers), Proceedings of the COMSOL Conference 2012 Boston

SERVICE ACTIVITIES

- Faculty Advisor of ASCE Student Chapter, Boise State University
- COEN Creating Pathways and Forward Progress Task Force, Boise State University
- Graduate Subcommittee, Civil Engineering Department, Boise State University
- Interdisciplinary PhD Computing Program, Boise State University

PRINCIPLE PUBLICATIONS AND PRESENTATIONS OF LAST FIVE YEARS

1. Golrokh, A.J., X. Gu, and **Y. Lu**, "Real-Time Thermal Imaging-Based System for Asphalt Pavement Surface Distress Inspection and 3D Crack Profiling," *Journal of Performance of Constructed Facilities*, Vol. 35(1): p. 04020143, 2021
2. **Lu, Y.**, Islam, M. A., Thomas, S., and Garboczi, E. J. "Three-dimensional mortar models using real-shaped sand particles and uniform thickness interfacial transition zones: Artifacts seen in 2D slices." *Construction and Building Materials*, Vol 236: 117590, 2020
3. Qu, L. and **Lu, Y.**, "Copula Density Estimation by Finite Mixture of Parametric Copula Densities," *Communications in Statistics - Simulation and Computation*, pp. 1-23, 2019
4. Rahman, A. and **Lu, Y.**, A time-dependent chemo-mechanical analysis of alkali-silica reaction for the disparate geometry of concrete meso-structure, *Construction and Building Materials*, Vol 211: pp. 847-857, 2019
5. **Lu, Y.** and Wang, L., Nanomechanics Modeling of Interface Interactions in Asphalt Concrete: Traction and Shearing Failure Study, *Journal of Multiscale Modelling*, Vol 10(01): pp. 1841004, 2019
6. Golrokh, A., **Lu, Y.**, An Experimental Study of the Effects of Climate Conditions on Thermography and Pavement Assessment, *International Journal of Pavement Engineering*, pp. 1-12, DOI: 10.1080/10298436.2019.1656809, 2019
7. Islam, A., Golrokh A., **Lu, Y.**, Chemo-mechanical Modeling of Sulfate Attack-induced Damage Process in Cement Stabilized Pavements, *ASCE Journal of Engineering Mechanics*, Vol. 145(1): pp. 04018117, 2018
8. Yano, K.H., Thomas, S., Swenson, M.J., **Lu, Y.**, Wharry, J.P., "TEM in situ Cube-Corner Indentation Analysis Using ViBe Motion Detection Algorithm," *Journal of Nuclear Materials*, Vol. 502, pp. 201-212, 2018
9. Ye, Z., **Lu, Y.**, Wang, L., "Investigating the Pavement Vibration Response for Roadway Service Condition Evaluation", *Advances in Civil Engineering*, Vol. 2018, Article ID 2714657
10. Wu, J., Wang, L., Hou, Y., **Lu, Y.**, and L. Zhang, "A digital image analysis of gravel aggregate using CT scanning technique," *International Journal of Pavement Research and Technology*, Vol 11(2): pp. 160-167, 2018
11. Spragg, R., Jones, S., **Lu, Y.**, Bentz, D., Snyder, K., Weiss, J., "Leaching of conductive species: Implications to measurements of electrical resistivity," *Cement and Concrete Composites*, Vol. 79(Supplement C), pp. 94-105, 2017
12. **Lu, Y.**, Golrokh, A., and Islam, A., "Concrete Pavement Service Condition Assessment Using Infrared Thermography," *Advances in Materials Science and Engineering*, Vol. 4, pp. 1-8, 2017
13. **Lu, Y.** and Wang, L., Atomistic Modelling of Moisture Sensitivity: A Damage Mechanisms Study of Asphalt Concrete Interfaces, Road Materials and Pavement Design, Vol. 18: pp. 200-214, 2017
14. Thomas, S., **Lu, Y.**, Garboczi, E., "Improved Model for Three-Dimensional Virtual Concrete: Anm Model," *Journal of Computing in Civil Engineering*, Vol. 30(2), pp. 04015027, 2016
15. Jones, S., Martys, N., **Lu, Y.**, Bentz, D., "Simulation Studies of Methods to Delay Corrosion and Increase Service Life for Cracked Concrete Exposed to Chlorides," *Cement and Concrete Composites*, Vol. 58, pp. 59-69, 2016

MOST RECENT PROFESSIONAL DEVELOPMENT ACTIVITIES

- ITD Application and use of AASHTOWare Pavement ME Design Software, Boise, ID, October 2021.
- Machine Learning and Molecular Dynamics Webinar, Virtual event, October 2021
- CAES Data Science Boot Camp, Virtual event, July 2021
- NIST 2020 Atomistic Simulations for Industrial Needs Workshop, Virtual event, August 2020
- CAES-INL C3 Summer Boot Camp, Virtual event, June 2020
- CTL workshop, Teaching First Generation College Students Supporting their Success, November 2019
- CTL workshop, Laying the Foundation for Meaningful Conversations about Diversity, August 2018
- CTL workshop, An Introduction to Effective Course Design, November 2017
- NCAT Professor Training in Asphalt Technology for professional development, Auburn, AL, 2015
- PCA Professor Workshop in Portland Cement Association for professional development, Skokie, 2014

NAME: MANDAR KHANAL

EDUCATION

Degree	Discipline	Institution	Year
B.Sc.	Civil Engineering	Delhi University, Delhi, India	1976
Post Grad Diploma	Town & Country Planning	School of Planning & Architecture, New Delhi	1977
M.S.	Civil Engineering	Northwestern University, Evanston, IL	1981
Ph.D.	Civil Engineering	University of California, Irvine	1994

ACADEMIC EXPERIENCE

- Boise State University – Civil Engineering, Associate Professor. (1997 – present, FT)
- Louisiana State University – Civil Engineering, Research Associate. (1996 – 1997, FT)
- University of California, Irvine – Civil Engineering, Lecturer. (1995, PT)

NON-ACADEMIC EXPERIENCE

- California Department of Transportation, District 12, Orange County – Transportation Engineer. (1993 – 1996)
- Department of Roads, Kathmandu, Nepal – District Engineer. (1981 – 1985)
- TAEC Consult, Kathmandu, Nepal – Principal. (1977 – 1979)

CERTIFICATIONS and PROFESSIONAL REGISTRATIONS

PE (Civil) in the states of California and Idaho

CURRENT MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS

- American Society of Civil Engineers (ASCE)
- Institute of Transportation Engineers (ITE)

HONORS and AWARDS

Recipient of the US Permanent Residency (Green Card) under the Outstanding Researcher/People with Exception Quality category.

Recipient of the University of California, Transportation Center Dissertation Grant.

Appointed as a University Scholar, Northwestern University, Evanston, IL.

Recipient of a full ride scholarship under the Colombo Plan, to pursue an engineering degree at Delhi University

SERVICE ACTIVITIES

- Chair, Civil Engineering Department (2017 – 2018)

- Chair, Civil Engineering Department (2012 – 2016)
- Associate Chair, Civil Engineering Department (2005 – 2011)
- Panel Member D03126: NCHRP Project Panel on Operational Standards for Highway Infrastructure (2019 – Present)
- Panel Member D08111: NCHRP Project Panel on Quantifying the Impact of Freight-Efficient Land Use Patterns to Support Effective Decision Making (2016 – Present)
- Panel Member D08110: NCHRP Project Panel on Traffic Forecasting Accuracy Assessment Research (2016 – 2020)
- Panel Member Project 17-65: NCHRP Project Panel on Improved Analysis of Two-Lane Highway Capacity and Operational Performance (2014 – 2018)
- Committee Member: Transportation Research Board Standing Committee on Operational Effects of Geometrics – AHB 65 (2016 – 2019)
- Technical Editor: *International Journal of Engineering Research and Innovation* (2021 – Present)

PRINCIPLE PUBLICATIONS AND PRESENTATIONS OF LAST FIVE YEARS

- **Khanal M**. and Hasan M. (2021) "Assessment of the Highway Safety Manual's Empirical Bayes Method." *The Technology Interface International Journal,* Vol 21, Number 2, Spring/Summer 2021, pages 40-46.
- **Khanal M.** (2021) "Estimating Demand for a New Travel Mode in Boise, Idaho." *Sustainability* 2021, 13(3), 1209; **https://doi.org/10.3390/su13031209** .
- **Khanal M.** Hasan M., Sterbentz N., Johnson R., and Weatherly J. (2020) "Accuracy Comparison of Aerial Lidar, Mobile-Terrestrial Lidar, and UAV Photogrammetric Capture Data Elevations over Different Terrain Types." *Infrastructures* 2020, 5(8), 65; **https://doi.org/10.3390/infrastructures5080065**.
- Hasan M. and **Khanal M.** (2020) "Crash Prediction Model for I-84 in Boise, Idaho", Proceedings of the 2020 ATMAE and IAJC Virtual Joint Conference, 4 November 2020,;ISBN 978-1-60643-379-9.
- **Khanal M**. (2016) Proactive-Adaptive Ramp Metering Scheme for Urban Highways. *Journal of Civil & Environmental Engineering* 6:e120. doi: 10.4172/2165-784X.1000e120.

MOST RECENT PROFESSIONAL DEVELOPMENT ACTIVITIES

- Invited Talk: "Use of Terrain Model Developed from Publicly Available Lidar Data". Inviting Institution: V-Appliedscience2021: 4th Edition of Applied Science, Engineering and Technology, 20-21 August, 2021, https://www.sciwideonline.com/applied-virtual-2021.
- Invited Talk: "Road Design Using Alternative Data Sources". Inviting Institution: Global Summit on Civil, Architectural and Environmental Engineering – 2021 (GSCAEE-2021). Barcelona, Spain. July 20, 2021, https://www.thescientistt.com/civil-structural-environmental-engineering/.
- Engineering Division Co-Chair, 2014 IAJC/ATMAE Joint Conference, Louisville, Kentucky. October 7-9, 2020.

NAME: ARVIN FARID

EDUCATION

DEGREE	DISCIPLINE	INSTITUTION	YEAR
Ph.D.	**Civil Engineering**	**Northeastern University**	**2004**
M.Sc.	**Civil Engineering**	**Shiraz (formerly Pahlavi) University**	**1997**
B.Sc.	**Civil Engineering (Electrical Engineering Minor)**	**Shiraz (formerly Pahlavi) University**	**1993**

ACADEMIC EXPERIENCE

Boise State University – Civil Engineering, Professor (2020- present, FT)

NONACADEMIC EXPERIENCE

Alborz Consulting, Geotechnical & Structural Consultant (1997-2001, FT)

CERTIFICATIONS and PROFESSIONAL REGISTRATIONS

Professional Engineer (PE), ASCE/NCEES, State of Idaho, Date Obtained: 12/18/2009

CURRENT MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS

- American Society of Civil Engineers (ASCE)
- ASCE Geo-Institute (GI)
- American Society for Engineering Education (ASEE)

HONORS and AWARDS

2019, NSF, SEnS-GPS: Stellar Engineering Students - Graduate Program Scholarship, $999,867.00, PI

2019, Fulbright, Indo-US Joint Center of Development of Sustainable Materials for Soil Remediation, $72,000, PI

2018, NSF, Planning Grant: Engineering Research Center for Fire Impacts, Remediation, and Education, $100,000, PI

2017, ASCE Hong Kong Section Award for Outstanding Contribution, Hong Kong University of Science & Technology, Hong Kong, November

2014, NSF, I-Corps: Electromagnetically Induced Groundwater Remediation, $50,000, PI

2011, NSF, NEESR: Induced-Partial Saturation Through Transport and Reactivity for Liquefaction Mitigation. $1,197,461.00, Co-PI

2009, NSF, IDR: Remote and Directive Stimulation of Transport Mechanisms to Enhance Soil Remediation, $371,782.00, PI

2007, Award for Outstanding Contribution to the Phi Beta Delta Education, Boston, MA, March.
2004, Award for Outstanding Contribution to Environmental & Subsurface Science Symposium, INRA (Inland Northwest Research Alliance), Spokane, WA, September.

SERVICE ACTIVITIES

Chair of ASCE-GI Technical Committee on Geoenvironmental Engineering, Oct/2021-Present
Vice-chair of ASCE-GI Technical Committee on Geoenvironmental Engineering, Oct/2015-Sep/2021
Award Subcommittee Chair, ASCE-GI Technical Committee on Geoenvironmental Engineering, Oct/2015-Sep/2017
Secretory of ASCE-GI Technical Committee on Geoenvironmental Engineering, Oct/2012-Sep/2015.
Graduate Coordinator, Boise State University, Civil Engineering, Jan/2013-May/2018

PRINCIPLE PUBLICATIONS AND PRESENTATIONS OF LAST FIVE YEARS

Alizadeh, M. R., Abatzoglou, J. T., Luce, C. H., Adamowski, J., **Farid, A.**, and Mojtaba Sadegh (2021) "Warming Enabled Upslope Advance in Western U.S. Forest Fires," *PNAS, Proceedings of National Academy of Science*, DOI: https://doi.org/10.1073/pnas.2009717118

Paleologos, E. K., Kelly, b. C. O., Tang, C. S., Cornell, K., Rodríguez-Chueca, J., Abuel-Naga, H., Koda, E., **Farid, A.**, Vaverková, M. D., Kostarelos, K., Sai Goli, V. S., N., Guerra-Rodríguez, S., Leong, E. C., Jayanthi, P., Shashank, B. S., Sharma, S., Shreedhar, S., Mohammad, A., Jha, B., Kuntikana, G., Win Bo, M., Mohamed, A. M. O., Singh, D. N. (2021) "Post COVID-19 Water and Wastewater Management to Protect Public Health and Geoenvironment," *ICE* Journal of *Environmental Geotechnics*, Vol. 8, Issue 3, pp. 193-207, May, DOI: 10.1680/jenge.20.00067

Sadegh, M., AghaKouchak, A., Mallakpour, I., Huning, L., Davis, S., Mazdiyasni, O., **Farid, A.,** and Martinez, A. (2020) "Data and Analysis Toolbox for Modeling the Nexus of Food, Energy, and Water," *Elsevier Journal of Sustainable Cities and Societies*, Vol. 61, October, DOI: https://doi.org/10.1016/j.scs.2020.102281

Farid, A. (2020) "Environmental Geotechnics for Sustainability," *ICE Journal of Environmental Geotechnics*, July, Vol. 7, No. 3, editorial, pp. 160-162, DOI: https://doi.org/10.1680/jenge/2020.7.3.160

Tang, C. S., Paleologos, E. K., Vitone, C., Du, Y. J., Li, J. S., Jiang, N. J., Deng, Y. F., Chu, J., Shen, Z. Koda, E., Dominijanni, A., Fei, X., Vaverková, M. D., Osiński, P., Chen, ., Asadi, A., Takeuchi, M. R. H., Bo, M. W., Abuel-Naga, H., Leong, E. C., **Farid, A.**, Jha, B., Singh, D. N., Baser, T. (2020) "Environmental Geotechnics: Challenges and Opportunities in the Post COVID-19 World," *ICE* Journal of *Environmental Geotechnics*, May, DOI: 10.1680/jenge.20.00054

Farid, A., Najafi, A.*, Browning, J., Barney Smith, E. (2019) "Effects of Air Injection Pressure on Airflow Pattern of Air Sparging," *Environmental Geotechnics*, August, DOI: https://doi.org/10.1680/jenge.18.00096

Bender, J.* and **Farid, A.** (2019) "Predicting Power Transformer Bushing Seismic Vulnerability: Mounting Stiffness and Coupling," *ASCE Journal of Performance of Constructed Facilities*, Vol. 33, No. 3, June, DOI: https://doi.org/10.1061/(ASCE)CF.1943-5509.0001286

Farid, A., Najafi, A.*, Browning, J., & Barney Smith, E. (2019). Electromagnetic Waves' Effect on Airflow during Air Sparging, *Elsevier Journal of Contaminant Hydrology,* Vol. 220, pp. 49-58, DOI: https://doi.org/10.1016/j.jconhyd.2018.11.004

Bender, J.*, **Farid, A.** (2018) "Seismic Vulnerability of Power Transformer Bushings Complex Structural Dynamics and Seismic Amplification, *Elsevier Journal of Engineering Structures*, Volume 162, No. 1, pp. 1-10, May, DOI: https://doi.org/10.1016/j.engstruct.2018.01.052

Bender, J.*, **Farid, A.**, Cornell, K. A., Browning, J. J., & Barney Smith, E. H. (2017). *Chapter 32 – Electromagnetic Enhancement of Microbially Induced Calcite Precipitation*. Springer.

Nadelson, L. S. McGuire, S., Davis, K., **Farid, A.**, Hardy, K., Hsu, Y., Kaiser, U., Nagarajan, R. & Wang, S. (2016) Am I a STEM professional? The development and results of a measure of student professional identity development. *Studies in Higher Education,* Vol. 42, No. 4, pp. 701-720, DOI: 10.1080/03075079.2015.1070819

MOST RECENT PROFESSIONAL DEVELOPMENT ACTIVITIES

Ghahremani, Z., Iradukunda, P., and **Farid, A**. (2021) "Post wildfire soil and groundwater contamination, A Review," CPEG 2021, Kyoto, Japan, October.

Farid, A., Sadegh, M., Hart, M., (2019) "Understanding Components to Establish Framework for Convergent Approach to Wildfire Mitigation," The 8th International Fire Ecology and Management Congress, Tuscan, AZ, October

Farid, A., Zimmerman, D. (2019) "Coupled Numerical Analysis of Variations in the Capacity of Driven Energy Piles in Clay," *Proceedings of ASCE, GeoCongress 2019*, Philadelphia, FL

Acharya, R. and **Farid, A.** (2017) "Study of Electromagnetic-Induced Liquefaction Mitigation and Alteration of the Hydraulic Conductivity of Coarse-Grained Soils," *Proceedings of ASCE, GeoFrontiers 2017*, Orlando, FL

Bender, J., **Farid, A.**, Cornell, K., Browning, J., and Barney Smith, E. (2016) "Electromagnetic enhancement of microbially induced Calcite precipitation," *Indo-US Bilatteral Workshop, ASCE, GeoChicago 2016*, Chicago IL, August

Nazari, A., **Farid, A.**, and Cornel, K. (2016) "Impedance-Based Water-Quality Monitoring Using Parallel Plate Method," *Proceedings of ASCE GeoChicago 2016, August*.

Kevin R. Roche

EDUCATION

Degree	Discipline	Institution	Year
BS	Chemical Engineering	Purdue University	2004
PhD	Civil and Environmental Engineering	Northwestern University	2017

ACADEMIC EXPERIENCE

Boise State University – Civil Engineering, Assistant Professor (2020-Present, FT)
Institute of Environmental Assessment and Water Research, Spanish National Research Council – Fulbright Research Scholar (2019-2020, FT)
University of Notre Dame – Civil & Environmental Engineering and Earth Sciences, Postdoctoral Scholar (2017-2019, FT)
Northwestern University – Civil and Environmental Engineering, Graduate Research Assistant (2012-2017, FT)

NON-ACADEMIC EXPERIENCE

US Peace Corps, Youth Development Volunteer (2009-2012, FT)
Eli Lilly and Company, Process Control Engineer (2004-2009, FT)

CERTIFICATIONS and PROFESSIONAL REGISTRATIONS

None

CURRENT MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS

American Geophysical Union (AGU)

HONORS and AWARDS

Fulbright Junior Scholar Award (Barcelona, Spain), 2019 – 2020
Editor's Choice Award, *Water Resources Research*, "Turbulence links momentum and solute exchange in coarse-grained streambeds," Vol. 54, No. 5, 2018. (awarded to not more than 1% of papers published in AGU journals in each calendar year).
Outstanding Student Presentation Award, AGU Fall Meeting, 2015
NSF Graduate Research Fellowship, 2013 – 2016
Walter P. Murphy Graduate Fellowship, Northwestern University, 2012

SERVICE ACTIVITIES

Session Chair and Primary Convener - Groundwater-Surface Water Interactions: Integrating Physical, Biological, and Chemical Patterns and Processes Across Systems and Scales, AGU Fall Meeting (2020)

AGU Hydrology Section Student Subcommittee Member (2015-2017)

Panel Reviewer, Dept of Energy Subsurface Biological Research Program (2020)

External Referee, Journals: Earth-Science Reviews, Geophysical Research Letters, Hydrological Processes, JGR-Biogeosciences, Journal of Hydrology, npj Biofilms and Microbiomes, PLOS One, Stochastic Environmental Research and Risk Assessment, Water Resources Research; Funders: NSF EAR Instrumentation and Facilities, NSF Hydrologic Sciences, DOD Army Research Office

Thesis/Dissertation committee for five Civil Engineering graduate students (1 chair)

PRINCIPLE PUBLICATIONS AND PRESENTATIONS OF LAST FIVE YEARS

Müller, M. F.**,** Roche, K. R., & Dralle, D. N. (2021). Catchment processes can amplify the effect of increasing rainfall variability. *Environmental Research Letters*, *16*(8), 084032

Roche, K.R., Müller-Itten, M., Dralle, D., Bolster, D., & Müller, M.F.* (2020). "Climate change and the opportunity cost of conflict." *Proceedings of the National Academy of Sciences, 117* (4) 1935-1940.

Roche, K.R., Li, A., Bolster, D., Wagner, G., & Packman, A.I. (2019). "Effects of turbulent hyporheic mixing on reach-scale transport." *Water Resources Research*, *55.*

Kim, J., Roche, K.R., Bolster, D., & Doudrick, K.* (2019). "Transport of Food- and Catalytic-Grade Titanium Dioxide Nanoparticles in Controlled Field Streams with Varying Streambed and Biofilm Conditions." *Environmental Science: Nano, 6* (11), 3454-3466.

Roche, K.R., Shogren, A., Aubeneau, A.F., Tank, J.T., & Bolster, D. (2019). "Modeling benthic vs. hyporheic uptake in unshaded streams with varying substrates." *JGR-Biogeosciences*, *124(2)*, 367-383.

Roche, K.R., Blois, G., Best, J.L., Christensen, K.T., Aubeneau, A.F., & Packman, A.I. (2018). "Turbulence links momentum and solute exchange in coarse-grained streambeds." *Water Resources Research, 54*

MOST RECENT PROFESSIONAL DEVELOPMENT ACTIVITIES

Course Design Institute, Boise State University (2021, participant)

National Socio-Environmental Synthesis Center, SESYNC – "Social-Environmental Approaches to Watershed Management and Governance", SESYNC Headquarters (2020, participant)

EDUCATION

Degree	Discipline	Institution	Year
Ph.D.	Civil Engineering	The University of Texas at Arlington	2008
M.S.	Civil Engineering	National Institute of Technology Karnataka, India	2004
B.S.	Civil Engineering	Jawaharlal Nehru Technological University, Kakinada, India	2002

ACADEMIC EXPERIENCE

Boise State University
Associate Professor — July 2018 – Present, FT
Assistant Professor — Aug. 2013 – June 2018, FT
The University of Texas at Arlington
Faculty Associate-Research/Lecturer — Sep. 2010 – Aug. 2013, FT

NON-ACADEMIC EXPERIENCE

Parsons Brinckerhoff
Engineer-II — Jan. 2009 – Sep. 2010, FT
Sai Sudha Constructions, India
Field Engineer — Nov. 2004 – Jul. 2005, FT

CERTIFICATIONS and PROFESSIONAL REGISTRATIONS

P.E. in: State of Idaho – State of Texas

CURRENT MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS

- American Society of Civil Engineers (ASCE)

HONORS and AWARDS

- Accomplished Under 40 Honoree, Idaho Business Review. 2019
- ***Best Paper Award***: Pedarla, A., Puppala, A. J., Chittoori, B., Ganne, V.K., Nazarian, S. (2017). "Long-term Durability Studies on Chemically Treated Reclaimed Asphalt (RAP) Material as a Base Layer for Pavements", Journal of Transportation Research Board, No. 2657, 1-9.
- Nominated for ASCE Norman Medal for best paper: Chittoori, B. and Puppala A.J. (2011). "Quantitative estimation of clay mineralogy in fine grained soils", Journal of Geotechnical and Geoenvironmental Engineering, 137 (11), 997-1008.
- 'University Scholar' Award for Academic Excellence in Civil Engineering Department, The University of Texas at Arlington, USA. 2008

SERVICE ACTIVITIES

- Associate Chair Department of Civil Engineering, Boise State University (2019-present)
- Member, Faculty Senate Diversity Committee, Boise State University (2018 to 2021)
- Member, College of Engineering Safety Committee, Boise State University (2018-2018)
- Associate Editor, ASCE Journal of Materials in Civil Engineering (2014-Present)
- Handling Editor, Transportation Research Record (2018-Present)
- Chair, ASCE Geo-Institute's Committee on Sustainability in Geotechnical Engineering
- Member, ASCE Committee on Technical Advancement (2018-2021)
- Member: TRB (Transportation Research Board) Standing Committee on Low-Volume Roads (AFB30)
- Member: TRB (Transportation Research Board) Standing Committee on Geotechnical Instrumentation and Modeling (AFS20)

PRINCIPLE PUBLICATIONS AND PRESENTATIONS OF LAST FIVE YEARS

- *Gajurel, A., Chittoori, B., Sarathi, P. M., Sadegh, M. (2021) "Machine Learning Methods to Map Stabilizer Effectiveness based on Common Soil Properties", Transportation Geotechnics, 27, DOI: https://doi.org/10.1016/j.trgeo.2020.100506.
- *Robbins, T., and Chittoori, B. (2021) "A Practical Risk-Based, Probabilistic Framework for Unifying Sustainability and Resiliency Assessments of Civil Infrastructure" Proceedings of the Institution of Civil Engineers - Engineering Sustainability, 174(3), DOI: https://doi.org/10.1680/jensu.20.00010.
- *Rabbi, M. F., Boudreau, R. L., Chittoori, B. C., Sotirin, M., & Mishra, D. (2020). "Polyurethane Grout Injection as Remedial Measure to Reduce Differential Heave in Pavement Sections Constructed over Expansive Soils." Journal of Transportation Engineering, Part B: Pavements, 146(4), 04020068. DOI: https://doi.org/10.1061/JPEODX.0000221.
- *Islam, Md., T, Chittoori, B. C. S., Burbank, M. (2020). "Evaluating the Applicability of Biostimulated Calcium Carbonate Precipitation to Stabilize Clayey Soils", ASCE Journal of Materials, 32 (3), 11.

MOST RECENT PROFESSIONAL DEVELOPMENT ACTIVITIES

- Asghari, S., Chittoori, B. C. S., Burbank, M., Hudyma, N. (2021). "Studying the Relationship between Indigenous Microbial Communities, Urease Activity, and Calcite Precipitation in Artificial Mixes of Clay and Sand", IFCEE 2021, May 10th to 14th, Dallas, TX, GSP 325, 130-138.
- Chittoori, B. C. S., Pathak, A., Burbank, M., *Islam, M. T. (2020). "Application of Bio-Stimulated Calcite Precipitation to Stabilize Expansive Soils: Field Trials", GeoCongress 2020, Feb 25-28, Minneapolis, MN.
- *Gajurel, A, Chittoori, B. C. S., Mukherjee, P. (2019). "Estimating Optimal Additive Content for Soil Stabilization Using Machine Learning Methods", Gecongress 2019, Mar 24-27, Philadelphia, PA.
- Chittoori, B. C. S., *Rahman, T., Burbank, M. (2019). "Evaluating Shallow Mixing Protocols as Application Methods for Microbial Induced Calcite Precipitation Targeting Expansive Soil Treatment", Gecongress 2019, Mar 24-27, Philadelphia, PA.

NAME: SONDRA MILLER

EDUCATION

Degree	Discipline	Institution	Year
AS	Liberal Arts, General Studies	Monroe Community College	1988
AS	Engineering Science	Monroe Community College	1989
BS	Civil Engineering	SUNY - Buffalo	1996
MS	Environmental Engineering	SUNY - Buffalo	1999
PhD	Environmental Engineering	University of Iowa	2003

ACADEMIC EXPERIENCE

- Boise State University - Civil Engineering, Associate Professor. (2013 - present, FT).
- Boise State University - Civil Engineering, Assistant Professor. (2006 - 2013, FT).
- Boise State University - Civil Engineering, Adjunct Professor. (2005 - 2006, PT).
- University of Iowa - Civil and Environmental Engineering, Research and Teaching Assistant. (1998 - 2002, FT).
- SUNY, Buffalo - Civil, Structural and Environmental Engineering, Research and Teaching Assistant. (1996 - 1998, FT).

NON-ACADEMIC EXPERIENCE

- CENTRA Consulting, Inc. - Vice President and Chief Engineer. (2014 -2015, PT).
- Idaho Department of Environmental Quality - Associate Engineer. (2004 - 2006, FT).
- Hydroblend, Inc. - Plant Engineer. (2002 - 2004, FT).
- The Sear-Brown Group - Structural Designer. (1990 - 1995, FT).

CERTIFICATIONS and PROFESSIONAL REGISTRATIONS

PE in: State of Idaho – State of New York

CURRENT MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS

- American Society of Civil Engineers (ASCE)
- American Society for Engineering Education (ASEE)
- Idaho Society of Professional Engineers (ISPE)
- National Society of Professional Engineers (NSPE)

HONORS and AWARDS

- Boise State University Foundation Scholars Award for Service, 2012
- Boise State University Provost's Excellence in Advising Award, 2010

SERVICE ACTIVITIES

- President, Idaho Society of Professional Engineers (2020 - present)
- Undergraduate Coordinator, EngineeringPLUS (2020 - present)
- Undergraduate Coordinator, Department of Civil Engineering (2016 - present)
- Associate Dean, College of Engineering (2018 - 2021)
- Discipline Expert, National Council of Examiners for Engineering and Surveying (2018, 2019)

PRINCIPLE PUBLICATIONS AND PRESENTATIONS OF LAST FIVE YEARS

- McLaughlin, B.M, Chittoori, B.C.S., Hamilton, R.W., Hudyma, N.W., **Miller, S.M.**, and Sadegh, M. 2021. "Work In Progress: Halting Attrition in Civil Engineering Programs through Lower-Division Engagement Course Implementation", *2021 Conference and Exposition*, American Society of Engineering Education.
- Chittoori, B.C.S., Salzman, N., Hamilton, R.W., Mishra, D. and **Miller, S.M.** 2020. "Incorporating Sustainability and Resiliency Content into the Civil Engineering Undergraduate Curriculum", *2020 Conference and Exposition*, American Society for Engineering Education.
- Hollar, C.E. and **Miller, S.M.** 2020. "Work in Progress: Development of a General Education First-Year Design Course", *2020 Conference and Exposition*, American Society for Engineering Education.
- Olson, L., Moll, A.J., Bullock, D., **Miller, S.M.**, Jain, A., and Callahan, J. 2016. "Support Model for Transfer Students Utilizing the STEM Scholarship Program", *2016 Conference and Exposition*, American Society for Engineering Education.
- **Miller, S.M.**, Catlin, L., and Giacumo, L. 2016 "Successes and Lessons from a Multidisciplinary Capstone Project". *2016 ASEE Pacific Northwest Division Section Conference.*

MOST RECENT PROFESSIONAL DEVELOPMENT ACTIVITIES

- ISPE Annual Conference, November 2021
- ASEE Conference and Exposition, June 2020

NAME: NICHOLAS HUDYMA

EDUCATION

Degree	Discipline	Institution	Year
BS	Geological Engineering	Universityof Manitoba	1992
MS	Civil and Environmental Engineering	University of Nevada, Las Vegas	1994
PhD	Engineering	University of Nevada, Las Vegas	1999

ACADEMIC EXPERIENCE

- Boise State University – Civil Engineering, Professor. (2019 – present, FT).
- University of North Florida – School of Engineering, Assistant/Associate/Full Professor (2002 – 2019, FT).
- University of Nevada, Las Vegas – Civil and Environmental Engineering, Assistant Research Professor (2000 – 2002, FT).
- Bradley University – Civil Engineering and Construction, Assistant Professor (1999 – 2000, FT).

NON-ACADEMIC EXPERIENCE

- Group Alpha – Project Engineer. (1999 – 1999, FT).
- Construction, Testing, and Engineering (CTE), Nevada – Operations Manager. (1997 – 1998, FT).
- Converse Consultants – Project Manager. (1997 – 1997, FT).

CERTIFICATIONS and PROFESSIONAL REGISTRATIONS

PE in: State of Nevada

CURRENT MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS

- American Society of Civil Engineers (ASCE)
- International Society of Soil Mechanics and Geotechnical Engineering (ISSMGE)
- American Rock Mechanics Association (ARMA)
- International Society for Rock Mechanics (ISRM)
- United States Council on Geotechnical Education and Research (USUCGER)

HONORS and AWARDS

- Northeast Florida Engineer of the Year, 2017
- Northeast Florida Professor of the Year, 2012
- Northeast Florida Professor of the Year, 2007
- University of North Florida Outstanding Undergraduate Teacher of the Year Award, 2006

SERVICE ACTIVITIES

- Chair, Civil Engineering Department (2019 – present)
- Chair, Technical Coordination Council of the Geo-Institute of ASCE (October 2019 – present)
- Technical Co-Chair, 2020 ASCE Geo-Institute Geo-Congress
- Secretary, Technical Coordination Council of the Geo-Institute of ASCE (October 2016 – October 2019)
- Team Leader, NSF Geotechnical Extreme Events Reconnaissance (Fall, 2017)
- Associate Editor for ASCE Journal of Materials in Civil Engineering (Geomaterials Section) (August 2017 – present)
- Co-Chair, 2014 ASCE Geo-Institute Geo-Congress

PRINCIPLE PUBLICATIONS AND PRESENTATIONS OF LAST FIVE YEARS

- Dally, W.R., Crowley, R., and **Hudyma, N.**, 2021. "Northeast Florida – A new hotspot for hurricane damage?" Proceedings of Geo-Extreme, Savannah, GA, November 7-10, 2021.
- Landon, M.E., **Hudyma, N.W.**, and Sharma, R.S., 2020. "Hurricane Irma: Consequences of intense rainfall and storm surge from a tropical storm in north and central Florida", International Journal of Geotechnical Case Histories, Volume 5, Issue 4, pp.26-46. https://doi.org/10.4417/IJGCH-05-04-02
- **Hudyma, N**. and Avar, B.B., 2020. "Characterization of failure loads and failure modes in schist from indirect tension tests", 54th US Rock Mechanics/Geomechanics Symposium. Manuscript 20-1439.
- **Hudyma, N.**, Kopp, B., Oglesby, J., and Vong, S., 2020. "Bench-scale investigation of remote detection of clay pockets in granular soils", Geo-Congress 2020: Modeling, Geomaterials, and Site Characterization, pp. 550-557. https://doi.org/10.1061/9780784482803.059
- Avar, B.B. and **Hudyma, N.W.**, 2019. "Earthquake surface rupture: A brief survey on interdisciplinary research and practice from geology to geotechnical engineering", Rock Mechanics and Rock Engineering, Volume 52, Issue 12, pp. 5259-5281. https://doi.org/10.1007/s00603-019-02006-0

MOST RECENT PROFESSIONAL DEVELOPMENT ACTIVITIES

- ASCE Geo-Institute's Geo-Extreme Conference, November 2021
- ASEE DELTA Department Leaders Institute, January 2021
- ASCE Geo-Institute's Geo-Congress, March 2020
- ARMA 52th US Rock Mechanics/Geomechanics Symposium, June 2018

NAME: Mojtaba Sadegh

EDUCATION

Degree	Discipline	Institution	Year
BS	Civil and Environmental Eng.	Ferdowsi University of Mashhad	2007
MS	Civil and Environmental Eng.	University of Tehran	2010
PhD	Civil and Environmental Eng.	University of California, Irvine	2015

ACADEMIC EXPERIENCE

Boise State University – Civil Engineering, Assistant Professor. (2017 – Present, FT).
University of California, Irvine – Postdoctoral Scholar. (2015-2016, FT)

CURRENT MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS

- American Geophysical Union – Member
- American Society of Civil Engineers – Member

HONORS and AWARDS

- 2021 Golden Apple Award for the College of Engineering of Boise State University for Offering Inclusive Learning Experiences.
- 2020 Editors' Citation for Excellence in Refereeing for *Earth's Future*
- 2019 Editors' Citation for Excellence in Refereeing for *Earth's Future*
- 2017 Editor's Citation for Excellence in Refereeing for *Water Resources Research.*

SERVICE ACTIVITIES

- Associate Editor: Journal of Hydrologic Engineering, ASCE, 2019-present
- Associate Editor: Hydrological Science Journal, IAHS, 2020-present.
- Panel Reviewer: NASA, NSF, Canada Foundation for Innovation.

PRINCIPLE PUBLICATIONS AND PRESENTATIONS OF LAST FIVE YEARS

- Shojaeezadeh, S., Nikoo, M.R., Talebbeydokhti, N., **Sadegh, M.**, Adamowski, J., 2021, Process-constrained Statistical Modeling of Sediment Yield, ***Catena***, 209 (1), 105794.
- Noori, R., Maghrebi, M., Mirchi, A., Tang, Q., Bhattarai, R., **Sadegh, M.**, Noury, M., Torabi Haghighi, A., Kløve, B., Madani, K., 2021, Anthropogenic Depletion of Iran's Aquifers, ***Proceedings of the National Academy of Sciences of the USA***, 118 (25) e2024221118.
- Alizadeh, M.R., Abatzoglou, J.T., Luce, C.H., Adamowski, J., Farid, A., **Sadegh, M.,** 2021, Warming Enabled Upslope Advance in Western U.S. Forest Fires, ***Proceedings of the National Academy of Sciences of the USA***, 118 (22), e2009717118.

- Salman, R., Nikoo, M.R., Shojaeezadeh, S.A., Hatami B.B., P., **Sadegh, M.,** Adamowski, J.F., Alamdari, N., 2021, A novel Bayesian maximum entropy-based approach for optimal design of water quality monitoring networks in rivers, ***Journal of Hydrology,*** 603, 126822.
- ModaresiRad, A., Kreitler, J., **Sadegh, M.,** 2021, Augmented Normalized Difference Water Index for Improved Surface Water Monitoring, ***Environmental Modeling & Software,*** 140, 105030.
- Vanda, S., Nikoo, M.R., Taravatrooy, N., **Sadegh, M.,** Al-Wardy, M., Adamowski, J.F., 2021, An emergency multi-objective compromise framework for reservoir operation under suddenly injected pollution, ***Journal of Hydrology***, 598, 126242.
- Abatzoglou, J.T., Rupp, D., O'Neill, L., **Sadegh, M.,** 2021, Compound extremes drive the western Oregon wildfires of September 2020, ***Geophysical Research Letters***, 48, e2021GL092520.
- AghaKouchak, A., Mirchi, A., Madani, K., Di Baldassarre, G., Nazemi, Al., Alborzin, A., Anjileli, H., Azarderakhsh, M., Chiang, F., Hassanzadeh, E., Hunning, L.S., Mallakpour, I., Martinez, A., Mazdiyasni, O., Moftakhari, H., Norouzi, H., **Sadegh, M.**, Sadeqi, D., Van Loon, A.F., Wanders, N. 2021, Anthropogenic Drought: Definition, Challenges and Opportunities, ***Reviews of Geophysics***, 59, e2019RG000683.
- Hashempour Bakhtiari, P., Nikoo, M.R., Golkar, F., **Sadegh, M.**, Al-Wardy, M., Al-Rawas, G.A., 2021, Design of a high-coverage ground-based CO2 monitoring layout using a novel information theory-based optimization model, ***Environmental Monitoring and Assessment***, 193, 150.
- Srivastava, A.K., Grotjahn, R., Ullrich, P., **Sadegh, M.**, 2021, Pooling data improves multimodel IDF estimates over median-based IDF estimates: Analysis over Susquehanna and Florida. ***Journal of Hydrometeorology***, 22, 971–995.
- Gajurel, A., Chittoori, B., Mukherjee, P.S., **Sadegh, M.,** 2021, Machine Learning Methods to Map Stabilizer Effectiveness based on Common Soil Properties, ***Transportation Geotechnics***, 27, p.100506.
- Alizadeh, M.R., Adamowski, J., Nikoo, M.R., AghaKouchak, A., Dennison, P., **Sadegh, M.** 2020, A Century of Observations Reveal Increasing Likelihood of Continental-Scale Compound Dry-Hot Extremes, ***Science Advances***, 6, eaaz4571.
- Madadgar, S., **Sadegh, M.**, Chiang, F., Ragno, E., AghaKouchak, A. 2020, Quantifying Increased Fire Risk in California in Response to Different Levels of Warming and Drying, ***Stochastic Environmental Research and Risk Assessment***, 34(12), 2023-2031.
- Haghighat, M., Nikoo, M.R., Parvinnia, M., **Sadegh, M**., 2020, Multi-objective conflict resolution optimization model for reservoir's selective depth water withdrawal considering water quality, ***Environmental Science and Pollution Research,*** 28(3), 3035-3050.
- Khorshidi, M.S., Dennison, P.E., Nikoo, M.R., AghaKouchak, A., Luce, C.H., **Sadegh, M**., 2020, Increasing concurrence of wildfire drivers tripled megafire critical danger days in Southern California between 1982-2018, ***Environmental Research Letters,*** 15(10), p.104002.

MOST RECENT PROFESSIONAL DEVELOPMENT ACTIVITIES

- Wildfire and the Biosphere Innovation Lab, NSF-funded Virtual Workshop, May, 2021.
- Flexible Teaching for Student Success Tier 1 Institute, Center for Teaching and Learning, Boise State University, June-July 2020.
- Aligning Stakeholders and Structures to Enable Risk Taking (ASSERT) Cohort 4, January-May, 2020.

AYKUT SATICI

EDUCATION

Degree	Discipline	Institution	Year
B.S.	Mechatronics Engineering	Sabanci University	2008
M.S.	Mechatronics Engineering	Sabanci University	2010
M.S.	Mathematical Sciences	The University of Texas at Dallas	2013
Ph.D.	Electrical Engineering	The University of Texas at Dallas	2014

ACADEMIC EXPERIENCE

Boise State University – Mechanical and Biomedical Engineering, Assistant Professor. (2017 – present, FT)
Massachusetts Institute of Technology – Engineering and Computer Science, Postdoctoral Associate. (2016 – 2017, FT)
The University of Naples, Federico II, – Electrical Engineering and Information Technology, Postdoctoral Researcher. (2015 – 2016, FT)

NON-ACADEMIC EXPERIENCE

Not Applicable

CERTIFICATIONS and PROFESSIONAL REGISTRATIONS

Not Applicable

CURRENT MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS

IEEE

HONORS and AWARDS

Not Applicable

SERVICE ACTIVITIES

Associate Editor for the International Conference on Robotics and Automation, (2020 – 2022)
Member of the American Control Conference Program Committee Member, (2023)
Led Robotics for Girl Scouts, (2019)
Supervisor for the Boise State Micron Robotics Challenger, (2020)

PRINCIPLE PUBLICATIONS AND PRESENTATIONS OF LAST FIVE YEARS

Aykut C. Satici, Fabio Ruggiero, et. al. "Robotic Dynamic Manipulation", Springer Nature Switzerland AG, 2022

Volkan Patoglu and **Aykut Cihan Satici**, "Optimal Design of Haptic Interfaces", Advances in Haptics, IN-TECH, 2010. (This book chapter has been downloaded over 5000 times from unique IP addresses.)

F. Ruggiero, **Aykut C. Satici**, et. al. "Perception of Deformable Objects and Nonprehensile Manipulation Control", ICINCO Springer, 2019

F. Ruggiero, **Aykut C. Satici**, et. al. "Nonprehensile manipulation of deformable objects: Achievements and Perspectives from the RoDyMan Project", vol. 25, nu. 3, pp.83,92 IEEE Robotics & Automation Magazine, 2018

Ryan Montrose, **Aykut C. Satici**, and John Gardner, "Centralized and Decentralized Optimal Control of Variable Speed Heat Pumps", Energies, MDPI, 2021

Wankun Sirichotiyakul, Volkan Patoglu, Aykut C. Satici, "Efficient Singularity-Free Workspace Approximations Using Sum-of-Squares Programming", Journal of Mechanisms and Robotics, 2020.

D. Serra, F. Ruggierro, **A. C. Satici**, et. al., "Time-Optimal Paths for a Robotic Batting Task", Informatics in Control, Automation and Robotics, Springer, 2018.

L. Buonocore, J. Cacace, A. Donaire, **A. C. Satici**, et. al., "Nonprehensile manipulation of defomable objects", Robotics and Automation Magazine (RAM), 2018.

Aykut Cihan Satici, Alejandro Donaire, Bruno Siciliano, ,"Intrinsic Dynamics and Total Energy Shaping Control of the Ballbot System", International Journal of Control, 2016.

Aykut C Satici, Mark W. Spong, "Global Swarming With Connectivity Via Lagrange-Poincaré Equations,", Automatica, Volume 71, 2016.

MOST RECENT PROFESSIONAL DEVELOPMENT ACTIVITIES

National Effective Teaching Institute, (2018)

DONALD PLUMLEE

EDUCATION

Degree	Discipline	Institution	Year
B.S.	Mechanical Engineering	Texas A&M University	1993
M.S.	Mechanical Engineering	Boise State University	2003
Ph.D.	Mechanical Engineering	University of Idaho	2007

ACADEMIC EXPERIENCE

Boise State University – College of Engineering, Associate Dean for Academic Affairs. (2021 – present, FT)
Boise State University – Mechanical and Biomedical Engineering, Associate Professor. (2014 – present, FT)
Boise State University – Mechanical and Biomedical Engineering, Department Chair. (2014 – 2020, FT)

NON-ACADEMIC EXPERIENCE

Not Applicable

CERTIFICATIONS and PROFESSIONAL REGISTRATIONS

Licensed Professional Engineer

CURRENT MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS

Pi Tau Sigma
Tau Beta Pi
International Microelectronics and Packaging Society (IMAPS)
American Society of Engineering Education (ASEE)

HONORS and AWARDS

BSU Foundation Scholars Award for Teaching, (2014)

SERVICE ACTIVITIES

Boise State University "Top Ten Scholars" Selection Committee, (2011 – 2020)
Boise State University Academic Leadership Committee, (2014 – 2020)
Boise State University Decision Support: Project Implementation Working Group, (2019 – 2020)
Chair of the Civil Engineering Department Chair Search Committee, (2018 – 2019)
College of Engineering Executive Committee (EXCO), (2014 – 2020)
College of Engineering Assessment Committee (ABET), (2013 – 2020)

PRINCIPLE PUBLICATIONS AND PRESENTATIONS OF LAST FIVE YEARS

Black, D., Harper, R., Ward, P., Davlin, J., Bentancourt, O., **Plumlee, D.**, & Browning, J. (2020). "*A cathode support structure for use in a magnetron oscillator experiment*." INTERNATIONAL JOURNAL OF APPLIED CERAMIC TECHNOLOGY, *17*(5), 2393-2406.

Cornell, K. A., Benfield, K., Berntsen, T., Clingerman, J., Croteau, A., Goering, S., **D. Plumlee** & Oxford, J. T. (2020). "*A Cold Atmospheric Pressure Plasma Discharge Device Exerts Antimicrobial Effects*." INTERNATIONAL JOURNAL OF LATEST TRENDS IN ENGINEERING & TECHNOLOGY: IJLTET, *15*(3), 036.

McNeilly, S. A., Pakala, K., & **Plumlee, D.** (2020). "Revolutionizing Mechanical Engineering Undergraduate Curriculum," ASEE Virtual Annual Conference and Exposition.

Kramer, Kyle; Carlson, Jessica; McCarver, Joe; Ravenscroft, Cory; Croteau, Adam; White, Amanda; Kennedy, Zeke; Kandadai, Nirmala; Estrada, David; **Plumlee, Don**; and Browning, Jim, "Understanding the Effects of Plasma Parameters on Plasma-Jet Printed Material Films" (2019). *2019 Undergraduate Research and Scholarship Conference*. 88. https://scholarworks.boisestate.edu/under_conf_2019/88

Browning, J., Pearlman, M., **Plumlee, D.**, Akinwande, T., Worthington, M., & Cipolla, J. (2017, May). Development Of A Phase-Controlled Magnetron Experiment Using A Modulated Electron Source. In *2017 IEEE International Conference on Plasma Science (ICOPS)* (pp. 1-1). IEEE.

Browning, J., Saxena, V., **Plumlee, D.**, Akinwande, T., Worthington, M., & Hay, B. (2016, June). A phase-controlled magnetron using a modulated electron source," Plasma Science (ICOPS), 2016 Abstracts IEEE International Conference on, Banff, Alberta, Canada, June 2016.

MOST RECENT PROFESSIONAL DEVELOPMENT ACTIVITIES

PKAL STEM Leadership Institute
Intergraph EMS Modeling Course

TODD OTANICAR

EDUCATION

Degree	Discipline	Institution	Year
B.S.	Aerospace Engineering	University of Kansas	2002
M.S.	Mechanical Engineering	University of Cincinnati	2005
Ph.D.	Mechanical Engineering	Arizona State University	2009

ACADEMIC EXPERIENCE

Boise State University – Mechanical and Biomedical Engineering, Department Chair. (2021 – present, FT)
Boise State University – Mechanical and Biomedical Engineering, Associate Professor. (2019 – present, FT)
The University of Tulsa – Mechanical Engineering, Assistant Professor. (2016 – 2019, FT)

NON-ACADEMIC EXPERIENCE

Exaeris Water Innovations LLC – Chief Scientist, developed technical models, oversaw device design and testing. (2015 – 2022)

CERTIFICATIONS and PROFESSIONAL REGISTRATIONS

Licensed Professional Engineer

CURRENT MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS

American Society of Thermal Fluids Engineers (ASTFE)

HONORS and AWARDS

American Society of Biomechanics Early Career Achievemetn Award, (2021)
Kids in Danger Best Friend Award, (2021)
Orthopaedic Research Society's Harris Award for Basic and Clinical Hip Research, (2020)
Arkansas Business Healthcare Hero: Innovation Hero Nominee, Little Rock, AR., (2020)
Phenomenal Woman Awardee, University of Arkansas for Medical Sciences, (2019)

SERVICE ACTIVITIES

Boise State University Academics and Research Subcommittee Sustainability Governance Council, (2020 – present)
Board Member of the Boise State University Idaho Chapter CleanTech Alliance, (2021 – present)
Idaho Strategic Energy Alliance Utility-Scale Storage Task Force, (2021 – present)

Mechanical and Biomedical Engineering Faculty Search Committee, (2019)
Mechanical and Biomedical Engineeirng ABET Committee, (2019 – 2021)
Chair of the University of Tulsa's Provost's Task Force on Research and Scholarship, (2018 – 2019)
Member of the University of Tulsa Graduate Council, (2017 – present)

PRINCIPLE PUBLICATIONS AND PRESENTATIONS OF LAST FIVE YEARS

Christen CE, Gomez-Hernandez J, **Otanicar TP**, "Bimodal Particle Distributions with Increased Thermal Conductivity for Solid Particles as Heat Transfer Media and Storage Materials," *International Journal of Heat and Mass Transfer*, 184, 2022.

Alagumalai A, Qin C, Vimal KEK, Solomin E, Yang L, Zhang P, **Otanicar T**, Lasaeian A, Chamka AJ, Rashidi MM, Wongwises S, Ahn HS, Lei Z, Saboori T, Mahian O, "Conceptual analysis framework development to understand barriers of nanofluid commercialization," *Nano Energy*, 92, 2022.

Espejo Sanchez A, Goel N, **Otanicar T**, "Novel Hybrid Solar Nanophotonic Distillation Membrane with Photovoltaic Module for Co-production of Electricity and Water," *Applied Energy*, 305, 2022.

Goel N, Fong TML, Shingledecker JP, Russel A, Keller MW, Shirazi SA, **Otanicar TP**, "Effect of temperature on abrasion erosion in particle based concentrating solar powerplants," *Solar Energy*, 224, 2021.

Goel N, O'Hern H, Orosz M, **Otanicar T**, "Annual simulation of photovoltaic retrofits within existing parabolic trough concentrating solar powerplants," *Solar Energy,* 211, 2020.
Wingert R, O'Hern H, Orosz M, Harikumar P, Roberts K, **Otanicar T**, "Spectral beam splitting retrofit for hybrid PV/T using existing parabolic trough power plants for enhanced power output," *Solar Energy*, 202, 2020.

Otanicar TP, Wingert R, Orosz M, McPheeters C, "Concentrating Photovoltaic Retrofit for Existing Parabolic Trough Solar Collectors: Design, Experiments, and Levelized Cost of Electricity," *Applied Energy*, 265, 2020.

Goel N, Taylor RA, **Otanicar T**, "A review of nanofluid-based direct absorption solar collectors: Design considerations and experiments with hybrid PV/Thermal and direct steam generation collectors," *Renewable Energy*, 145, 2020.

Otanicar T, Patel J, Sarica E, "Mechanical milling of thermoresponsive poly(N-isopropylacrylamide) hydrogel for particle-oriented oil-water separation," *Journal of Applied Polymer Science*, 137, 2020.

MOST RECENT PROFESSIONAL DEVELOPMENT ACTIVITIES

Flexible Teaching for Student Success Boise State University Center for Teaching and Learning, (2020)

MAHMOOD MAMIVAND

EDUCATION

Degree	Discipline	Institution	Year
BS	Aerospace Engineering	Amirkabir University	2004
MS	Mechanical Engineering	Tarbiat Modares University	2007
PhD	Mechanical Engineering	Mississippi State University	2014

ACADEMIC EXPERIENCE

Boise State University – Mechanical and Biomedical Engineering, Assistant Professor. (2017-Present, FT)
University of Wisconsin-Madison – Materials Science, Postdoctoral Researcher. (2014-2017, FT)

NON-ACADEMIC EXPERIENCE

Nargan Engineers and Constructors – Mechanical Engineer, Fixed Equipment Designer. (2009-2011, FT).

CERTIFICATIONS and PROFESSIONAL REGISTRATIONS:

Not Applicable

CURRENT MEMBERSHIPS IN PROFESSIONAL ORGANIZATIONS

American Society of Mechanical Engineers (ASME)
The Minerals, Metals & Materials Society (TMS)

HONORS and AWARDS:

Not Applicable

SERVICE ACTIVITIES

Grant reviewer, National Science Foundation, (2021)
Grant Reviewer, Department of Energy, (2019,2021)
Guest Editor, Journal of Metals, (2020 – 2021)
Symposium Co-Organizer for ASME-IMECE, (2018 – 2019)
Symposium Co-Organizer for TMS, (2017, 2020)
Mechanical and Biomedical Engineering Search Committee, (2019, 2021)

Mechanical and Biomedical Engineering Academic Dishonesty Committee, (2018 – present)
Mechanical and Biomedical Engineering Graduate Committee, (2017 – present)
Micron School of Materials Science and Engineering Interdisciplinary Graduate Program, (2017 – present)
Mechanical and Biomedical Engineering Solid Mechanics Curriculum Alignment Team, (2018 – present)
Mechanical and Biomedical Engineering Computational Curriculum Alignment Team, (2018 – present)

PRINCIPAL PUBLICATIONS AND PRESENTATIONS OF LAST FIVE YEARS

E. Moshkelgosha, **M. Mamivand** (2021). *"*Three-dimensional phase field modeling of fracture in shape memory ceramics*," International Journal of Mechanical Sciences*.

A. Lupercio, E. Moshkelgosha, R. Winters, C. Doyle, **M. Mamivand**, A. Nelson, *B. Jaques (2021). *"*Ball-on-ring test validation for equibiaxial flexural strength testing of engineered ceramics*," International Journal of Ceramic Engineering & Science*.

E. Moshkelgosha, **M. Mamivand** (2021). *"*Concurrent modeling of martensitic transformation and crack growth in polycrystalline shape memory ceramics*," Engineering Fracture Mechanics*.

S. Cui, **M. Mamivand**, D. Morgan (2020). *"*Simulation of Cu precipitation in Fe-Cu dilute alloys with cluster mobility*," Materials & Design*.

E. Moshkelgosha, **M. Mamivand** (2020). *"*Phase Field Modeling of Crack Propagation in Shape Memory Ceramics–Application to Zirconia*," Computational Materials Science*.

M. Mamivand, P. Wells, H. Ke, S. Shu, GR Odette, D. Morgan (2019). *"*CuMnNiSi precipitate evolution in irradiated reactor pressure vessel steels: Integrated Cluster Dynamics and experiments*," Acta Materialia*.

M. Asle Zaeem, N. Zhang, **M. Mamivand** (2019). "A Review of Computational Modeling Techniques in Study and Design of Shape Memory Ceramics*," Computational Material Science*.

M. Mamivand, Y. Yang, J. Busby, D. Morgan (2017). *"*Integrated Modeling of Second Phase Precipitation in Cold-Worked 316 Stainless Steels under Irradiation*," Acta Materialia*.

MOST RECENT PROFESSIONAL DEVELOPMENT ACTIVITIES

Proposal Workshop, National Science Foundation, (2019)
Aligning Stakeholders and Structures to Enable Research Transformation (ASSERT), Boise State University, (2020)

ZHANGXIAN DENG

EDUCATION

Degree	Discipline	Institution	Year
B.E.	Mechatronics Engineering	Zhejiang University	2010
Ph.D.	Mechanical Engineering	The Ohio State University	2015

ACADEMIC EXPERIENCE

Boise State University – Mechanical and Biomedical Engineering, Assistant Professor. (2018-Present, FT)

The Ohio State University – Mechanical Engineering, Postdoctoral Researcher. (2015-2018, FT)

NON-ACADEMIC EXPERIENCE

Not Applicable

CERTIFICATIONS and PROFESSIONAL REGISTRATIONS

Not Applicable

CURRENT MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS

Institute of Electrical and Electronics Engineers (IEEE)

HONORS and AWARDS

Not Applicable

SERVICE ACTIVITIES

Mentor, NSF Research Experience for Undergraduates (REU), (2019, 2021)
Mechanical and Biomedical Engineering Graduate Committee, (2018 – 2020)
Mechanical and Biomedical Engineering Student Affairs Committee, (2021 – present)

PRINCIPLE PUBLICATIONS AND PRESENTATIONS OF LAST FIVE YEARS

K. Fujimoto, J. Watkins, T. Phero, D. Litteken, K. Tsai, T. Bingham, K. Ranganatha, B. Johnson, **Z. Deng**, B. Jaques, and D. Estrada. "Aerosol jet printed capacitive strain gauge for soft structural materials." *Npj Flexible Electronics*. 32. 2020

Z. Deng, J. J. Scheidler, V. M. Asnani, and M. J. Dapino. "Shunted magnetostrictive devices in vibration control." *Smart Materials and Structures*. 29(10): 105007. 2020

L. Weng, G. Xie, B. Zhang, W. Huang, B. Wang, and **Z. Deng**. "Magnetostrictive tactile sensor array for force and stiffness detection." *Journal of Magnetism and Magnetic Materials*. 513: 167068. 2020

L. Shu, J. Yang, B. Li, **Z. Deng**, and M. J. Dapino. "Impact force sensing with magnetostrictive Fe-Ga alloys." *Mechanical Systems and Signal Processin.* 106418. 2019

Z. Deng, I. Nas, and M. J. Dapino. "Torque analysis in coaxial magnetic gears considering nonlinear magnetic properties and spatial harmonics." *IEEE Transactions on Magnetics*. 55(2): 8200511. 2019

Z. Deng and M. J. Dapino. "Review of magnetostrictive materials for structural vibration control." *Smart Materials and Structures*. 27(11):113001. 2018

Z. Deng, M. B. Gingerich, T. Han, and M. J. Dapino. "Yttria-Stabilized Zirconia-Aluminum matrix composites via ultrasonic additive manufacturing." *Composite B: Engineering*. 151:215-221. 2018

Z. Deng, Q. Zhang, and M. J. Dapino. "Dynamic model for magnetostrictive systems with applications to damper design." *IEEE/ASME Transactions on Mechatronics*. 23(4):1823-1831. 2018

Z. Deng and M. J. Dapino. "Review of magnetostrictive vibration energy harvesters." *Smart Materials and Structures*. 26(10): 103001. 2017.

Z. Deng*. "Dynamic discrete energy-averaged model for magnetostrictive materials." *Journal of Magnetism and Magnetic Materials*. 441: 757-763. 2017.

Z. Deng and M. J. Dapino. "Magnetic flux biasing of magnetostrictive sensors." *Smart Materials and Structures*. 26(5): 055027. 2017.

Z. Deng*. "Explicit and efficient discrete energy-averaged model for Terfenol-D." *Journal of Applied Physics*. 122(4): 043901. 2017.

R. L. Harne, **Z. Deng**, and M. J. Dapino. "Adaptive magnetoelastic metamaterials: a new class of magnetorheological elastomers." *Journal of Intelligent Material Systems and Structures.* 1045389X17721037. 2017.

MOST RECENT PROFESSIONAL DEVELOPMENT ACTIVITIES

Summer 2019 Course Design Institute 1.0, (2019)
Mobile Learning Summer Institute, (2019)

LEWIS-CLARK STATE COLLEGE

SUBJECT

Master of Nursing, Nursing Leadership in Healthcare

REFERNCE

December 2020	The Board approved LC State's first graduate certificate program in Nursing Management and Leadership.

APPLICABLE STATUTE, RULE, OR POLICY

Idaho Code § 33-3101

Idaho State Board of Education Governing Policies & Procedures, Section III.G and III.Z., Planning and Delivery of Postsecondary Programs and Courses

BACKGROUND/DISCUSSION

Lewis-Clark State College requests approval to offer a new Master of Science Nursing (MSN) degree in Nursing Leadership in Healthcare. This program will offer two tracks:

1) Bachelor of Science Nursing (BSN) – MSN track (30 credits)
2) Registered Nurse (RN) – MSN track (11-17 bridge credits + 30 graduate level credits)

The fully online MSN program, Nursing Leadership in Healthcare, challenges the BSN-prepared Registered Nurse to develop the evidenced-based knowledge and skills to become a transformative nurse leader effective across a diverse range of healthcare and academic environments. The graduate will develop expertise to practice at an advanced level in financial and human capital management and quality improvement and safety management. Graduates will be equipped with strategies for managing policy and other issues encountered in healthcare and educator leadership roles.

The American Organization for Nursing Leadership (AONL) core concepts are woven throughout the program. Graduates are eligible for the AONL's Certified Nurse Manager and Leader (CNML) examination.

The RN to MSN track is designed for the nurse with an associate degree in nursing who wishes to pursue advanced education upon completion of select bridge courses.

IMPACT

The proposed MSN degree is in response to the need expressed by local and regional industry partners for more nurse leaders and managers to support the health care workforce. Nursing (RN) is listed among the top occupations in

terms of job growth through 2026 (Idaho Department of Labor; US Bureau of Labor Statistics). The pandemic reinforced the need for hospitals and health care agencies to develop new care delivery models. As the care providers closest to patients, nurses are integral to these discussions. Graduate level coursework in leadership, management, and business processes provides a strong foundation for nurse leaders who contribute to these health system changes.

Existing infrastructure, such as the learning management system, are in place to facilitate the online program. There are sufficient faculty resources to initiate the graduate program. Reallocation of current faculty teaching assignments will occur to provide for new course instruction. The MSN program will have a very modest impact on LC State Library resources. Given LC State's online presence and Coeur d'Alene Outreach Center, there is well-established access to the library's holdings through online database and journal access, and through the inter-library loan programs with partner institutions.

The program will need to purchase several online journals and other web-based commercial reference management software packages. Annual cost is estimated at less than $5,000. It is anticipated that faculty teaching in the MSN program will be shared with the BSN program. Over time, a teaching load equivalent to two FTE may be needed for delivery of MSN curriculum. The program will also utilize adjuncts with necessary credentials and content knowledge. In FY22, the Governor authorized the addition of $400,000 in ongoing funds to LC for nursing programs. Funds will be used to support doctoral-prepared nursing faculty to teach in the master's and BSN programs. Funds may also be used to support travel to supervise students in their practicum experiences. Total financial impact is $52,595 - $122,143 over a four-year period.

The program is proposed as the first full graduate program offered by LC State. Board approval would allow LC State to offer a degree that was developed to meet healthcare industry needs.

ATTACHMENTS

Attachment 1 – Master of Nursing, Nursing Leadership in Healthcare Proposal

BOARD STAFF COMMENTS AND RECOMMENDATIONS

The proposed program will be LC State's first master's degree offering and is intended to fill a need for more nurse leaders and managers expressed by local and regional industry partners such as Kootenai Health and St. Joseph Regional Medical Center. These healthcare partners collaborated with LC State faculty to develop the curriculum. Beginning Fall 2024, the program will be offered fully online with one credit required as a face-to-face immersion course. The program will include a 500-hour practicum experience and will prepare graduates to complete American Organization for Nursing Leadership Certified Nurse Manager

and Leader examination. The RN to MSN track is designed for the nurse with an associate degree in nursing who wishes to pursue advanced education upon completion of select bridge courses. Graduates who have earned the graduate certificate in Nursing Management and Leadership will be able to seamlessly transition to the full degree.

LC State projects five initial enrollments in its first year, reaching 25 by year five and graduating 10 by year four. The program will require a minimum enrollment of 15 per cohort by year three to maintain sustainability. LC State is committed to offering the program for a minimum of five years to assess enrollment trends.

The proposed master's program is consistent with LC State's Service Region Program Responsibilities and their current institution plan for Delivery of Academic Programs in Region II. Currently, Idaho State University has statewide program responsibility to offer a Master of Science in Nursing and shares statewide program responsibility with Boise State University for Region III. LC State provides that there are no master's degrees focused on nursing leadership currently being offered by Idaho universities. The chart below represents the status of master's nursing program offerings.

Instit.	Program	CIP Code	Degree	Location	Responsibility	Method of Delivery
BSU	Nursing **(suspended)**	51.3801	MN/MSN	Boise	Regional	Online
BSU	Adult-Gerontology Nurse Practitioner – Acute Care option **(scheduled for discontinuation)**	53.3818	MN	Boise	Regional	Online
BSU	Adult-Gerontology Nurse Practitioner-Primary Care option **(scheduled for discontinuation)**	53.3818	MN	Boise	Regional	Online
ISU	Nursing: Education Option	51.3801	MS Option	Online	Regional	Online

The proposal completed the program review process and was presented to the Council on Academic Affairs and Programs on December 7, 2023; and to the Instruction, Research, and Student Affairs on February 15, 2024.

Board staff recommends approval.

BOARD ACTION

I move to approve the request by Lewis-Clark State College to offer a Master of Nursing, Nursing Leadership in Healthcare as presented in Attachment 1.

Moved by _____ Seconded by _____ Carried Yes _____ No _____

Institutional Tracking No. _____

Idaho State Board of Education

FULL PROPOSAL FORM

Academic Degree and Certificate Program

Date of Proposal Submission:	August 25, 2023			
Institution Submitting Proposal:	Lewis-Clark State College			
Name of College, School, or Division:	Professional Studies/ Graduate School			
Name of Department(s) or Area(s):	Nursing & Health Sciences			
Official Name of the Program:	Master of Science in Nursing Leadership in Healthcare			
Implementation Date:	Fall 2024			
Degree Information:	Degree Level: Graduate	Degree Type: Master of Science in Nursing (MSN)		
CIP code (consult IR /Registrar):	51.3802			
Method of Delivery: Indicate percentage of face-to-face, hybrid, distance delivery, etc.	Online with 1 credit required face-to-face immersion			
Geographical Delivery:	Location(s)	Online	Region(s)	Online
Indicate (X) if the program is/has: (Consistent with Board Policy V.R.)	☐ Self-Support fee	☐ Professional Fee	☐ Online Program Fee	
Indicate (X) if the program is: (Consistent with Board Policy III.Z.)	☐ Regional Program Responsibility	☐ Statewide Program Responsibility		

Proposed Action

- [X] **New program offering**
  - [ ] Undergraduate program
  - [X] Graduate program
  - [ ] Undergraduate certificate (30 credits or more)
  - [ ] Graduate certificate (30 credits or more)
- [ ] **New branch campus or change in location**
- [ ] **Modification of Existing Academic Programs**
  - [ ] Converting one program option to a stand-alone program
  - [ ] Consolidating two or more undergraduate programs into one
  - [ ] Consolidating two or more graduate programs into one
  - [ ] Splitting an existing program into two or more programs
  - [ ] Program expansion outside an institution's Designated Service Region as defined in Board Policy III.Z.
  - [ ] Adding certificate or degrees to existing programs

	08/25/2023		**08/25/2023**
College Dean	Date	Vice President for Research (as applicable)	Date
			12/5/2023
Graduate Dean/other (as applicable)	Date	Academic Affairs Program Manager, OSBE	Date
	09/01/2023		12/06/2023
FVP/Chief Fiscal Officer	Date	Chief Financial Officer, OSBE	Date
	09/05/23		12/5/2023
Provost/VP for Instruction	Date	Chief Academic Officer, OSBE	Date

09/07/2023

President	Date	SBOE/Executive Director or Designee Approval	Date

Before completing this form, refer to Board Policy Section III.G., Postsecondary Program Approval and Discontinuance. This proposal form must be completed for the creation of each new program. All questions must be answered.

Rationale for Creation or Modification of the Program

1. **Describe the request and give an overview of the changes that will result.** What type of substantive change are you requesting? Will this program be related or tied to other programs on campus? Identify any existing program that this program will replace. If this is an Associate degree, please describe transferability.

   The proposed Master of Science in Nursing (MSN) program will be the first full master's degree at Lewis-Clark State College, and will join two existing graduate certificates (one is in Nursing Management & Leadership). The new MSN program will include comprehensive coursework in leadership, management, and business processes that provides a strong foundation for nurse leaders. The new MSN program, adhering to the American Association of Colleges of Nursing (AACN) Essentials document, will include a 500 hour practicum experience and will prepare graduates to complete a national certification examination. Graduates who have earned the graduate certificate in Nursing Management & Leadership will be able to seamlessly transition to the full degree.

2. **Need for the Program**. Describe evidence of the student, regional, and statewide needs that will be addressed by this proposal to include student clientele to be served and address the ways in which the proposed program will meet those needs.

   a. **Workforce and economic need:** Provide verification of state workforce needs that will be met by this program. Include job titles and cite the data source. Describe how the proposed program will stimulate the state economy by advancing the field, providing research results, etc.

      Nursing (RN) is listed among the top occupations in terms of job growth through 2026 (Idaho Department of Labor; US Bureau of Labor Statistics). According to the Bureau of Labor Statistics *Employment Projections* 2016-2026, Registered Nursing (RN) is listed among the top occupations in terms of job growth through 2026. The RN workforce is expected to grow from 2.9 million in 2016 to 3.4 million in 2026, an increase of 438,100 or 15%. Still, the Bureau projects an additional 203,700 new RNs are needed each year through 2026, to fill new positions and to replace retiring nurses. The pandemic reinforced the need for hospitals and health care agencies to develop new care delivery models, and as the care providers closest to patients, nurses are integral to these discussions. Graduate level coursework in leadership, management, and business processes provides a strong foundation for nurse leaders who contribute to these health system changes. Currently, there are no master's degrees focused on nursing leadership offered at Idaho public colleges/ universities. LC State proposes this degree as its first full graduate program to fulfill a need expressed by local and regional industry partners for more nurse leaders and managers. These healthcare partners collaborated with LC State faculty to develop the curriculum. An increasing need for nurses and nurse leaders, coupled with industry support, reinforces the program's future viability and sustainability.

      Lewis-Clark State College (LC State) began discussions about offering graduate degrees and certificates nearly a decade ago, with emphasis on degrees that build on our highly

regarded programs in the health sciences and related fields. Students, graduates, and regional industry partners have expressed interest in graduate level offerings. As one example, Kootenai Health, a large health system in northern Idaho, continues to have increased need for nurses to serve as leaders and managers within its organization. Another healthcare partner, St. Joseph Regional Medical Center has identified this same need.

As initial steps, the college developed both an undergraduate and a graduate certificate in Nursing Management and Leadership. While this is helpful in the short term, Kootenai Health System and other industry partners want and need nurses prepared with a full master's degree.

Further, over the past two years, the LC State's BSN program Advisory Board discussed the need for a leadership focused master's degree in nursing and expressed support for the college and division to move in this direction. At the most recent Advisory Board meeting (April 2023), the general degree plan, curriculum, and learning outcomes were presented. Members unanimously supported the college and division moving toward offering the graduate degree and pledged support in curricular development and clinical placement opportunities.

The 2022 Idaho Nursing Workforce Report conducted by the Idaho Nursing Workforce Center does not provide detail on nurses prepared at the master's level, beyond those in advanced practice or certified nurse practitioner roles. However, interesting aspects of the report that compel approval of this master's degree include:

- Among CNOs, most have been in their position for less than 2 years, and the situation is worse for those in the long-term care setting.
- One of the reasons nurses migrate out of Idaho is to pursue graduate education. RNs have also left Region II for the Treasure Valley, perhaps in pursuit of an advanced degree leading to progression on the career ladder.
- RN self-reported data reveal 9.87% of Idaho nurses with a non-APRN master's degree.
- Of nurses licensed in Idaho and holding a clinical nurse specialist certification, 92% were educated outside of Idaho.
- Data from 2019 indicates 18 graduates of Idaho non-NP master's programs; however, only two (2) graduated from an Idaho public institution. Data from 2020 and 2021 show 21 and 23 graduates, respectively, all from a private Idaho university. In 2022, 4 graduated from a public Idaho university and 26 from a private institution.
- Idaho Department of Labor reports that Idaho's population will continue to grow, requiring growth in the nursing sector. Additionally, healthcare systems are looking to change models of care delivery, requiring more master's level nurses to serve as agents of change.

b. Student demand. What is the most likely source of students who will be expected to enroll (full-time, part-time, outreach, etc.). Provide evidence of student demand/ interest from inside and outside of the institution.

LC State is a destination for transfer students from Idaho's community colleges, each of which has an associate degree program in nursing. To serve the needs of LC State BSN graduates, associate degree in nursing community college graduates, and industry partners, college administration approached the Idaho State Board of Education (SBOE) in 2018 with a request to support a change in Idaho statute to allow LC State to offer graduate-level education. In the 2020 session, a northern Idaho state representative introduced this

change, which was approved by both legislative chambers and the Governor, clearing the way for LC State to bring forward to the Idaho State Board of Education and the Northwest Commission on Colleges and Universities (NWCCU) requests for approval of master's level certificates and degrees. In addition to seeking legislative and Idaho State Board of Education approval, the addition of graduate programs at LC State has been discussed with all internal constituent groups (faculty, staff and students), and addressed at the institutional All-Campus and town hall-type events. Faculty Senate voted in December of 2020 to support forward movement of graduate level programming.

The student clientele to be served with this initial graduate program includes Registered Nurse (RN) employees of industry partners and LC State BSN graduates. As noted above, there is strong interest from health care partners for master's level education in the area of nursing management and leadership. This initial graduate program will address this need by offering a fully online curriculum, targeting the working nurse who wishes to advance up the career ladder. It is anticipated that, to gain advanced knowledge and to distinguish themselves to future employers, current Bachelor of Science in Nursing students will enroll in the graduate program immediately upon graduation. Additionally, the online RN to MSN option will provide an accelerated option for associate degree prepared nurses seeking a leadership position within their organization.

c. **Societal Need**: Describe additional societal benefits and cultural benefits of the program.
The AACN advocates for a well-educated nursing workforce to help assure quality patient care. Further, positive outcomes are 'linked to nurses prepared at the baccalaureate and graduate degree levels" (AACN, 2019, para. 1).

3. Program Prioritization

Is the proposed new program a result of program prioritization?

Yes_____ No XX

If yes, how does the proposed program fit within the recommended actions of the most recent program prioritization findings.

4. Credit for Prior Learning

Indicate from the various crosswalks where credit for prior learning will be available. If no PLA has been identified for this program, enter 'Not Applicable'.

Not applicable.

5. Affordability Opportunities

Describe any program-specific steps taken to maximize affordability, such as: textbook options (e.g., Open Educational Resources), online delivery methods, reduced fees, compressed course scheduling, etc. This question applies to certificates, undergraduate, graduate programs alike.

The online delivery mode and part-time/ full-time options, allow nurses across the state, region, and beyond, to access high quality education with limited travel costs and at a pace that allows for continued employment. Whenever possible, low-cost textbooks will be utilized, and many of the supplemental course materials are anticipated to be open-access. Some courses will be delivered in a compressed format, using the two 8-week blocks in each of fall and spring semester, and the 8-week block in summer session.

Enrollments and Graduates

6. **Existing similar programs at Idaho Public Institutions.** Using the chart below, provide enrollments and numbers of graduates for similar existing programs at your institution and other Idaho public institutions for the past four years.

Idaho State and Boise State universities offer master's and doctoral degrees in nursing. However, neither offers a master's in the nursing leadership and management areas as is proposed by LC State.

Instit	Program Name	Fall Headcount Enrollment in Program				Number of Graduates From Program (Summer, Fall, Spring)			
		FY__	FY__	FY__	FY__ (most recent)	FY__	FY__	FY__	FY__ (most recent)
N/A									

7. **Justification for Duplication** (if applicable). If the proposed program is similar to another program offered by an Idaho public higher education institution, provide a rationale as to why any resulting duplication is a net benefit to the state and its citizens. Describe why it is not feasible for existing programs at other institutions to fulfill the need for the proposed program.

Not applicable.

8. **Projections for proposed program:** Using the chart below, provide projected enrollments and number of graduates for the proposed program:

Proposed Program: Projected Enrollments and Graduates First Five Years											
Program Name: MSN Nursing Leadership in Healthcare											
Projected Fall Term Headcount Enrollment in Program						**Projected Annual Number of Graduates From Program**					
FY25 (first year)	FY26	FY27	FY28	FY29		FY25 (first year)	FY26	FY27	FY28	FY29	
5	10	15	20	25		0	0	5	10	15	

9. **Describe the methodology for determining enrollment and graduation projections.** Refer to information provided in Question #2 "Need for the Program" above. What is the capacity for the program? Describe your recruitment efforts? How did you determine the projected numbers above?

   Through inquiry and informal survey of current nursing program graduates and employer partners. Discussion with BSN program Advisory Board members to determine conservative projected program enrollments.

10. **Minimum Enrollments and Graduates.**
    a. What are the minimums that the program will need to meet in order to be continued, and what is the logical basis for those minimums?

       Based on projection of 2 FTE to support graduate program instruction, anticipate minimum enrollment of 15 per cohort by year 3.

    b. If those minimums are not met, what is the sunset clause by which the program will be considered for discontinuance?

       Administration is committed to offering the program for a minimum of 5 years to assess enrollment trends and opportunities.

11. **Assurance of Quality.** Describe how the institution will ensure the quality of the program. Describe the institutional process of program review. Where appropriate, describe applicable specialized accreditation and explain why you do or do not plan to seek accreditation.

    LC State has a well-established program assessment process that occurs every 3 years, on a rotating basis. The Nursing & Health Sciences Division conducts an assessment and develops a Unit Action Report (UAR) annually. The assessment process begins with program faculty creating program learning outcomes and setting benchmarks for each. Programs gather relevant data, compare data to established benchmarks, and analyze the overall results. The results inform changes to learning outcomes, benchmarks, and measurement tools. Findings also serve as the basis for the work plan, which specific programmatic changes resulting from data analysis. Throughout the next year, programs implement work plan actions. Upon approval, specific benchmarks and direct / indirect measurement tools for each program learning outcome will be established.

    Additional metrics such as completion and placement rates and employer satisfaction, will provide important data on the quality of graduates and the usefulness of the program in assisting nurses to advance on the career ladder. Graduate satisfaction will be assessed through an end of program survey and in an exit interview. Graduates will be prepared to take a national certification exam. Exam pass rates will provide insight into program effectiveness. To close the feedback loop, data will be reviewed and used, at least annually, to refine or modify course outcomes/ expectations, assignments, content of courses, and internship experiences.

    The existing BSN program is fully accredited by the Commission on College Nursing Education (CCNE), and we will seek accreditation for this proposed MSN program following one year of program delivery.

12. **In accordance with Board Policy III.G., an external peer review is required for any new doctoral program.** Attach the peer review report as **Appendix A**.

    Not applicable.

13. **Teacher Education/Certification Programs** All Educator Preparation programs that lead to certification require review and recommendation from the Professional Standards Commission (PSC) and approval from the State Board of Education.

Will this program lead to certification?

Yes_____ No_____

If yes, on what date was the Program Approval for Certification Request submitted to the Professional Standards Commission?

14. **Three-Year Plan: If this is a new proposed program, is it on your institution's approved 3-year plan?**

Yes **X** No _____

If yes, proceed to question 15. If no:

a. **Which of the following statements address the reason for adding this program outside of the regular three-year planning process.**

Indicate (X) by each applicable statement:

	Program is important for meeting your institution's regional or statewide program responsibilities.
	The program is in response to a specific industry need or workforce opportunity.
	The program is reliant on external funding (grants, donations) with a deadline for acceptance of funding.
	There is a contractual obligation or partnership opportunity related to this program.
	The program is in response to accreditation requirements or recommendations.
	The program is in response to recent changes to teacher certification/endorsement requirements.

b. **Provide an explanation for all statements you selected.**

Educational Offerings: Curriculum, Intended Learning Outcomes, and Assessment Plan

15. **Curriculum. Provide descriptive information of the educational offering.**

a. **Summary of requirements.** Provide a summary of program requirements using the following table.

Credit hours in required courses offered by the department (s) offering the program.	30 credits
Credit hours in required courses offered by other departments:	0 credits
Credit hours in institutional general education curriculum	0 credits
Credit hours in free electives	0 credits
Total credit hours required for degree program:	30 credits

b. Curriculum. Provide the curriculum for the program, including credits to completion, courses by title and assigned academic credit granted.

Program description:

The fully online MSN program in Nursing Leadership in Healthcare challenges the BSN-prepared registered nurse to develop the evidenced-based knowledge and skills to become a transformative nurse leader, effective across a diverse range of healthcare and academic environments. The graduate will develop expertise to practice at an advanced level in the areas of financial and human capital management and quality improvement and safety management. Graduates will be equipped with strategies for managing policy and other issues encountered in healthcare and educator leadership roles. The American Organization for Nursing Leadership (AONL) core concepts are woven throughout the program. Graduates will be prepared for the AONL's Certified Nurse Manager and Leader (CNML) examination. The RN to MSN track is designed for the nurse with an associate degree in nursing who wishes to pursue advanced education upon completion of select bridge courses.

Required coursework:

NU 507 Leadership in Healthcare Immersion (1 credit)
BUS 512 Human Resource Management in Healthcare (3 credits)
BUS 560 Leadership (3 credits)
NU 533 Health Information and Patient Care Technologies (3 credits)
NU 547 Evidence-Based Practice for Nursing Leadership (3 credits)
NU 568 Quality Improvement & Safety Management (3 credits)
NU 569 Principles of Business and Finance in Healthcare (3 credits)
NU 580 Population Health in a Global Society (3 credits)
NU 594 Nursing Leadership in Healthcare Practicum (minimum 8 credits)

c. Additional requirements. Describe additional requirements such as comprehensive examination, senior thesis or other capstone experience, practicum, or internship, some of which may carry credit hours included in the list above.

The program includes a one (1) credit face-to-face immersion course which introduces students to the college, the division, support services (student support, library, etc.), and required program components. It includes 20 lab hours focused on development of a plan for the culminating practicum. A total of eight (8) credits (480 hours in final practicum; 20 in immersion course) of practicum work is a required component of the MSN program.

16. Learning Outcomes: Expected Student Learning Outcomes and Connection to Curriculum.

a. Intended Learning Outcomes. List the Intended Learning Outcomes for the proposed program, using learner-centered statements that indicate what students will know, understand, and be able to do, and value or appreciate as a result of completing the program.

Upon completion of the Nursing Leadership in Healthcare MSN program, the graduate will:

1. Demonstrate administrative and/or practice leadership in a population health context.
2. Synthesize and disseminate evidence-based administrative and/ or practice leadership knowledge to improve health outcomes.
3. Be prepared to serve in leadership roles in clinical nursing, nursing education, or management.
4. Articulate methods, tools, performance measures, and standards related to quality, as well as apply quality and safety principles within an organization.

5. Collaborate across disciplines and with patients, families, and care teams to improve patient outcomes and enhance the healthcare experience.
6. Apply leadership communication skills, including health information management to lead and manage a team within a complex healthcare environment at individual and aggregate levels.
7. Demonstrate professionalism in all program activities reflective of nursing's value, and an attitude of personal growth and commitment to career-long learning.
8. Be prepared to successfully complete the American Organization for Nursing Leadership's Certified Nurse Manager and Leader or similar examination.

17. Assessment plans.

a. Assessment Process. Describe the assessment plan for student learning outcomes that will be used to evaluate student achievement and how the results will be used to improve the program.

LC State has a well-established program assessment process that occurs every 3 years, on a rotating basis. The Nursing & Health Sciences Division conducts an assessment and develops a Unit Action Report (UAR) annually. The assessment process begins with program faculty creating program learning outcomes and setting benchmarks for each. Programs gather relevant data, compare data to established benchmarks, and analyze the overall results. The results inform changes to learning outcomes, benchmarks, and measurement tools. Findings also serve as the basis for the work plan, which specific programmatic changes resulting from data analysis. Throughout the next year, programs implement work plan actions. Upon approval, specific benchmarks and direct / indirect measurement tools for each program learning outcome will be established.

Additional metrics such as completion and placement rates and employer satisfaction, will provide important data on the quality of graduates and the usefulness of the program in assisting nurses to advance on the career ladder. Graduate satisfaction will be assessed through an end of program survey and in an exit interview. Graduates will be prepared to take a national certification exam. Exam pass rates will provide insight into program effectiveness. To close the feedback loop, data will be reviewed and used, at least annually, to refine or modify course outcomes/ expectations, assignments, content of courses, and internship experiences.

Resources Required for Implementation – fiscal impact and budget.

Organizational arrangements required within the institution to accommodate the change including administrative, staff, and faculty hires, facilities, student services, library; etc.

18. Physical Facilities and Equipment: Describe the provision for physical facilities and equipment.

a. Existing resources. Describe equipment, space, laboratory instruments, computer(s), or other physical equipment presently available to support the successful implementation of the program.

Due to the online nature of the program, existing infrastructure, such as the learning management system, is in place.

b. Impact of new program. What will be the impact on existing programs of increased use of physical resources by the proposed program? How will the increased use be accommodated?

Not applicable.

c. Needed resources. List equipment, space, laboratory instruments, etc., that must be obtained to support the proposed program. Enter the costs of those physical resources into the budget sheet.

Not applicable.

19. Library and Information Resources: Describe adequacy and availability of library and information resources.

a. Existing resources and impact of new program. Evaluate library resources, including personnel and space. Are they adequate for the operation of the present program? Will there be an impact on existing programs of increased library usage caused by the proposed program? For off-campus programs, clearly indicate how the library resources are to be provided.

There are sufficient personnel in place to support addition of this program. The MSN program will have a very modest impact on LC State Library resources. Given LC State's online presence and Coeur 'd'Alene Outreach Center, there is well established access to the Library's holdings through online database and journal access, and through the inter-library loan program in place with partner institutions.

b. Needed resources. What new library resources will be required to ensure successful implementation of the program? Enter the costs of those library resources into the budget sheet.

A modest increase in Library resources is required to support the MSN program. Additional resources include purchase of several online journals, and potentially a web-based commercial reference management software package. The annual cost of these resources is anticipated to be less than $5,000.

20. Faculty/Personnel resources

a. Needed resources. Give an overview of the personnel resources that will be needed to implement the program. How many additional sections of existing courses will be needed? Referring to the list of new courses to be created, what instructional capacity will be needed to offer the necessary number of sections?

It is anticipated that faculty teaching in the MSN program will be shared with the BSN program, based on nursing specialty. Therefore, as many as 5-6 faculty members could carry a combined MSN / BSN teaching assignment. There is sufficient faculty resource to initiate the graduate program. Reallocation of current faculty teaching assignment will occur to provide for new course instruction. Over time, assuming full program capacity with multiple ongoing cohorts, it is anticipated that a teaching load equivalent to two (2) FTE may be needed for delivery of the MSN curriculum. In addition to reallocation of current faculty teaching assignment, adjunct instructors with necessary credentials and specialty content knowledge will be utilized.

b. Existing resources. Describe the existing instructional, support, and administrative resources that can be brought to bear to support the successful implementation of the program.

From a resource perspective, in FY22, Governor Little authorized the addition of $400,000 in ongoing funds to LC State nursing program budgets. These funds supported structural expansion of the BSN nursing simulation laboratories during the pandemic. Additionally, the funds are being used to support nursing faculty prepared at the doctoral level to teach in the master's and BSN programs. Funds may also be used to support faculty travel to supervise students in their practicum experiences.

c. Impact on existing programs. What will be the impact on existing programs of increased use of existing personnel resources by the proposed program? How will quality and productivity of existing programs be maintained?

As noted above, it is anticipated that MSN faculty will also teach in the BSN program. This model keeps nurse educators working within their area of specialization, and makes the transition for students from the BSN to the MSN program more seamless.

d. Needed resources. List the new personnel that must be hired to support the proposed program. Enter the costs of those personnel resources into the budget sheet.

Not applicable at this time.

21. Revenue Sources

a) **Reallocation of funds:** If funding is to come from the reallocation of existing state appropriated funds, please indicate the sources of the reallocation. What impact will the reallocation of funds in support of the program have on other programs?

With initial implementation of the program, it is anticipated that doctoral-prepared faculty currently teaching in the BSN program will teach some of the graduate courses. Additionally, qualified adjunct instructors will be utilized for specialized course content instruction. Initial implementation of the program will result in minimal impact on the existing nursing program.

b) **New appropriation**. If an above Maintenance of Current Operations (MCO) appropriation is required to fund the program, indicate when the institution plans to include the program in the legislative budget request.

Not applicable.

c) **Non-ongoing sources**:

i. If the funding is to come from one-time sources such as a donation, indicate the sources of other funding. What are the institution's plans for sustaining the program when that funding ends?

ii. Describe the federal grant, other grant(s), special fee arrangements, or contract(s) that will be valid to fund the program. What does the institution propose to do with the program upon termination of those funds?

Not applicable.

d) **Student Fees**:

i. If the proposed program is intended to levy any institutional local fees, explain how doing so meets the requirements of Board Policy V.R., 3.b.

Graduate program application fee = $50

ii. Provide estimated cost to students and total revenue for self-support programs and for professional fees and other fees anticipated to be requested under Board Policy V.R., if applicable.

Graduate tuition at LC State is $496 per credit (AY 2023-2024).
30 cr x $496 = $14,880.

22. Using the excel **budget template** provided by the Office of the State Board of Education, provide the following information:

- Indicate all resources needed including the planned FTE enrollment, projected revenues, and estimated expenditures for the first **four** fiscal years of the program.
- Include reallocation of existing personnel and resources and anticipated or requested new resources.
- Second and third year estimates should be in constant dollars.
- Amounts should reconcile subsequent pages where budget explanations are provided.
- If the program is contract related, explain the fiscal sources and the year-to-year commitment from the contracting agency(ies) or party(ies).
- Provide an explanation of the fiscal impact of any proposed discontinuance to include impacts to faculty (i.e., salary savings, re-assignments).

Program Resource Requirements.

- Indicate all resources needed including the planned FTE enrollment, projected revenues, and estimated expenditures for the first **four** fiscal years of
- Include reallocation of existing personnel and resources and anticipated or requested new resources.
- Second and third year estimates should be in constant dollars.
- Amounts should reconcile subsequent pages where budget explanations are provided.
- If the program is contract related, explain the fiscal sources and the year-to-year commitment from the contracting agency(ies) or party(ies).
- Provide an explanation of the fiscal impact of any proposed discontinuance to include impacts to faculty (i.e., salary savings, re-assignments).

I. PLANNED STUDENT ENROLLMENT

	FY 25		FY 26		FY 27		FY 28	
	FTE	Headcount	FTE	Headcount	FTE	Headcount	FTE	Headcount
A. New enrollments		5		10		10		15
B. Shifting enrollments	0	0		5		15		20
Total Enrollment	0	5	0	15	0	25	0	35

II. REVENUE

	FY 25		FY 26		FY 27		FY 28	
	On-going	One-time	On-going	One-time	On-going	One-time	On-going	One-time
1. New Appropriated Funding Request	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
2. Institution Funds	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
3. Federal	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
4. New Tuition Revenues from Increased Enrollments	$28,908.75		$86,726.25		$124,530.00		$162,333.75	
5. Student Fees	$3,331.25		$9,993.75		$14,350.00		$18,706.25	
6. Other (i.e., Gifts)	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Total Revenue	$32,240	$0	$96,720	$0	$138,880	$0	$181,040	$0

Ongoing is defined as ongoing operating budget for the program which will become part of the base.
One-time is defined as one-time funding in a fiscal year and not part of the base.

III. EXPENDITURES

	FY 25		FY 26		FY 27		FY 28	
	On-going	One-time	On-going	One-time	On-going	One-time	On-going	One-time
A. Personnel Costs								
1. FTE	0.3		0.3		0.5		0.5	
2. Faculty	$25,000.00		$25,000.00		$37,500.00		$37,500.00	
3. Adjunct Faculty	17,500		57,000		72,000		72,000	
4. Graduate/Undergrad Assistants								
5. Research Personnel								
6. Directors/Administrators								
7. Administrative Support Personnel								
8. Fringe Benefits	5,095		5,095		7,643		7,643	
9. Other:								
Total Personnel and Costs	$47,595	$0	$87,095	$0	$117,143	$0	$117,143	$0

	FY		FY		FY		FY	
	On-going	One-time	On-going	One-time	On-going	One-time	On-going	One-time
B. Operating Expenditures								
1. Travel								
2. Professional Services								
3. Other Services								
4. Communications								
5. Materials and Supplies								
6. Rentals								
7. Materials & Goods for Manufacture & Resale								
8. Miscellaneous								
Total Operating Expenditures	$0	$0	$0	$0	$0	$0	$0	$0

	FY 25		FY 26		FY 27		FY 28	
	On-going	One-time	On-going	One-time	On-going	One-time	On-going	One-time
C. Capital Outlay								
1. Library Resources	$5,000.00		5,000		$5,000.00		$5,000.00	
2. Equipment								
Total Capital Outlay	$5,000	$0	$5,000	$0	$5,000	$0	$5,000	$0

	FY		FY		FY		FY	
	On-going	One-time	On-going	One-time	On-going	One-time	On-going	One-time
D. Capital Facilities Construction or Major Renovation								
E. Other Costs								
Utilites								
Maintenance & Repairs								
Other								
Total Other Costs	$0	$0	$0	$0	$0	$0	$0	$0
TOTAL EXPENDITURES:	$52,595	$0	$92,095	$0	$122,143	$0	$122,143	$0
Net Income (Deficit)	-$20,355	$0	$4,625	$0	$16,737	$0	$58,897	$0

Budget Notes (specify row and add explanation where needed; e.g., "I.A.,B. FTE is calculated using…"):

I.A.B.	
III.A.1.	.3 FTE - current faculty to be reassigned - not new faculty line; same faculty assignment to be increased to .5 FTE year 3

TAB	DESCRIPTION	ACTION
1	SUPERINTENDANTS UPDATE	Information Item
2	SY2024-2025 AMENDMENT TO THE ELEMENTARY SECONDARY EDUCATION (ESEA) AS AMENDED BY THE EVERY STUDENT SUCCEEDS ACT (ESSA) CONSOLIDATED STATE PLAN	Action Item
3	IDAHO TEACHER OF THE YEAR	Information Item

SUBJECT

Superintendent's K-12 Update

APPLICABLE STATUTE, RULE, OR POLICY

Idaho State Board of Education Bylaws (Operational Procedures) Section E.4.
Sections 33-125, 125A, and 127, Idaho Code

BACKGROUND/DISCUSSION

Idaho State Board of Education Bylaws establish the superintendent of public instruction as responsible for carrying out policies, procedures, and duties prescribed by the Constitution of the State of Idaho, and Idaho Code or established by the Board for all elementary and secondary school matters.

Debbie Critchfield was sworn into office as the Idaho Superintendent of Public Instruction on January 2, 2023. She will update the State Board of Education (SBOE) on the Superintendent's priorities moving forward.

- Idaho Career Ready Students (ICRS) Update
- Graduation Requirements Update
- SDE Legislative and Budget Update
    - Modernizing School Funding/K-12 Budget Submission
    - 2024 Policy Legislation
- Assessment Alignment Update
- Update re: IRI Request for Information

BOARD ACTION

This item is for informational purposes only.

SUBJECT

SY2024-2025 Amendment to the Elementary Secondary Education Act (ESEA) as amended by the Every Student Succeeds Act (ESSA) Consolidated State Plan

REFERENCE

October 2015	State Board of Education (Board) received recommendations from the Accountability Oversight Committee (AOC) regarding changes to be made to the state's accountability system, in preparation for submission of a new ESEA waiver.
December 2015	Board was updated on the status of the ESEA and the process the SDE will conduct in bringing forward to the Board a new Consolidated State Plan.
August 2016	Board received recommendations from the AOC on a new state accountability system. The Board approved the proposed rule setting of the new accountability framework that will be used for both state and federal accountability.
November 2016	Board approved pending rule creating the new statewide accountability system based on the Governor's K-12 Task Force recommendations, the AOC recommendations and public input gathered by staff through public forums held around the state.
June 2017	Board received an update on the development of and initial draft of Idaho's ESEA Consolidated State Plan and provided input and feedback.
August 2017	Board approved Idaho's ESEA Consolidated State Plan and its submission to the U.S. Department of Education.
February 2018	Board approved a revised ESEA Consolidated State Plan based on review and feedback from the US Department of Education (USED).
December 2018	Board received the fiscal year 2019 report from the AOC, including student achievement data and an analysis on the first year of implementation of the state's new K-12 school accountability system.
February 2019	Board approved amendments to the ESEA Consolidated State Plan, based on recommendations from the Assessment and Accountability team at the

	State Superintendent of Public Instruction and the AOC.
March 2020	Board waived the requirement for the spring 2020 ISAT administration and approved the waiver to be submitted to the U.S. Department of Education requesting flexibility in the ESEA accountability provisions.
April 6, 2020	Board received an update on the availability of additional ESEA waivers from the U.S. Department of Education.
April 13, 2020	Board approved a waiver for submission to the USED of several reporting and accountability requirements outlined in the ESEA Consolidated Plan in response to COVID-19 disruptions. The Board also waived the requirement in 08.02.03.111 for the administration of the Idaho Standard Achievement Test (ISAT) and alternate assessments for students with significant cognitive disabilities, in English Language Arts, Math and Science, in grades 3-8 and high school for the 2019-2020 school year.
June 2020	Board received the fiscal year 2020 report from the AOC with recommendations regarding assessment and accountability, as related to analysis of the data in the SDE's 2018-2019 Student Achievement Report.
October 2020	Board received an update on assessment administration and accountability calculations for the 2020-2021 school year.
January 2021	Board approved an accountability addendum based on existing USED guidance for modifying calculations and identifications following the 2020-2021 school year.
February 2021	Board adopted recommendations from the AOC related to the state's high school accountability assessment, thus initiating the negotiated rulemaking process for IDAPA 08.02.03 – Section 111, Assessment in the Public Schools.
April 2021	Board adopted recommendations from the AOC related to the K-8 school quality or student success measure used for school identification, thus initiating the negotiated rulemaking process for IDAPA 08.02.03 – Section 112, Accountability. Board asked to consider a waiver request for submittal to the USED of federal

	accountability requirements and postponed action pending a waiver of the state accountability requirements.
June 2021	Board approved proposed rule Docket 08-0203-2101 including the removal of student engagement survey from and the addition of chronic absenteeism to Section 112 Subsection 03, School Quality Measure. Board also waived the 95 percent participation rule in IDAPA 08.02.03.112 and approved the accountability waiver and school identification for submission to the USED.
November 2021	Board approved pending rule Docket 08-0203-2101, including the removal of student engagement survey from and the addition of chronic absenteeism to Section 112 Subsection 03, School Quality Measures.
December 2021	Board received an update on the proposed future amendments to the ESEA Consolidated State Plan.
March 2022	Legislature rejected and nullified Chapter 08.02.03, Rules Governing Thoroughness Section 112., Subsection 03.a.ii. and b.ii., the addition of chronic absenteeism as part of the School Quality Measures, adopted as pending rule under Docket 08-0203-2101, in the House Concurrent Resolution 045.
April 2022	Board approved the 2021-2022 Addendum to the Idaho ESEA Consolidated Sate Plan based on existing USED guidance for modifying calculations and identifications following the 2021-2022 school year.
June 2022	Board approved temporary rule Docket 08-0203-2202, including the addition of chronic absenteeism to Section 112 Subsection 03, School Quality Measures, and student engagement survey to Section 112 Accountability, as well as amending the assessment section to account for administering assessments at the high school level using a modified cohort model.
August 2022	Board approved proposed rule Docket 08-0203-2201, including the addition of chronic absenteeism to Section 112 Subsection 03, School Quality Measures, and student engagement survey to Section 112 Accountability, as well as amending the assessment section to account for administering assessments at the high school level using a modified cohort model.

October 2022	Board approved the 2022-23 amendment to the ESEA Consolidated State Plan.
August 2023	USED approved Idaho's request to amend the ESEA Consolidated State Plan for 2022-2023.

APPLICABLE STATUTE, RULE, OR POLICY

Idaho State Board of Education Governing Policies & Procedures, Section I.Q.
Section 33-110, Idaho Code
IDAPA 08.02.03 – Section 111, Assessment in the Public Schools; IDAPA 08.02.03 – Section 112, Accountability

BACKGROUND/DISCUSSION

In April 2022, the Board approved an addendum to the ESEA Consolidated State Plan to address disruptions due to COVID-19. These included the following changes: adjusting growth calculation methodology for the progress in achieving English language proficiency indicator; pausing some of the school quality or student success indicators not used in school identification due to data collection issues; adjusting identification methodology due to COVID-19 disruptions and data availability for Comprehensive Support and Improvement schools, Targeted Support and Improvement schools, and Additional Targeted Support and Improvement schools; and adjusting exit criteria for the Comprehensive Support and Improvement schools.

In June and August of 2022, the Board approved temporary rules to add chronic absenteeism to Section 112 Subsection 03, School Quality Measures, and student engagement survey to Section 112 Accountability, as well as amending the assessment section to account for administering assessments at the high school level using a modified cohort model.

After several rounds of public comment in May through September 2022 the SDE drafted an amendment to the ESEA Consolidated State Plan for the 2022-23 school year.

The U.S. Department of Education (USED) approved Idaho's 2022-23 ESEA Consolidated State Plan amendment in August 2023.

After the approval of the 2022-23 ESEA Consolidated State Plan Amendment, the Idaho Department of Education (IDE) received feedback that reading the document was difficult for stakeholders and outdated descriptions of activities resulted in a lack of clarity of available supports for LEAs. The IDE drafted an amendment to the Consolidated State Plan to address both technical changes and updated descriptions which include:

- Remove school librarian as a required member of a Comprehensive and Integrated Field Review (CIFR) Team for school reidentified for Comprehensive School Improvement.

- Allow for identified stakeholders in focus groups in the Comprehensive and Integrated Field Review process to be optional versus required.

- Redefine membership of the State Technical Assistance Team (STAT) to include representatives of the Idaho Department of Education, Local Education Agencies (LEAs), and other specialists as needed. Remove the Idaho Education Association, Idaho Association of School Administrators, Career and Technical Education, State Board of Education, and members of the IDE executive team as required members.

- Update the System of Supports for LEAs in school improvement to remove organizations and programs no longer available.

- Remove language regarding the ongoing work of a cross-agency workgroup addressing the equitable access of educators across the state. This workgroup completed its task to measure the equitable distribution of educators.

- Add description of Idaho Prevention and Support Conference, State/Tribal Youth Suicide Prevention and Early Intervention Grant, Sources of Strength, and Project Aware as activities to support LEAs in improving school conditions for learning.

- Add to School Transitions section clarifying pre-kinder to post-secondary education transitions. Includes the addition of career pathway plans and 8th grade requirements for career readiness, NextSteps.Idaho.gov website, and updated data regarding Advanced Opportunities.

- Add description of Career Technical Education, including facilities improvement funding and school design.

- Update the timelines for completion of the Comprehensive Needs Assessment and Service Delivery Plan for the Title I-C Migrant Program to every three years. Add a link to updated Measurable Program Outcomes (MPO) on the Idaho Department of Education website.

- Update language to clarify the use of Migrant Student Information Systems (MSIS and MSIX) for the accurate and complete record exchange for migratory students.

- Add description of career fairs as a method for enhancing recruitment and retention of educators.

- Update System of Certification and Licensing to align with IDAPA, Idaho Code, and *Idaho Standards for Initial Certification of Professional School Personnel*. Add clarification to certifications requirements for Alternative Authorization for New Endorsement and Alternative Authorization for New Certificate.

- Remove "Current Work Regarding Certification of Educators" workgroup. This workgroup has completed its scope of work.

- Add description of *Idaho Standards for Educator Preparation Providers* under actions to support Teacher Preparation.

- Add description of Title III Consortium under Title III, Part A. Also add to state and national partnerships to include Idaho Association of Bilingual Education (IABE) and the National Association of Bilingual Education (NABE).

- Remove description of STEM Action Center, Idaho Commission for Libraries, and Idaho Commission on the Arts from description of supports in Title IV, Part A.

- Update the Title IV-B 21st Century Community Learning Grant timeline and frequency.

- Remove descriptions of a new state coordinator in Title IX-A, McKinney-Vento Homeless Assistance Act.

- Remove descriptions of Edify and Idaho Homeless Education Advisory Team (IHEAT) from Title IX-A< McKinney Vento Homeless Assistant Act.

The IDE solicited public comments on the proposed 2024-2025 ESEA Consolidated State Plan amendment from December 15, 2023 through January 15, 2024. A public comment survey link was posted on the IDE's website, included in the IDE newsletter, and was also emailed to internal and external stakeholders. No comments were received regarding the proposed amendment.

IMPACT

If the 2024-2025 amendment is approved by the Board, it will be submitted to the USED. This agenda item provides the Board with information on proposed changes to the ESEA Consolidated State Plan that resulted from stakeholder feedback. Proposed changes will not take effect until the amendment is approved by USED.

ATTACHMENTS

Attachment 1 – ESEA Consolidated State Plan SY2024-2025 Amendment
Attachment 2 – ESEA Consolidated State Plan SY2024-2025 Summary of Changes

STAFF COMMENTS AND RECOMMENDATIONS

IDE staff has conducted a thorough review of the ESEA Consolidated Plan and identified edits that are necessary to ensure that the plan reflects current operational practices under Superintendent Critchfield's administration. Board staff have reviewed to confirm that the proposed revisions are minor technical corrections that do not require public comment.

During the PPGA committee meeting it was noted that one of the reasons for addressing these revisions now, was to ensure that the minor technical corrections are addressed separately from the more material changes the Accountability Oversight Committee (AOC) will be taking out for public comment in the spring and returning to the Board for consideration in June. Completing the clean up work ahead of time will provide for greater transparency for the more substantial changes currently in development.

A preview of the more substantial changes will be discussed with the Board during AOC agenda items presented at this meeting (February 27-28, 2024).

Board staff recommend approval of the amendments to the ESEA Consolidated State Plan as presented.

BOARD ACTION

I move to approve the 2024-2025 Amendment to the Elementary and Secondary Education Act of 1965 (ESEA) as amended by the Every Student Succeeds Act (ESSA) Consolidated State Plan as provided in Attachment 1 and authorize the State Superintendent of Public Instruction to submit the amendment request on behalf of the State Board of Education.

Moved by _____ Seconded by _____ Carried Yes _____ No _____

Idaho's Consolidated State Plan

IDAHO ~~STATE~~ DEPARTMENT OF EDUCATION
IDAHO STATE BOARD OF EDUCATION

650 W STATE STREET, 2ND FLOOR
BOISE, IDAHO 83702

(208) 332 6800

WWW.SDE.IDAHO.GOV/TOPICS/CONSOLIDATED-PLAN

Idaho's Consolidated State Plan

The Elementary and Secondary Education Act of 1965, as amended by the Every Student Succeeds Act

MARCH 23, 2023

AMENDED

INTRODUCTION

Section 8302 of the Elementary and Secondary Education Act of 1965 (ESEA), as amended by the Every Student Succeeds Act (ESSA),[1] requires the Secretary to establish procedures and criteria under which, after consultation with the Governor, a State educational agency (SEA) may submit a consolidated State plan designed to simplify the application requirements and reduce burden for SEAs. ESEA section 8302 also requires the Secretary to establish the descriptions, information, assurances, and other material required to be included in a consolidated State plan. Even though an SEA submits only the required information in its consolidated State plan, an SEA must still meet all ESEA requirements for each included program. In its consolidated State plan, each SEA may, but is not required to, include supplemental information such as its overall vision for improving outcomes for all students and its efforts to consult with and engage stakeholders when developing its consolidated State plan.

COMPLETING AND SUBMITTING A CONSOLIDATED STATE PLAN

Each SEA must address all of the requirements identified below for the programs that it chooses to include in its consolidated State plan. An SEA must use this template or a format that includes the required elements and that the State has developed working with the Council of Chief State School Officers (CCSSO).

Each SEA must submit to the U.S. Department of Education (Department) its consolidated State plan by one of the following two deadlines of the SEA's choice:

- **April 3, 2017;** or
- **September 18, 2017**.

Any plan that is received after April 3, but on or before September 18, 2017, will be considered to be submitted on September 18, 2017.

Alternative Template

If an SEA does not use this template, it must:

- Include the information on the Cover Sheet;
- Include a table of contents or guide that clearly indicates where the SEA has addressed each requirement in its consolidated State plan;

[1] *Unless otherwise indicated, citations to the ESEA refer to the ESEA, as amended by ESSA.*

- Indicate that the SEA worked through CCSSO in developing its own template; and

- Include the required information regarding equitable access to, and participation in, the programs included in its consolidated State plan as required by section 427 of the General Education Provisions Act. See Appendix C.

Individual Program State Plan

An SEA may submit an individual program State plan that meets all applicable statutory and regulatory requirements for any program that it chooses not to include in a consolidated State plan. If an SEA intends to submit an individual program plan for any program, the SEA must submit the individual program plan by one of the dates above, in concert with its consolidated State plan, if applicable.

Consultation

Under ESEA section 8540, each SEA must consult in a timely and meaningful manner with the Governor or appropriate officials from the Governor's office, including during the development and prior to submission of its consolidated State plan to the Department. A Governor shall have 30 days prior to the SEA submitting the consolidated State plan to the Secretary to sign the consolidated State plan. If the Governor has not signed the plan within 30 days of delivery by the SEA, the SEA shall submit the plan to the Department without such signature.

Assurances

In order to receive fiscal year (FY) 2017 ESEA funds on July 1, 2017, for the programs that may be included in a consolidated State plan, and consistent with ESEA section 8302, each SEA must also submit a comprehensive set of assurances to the Department at a date and time established by the Secretary. In the near future, the Department will publish an information collection request that details these assurances.

For Further Information:
If you have any questions, please contact your Program Officer at OSS.[State]@ed.gov (e.g., OSS.Alabama@ed.gov).

COVER PAGE

Contact Information and Signatures

SEA Contact (Name and Position):

Sherri Ybarra
State Superintendent of Public Instruction
(208) 332-6815
sybarra@sde.idaho.gov

Dr. Linda Clark
President, Idaho State Board of Education
(208) 334-2270
clarklindaid@gmail.com

Idaho State Department of Education
PO Box 83720
Boise ID 83720

By signing this document, I assure that: *To the best of my knowledge and belief, all information and data included in this plan are true and correct. The SEA will submit a comprehensive set of assurances at a date and time established by the Secretary, including the assurances in ESEA section 8304.*
Consistent with ESEA section 8302(b)(3), the SEA will meet the requirements of ESEA sections 1117 and 8501 regarding the participation of private school children and teachers.

Authorized SEA Representative (Printed Name)
Superintendent Sherri Ybarra

Dr. Linda Clark,
President, Idaho State Board of Education

Sherri S Ybarra

February 27, 2019

Signature of Authorized SEA Representatives
Superintendent Sherri Ybarra

Date:

Dr. Linda Clark,
President, Idaho State Board of Education

Date: February 27, 2019

Governor
Brad Little

Signature of Governor

Date SEA provided plan to the Governor under ESEA section 8540:

Date: February 27, 2019

COVER PAGE FOR THE 2023 AMENDMENT

Contact Information and Signatures	
SEA Contact (Name and Position) Dr. Linda Clark, President, Idaho State Board of Education	Telephone 208-332-1571
Mailing Address: 650 West State Street Suite 307 Boise, ID 83720	Email Address: Florence.lince@osbe.idaho.gov
Authorized SEA Representative (Printed Name) Dr. Linda Clark, President Idaho State Board of Education	Telephone: 208-332-1571
Signature of Authorized SEA Representative L. Clark	Date: 5/9/23
Authorized SEA Representative (Printed Name) Debbie Critchfield, Superintendent of Public Instruction Idaho State Department of Education	Telephone: 208-332-6815
Signature of Authorized SEA Representative Debbie Critchfield	Date: 5/9/2023

The SEA, through its authorized representative, agrees to the enclosed assurances.

PROGRAMS INCLUDED IN THE CONSOLIDATED STATE PLAN

Instructions

Indicate below by checking the appropriate box(es) which programs the SEA included in its consolidated State plan. If an SEA elected not to include one or more of the programs below in its consolidated State plan, but is eligible and wishes to receive funds under the program(s), it must submit individual program plans for those programs that meet all statutory and regulatory requirements with its consolidated State plan in a single submission.

☒ Check this box if the SEA has included all of the following programs in its consolidated State plan.

Or

If all programs are not included, check each program listed below that the SEA includes in its consolidated State plan:

☐ Title I, Part A: Improving Basic Programs Operated by Local Educational Agencies
☐ Title I, Part C: Education of Migratory Children
☐ Title I, Part D: Prevention and Intervention Programs for Children and Youth Who Are Neglected, Delinquent, or At-Risk
☐ Title II, Part A: Supporting Effective Instruction
☐ Title III, Part A: English Language Acquisition, Language Enhancement, and Academic Achievement
☐ Title IV, Part A: Student Support and Academic Enrichment Grants
☐ Title IV, Part B: 21st Century Community Learning Centers
☐ Title V, Part B, Subpart 2: Rural and Low-Income School Program
☐ Title VII, Subpart B of the McKinney-Vento Homeless Assistance Act: Education for Homeless Children and Youth Program (McKinney-Vento Act)

Instructions

Each SEA must provide descriptions and other information that address each requirement listed below for the programs included in its consolidated State plan. Consistent with ESEA section 8302, the Secretary has determined that the following requirements are absolutely necessary for consideration of a consolidated State plan. An SEA may add descriptions or other information, but may not omit any of the required descriptions or information for each included program.

A. Title I, Part A: Improving Basic Programs Operated by Local Educational Agencies (LEAs)

1. **Challenging State Academic Standards and Assessments** *(ESEA section 1111(b)(1) and (2) and 34 CFR §§ 200.1–200.8.)*[2]

2. **Eighth Grade Math Exception** *(ESEA section 1111(b)(2)(C) and 34 CFR § 200.5(b)(4)):*

i. Does the State administer an end-of-course mathematics assessment to meet the requirements under section 1111(b)(2)(B)(v)(I)(bb) of the ESEA?

☐ Yes
☒ No

ii. If a State responds "yes" to question 2(i), does the State wish to exempt an eighth-grade student who takes the high school mathematics course associated with the end-of-course assessment from the mathematics assessment typically administered in eighth grade under section 1111(b)(2)(B)(v)(I)(aa) of the ESEA and ensure that:

a. The student instead takes the end-of-course mathematics assessment the State administers to high school students under section 1111(b)(2)(B)(v)(I)(bb) of the ESEA;

b. The student's performance on the high school assessment is used in the year in which the student takes the assessment for purposes of measuring academic achievement under section 1111(c)(4)(B)(i) of the ESEA and participation in assessments under section 1111(c)(4)(E) of the ESEA;

c. In high school:

1. The student takes a State-administered end-of-course assessment or nationally recognized high school academic assessment as defined in 34 CFR § 200.3(d) in mathematics that is more advanced than the assessment the State administers under section 1111(b)(2)(B)(v)(I)(bb) of the ESEA;

2. The State provides for appropriate accommodations consistent with 34 CFR § 200.6(b) and (f); and

3. The student's performance on the more advanced mathematics assessment is used for purposes of measuring academic achievement under section 1111(c)(4)(B)(i) of the ESEA and participation in assessments under section 1111(c)(4)(E) of the ESEA.

☐ Yes

☒ No

iii. If a State responds "yes" to question 2(ii), consistent with 34 CFR § 200.5(b)(4), describe, with regard to this exception, its strategies to provide all students in the State the opportunity to be prepared for and to take advanced mathematics coursework in middle school.

Not applicable.

3. **Native Language Assessments** (ESEA section 1111(b)(2)(F) and 34 CFR § 200.6(f)(2)(ii)):

i. Provide its definition for "languages other than English that are present to a significant extent in the participating student population," and identify the specific languages that meet that definition.

Idaho's definition for languages other than English that are present to a significant extent in the participating student population, is a language spoken by 5% or more of all students, or 20% or more of English Learners.

Over 150 different language and dialects are native to Idaho students. To identify specific languages other than English that are present to a significant extent, we referenced our data from the SY1516 Consolidated State Performance Report, which captures the top five.

(5) commonly spoken languages shown in Table 1 below.

Table 1: Idaho's top five languages spoken by English Learner populations

Language	# of EL Students
Spanish	11,124
Arabic	389
Swahili	196
Somali	148
Chinese	133

Spanish is the most predominant language, representing nearly 80% of our English Language learners.

ii. Identify any existing assessments in languages other than English, and specify for which grades and content areas those assessments are available.

[2] *The Secretary anticipates collecting relevant information consistent with the assessment peer review process in 34 CFR § 200.2(d). An SEA need not submit any information regarding challenging State academic standards and assessments at this time*

Currently the Idaho Standards Achievement Test (ISAT) in Science, administered in grades 5, 8, and 11 is offered in both English and Spanish. The statewide mathematics assessment, developed by Smarter Balanced and administered in grades 3-8 and high school, is offered in a Spanish/English stacked translation format. Neither the ISAT English Language Arts by Smarter Balanced or the English Language Proficiency Assessment developed by WIDA, are offered in translated versions because English language is a critical component of the measured constructs of these two required statewide assessments.

iii. Indicate the languages identified in question 3(i) for which yearly student academic assessments are not available and are needed.

At this time, there are no other languages of origin for students that constitute a large enough percentage of the statewide student population to require additional translated versions of any Idaho Statewide assessment.

iv. Describe how it will make every effort to develop assessments, at a minimum, in languages other than English that are present to a significant extent in the participating student population including by providing:

a. The State's plan and timeline for developing such assessments, including a description of how it met the requirements of 34 CFR § 200.6(f)(4);
b. A description of the process the State used to gather meaningful input on the need for assessments in languages other than English, collect and respond to public comment, and consult with educators; parents and families of English learners; students, as appropriate; and other stakeholders; and
c. As applicable, an explanation of the reasons the State has not been able to complete the development of such assessments despite making every effort.

Not applicable.

4. **Statewide Accountability System and School Support and Improvement Activities** *(ESEA section 1111(c) and (d))*:

i. **Subgroups** *(ESEA section 1111(c)(2))*:

a. List each major racial and ethnic group the State includes as a subgroup of students, consistent with ESEA section 1111(c)(2)(B).

Within Idaho's accountability system, all required consistently underperforming subgroups are included in both federal reporting, as well as comprehensive and targeted school identifications.

- Economically disadvantaged are students with a free or reduced-price lunch status.
- English learners are those who have not yet tested as English proficient.

- Major racial and ethnic groups include American Indian or Alaskan Native, Asian, Black or African American, Native Hawaiian or Pacific Islander, White, Hispanic or Latino.
- Students with disabilities are students that meet eligibility criteria as outlined in the Idaho Special Education Manual according to the Individuals with Disabilities Education Act (IDEA).

b. If applicable, describe any additional subgroups of students other than the statutorily required subgroups (*i.e.*, economically disadvantaged students, students from major racial and ethnic groups, students with disabilities, and English learners) used in the Statewide accountability system.

Not applicable.

c. Does the State intend to include in the English learner subgroup the results of students previously identified as English learners on the State assessments required under ESEA section 1111(b)(2)(B)(v)(I) for purposes of State accountability (ESEA section 1111(b)(3)(B))? Note that a student's results may be included in the English learner subgroup for not more than four years after the student ceases to be identified as an English learner.

☒ Yes
☐ No

d. If applicable, choose one of the following options for recently arrived English learners in the State:

☒ Applying the exception under ESEA section 1111(b)(3)(A)(i); or
☐ Applying the exception under ESEA section 1111(b)(3)(A)(ii); or
☐ Applying the exception under ESEA section 1111(b)(3)(A)(i) or under ESEA section 1111(b)(3)(A)(ii). If this option is selected, describe how the State will choose which exception applies to a recently arrived English learner.

ii. **Minimum N-Size** *(ESEA section 1111(c)(3)(A))*:

a. Provide the minimum number of students that the State determines are necessary to be included to carry out the requirements of any provisions under Title I, Part A of the ESEA that require disaggregation of information by each subgroup of students for accountability purposes.

The minimum number of students required for the all-students group and each student group listed in section A(4)(i)(a) of this plan to be included for accountability is N >= 20. Previously, Idaho used N >= 25, however after Idaho's Data Management Council (DMC) changed its policy to reduce the minimum

number of students for reporting purposes from 10 to 5, the ISDE will reduce the minimum number of students for accountability purposes by a commensurate 5 students.

The minimum number of students required for graduation rate to be included for accountability is N >= 20.

Idaho rule IDAPA 08.02.03.112(5)(d)(i), describes the number of days students must be enrolled in school for accountability purposes: "A student who is enrolled continuously in the same public school from the end of the first eight (8) weeks or fifty-six (56) calendar days of the school year through the state approved spring testing administration period, not including the make-up portion of the test window, will be included in the calculation to determine if the school achieved progress in any statewide assessment used for determining proficiency. A student is continuously enrolled if the student has not transferred or dropped-out of the public school. Students who are serving suspensions are still considered to be enrolled students."

b. Describe how the minimum number of students is statistically sound.

ISDE's analysis showed that the difference in the number of K-8 and high schools captured
in Idaho's school identification system changed very little between N >=25, N >= 20, and N
>= 15. Table 2 shows how many of Idaho's Title I schools meet the N-size requirement with
N >= 20.

Table 2: Approximate Number of Title I schools included in identification system N->= 20

School type	Achievement	Student growth	English Prof.	Graduation rate
K-8 (349 total)	337	314	137	NA
High school (67 total)	64	NA	8	43
Alternative high school (16 total)	11	NA	1	13

c. Describe how the minimum number of students was determined by the State, including how the State collaborated with teachers, principals, other school leaders, parents, and other stakeholders when determining such minimum number.

Idaho solicited feedback on the state's minimum N-size for accountability purposes through our online feedback opportunities as well as our in-person feedback forums,

which were attended by education stakeholders of all types. Minimum N-size was brought up specifically to understand whether stakeholders had concerns about continuing to use the N-size as determined under the NCLB flexibility waiver.

Feedback from stakeholders, including teachers, administrators, school board members, indicated that N >= 20 is preferred in order to ensure that the performance of each student alone does not have an unreasonable impact on whether the school is identified for comprehensive support and improvement.

However, legislators specifically indicated a desire for Idaho's N-size to avoid leaving very small schools out of school improvement results. Due to this feedback, Idaho's original plan called for the N-size for all students to be N >= 20, but for student groups and graduation rate Idaho would use N >= 10. Feedback from the U.S. Department of Education indicated that this approach was not in compliance with ESSA.

Because there is broad agreement among stakeholders that an N-size smaller than N >= 20 introduces too much noise into comprehensive support and improvement results, Idaho will use N >= 20 for the all students group as well as each student subgroup. However, achievement results for smaller groups of students will still be reported on the school report card as long as they meet state N-size requirements described in section A(4)(2)(e) of this plan.

d. Describe how the State ensures that the minimum number is sufficient to not reveal any personally identifiable information.[3]

The State of Idaho places a high value on preserving the privacy of students and safeguarding their personally identifiable information (PII). To ensure that student data is treated with the utmost security, Idaho has enacted statutory protections found in Idaho Code § 33-133.

As part of this protection, the statute permits the release of student data in aggregate. It requires that "the minimum number of students shall be determined by the state board of education."

To provide oversight and guidance over the collection, retention, and security of student data, the State Board of Education created the Data Management Council (DMC). This controlling body has set rules on minimum numbers reported in aggregate. These minimums supersede any other minimums that may be defined elsewhere unless expressly permitted by the DMC.

[3] Consistent with ESEA section1111(i), information collected or disseminated under ESEA section 1111 shall be collected and disseminated in a manner that protects the privacy of individuals consistent with section 444 of the General Education Provisions Act (20 U.S.C. 1232g, commonly known as the "Family Educational Rights and Privacy Act of 1974"). When selecting a minimum n-size for reporting, States should consult the Institute for Education Sciences report "*Best Practices for Determining Subgroup Size in Accountability Systems While Protecting*

e. If the State's minimum number of students for purposes of reporting is lower than the minimum number of students for accountability purposes, provide the State's minimum number of students for purposes of reporting.

DMC policy page 5 states:
Any release of data that would result in the ability to identify the personally identifiable information (PII) of an individual must be approved by the Data Management Council, aggregated to a minimum cell size of 5, or masked/blurred. This includes situations where a calculation can be done to arrive at a single count of less than 5 students that would risk exposure of PII. Instances where 100% or 0% of students fall within one category and would risk the exposure of PII must also be approved by the Data Management Council or masked/blurred since doing so discloses information on either all or no students and thereby violates the minimum cell size policy.

In order to protect student privacy, we must redact data in any cells of less than 5 students or where the difference between the total of one or more cells of categorical data is less than 5 of the total student population. In addition, Data Management Council Policies and Procedures call for at least two cells to be redacted in most cases in order to prevent any cell required for redaction to be derived. Under DMC policy additional cells may be required to be redacted until the total of the exempt and therefore redacted aggregate data in a line or column equals 5 or more. Zero is considered a number.

Performance of student groups that are too small to be included in school identification is reported on the state website and on the state report card so long as the reporting meets the redaction rules detailed above. Enrollment numbers and percentages are displayed so long as there is at least one student within the subgroup.

iii. **Establishment of Long-Term Goals** *(ESEA section 1111(c)(4)(A))*:

a. **Academic Achievement** (ESEA section 1111(c)(4)(A)(i)(I)(aa))

1. Describe the long-term goals for improved academic achievement, as measured by proficiency on the annual statewide reading/language arts and mathematics assessments, for all students and for each subgroup of students, including: (1) the timeline for meeting the long-term goals, for which the term must be the same multi-year length of time for all students and for each subgroup of students in the State, and (2) how the long-term goals are ambitious.

Idaho's long-term goal for English/Language Art and Mathematics is to reduce the percentage of non-proficient students by 33% over six years. "Proficient" means that a student has met or exceeded grade level standards in a specific subject as determined by performance on the associated assessment. Robust stakeholder feedback took place to set long-term goals for the state that achieve a balance of both ambitious and achievable.
While several options were considered, the long-term goals below were agreed upon by all

stakeholders due to the following:

- The goals result in closing achievement gaps, especially for student groups that currently show the lowest achievement.
- The target year – 6 years from 2017 – encompasses half of a student's K-12 career and therefore achieving the goal would impact students that are currently in the K-12 education system.

Historical data analysis indicates that, had these goals been set in the 2015 school year, a substantial number of schools would have achieved their school-level goal in 2016.

Calculation: Long-term goal = 2016 % proficient/advanced + ((1/3) x (100 – 2016 % proficient/advanced))
Interim progress goal = Difference between the long-term goal and the baseline / 6

Due to disruptions related to COVID-19 and field testing, the 2022 long-term goal has been extended to 2023.

Table 3: Mathematics - 2016 baseline, 2024 long-term goal, and 2017-2023 interim targets

Mathematics	2016	2017	2018	2019	2020	2021	2022	2023	2024
All Students	41.6%	44.8%	48.1%	51.3%	54.6%	57.8%	61.1%	61.1%	61.1%
Economically Disadvantaged	30.3%	34.2%	38.0%	41.9%	45.8%	49.7%	53.5%	53.5%	53.5%
Students with Disabilities	15.2%	19.9%	24.6%	29.3%	34.0%	38.8%	43.5%	43.5%	43.5%
English Learners	7.1%	12.3%	17.4%	22.6%	27.7%	32.9%	38.1%	38.1%	38.1%
Black / African American	22.2%	26.5%	30.8%	35.2%	39.5%	43.8%	48.1%	48.1%	48.1%
Asian or Pacific Islander	56.8%	59.2%	61.6%	64.0%	66.4%	68.8%	71.2%	71.2%	71.2%
American Indian or Alaskan Native	19.4%	23.9%	28.4%	32.8%	37.3%	41.8%	46.3%	46.3%	46.3%
Hispanic or Latino	22.0%	26.3%	30.7%	35.0%	39.3%	43.7%	48.0%	48.0%	48.0%
Native Hawaiian / Other Pacific Islander	33.6%	37.3%	41.0%	44.7%	48.4%	52.0%	55.7%	55.7%	55.7%
White	46.6%	49.6%	52.5%	55.5%	58.5%	61.4%	64.4%	64.4%	64.4%
Two Or More Races	42.2%	45.4%	48.6%	51.8%	55.0%	58.3%	61.5%	61.5%	61.5%

Table 4: English Language Arts/Literacy - 2016 baseline, 2024 long-term goal, and 2017-2023 interim targets

ELA/Literacy	2016	2017	2018	2019	2020	2021	2022	2023	2024
All Students	53.0%	55.6%	58.2%	60.8%	63.4%	66.1%	68.7%	68.7%	68.7%
Economically Disadvantaged	40.6%	43.9%	47.2%	50.5%	53.8%	57.1%	60.4%	60.4%	60.4%
Students with Disabilities	15.0%	19.7%	24.4%	29.2%	33.9%	38.6%	43.3%	43.3%	43.3%
English Learners	6.9%	12.1%	17.2%	22.4%	27.6%	32.8%	37.9%	37.9%	37.9%
Black / African American	34.1%	37.8%	41.4%	45.1%	48.7%	52.4%	56.1%	56.1%	56.1%
Asian or Pacific Islander	65.0%	66.9%	68.9%	70.8%	72.8%	74.7%	76.7%	76.7%	76.7%
American Indian or Alaskan Native	30.6%	34.5%	38.3%	42.2%	46.0%	49.9%	53.7%	53.7%	53.7%
Hispanic or Latino	33.6%	37.3%	41.0%	44.7%	48.4%	52.0%	55.7%	55.7%	55.7%
Native Hawaiian / Other Pacific Islander	46.7%	49.7%	52.6%	55.6%	58.5%	61.5%	64.5%	64.5%	64.5%
White	57.9%	60.2%	62.6%	64.9%	67.3%	69.6%	71.9%	71.9%	71.9%
Two Or More Races	54.5%	57.0%	59.6%	62.1%	64.6%	67.1%	69.7%	69.7%	69.7%

2. Provide the measurements of interim progress toward meeting the long-term goals for academic achievement in Appendix A.

   Table 3 and 4 above provide the interim progress goals towards meeting the state's long- term goals for academic achievement in English Language Arts/Literacy and Mathematics. Interim progress goals are also available in Appendix A.

3. Describe how the long-term goals and measurements of interim progress toward the long- term goals for academic achievement take into account the improvement necessary to make significant progress in closing statewide proficiency gaps.

   By reducing the percentage of non-proficient students by one-third over the next six years, the students in subgroups whose baseline is farther behind the all-students group have a more ambitious long term goal, and interim measures to reach that goal, which will close achievement gaps for all student subgroups, using attainable targets.

b. **Graduation Rate.** *(ESEA section 1111(c)(4)(A)(i)(I)(bb))*

1. Describe the long-term goals for the four-year adjusted cohort graduation rate for all students and for each subgroup of students, including: (1) the timeline for meeting the long- term goals, for which the term must be the same multi-year length of time for all students and for each subgroup of students in the State, and (2) how the long-term goals are ambitious.

   The Idaho State Board of Education has established a goal that Idaho's 4-year cohort graduation rate will be 95% by 2023. In seeking to align the long-term goal to this established goal, the state will reduce non-graduates by 75% over six years.

   Calculation:
   Long-term goal = Class of 2016 % graduating + (75% x (100 – Class of 2016 % graduating)
   Interim progress goal = Difference between the long-term goal and the baseline / 6
   Note: The all students graduation rate long-term goal has been rounded up to align with the Idaho State Board of Education's existing graduation rate goal.

   Due to disruptions related to COVID-19, the 2022 long-term goal has been extended to 2023.

Table 5a: 4 year Graduation rate – Class of 2016 baseline, Class of 2024 long-term goal, and Class of 2017-Class of 2023 interim targets
***Reporting of 4 Year graduation rates lags 1 year**

4 year Graduation Rate	Class of 2016	Class of 2017	Class of 2018	Class of 2019	Class of 2020	Class of 2021	Class of 2022	Class of 2023	Class of 2024
All Students	79.7%	82.2%	84.8%	87.3%	89.9%	92.4%	94.9%	94.9%	94.9%
Economically Disadvantaged	71.9%	75.4%	78.9%	82.4%	86.0%	89.5%	93.0%	93.0%	93.0%
Students with Disabilities	60.5%	65.4%	70.4%	75.3%	80.3%	85.2%	90.1%	90.1%	90.1%
English Learners	73.3%	76.6%	80.0%	83.3%	86.7%	90.0%	93.3%	93.3%	93.3%
Black / African American	77.8%	80.6%	83.4%	86.1%	88.9%	91.7%	94.5%	94.5%	94.5%
Asian or Pacific Islander	83.1%	85.2%	87.3%	89.4%	91.6%	93.7%	95.8%	95.8%	95.8%

American Indian or Alaskan Native	58.5%	63.7%	68.9%	74.1%	79.3%	84.4%	89.6%	89.6%	89.6%
Hispanic or Latino	73.7%	77.0%	80.3%	83.6%	86.9%	90.1%	93.4%	93.4%	93.4%
Native Hawaiian / Other Pacific Islander	69.7%	73.5%	77.3%	81.1%	84.9%	88.6%	92.4%	92.4%	92.4%
White	81.3%	83.6%	86.0%	88.3%	90.7%	93.0%	95.3%	95.3%	95.3%
Two Or More Races	77.3%	80.1%	83.0%	85.8%	88.7%	91.5%	94.3%	94.3%	94.3%

2. If applicable, describe the long-term goals for each extended-year adjusted cohort graduation rate, including (1) the timeline for meeting the long-term goals, for which the term must be the same multi-year length of time for all students and for each subgroup of students in the State; (2) how the long-term goals are ambitious; and (3) how the long-term goals are more rigorous than the long-term goal set for the four-year adjusted cohort graduation rate.

   Long-term goal = Class of 2017 % graduating + (75% x (100 – Class of 2017 % graduating))
   Interim progress goal = Difference between the long-term goal and the baseline/5

Table 5b: 5-Year graduation rate long term goals and interim progress goals
***Reporting of 5 Year graduation rates lags 2 years**

5 year Graduation Rate	Baseline Class of 2017	Class of 2018	Class of 2019	Class of 2020	Class of 2021	Class of 2022	Class of 2023
All Students	82.00%	84.7%	87.4%	90.1%	92.8%	95.5%	95.5%
Economically Disadvantaged	75.00%	78.8%	82.5%	86.3%	90.0%	93.8%	93.8%
Students with Disabilities	65.50%	70.7%	75.9%	81.0%	86.2%	91.4%	91.4%
English Learners	79.30%	82.4%	85.5%	88.6%	91.7%	94.8%	94.8%
Black / African American	75.60%	79.3%	82.9%	86.6%	90.2%	93.9%	93.9%

Asian or Pacific Islander	88.00%	89.8%	91.6%	93.4%	95.2%	97.0%	97.0%
American Indian or Alaskan Native	67.50%	72.4%	77.3%	82.1%	87.0%	91.9%	91.9%
Hispanic or Latino	78.40%	81.6%	84.9%	88.1%	91.4%	94.6%	94.6%
Native Hawaiian / Other Pacific Islander	79.70%	82.7%	85.8%	88.8%	91.9%	94.9%	94.9%
White	83.10%	85.6%	88.2%	90.7%	93.2%	95.8%	95.8%
Two Or More Races	79.30%	82.4%	85.5%	88.6%	91.7%	94.8%	94.8%

3. Provide the measurements of interim progress toward the long-term goals for the four-year adjusted cohort graduation rate and any extended-year adjusted cohort graduation rate.

   Interim progress goals are in Tables 5a and 5b above and in Appendix A.

4. Describe how the long-term goals and measurements of interim progress for the four-year adjusted cohort graduation rate and any extended-year adjusted cohort graduation rate take into account the improvement necessary to make significant progress in closing statewide graduation rate gaps.

   As with goals for reading/language arts and mathematics assessments, by reducing the number of non-graduating students by 75% over six years, student groups with lower rates of graduating students will be required to increase the number of graduates at a faster rate in order to meet the state's goals.

c. **English Language Proficiency.** *(ESEA section 1111(c)(4)(A)(ii))*

   Idaho determines a student's eligibility as an English Learner in a multi-step process, beginning with an initial home language survey, completed at registration. If the home language survey indicates a language other than English is the primary language spoken at home, the student is then screened using the WIDA Screener for Kindergarten or WIDA Screener. The student's results from this screener determine eligibility and inform the students plan for developing English language skills.

   The ACCESS for ELL is administered to all identified English Learners, annually, and includes assessments in reading, writing, listening and speaking. A student receives an overall composite score and a scale score in each of the four domains.

The reading and writing domains are weighted 35% each in the overall composite, while the speaking and listening are weighted 15% each in the overall composite.

Following the 2020 ACCESS for ELL administration, a student is considered proficient when they receive a composite score equal to or greater than 4.2, with a minimum score of 3.5 in the domains of reading, writing and listening, and a minimum score of 1 in the speaking domain.

The change came after analysis of both Idaho and WIDA Consortium data, consultation with stakeholders and assessment measurement experts as well as considering the rigor of English Language assessed by the ACCESS for ELL.

After analyzing the 2016, 2017 and 2018 results from the WIDA ACCESS for ELL, Idaho has updated the measure of expected progress. The new measure of expected progress as captured in Table 6a, considers the student's initial ELP level, and recognizes student's English language development is not equal to the years served in an EL program, but influenced by their initial ELP level.

The expected time to English Language Proficiency also serves educators in the development of the student's EL plan in setting realistic and attainable growth targets, with a focus on meeting students where they are and moving students where they need to be, so they can successfully access academic content and be college and career ready.

Initial ACCESS for ELL Proficiency Level Composite (2017 or later)	Calculated Growth Year 1*	Calculated Growth Year 2*	Calculated Growth Year 3*	Calculated Growth Year 4*	Calculated Growth Year 5*
6.0 Reaching	**	**	**	**	**
5.0 – 5.9 Bridging	**	**	**	**	**
4.0 – 4.9 Expanding	4.0+	4.2+	**	**	**
3.0 – 3.9 Developing	3.0+	3.6+	4.2+	**	**
2.0 – 2.9 Emerging	2.5+	3.0+	3.6+	4.2+	**
1.0 – 1.9 Entering	1.5+	2.0+	3.0+	3.6+	4.2+

** Only years in which the student was continuously enrolled in Idaho schools count for the year counter in the first row of this table.*
*** English learners must meet proficiency (Idaho Language Instruction Educational Program exit criteria) to be considered as making the expected progress.*

1. Describe the long-term goals for English learners for increases in the percentage of such students making progress in achieving English language proficiency, as measured by the statewide English language proficiency assessment, including: (1) the State-determined timeline for such students to achieve English language proficiency and (2) how the long- term goals are ambitious.

   Idaho will reduce the number of English learners who are not making expected

progress to English proficiency, as defined above by 1/3 over five years. This five-year long-term goal has been reset to reflect the change to the expected progress, using 2018 data as the baseline**.**

Table 6b: Percent of Students Making Expected Progress toward English proficiency 2018 baseline, 2024 long-term goal, and 2019-2023 interim targets

2018 Baseline	2019	2020	2021	2022	2023	2024
74.07%	75.80%	77.53%	79.26%	80.98%	82.71%	82.71%

2. Provide the measurements of interim progress toward the long-term goal for increases in the percentage of English learners making progress in achieving English language proficiency in Appendix A.

   Interim progress goals are in Table 6b above and Appendix A.

iv. **Indicators** *(ESEA section 1111(c)(4)(B))*

Idaho annually and publicly reports progress on all measures in the state's Accountability Framework (Appendix B), originally approved by the Idaho State Board of Education and the Idaho Legislature in 2017. These measures were agreed upon by Idaho's stakeholders as the next step forward in education accountability in the state to ensure that all students are college and career ready. Idaho believes defining success requires going beyond statewide test scores and should illustrate multiple measures reflecting the many facets of our students. All measures in the Accountability Framework reflect Idaho's values and will further empower educators and parents to engage in educational decisions about their children.

The Accountability Framework is used to meet both state and federal school accountability requirements and is broken up by school categories.

A subset of the measures in the Accountability Framework is used as the accountability indicators required by ESSA, and described in this section. Idaho uses these indicators every three years to determine schools for comprehensive support and improvement, and each year to determine schools for targeted support and improvement, using the methodology described in sections A(4)(v) and A(4)(vi) of this plan.

It should be noted that the state accountability framework groups schools into three categories so meaningful differentiation can be made between like schools. The following school categories are outlined in the state accountability framework:

School Categories

- Kindergarten through grade eight (K-8): Schools in this category include elementary and middle schools as defined in IDAPA Rule 08.02.03.112.05.f.
- High Schools, not designated as alternative high schools, as defined in Subsection 112.05.f.
- Alternative High Schools

The indicators Idaho uses for school identification as required by ESSA are listed by school category.

Academic Measures by School
Category K-8:

- Achievement on Idaho Standards Assessments in English Language Arts and Math
- Growth – as determined by the percentage of students on track to be proficient within three years.
- English Learners making progress towards English language proficiency.

High School:

- Achievement on Idaho Standards Assessments in English Language Arts and Math
- English Learners making progress towards English language proficiency.
- Four (4) year cohort graduation rate

Alternative High School:

- Achievement on Idaho Standards Assessments in English Language Arts and Math
- English learners making progress towards English language proficiency.
- Four (4) year cohort graduation rate

School Quality Measures by School
Category K-8:

- Chronic absenteeism rates for grades K-8.

High School:

- College and Career Readiness indicators, determined through a combination of students participating in advanced opportunities, earning industry recognized certification and/or participation in recognized high school apprenticeship programs.

Alternative High School:

- College and Career Readiness indicators, determined through a combination of students participating in advanced opportunities, earning industry recognized certification and/or participation in recognized high school apprenticeship programs.

a. **Academic Achievement Indicator**. Describe the Academic Achievement indicator, including a description of how the indicator (i) is based on the long-term goals; (ii) is

measured by proficiency on the annual Statewide reading/language arts and mathematics assessments;(iii) annually measures academic achievement for all students and separately for each subgroup of students; and (iv) at the State's discretion, for each public high school in the State, includes a measure of student growth, as measured by the annual Statewide reading/language arts and mathematics assessments.

Idaho's Academic Achievement Indicator is achievement on the statewide tests in Mathematics and English Language Arts/Literacy and meets the criteria for academic indicators as described in section A(4)(iv)(a) of this plan.

Academic achievement indicator measures:

- K-8 Schools
  - Idaho Student Achievement Test (ISAT) Mathematics grades 3-8
  - ISAT English Language arts (ELA)/Literacy grades 3-8
- High Schools
  - ISAT Mathematics
  - ISAT ELA/Literacy
- Alternative High Schools
  - ISAT Mathematics
  - ISAT ELA/Literacy

The academic achievement indicator represents the proficiency on statewide mathematics and ELA/Literacy tests. In the school identification system, academic achievement for K-8 schools is the actual, non- averaged achievement in that school year. For high school, students are allowed to demonstrate their mastery of the high school content standards by taking the assessment at least once in high school prior to or during their 11th grade year.

The state administers and reports the grade level assessments annually and provides comparative data across subgroups.

Used for all schools in state: Both academic indicators in this section are used for all schools in the state according to the school categories as outlined in Idaho's Accountability Framework.

Same calculation for all schools: The same calculation is used for all schools in the state for the academic indicators. This is further described in the process of annual meaningful differentiation methods later in this section.

Validity and reliability: The academic indicators are calculated using statewide test scores in Mathematics and English Language Arts. The Idaho Standard Achievement Tests, developed by Smarter Balanced, have met validity and reliability criteria as outlined in the Federal Assessment Peer Review.

Based on long-term goals: Both academic indicators are aligned directly to Idaho's long- term goals.

Proficiency on statewide reading/language arts and mathematics assessments: The academic indicators are based on the percentage of students scoring proficient or advanced on these assessments. Results from both content areas will be weighted equally. Please see annual meaningful differentiation of schools methodology for further explanation.

Disaggregation: Each academic indicator can be disaggregated for each student group.

95% participation: Both academic indicators measure the performance of at least 95% of all students and 95% of all students in each student group.

b. **Indicator for Public Elementary and Secondary Schools that are Not High Schools (Other Academic Indicator).** Describe the Other Academic Indicator, including how it annually measures the performance for all students and separately for each subgroup of students. If the Other Academic Indicator is not a measure of student growth, the description must include a demonstration that the indicator is a valid and reliable statewide academic indicator that allows for meaningful differentiation in school performance.

Idaho's Other Academic Indicator is Academic Growth as defined below and meets the criteria for academic indicators as described in section A(4)(iv)(a) of this plan.

Other Academic indicator measures:

- Student Growth to proficiency in English Language Arts/Literacy using a 3 year trajectory model
- Student Growth to proficiency in Mathematics using a 3 year trajectory model

The state determines the gap between a student's most recent scale score and the scale score necessary to reach proficiency in 3 years. From there, a linear path is created and the minimum score needed to be proficient in three years. A student is considered 'on-track' if they meet their annual target on the path to proficiency. For example, a fourth grade student scored 2420 in third grade mathematics and requires 120 scale score points to reach proficiency in mathematics by sixth grade. The student must increase his or her scale score by at least 40 points in the current year to be on track. Student growth targets are calculated annually.

The percentage of students 'on track' to be proficient in three years is calculated for English Language Arts/Literacy and Mathematics separately and weighted equally.

Disaggregation: The other academic indicator can be disaggregated for each student group. Student growth can be disaggregated for each student group.

Validity and reliability: Student growth calculations are a valid and reliable measure and have been used by the U.S. Department of Education to understand and measure the growth of schools and districts.

95% participation: The growth rate indicator measures the performance of at least 95% of all students and 95% of all students in each student group.

c. **Graduation Rate.** Describe the Graduation Rate indicator, including a description of (i) how the indicator is based on the long-term goals; (ii) how the indicator annually measures graduation rate for all students and separately for each subgroup of students; (iii) how the indicator is based on the four-year adjusted cohort graduation rate; (iv) if the State, at its discretion, also includes one or more extended-year adjusted cohort graduation rates, how the four-year adjusted cohort graduation rate is combined with that rate or rates within the indicator; and (v) if applicable, how the State includes in its four-year adjusted cohort graduation rate and any extended-year adjusted cohort graduation rates students with the most significant cognitive disabilities assessed using an alternate assessment aligned to alternate academic achievement standards under ESEA section 1111(b)(2)(D) and awarded a State-defined alternate diploma under ESEA section 8101(23) and (25).

Table 7 below describes Idaho's graduation rate indicators. Idaho uses the four-year adjusted cohort graduation rate for the graduation rate indicator, which follows federal guidelines. See section A(4)(v) for how the graduation rate indicator is used for meaningful differentiation of schools. Idaho does not award a state-defined alternate diploma. Based on stakeholder feedback, Idaho calculated a five-year cohort graduation rate for the first time in 2018/2019. The Five-year cohort graduation rate is reported for all high schools.

Table 7: Graduation rate indicators

Indicator	Measure	Description
Graduation Rate	The four-year cohort graduation rate	The percent of students graduating using the four-year graduation cohort rate calculation within a school reported[4] in the current school year.

Used for all high schools in state: The graduation rate indicator is used for all high schools in the state.

Same calculation for all high schools: The same calculation is used for all schools in the state for the graduation rate indicator.

Based on long-term goals: The graduation rate indicator is aligned directly to Idaho's long- term goals.

Disaggregation: The graduation rate indicator can be disaggregated for each student group. The graduation rate indicator can be disaggregated for each student group.

Validity and reliability: The federally-required four-year cohort graduation rate has been shown to be valid and reliable.

d. **Progress in Achieving English Language Proficiency (ELP) Indicator.** Describe the Progress in Achieving ELP indicator, including the State's definition of ELP, as measured by the State ELP assessment.

Idaho administers the ACCESS for ELL developed by WIDA as our English Language Proficiency Assessment. The progress in achieving ELP is defined in section iv.c above.

e. **School Quality or Student Success Indicator(s).** Describe each School Quality or Student Success Indicator, including, for each such indicator: (i) how it allows for meaningful differentiation in school performance; (ii) that it is valid, reliable, comparable, and statewide (for the grade span(s) to which it applies); and (iii) of how each such indicator annually measures performance for all students and separately for each subgroup of students. For any school quality or indicator that does not apply to all grade spans, the description must include the grade spans to which it does apply.

Table 8: School Quality Indicators

School Category	Measure
K-8	Chronic absenteeism rates for grades K-8.
High School	College and Career Readiness indicators, determined through a combination of students participating in advanced opportunities, earning industry recognized certification and/or participation in recognized high school apprenticeship programs.
Alternative High School	College and Career Readiness indicators, determined through a combination of students participating in advanced opportunities, earning industry recognized certification and/or participation in recognized high school apprenticeship programs.

Table 8 describes the school quality indicators used in our school identification methodology. Additional school quality indicators are found in Appendix B, described at the end of this section and included in annual reporting on the state, district and school report card used as our tool for annual meaningful differentiation.

Disaggregation: Each school quality indicator can be disaggregated for each student group.

Validity and reliability:
The validity of chronic absenteeism is supported by numerous studies that have found strong linkages between chronic absenteeism and other key indicators of student performance and success such as improved academic achievement, increased graduation rates, and lower dropout rates. The reliability of the collected data is largely ensured by a

[4] *Graduation rate lags by one school year.*

consistent reporting methodology, the use of a standardized state definition of chronic absenteeism, and a singular data collection system that has already been established and used for reporting. Idaho is confident in the accurate reporting of attendance data because Idaho has used an average daily attendance (ADA) funding model for many years for all school districts.

All local education agencies in Idaho have been submitting chronic absenteeism data since the 2018-2019 school year to the state. Idaho defines chronic absenteeism the same as the definition provided by the U.S. Department of Education in the EDFacts file spec FS195:

"The unduplicated number of students absent 10% or more school days during the school year. A student was absent if he or she was not physically on school grounds and was not participating in instruction or instruction-related activities at an approved off-grounds location for at least half the school day".

The college and career readiness indicator will be calculated for every student using data collected by the ISDE, State Board of Education, or the Idaho Division of Career and Technical Education (ICTE).

Students who demonstrate early success in college and career preparation opportunities have an increased likelihood of entry and success in education and career training after high school. College and career preparation is determined by calculating the percent of students who have demonstrated success preparation for education and/or career training after high school through advanced course work, technical skills attainment or work experience.

Advanced coursework includes advance placement courses, dual credit courses, and international baccalaureate programs. Students earn credit by passing the course. Technical Skills Assessment (TSA) is a pathway program that measures a student's understanding of the technical requirements of the occupational pathway. The TSA is a nationally validated, industry- based assessment, administered by an approved vendor, such as Career Technical Education. All juniors and seniors enrolled in a capstone course are required to take the TSA. Work experience includes credit for internships and job shadowing. A student earns work experience credit by passing the established criteria for that experience. At a minimum, each work experience aligns to Idaho's Content Standards. In this way, the work experience requirements for credit are consistent and comparable across the State. The LEA may require additional criteria above and beyond the Standards.

The three options in the college and career ready indicators in Idaho's Accountability framework are equally accessible and reflective of stakeholder feedback and State Board of Education goals and allow for meaningful differentiation among all high schools and alternative schools in the state.

Each college and career indicator will include all 12th graders in the denominator providing a true measure of student's access to advanced coursework and a measure of performance throughout their high school experience.

The numerator and denominator are summarized below:

The # of 12th grade students in a high school meeting one or more of the three College and Career options divided by the number of 12th grade students.

Idaho's high school students have equitable access to Advanced Opportunities. Idaho requires that all high schools offer Advanced Opportunities. Idaho rule 08.02.03.106.01 states: "All high schools in Idaho shall be required to provide Advanced Opportunities, as defined in Section 007, or provide opportunities for students to take courses at the postsecondary campus."

In addition, each student in Idaho has $4,125 available to them to cover costs associated with Advanced Opportunities. These funds may be used to pay for dual credits, overload courses, or certificate exams.

Additional school quality and student success indicators not used in school identification. Additional school quality indicators in the state accountability framework include students enrolled in grade 8 taking pre-algebra or higher-level math courses and students in grade 9 taking algebra 1 or higher level math courses in our high schools and alternative high schools. Enrollment in math courses is based on the total population of students in the applicable grade and is disaggregated by sub-groups.

Research shows that students learn more in schools that emphasize high academic expectation and students that take higher-level academic courses learn more. This research supports the use of the enrollment in on-grade or above grade mathematics courses as an indicator of school quality and student success. This indicator also allows for evaluation of school programs in aligning curriculum and instruction in setting high expectation.

Credit recovery and accumulation in Idaho alternative schools as a measure of school quality and student success is predicated on the specific academic needs of students in alternative high schools. The state intends to identify the number of courses taken for credit recovery – which is defined as, any course for which a student received credit after previously attempting the same or equivalent course where credit was not earned. The State Department of Education is working with alternative schools to determine the most meaningful way of articulating this in our reporting of the indicators in the state, district and school report cards. Business rules for reporting will be finalized in May 2018.

The final indicator of school quality and student success; communication with parents on student achievement, which applies to all school configurations, was

implemented in the 2018/2019 school year.

v. **Annual Meaningful Differentiation** *(ESEA section 1111(c)(4)(C))*

a. Describe the State's system of annual meaningful differentiation of all public schools in the State, consistent with the requirements of section 1111(c)(4)(C) of the ESEA, including a description of (i) how the system is based on all indicators in the State's accountability system, (ii) for all students and for each subgroup of students. Note that each state must comply with the requirements in 1111(c)(5) of the ESEA with respect to accountability for charter schools.

Idaho annually and publicly reports progress on all measures in the state's Accountability Framework (Appendix B), approved by the Idaho State Board of Education and the Idaho Legislature in 2017. These measures were agreed upon by Idaho's stakeholders as the next step forward in education accountability in the state to ensure that all students are college and career ready. Idaho believes defining success requires going beyond statewide test scores and should illustrate multiple measures reflecting the many facets of our students.

All measures in the Accountability Framework reflect Idaho's state values and further empower educators and parents to engage in educational decisions about student achievement. Idaho reports results for each indicator disaggregated by all student subgroups for all schools. Idaho's stakeholders were outspoken in their opposition to a summative rating for each school. It was felt that the complex calculations required to produce a summative score are not transparent, sometimes misleading, and result in a system that is not useful for parents and educators. In order to produce a meaningful report card, Idaho has developed a user-friendly report card that allows for data to be summarized and visualized in ways most useful to parents and community members. The state also incorporated tools for comparing schools to each other. This allows all education stakeholders to use the multiple measures in the Accountability Framework to differentiate schools.

b. Describe the weighting of each indicator in the State's system of annual meaningful differentiation, including how the Academic Achievement, Other Academic, Graduation Rate, and Progress in ELP indicators each receive substantial weight individually and, in the aggregate, much greater weight than the School Quality or Student Success indicator(s), in the aggregate.

When identifying comprehensive and targeted support and improvement schools as described above, the school quality indicator is weighted at 10% for all schools, with the remaining indicators weighted evenly across the remaining 90%.

See Table 9 below for an outline of indicator weights for Idaho's most common school configurations.

Table 9: Indicator weights for Idaho's most common Title I school configurations (percent)

School Type (Title 1 Schools)	Math	ELA/ Literacy	Student Growth – Math	Student Growth – ELA/Literacy	English Learner Proficiency	Graduation Rate	School Quality
K-8	18	18	18	18	18	NA	10
K-8 (no ELs)	22.5	22.5	22.5	22.5	NA	NA	10
High school	22.5	22.5	NA	NA	22.5	22.5	10
High school (no ELs)	30	30	NA	NA	NA	30	10
Alternative high school	22.5	22.5	NA	NA	22.5	22.5	10
Alternative high school (no ELs)	30	30	NA	NA	NA	30	10

c. If the State uses a different methodology for annual meaningful differentiation than the one described in section 4(v)(a) above for schools for which an accountability determination cannot be made (*e.g.*, P-2 schools), describe the different methodology, indicating the type(s) of schools to which it applies.

The CSI process for identifying the lowest performing schools relies on multiple measures of school performance to accurately identify schools with systemic challenges. Consequently, to progress through Step 6 above and receive a composite score, schools must meet the n size threshold of 20 students in a minimum number of key indicators.

For K-8 schools, the key indicators are:

- Academic Achievement
  - ISAT/IDAA Proficiency Rate in ELA/literacy
  - ISAT/IDAA Proficiency Rate in Mathematics
- Academic Growth
  - Student Growth toward Proficiency – ISAT ELA/Literacy
  - Student Growth toward Proficiency – ISAT Mathematics
  - English Learner Growth toward English Language Proficiency

K-8 schools must have a value for at least one academic achievement measure and one academic growth measure listed above to receive a composite score.

For High Schools and Alternative High Schools, the key indicators are:

- Academic Achievement
  - ISAT/IDAA Proficiency Rate in ELA/literacy

- ISAT/IDAA Proficiency Rate in Mathematics
- Graduation Rate
  - Four-year cohort graduation rate (High Schools)

High Schools and Alternative High Schools must have a value for at least one academic achievement measure and a graduation rate to receive a composite score.

When schools meet the n size requirements for the key indicators described above, the SDE uses the results in the standard, Lowest-Performing CSI process with the weights distributed across the available indicators. However, if the school still fails to meet the n size requirements for the minimum number of indicators, the school will be subject to a qualitative review process.

Qualitative Review Process

In the qualitative review process, the SDE convenes a review committee to review the school's characteristics and performance using available data. This committee will review information about the school, including the following:

- Title I status
- Grades served
- Detailed school type (e.g. career technical school, adjudicated school, etc.)
- Number of students in the denominator of each accountability measure
- Performance in each measure
- Student achievement progress and growth based on criteria established by the State Technical Assistance Team (STAT)
- For schools serving grades not assessed in our accountability system, the review committee will consider the school's performance on the statewide early literacy assessment as a metric of comparison. While not a measure in our identification system, the statewide literacy assessment is a measure in our accountability framework and is a key performance indicator in annual meaningful differentiation in our report card.

The committee will use the information available during the qualitative review to determine if the school should be identified for comprehensive support and improvement.

vi. **Identification of Schools** *(ESEA section 1111(c)(4)(D))*

a. **Comprehensive Support and Improvement Schools**. Describe the State's methodology for identifying not less than the lowest-performing five percent of all schools receiving Title I, Part A funds in the State for comprehensive support and

improvement.

Idaho identified schools in the beginning of the 2018-19 school year using data from 2015- 16, 2016-17, and 2017-18. In the case of the student engagement survey, only data from the end of the 2017-18 school year was used. Idaho originally planned to identify schools every three years thereafter, using the same review of three prior years' data. Although this original identification schedule was delayed by COVID-19 disruptions, Idaho will return to a three-year identification cycle starting in the beginning of the 2022-2023 school year.

Feedback from stakeholders strongly emphasized a three-year identification cycle in order to build a system that supports the development of sustainable school improvement strategies. School leaders will be able to dedicate time to planning and early implementation in the first year of identification and will have an additional two full years to implement their school improvement strategies, with the intent of generating sustainable change at the school.

ISDE reviews identification data annually to determine whether schools would be identified during an off-cycle year. If schools are found that are not currently identified but would have been identified if the current year were on-cycle will be notified and offered support and thought partnership from staff. Those schools will be added to a watch list and this will be noted on the school report card.

A subset of the measures in the Accountability Framework is used as accountability indicators as required by ESSA, described in section A(4)(iv) of this plan. Idaho uses these indicators every three years to identify schools for comprehensive support and improvement, and each year to determine schools for targeted support and improvement, using the methodology described in this section and section A(4)(vi) of this plan.

The steps below describe the calculation steps the state will use in identifying the lowest-performing five percent of all schools receiving Title I, Part A funds.

***Step 1**:*
For each indicator used in school identification, combine the performance of students in the school for the most recent three years and calculate a weighted average. For indicators for which three years of statewide data is not available, the state combines performance for the number of years that are available.

The example below demonstrates the three-year average calculation for math achievement.

Math Assessment	2016		2017		2018		Three year average calculation for Math achievement	
# proficient	95	95.0%	100	78.7%	79	57.20%	274	75.07%
# tested	100	proficiency	127	proficiency	138	proficiency	365	proficiency

***Step 2**:* Select a school and identify the three-year weighted average value of the first indicator (among the academic and school quality indicators described in section iv.)

As an example, the academic achievement indicator for Math, which is the percentage of students scoring at proficient or advanced. From the example calculation above, this value is 75% for a hypothetical school – School X.

School X math performance

Current year Proficient/Advanced
75%

***Step 3**:* Determine the school's rank on that indicator relative to all other public schools in the state in the same school category.

To continue our example, assume School X's math achievement was about in the middle relative to other schools in the state, ranking 197 of 378 schools.

School	Achievement	Rank
P	99%	1
F	98%	2
AA	96%	3
S	94%	4
-	●	●
-	●	●
X	**75%**	**197**
-	●	●
-	●	●
G	32%	378

There are 181 schools with lower Achievement than School X and 196 that have higher Achievement than School X.

Step 4: Calculate the school's percentile rank for the indicator. The percentile rank

is a simple calculation: divide the number of schools below the school in question by the total number of public schools in the state in the same school category. This number is then multiplied by 100. This calculation provides the percent of schools in the state that fall below the target school in that indicator.

For our hypothetical school X, the calculation would be as follows:

Math Achievement -Percentile Rank

$$\frac{\text{Number of schools below School X (181)}}{\text{Total Number of schools (378)}}$$

Using this calculation, we determine that 48 percent of schools in the state fall below School X in the math academic achievement indicator.

Step 5*:* Repeat steps 1-4 for all indicators.

Step 6: Calculate a composite value for the school based on the available indicators. The composite value is calculated by applying the weights described in section b (below) to the percentile ranks for each indicator (determined at the end of step 4) and summing these values.

Step 7*:* Repeat steps 1-6 for all schools in the state.

Step 8 Rank schools from highest to lowest within their school category based on their composite value.

Step 9 Identify the composite value that would capture the bottom 5% of Title I schools within the K-8, high school, and alternative high school categories.

Idaho designates both Title I and Non-Title I schools with composite scores at or below the relevant 5% threshold value as schools identified for comprehensive support and improvement.

Step 10*:* Idaho also celebrates schools for their work to meet the needs of their students by recognizing:

- Schools that meet or exceed the interim progress goals for each indicator.
- Schools that fall into the 90th percentile rank or above using the school identification methodology for each of the indicators in the framework.

~~i. Describe the weighting of each indicator in the State's system of annual meaningful differentiation, including how the Academic Achievement, Other Academic, Graduation Rate, and Progress in ELP indicators each receive substantial weight individually and, in the aggregate, much greater weight than the School Quality or Student Success indicator(s), in the aggregate.~~

~~When identifying comprehensive and targeted support and improvement schools as described above, the school quality indicator is weighted at 10% for all schools, with the remaining indicators weighted evenly across the remaining 90%.~~
~~See Table 9 below for an outline of indicator weights for Idaho's most common school configurations.~~

~~Table 9: Indicator weights for Idaho's most common Title I school configurations (percent)~~

b. **Comprehensive Support and Improvement Schools**. Describe the State's methodology for identifying all public high schools in the State failing to graduate one third or more of their students for comprehensive support and improvement.

Beginning in 2019, the state calculates and reports both a 4-year cohort and a 5-year cohort graduation rate annually for all traditional and alternative high schools.

Beginning in 2021, Idaho identifies all high schools in the state with a 5-year cohort graduation rate less than 67%, based on a three year weighted average, for comprehensive support and improvement.

The change to using a 5-year rate specifically addresses the challenges and unique needs of our alternative high schools, which are required to serve students who are at risk for dropping out due to academic and social or emotional challenges. Using a 5-year cohort graduation rate average for all high schools recognizes the unique challenges and important work educators and students accomplish in preparing students for college and/or career.

The use of a 5-year cohort graduation rate also allows the state to meaningfully differentiate high schools in our accountability system.

c. **Comprehensive Support and Improvement Schools**. Describe the methodology by which the State identifies public schools in the State receiving Title I, Part A funds that have received additional targeted support under ESEA section 1111(d)(2)(C) (based on identification as a school in which any subgroup of students, on its own, would lead to identification under ESEA section 1111(c)(4)(D)(i)(I) using the State's methodology under ESEA section 1111(c)(4)(D) and that have not satisfied the statewide exit criteria for such schools within a State-determined number of years.

If a Title 1 school is identified for additional targeted support under section A(4)(vi)(f) of this plan for three consecutive years (i.e., the school has not met the statewide exit criteria for two consecutive years immediately after the year in which it was identified for additional targeted support), that school will be identified as a comprehensive support and improvement school.

d. **Year of Identification**. Provide, for each type of schools identified for comprehensive support and improvement, the year in which the State will first identify such schools and the frequency with which the State will, thereafter, identify such schools. Note that these schools must be identified at least once every three years.

Idaho began identifying comprehensive support and improvement schools for the 2018-19 school year and originally planned to repeat this process every three years. Due to COVID- 19 disruptions, the identification schedule was pause. Idaho re-identifies schools prior to the 2022-2023 school year and then continues to identify schools every three years thereafter.

e. **Targeted Support and Improvement**. Describe the State's methodology for annually identifying any school with one or more "consistently underperforming" subgroups of students, based on all indicators in the statewide system of annual meaningful differentiation, including the definition used by the State to determine consistent underperformance. *(ESEA section 1111(c)(4)(C)(iii))*

While the lowest-performing five percent of schools will be identified as comprehensive support and improvement schools every three years, the methodology for identifying these schools will be calculated annually for the purpose of identifying schools for targeted support and improvement.

The comprehensive support and improvement calculations will be run for all students to identify the lowest-performing five percent of schools. The same calculations will then be run for each subgroup of students (when meeting the n size requirements). Idaho identifies targeted support and improvement schools based on a student group composite below the bottom 5% of state average composite for all students and in the bottom five (5) percent of the corresponding student group composites.

The composite score is calculated based on three most recent years of data. For indicators

for which three years of statewide data is not available, Idaho combines performance for the number of years that are available.

Each targeted support and improvement school will be required to develop and implement an improvement plan that is aligned to the long-term goals for the state, and approved by their LEA.

To exit targeted support and improvement, a school must not be identified using the methodology described above.

f. **Additional Targeted Support.** Describe the State's methodology for identifying schools in which any subgroup of students, on its own, would lead to identification under ESEA section 1111(c)(4)(D)(i)(I) using the State's methodology under ESEA section 1111(c)(4)(D), including the year in which the State will first identify such schools and the frequency with which the State will, thereafter, identify such schools. *(ESEA section 1111(d)(2)(C)-(D))*

The methodology for identifying additional targeted support schools will be calculated annually.

The same calculations as used for comprehensive support and improvement identifications will be run among targeted support and improvement schools for all subgroups of students (when meeting the n size requirements). The final, weighted composite value for each student group will be compared with that for schools that are (or would be) identified for comprehensive support and improvement.

If the composite value for any of the subgroups is below that for the highest performing school in the bottom 5% of the comprehensive identification schools, the school will be identified for additional targeted support and improvement.

The composite score is calculated based on three most recent years of data. For indicators for which three years of statewide data is not available, Idaho combines performance for the number of years that are available.

To exit additional targeted support, a school must not be identified using the methodology described above.

g. **Additional Statewide Categories of Schools**. If the State chooses, at its discretion, to include additional statewide categories of schools, describe those categories.

The state does not identify additional statewide categories of schools.

vii. **Annual Measurement of Achievement** *(ESEA section 1111(c)(4)(E)(iii))*: Describe how the State factors the requirement for 95% student participation in statewide mathematics and

reading/language arts assessments into the statewide accountability system.

Idaho understands that in order to provide a fair and accurate picture of school success, and to help parents, teachers, school leaders, and state officials understand where students are struggling and how to support them, the state must ensure high participation in statewide assessments.

According to current Idaho Administrative Code (IDAPA 08.02.03.112(e), "failure to include ninety-five percent (95%) of all students and ninety-five percent (95%) of students in designated subgroups automatically identifies the school as not having achieved measurable progress in ISAT proficiency." For the purposes of this plan, "measurable progress on ISAT proficiency" is defined as not having met the school's interim progress measure toward its long-term goals in any group where 95% participation is not attained.

Additionally, "If a school district does not meet the ninety-five percent (95%) participation target for the current year, the participation rate can be calculated by the most current three (3) year average of participation."

Should a school or LEA not meet the 95% participation minimum standard, the local school board will be notified by the State Board of Education that the school or district has failed to meet the minimum standard of reporting and that this will be reflected on the state report card. The ISDE will support the school or LEA to write a parent outreach plan that addresses how it will engage parents and community members in order to meet the 95% participation minimum standard. In addition, ISDE will develop policies requiring the LEA to use a portion of its funds pursuant to 33-320, Idaho Code (Continuous Improvement Plans) for local school board and superintendent training on data-driven decision-making and assessment literacy.

If a school has at least 95% participation in any year, the school is not required to submit a parent outreach plan for the following year.

viii. **Continued Support for School and LEA Improvement** *(ESEA section 1111(d)(3)(A))*

a. **Exit Criteria for Comprehensive Support and Improvement Schools**. Describe the statewide exit criteria, established by the State, for schools identified for comprehensive support and improvement, including the number of years (not to exceed four) over which schools are expected to meet such criteria.

Lowest performing 5% of schools:
To exit comprehensive support and improvement a school identified in the lowest performing 5% of schools must:

- No longer meet the eligibility criteria for comprehensive support and improvement (no longer be in the lowest 5%), and
- Achieve ELA and Math results above the 10th percentile within each school category for the all student group, and
- Articulate in writing a plan for sustaining improved student achievement. The

plan will be submitted to and approved by the State Technical Assistance Team (STAT). This plan will articulate measurable goals, aligned strategies, and a robust monitoring plan. This sustainability plan must explain how the school will maintain a strong rate of growth and change for students while addressing how the school intends to ensure sustainability without additional improvement funds.

A school may not exit if student outcomes (e.g. proficiency rates) have not improved from the point of identification.

Schools with graduation rate below 67%:
Schools identified for comprehensive support and improvement by failing to graduate two- thirds of its graduating cohort may exit from comprehensive status if:

- The school's average graduation rate over the previous 3 years exceeds 67%, or
- The school's graduation rate for two consecutive years exceeds 67%.

b. **Exit Criteria for Schools Receiving Additional Targeted Support**. Describe the statewide exit criteria, established by the State, for schools receiving additional targeted support under ESEA section 1111(d)(2)(C), including the number of years over which schools are expected to meet such criteria.

Schools identified for additional targeted support will be assigned school improvement goals with a three-year timeline for the student group for which the school was identified for additional targeted support. These goals will be aligned with a long-term goal for that student group to reduce the gap to 100% proficiency in each indicator by half over 6 years with 2016 as the baseline year. To exit, a school must:

- No longer meet the eligibility criteria for additional targeted support, and
- Achieve ELA and Math results above the 10^{th} percentile within each school category, for all subgroups for which the school was identified for targeted support and improvement.

A school may not exit if student outcomes (e.g. proficiency rates) have not improved from the point of identification.

c. **More Rigorous Interventions**. Describe the more rigorous interventions required for schools identified for comprehensive support and improvement that fail to meet the State's exit criteria within a State-determined number of years consistent with section 1111(d)(3)(A)(i)(I) of the ESEA.

More rigorous interventions in a school failing to meet Idaho's exit criteria after three years will be led by the State Technical Assistance Team (or STAT, see section A(4)(viii)(e) for a complete description), who will facilitate the completion of a Comprehensive and Integrated Field Review (CIFR) that will lead to next steps for

the school. Below is a description of the steps the STAT will complete to determine more rigorous interventions.

~~**Notification of insufficient progress from the Superintendent of Public Instruction will go to:**~~

- ~~The Idaho State Board of Education~~
- ~~The local school board~~
- ~~The superintendent of the LEA with the building principal copied~~
- ~~The public via the School Accountability Report Card~~

Next steps include:

- The ISDE conducts a Comprehensive and Integrated Field Review (CIFR) during the fall following the third year of identification (see below for membership and protocol).
- The State Board of Education may direct the use of some of the LEA's continuous improvement funds pursuant to 33-320, Idaho Code for local school board training in school improvement.
- A leadership coach may be assigned to the local school board and LEA leader to inform school improvement at the local level.

Membership of the Comprehensive and Integrated Field Review Team may include:

- STAT Team; including the superintendent, building administrators and school leadership team
- ISDE representatives as needed
- LEA/school administrators ~~and teachers~~ from the region with similar demographics~~, which may include a school librarian~~
- ~~Persons nominated by Idaho School Boards Association, Idaho Association of School Administrators, Idaho Association of Special Education Directors, Idaho Education Association~~
- ~~Administration/faculty applicants from high achieving schools chosen by the State Department of Education~~

Comprehensive and Integrated Field Review protocol:

- Observe a stratified sample of faculty including teachers of special populations, using a standard protocol. The protocol will include a subset of the indicators that align with the state's current teacher evaluation system.
- Interview focus groups; which may include ~~with~~ teachers, parents, students, and noncertified staff (e.g. food service, custodians and paraprofessional).
- Interview LEA and school administrators.
- Collect and interpret data.
- Recommend additional school interventions to school, LEA, and state leadership.
- School, LEA, and state leaders agree upon and implement new interventions for the school.

d. **Resource Allocation Review**. Describe how the State will periodically review

resource allocation to support school improvement in each LEA in the State serving a significant number or percentage of schools identified for comprehensive or targeted support and improvement.

Idaho will identify all LEAs with 50% or more of comprehensive and targeted support and improvement schools every year.

For LEAs with 50% or more comprehensive and targeted support and improvement schools the state will annually review ESSA Federal program resource allocations from the LEA to the school through the Consolidated Federal and State Grant Application (CFSGA). Budget and expenditure information, supports and resources, and student performance will be analyzed to determine the effectiveness of those supports.

ISDE has access to a wide variety of resources, including funding, expertise, math and ELA coaches, leadership training, and assessment development. The allocation of these resources will first be applied to those comprehensive and targeted schools, especially the LEAs that have more than 50% of schools identified for comprehensive or targeted support.

e. **Technical Assistance**. Describe the technical assistance the State will provide to each LEA in the State serving a significant number or percentage of schools identified for comprehensive or targeted support and improvement.

Idaho is committed to a robust statewide system of support. Our system of support is designed to pair local issues with local solutions and draws from a variety of resources and programs to build the capacity of schools and LEAs for continuous and sustainable improvement. The statewide system of support is managed and coordinated by the State Technical Assistance Team (STAT). This team is responsible for overseeing all school improvement grants for comprehensive and targeted schools. The STAT works with LEAs to ensure that improvement plans are evidence-based and managed for high performance.

The STAT will provide a network approach to improving instruction and achievement for each school identified as comprehensive support and improvement. ~~The STAT will include members of the executive team, federal programs director of special education, director of curriculum and instruction, director of assessment, school improvement coordinator, a Career and Technical Education (CTE) representative, a state board of education representative, and members of the local LEA and school leadership teams. Depending upon the needs of the schools identified for comprehensive or targeted assistance, other specialists will be asked to provide input, such as school library or charter school representatives~~ The STAT will include members of the Idaho Department of Education , LEA Team, and other specialists as necessary to meet the unique needs of the LEA/District. ~~.~~

~~Plan implementation and management support may be provided by the STAT if specifically requested by the LEA or school. The assistance may be in the form of conducting a comprehensive needs assessment, drafting a comprehensive plan, defining evidenced- based interventions, defining key indicators to measure and monitor, conducting periodic data collection, evaluating the data, and making necessary corrections in the interventions.~~

As shown in Table 10 below, the statewide Ss~~s~~ystem of Ss~~s~~upport includes strategies and activities that LEAs and schools can select based on need. Schools identified for comprehensive support and improvement will likely need to draw on multiple strategies, whereas schools identified for targeted support and improvement may apply focused resources on meeting the needs of ~~particular~~ identified groups of students. ~~This could include drawing on the English Learner Program to support EL students or providing extended learning time to help accelerate learning for specific groups of students. All funded activities and programs are evaluated regularly for evidence of effective implementation and to assess the degree to which services and activities are evidence-based. Programs draw on guidance from the U.S. Department of Education's What Works Clearinghouse and expertise from the Northwest Comprehensive Center and Regional Education Lab Northwest.~~

The STAT will ensure that school improvement plans meet evidence-based requirements under ESSA, and that the state interventions being applied to schools are evaluated to ensure that they are high quality and resulting in improved outcomes for students.

State-led school improvement activities are funded through the state administrative set- aside for 1003(a) funds. Services are provided directly to schools identified for improvement, when requested by the LEA as an optional part of the 1003(a) funding formula.

Table 10: Strategies used in the Idaho statewide Ss~~s~~ystem of Ss~~s~~upport

Strategy	Activity	Provider/program	Funding source
Creating/implementing comprehensive and targeted school improvement plans	Diagnostic evaluation/needs assessment to determine key challenges and root causes	~~ISDE or approved provider~~Idaho Building Capacity Project	Title I-A School Improvement funds
Creating/implementing comprehensive and targeted school improvement plans	Comprehensive school improvement and leadership coaching	~~Idaho Capacity Builders~~Idaho Building Capacity Project	Title I-A School Improvement funds

Improving leadership effectiveness	Training/Mentoring for School Board Members	ISDE, Idaho School Boards Association, Idaho Building Capacity Project	School Improvement funds
~~Improving leadership effectiveness~~	~~Leadership coaching~~	~~Idaho Building Capacity Project~~	~~School improvement funds~~
Improving leadership effectiveness	Mentoring and support for principals	Idaho Principals Network Idaho Principal Mentoring Project	School improvement funds Title II-A
~~Improving leadership effectiveness~~j	Mentoring and support for superintendents	Idaho Superintendents Network, Idaho Superintendent Mentoring Project	School Improvement Funds~~School improvement grant~~
~~Improving leadership effectiveness~~	~~School improvement training for local school boards and superintendents~~	~~ISDE or contract vendor~~	~~State funds pursuant to 33-320, Idaho Code~~
~~Improving leadership effectiveness~~	~~Mentoring, training, and support for emerging CTE leaders and prospective CTE administrators~~	~~Leadership Institute~~	~~State funds (CTE)~~
~~**Strategy**~~	~~**Activity**~~	~~**Provider/program**~~	~~**Funding source**~~
Aligning curriculum and improving instruction	Professional development and technical assistance in curriculum and standards development and alignment and research-based instructional improvement	ISDE, Content and Curriculum Coaches~~Approved providers; state regional mathematics or ELA specialists~~	State funds
~~Aligning curriculum and improving instruction~~	~~Idaho Content Standards/Literacy coaching~~	~~Idaho Coaching Network, ELA/Literacy~~	~~State funds~~

Aligning curriculum and improving instruction	Training on the Idaho Content Standards and technical assistance with how to align curriculum, instruction, and assessment practices	~~Idaho Coaching Network/ELA/ Literacy Coaches, Idaho Math Centers~~ISDE, Content and Curriculum Coaches	State funds
Aligning curriculum and improving instruction	Educator evaluation training and coaching	ISDE and SBOE Educator Effectiveness Coordinators	Title II-A State funds
~~Aligning curriculum and improving instruction~~	~~Opportunities to implement STEM curriculum~~	~~STEM Action Center~~	~~State and federal funds~~
Aligning curriculum and improving instruction	Training on Assessment and Data Literacy	ISDE	State funds ~~(CTE)~~
~~Aligning curriculum and improving instruction~~	~~Training on the Idaho Career Technical Content Standards and technical assistance with how to align programs and assessments.~~	~~ICTE Reach Professional Development Conference; Program Quality Managers~~	~~State funds~~
~~Aligning curriculum and improving instruction~~	~~Participating in the Idaho Mastery Education Network~~	~~ISDE~~	~~State funds~~

~~Strategy~~	~~Activity~~	~~Provider/program~~	~~Funding source~~
Supporting English learners	Technical assistance with EL program design	Idaho English Learner Program	State and federal funds
Supporting English learners	Training on WIDA standards and technical assistance on aligning WIDA standards with Response to Intervention (RTI) practices	Idaho English Learner Program	State and federal funds

Supporting Special Education students	Multi-tiered instructional training and coaching	SESTA team of Special Education Idaho Center on Disabilities and Human Development	State funds, special education funds
Supporting Special Education students	Training on intensive interventions, assessments and strategies related to special education	SESTA team of Special Education Idaho Center on Disabilities and Human Development	Special education funds
~~Extended learning time~~	~~Technical assistance on how to redesign the school day using extended learning and/or other opportunities (e.g., 21st Century Community Learning Centers and school or public libraries)~~	~~ISDE~~ ISDE ~~and/or Idaho Universities~~	~~Title IV~~

~~Strategy~~	~~Activity~~	~~Provider/program~~	~~Funding source~~
Family and community engagement	Technical assistance in the inclusion of families and the community in the school improvement planning and implementation process	ISDE-Family Engagement Coordinator	State funds

~~Family and community engagement~~	~~Access to and support with the Family Engagement Tool (FET)~~	~~ISDE Family Engagement Coordinator~~	~~State funds~~
~~Family and community engagement~~	~~Career and Technical Student Organizations (CTSOs) provide student leadership opportunities and community engagement~~	~~ICTE~~	~~-~~
~~Family and community engagement~~	~~Career and Technical Program Advisory Committees provide community partnerships and industry input for CTE programs~~	~~ICTE~~	~~State funds (CTE)~~

The following describes each of these strategies and activities in greater detail:

Management of Comprehensive and Targeted School Improvement

LEAs and schools need guidance and support in conducting needs assessments, prioritizing goals and needs, and developing improvement plans that are actionable and effective. ISDE partners with local and regional organizations to provide this assistance.

Comprehensive needs assessment and action plan: As part of the state's support, all comprehensive support and improvement schools will conduct a comprehensive needs assessment. The needs assessment may include an examination of four key components of each school: climate and culture, student engagement, leadership, and stakeholder perspectives and experiences. Data will be collected and analyzed using key performance and improvement indicators for school quality and learner outcomes. Areas of improvement will include a root-cause analysis to determine appropriate solutions.

Improvement areas will be prioritized, and this information will help guide LEAs in writing

their comprehensive support and improvement plans and will help the STAT provide ongoing support assistance. If the LEA would like assistance from ISDE in either conducting the diagnostic evaluation or recommending an external provider, the school improvement coordinator will provide the information and resources.

Action plans from the diagnostic evaluation will address the why, who, what, when, and resource allocation for making improvement changes. A vision for the school will be developed and the school's strategic direction—setting short-term (one year) and long-term (three to five years) goals—will be identified. An important component of the plan will include external stakeholder involvement in the development process and during the implementation of the plan. External stakeholders will include, at a minimum, the principal and other school leaders, teachers, and parents. The LEA will address in the plan how it will monitor and oversee the plan's implementation, as well as how the effectiveness of the plan will be evaluated. Title I-A school improvement funds may be used to fund a comprehensive needs assessment if the LEA chooses to use an external provider.

Additionally, grant funds will be available for all Title I schools identified as comprehensive support and improvement for the purpose of implementing system changes, strategies, and interventions as identified in the school's improvement plan based on the results of the comprehensive needs assessment.

STAT Team: The STAT will meet regularly either in person or via web conference ~~(depending on where team members are located)~~. The state school improvement coordinator will develop the agenda and ~~with input from STAT member stakeholders and will~~ facilitate the meetings. One of the key responsibilities of this group will be to review data to inform strategies for improvement. ~~Data from each of the stakeholders will be provided to the STAT members ahead of the meeting time.~~ The purpose of the meeting will be to review progress of schools in CSI-Up and align the statewide System of Support for continuous improvement. ~~from the last meeting and identify action plan supports and next steps for the following meeting. All stakeholder members are mutually responsible for the improvement of the school.~~

~~Given that the STAT will have members who are part of ISDE's executive team, ISDE will have an internal system of control with regular feedback provided to the superintendent and cabinet. The STAT members will also be responsible for continuing to convene regular meetings of a core team, which will include representatives from ISDE, CTE, and OSBE leadership. ISDE, the STAT, and the core team will have access to technical assistance from external providers and will reach out to staff from other state education agencies to brainstorm challenges.~~

~~The STAT will use the LEA and school improvement plans as a component of analysis of school progress. This team will work with LEAs to examine school data in an iterative process that includes an initial benchmark of student achievement levels, delivery of the prescribed intervention, a second assessment of progress, continued intervention, and a third assessment of~~

~~progress.~~

~~If the monitoring of data demonstrates *no improvement in student progress* toward desired outcome(s) after two cycles within one year of the initial grant, the STAT, in collaboration with the LEA, should determine modification to the intervention(s) or a redefinition of the intervention. The new or modified intervention should be implemented and the monitoring process should begin again.~~

If ~~the~~ a school no longer falls in the category of comprehensive support due to the *significant increase in achievement and/or growth* or it is the conclusion of the STAT that the school's processes and procedures will result in higher levels of student outcomes, ISDE and the LEA will discuss termination of designation and a plan for interim measures of progress, student data, and scaffolded support. The school will be considered exited, but the additional funding allocated for support will no longer be distributed.

Idaho Building Capacity Project: Central to the strategy of providing assistance with the management of school improvement is the Idaho Building Capacity (IBC) Project. The project began in 2008 and is now a cornerstone of ISDE's statewide S~~s~~ystem of S~~s~~upport and its approach to school improvement. Idaho Capacity Builders are experienced educators who have in-depth knowledge of school improvement processes and demonstrated experience implementing change processes. All schools identified for comprehensive support and improvement ~~or targeted support~~ may~~will~~ receive support from a Capacity Builder. Capacity Builders coach leaders and leadership teams through the tasks of improvement with ~~monthly~~ ongoing training ~~and assist in promoting alignment among the various parts within the school or LEA system~~.

Capacity Builders are provided with a toolkit of evidence-based school improvement resources and, in partnership with school and LEA leaders, help create and implement a customized school improvement plan. The Capacity Builders are managed by regional school improvement coordinators at Boise State University, Idaho State University, and University of Idaho.

Improving Leadership Effectiveness

The statewide S~~s~~ystem of S~~s~~upport includes several activities to increase the effectiveness of ~~LEA and~~ school leadership. The following activities draw on the strengths and assets of Idaho's educators while providing focused support to leaders of schools identified for comprehensive or targeted support and improvement.

Idaho Principals' Network (IPN): The IPN brings school principals together in a professional learning community that is singularly focused on improving outcomes for all students by improving the quality of instruction in all schools. Through the IPN, principals participate in a balance of content, professional conversation, and collegial instructional rounds related directly to instructional leadership, managing change, and improving the overall effectiveness of the instructional core. ~~. For example, the network has worked on improving classroom observations, building turnaround leadership competencies, and instructional rounds.~~ For schools

identified for comprehensive support and improvement, the IPN is ~~required~~ recommended and provides coaching and support unique to the leadership needs of each principal. Data collected in July 2017 indicated that IPN participants overwhelmingly indicated satisfaction with the program. Over 95% of participants would either recommend or strongly recommend the program and indicated that the workshops are useful and directly impact their work.

Idaho Superintendents' Network (ISN): The ISN was developed by ISDE in partnership with Boise State University's Center for School Improvement and Policy Studies. The purpose of this project is to support the work of ~~LEA leaders~~superintendents in improving outcomes for all students ~~by focusing on the quality of instruction~~. The network is comprised of~~s~~ committed superintendents who work together to develop a cohesive and dedicated leadership community focused on teaching and learning. ~~The superintendents support each other as they bring about change and collectively brainstorm obstacles that may prevent improvement in the quality of the instruction in their LEAs. ISDE acts as a resource and provides the necessary research, experts, and planning to bring superintendents from across the state together to discuss self-identified issues.~~ The ISN is a key resource for superintendents in LEAs with schools that are in comprehensive and targeted designation in order to support and build their capacity in specific aspects of leadership. ~~Areas of support provided by the ISN include transforming district central offices for learning improvements, using data to improve teacher effectiveness and instruction, and creating strong stakeholder relationships.~~ The ISN is ~~required~~ recommended for district superintendents with one or more schools identified for comprehensive support and improvement.

The Idaho Principal Mentoring Project (IPMP): The IPMP is designed for early career principals in Idaho. This project is voluntary and will provide ~~new to position~~ principals in their first or second year multiple levels of support. The program hires highly distinguished principals and/or superintendents trained by the state to mentor school leaders. Principal mentors are assigned to principal mentees based on need and experience. Mentors coach leaders through the tasks of improvement with regular high-performance phone calls. Principal mentors are provided with a toolkit of mentoring resources and work with mentees to create a customized mentoring plan that focuses on developing the skills and dispositions in four critical areas of school level leadership: interpersonal and facilitation skills, teacher observation and feedback, effective school-level practices and classroom-level practices, and using data to improve instruction. Data collected in July 2017 showed that 100% of IPMP participants indicated satisfaction with the program and that it directly impacts their work. ~~Moving forward, IPMP participation will be required for new principals serving in schools identified for comprehensive support and improvement.~~

Idaho Career & Technical Education (CTE) Leadership Institute: Leadership Institute was developed to foster professional development and provide leadership training and opportunities for Idaho professionals in career and technical education. The goal is to train individuals to become local, district, or state-level administrators of career and technical programs. CTE programs in Idaho exist at the middle, secondary, and postsecondary levels, and workforce training exists in noncredit

settings such as community colleges and correctional facilities. Each year applicants for Leadership Institute are nominated by a peer, supervisor, or other CTE administrator who recognize the leadership potential of the nominee. New selected members are placed into a cohort to join other cohorts in a rolling 27-month professional development journey that includes training on state and national policy, CTE funding and governance, administration of CTE programs and schools, introduction to national CTE professional associations and advocacy, and personal leadership discovery and growth. Professional staff at ICTE lead the cohorts and act as mentors for the Leadership Institute participants throughout their time in the cohort and beyond.

Aligning Curriculum and Improving Instruction

Professional development and technical assistance from state content specialists: Idaho has a network of local teacher leaders and content specialists who provide high-quality professional development across the state. The Idaho Regional Mathematics Centers are housed within the colleges of education at each of Idaho's four-year institutions of higher education: Boise State University, Lewis Clark State College, Idaho State University and University of Idaho. The staff of each Regional Mathematics Center provides both regional, district and school-specific support in mathematics education. Each center has developed and utilizes a systematic method to gauge regional, district or school needs and readiness in order to provide equal opportunity to services. To ensure a lasting change in Idaho educators' instructional practice, center programs are of sufficient quality, duration and frequency.

The Idaho Content Literacy Coaches are a group of more than 600 teacher leaders who provide professional development on the Idaho Content Standards, along with lessons, units, and assessments aligned to the Idaho Content Standards. For schools identified as in need of comprehensive or targeted support and improvement, regional mathematics and literacy specialists provide job-embedded coaching.

For schools that are implementing mastery education, expertise from the Idaho Mastery Education Network will be a critical resource for implementing this important but challenging shift in how students learn and are assessed. In addition, mastery education may be used as a strategy for school improvement in schools that are not yet implementing mastery education.

Educator effectiveness coordinator: Educator effectiveness is a program that provides LEAs with standards, tools, resources, and support to increase teacher and principal effectiveness and consequently increase student achievement. ISDE's and OSBE's educator effectiveness coordinators integrate educator effectiveness policies and resources within Idaho's statewide system of support. Schools identified for comprehensive or targeted support and improvement may utilize the educator effectiveness program for the following: integrating observation and evaluation into continuous school and LEA improvement; technical assistance and professional development on effective instructional strategies and interventions; and creating school and LEA improvement plans that integrate educator observation and evaluation practices with resources, strategies, assessments, and evaluation procedures that will adequately address the needs of all learners.

Supporting English Learner Students

Schools identified for comprehensive or targeted support and improvement may serve disproportionately high percentages of EL students compared with other schools in the state. ISDE is part of the WIDA Consortium and provides the following supports:

Technical assistance with EL program design and implementation: The Idaho English Learner Program assists school districts with federal and state requirements of ELs. Program staff works with LEAs to create, implement, and maintain language development programs that provide equitable learning opportunities for ELs. The Idaho EL and Title III Program also provides support for all Idaho educators of EL students through professional learning opportunities that are intentionally designed based on evidence about student and teacher needs.

Training on WIDA standards and technical assistance on aligning WIDA standards with RTI practices: The Idaho State EL and Title III Program partners with the WIDA consortium to provide training and technical assistance in implementing the WIDA standards and assessments for English language development and in using data to design and manage instruction and support for EL students.

Extended Learning Time

Adjusting the frequency and intensity of interventions can be facilitated by the provision of extended learning time for students and educators. The state encourages LEAs to review school schedules for efficient use of available time and to ensure that available time is effectively used for instruction and academic intervention. LEAs are encouraged to determine how—within existing frameworks and resources—schools can provide interventions and supports beyond scheduled instructional time and how they might use school improvement funds to extend learning time beyond the school day. In particular, schools may leverage school or public libraries in order for students to access additional education resources outside of regular class time during the regular school day.
Additionally, LEAs are encouraged to evaluate and determine how extended professional learning time can be made available for educators within schools identified for comprehensive improvement.

Family and Community Engagement

ISDE provides resources to support LEAs and schools in taking an evidence-based approach to involving families and the community in improving student outcomes.

Family and community engagement coordinator: ISDE has built a system to engage parents within the improvement process. The family and community engagement coordinator identifies, plans, and implements methods that would support LEA leaders and their schools in engaging families and the community at large in the discussion of continuous school improvement.

Family engagement tool: Idaho has collaborated with the Academic Development Institute, the parent organization for the Center on Innovation and Improvement, to provide the Family Engagement Tool (FET) as a resource to all Idaho schools. The FET guides school leaders through an assessment of indicators related to family engagement policies and practices. The resulting outcome is a set of recommendations that can be embedded in the school's improvement plan. As

described on the FET website (www.families- schools.org/FETindex.htm), the tool provides: a structured process for school teams working to strengthen family engagement through the school improvement plan; rubrics for improving LEA and school family engagement policies, the home-school compact, and other policies connected to family engagement; documentation of the school's work for the LEA and state; and a reservoir of family engagement resource for use by the school.

Career & Technical Student Organizations (CTSOs): CTSOs are an integral, co-curricular part of all CTE programs. They provide opportunities for students to learn and practice leadership skills in the classroom, the school, the community, and within their organization. CTSO members perform community service projects. They may also engage with business and industry community leaders during board meetings, fundraising, and CTSO conferences where the community leaders attend to act as judges for competitive events. CTSOs are, in effect, the part of CTE programs that is visible to the community.

Technical Advisory Committees (TACs): TACs support CTE programs by providing input on curriculum and projects, collaborating on and/or securing equipment and other program needs, and supporting the educators and schools where CTE programs are housed, as practical and appropriate. TAC members become involved not only for CTE programs but also the school and the community to advocate for program improvement and student success.

Fiscal Management
Idaho's Public School Finance Department provides technical support to LEAs. Finance department staff also prepares reports about revenues, expenditures, budgets, attendance and enrollment, staffing, and school property taxes with information provided by LEAs. For LEAs seeking support on fiscal management and budgetary issues, the State Assistance Team will help coordinate support from the finance department.

ICTE provides technical assistance and oversight to administrators, managers, and teachers regarding the funding distributed through its office. This funding includes, but is not limited to, CTE added-cost funds, career technical school funds, and Idaho Quality Program Standards (IQPS) grants for secondary programs, postsecondary program funding, and Perkins funding for middle, secondary, and postsecondary programs.

f. **Additional Optional Action**. If applicable, describe the action the State will take to initiate additional improvement in any LEA with a significant number or percentage of schools that are consistently identified by the State for comprehensive support and improvement and are not meeting exit criteria established by the State or in any LEA with a significant number or percentage of schools implementing targeted support and improvement plans.

Not applicable.

5. **Disproportionate Rates of Access to Educators** (*ESEA section 1111(g)(1)(B)):* Describe how low-income and minority children enrolled in schools assisted under Title I, Part A are not served at disproportionate rates by ineffective, out-of-field, or inexperienced teachers, and the measures the SEA agency will use to evaluate and publicly report the progress of the State educational agency with respect to such description.[5]

   ISDE created a cross-agency workgroup in 2015 to measure the equitable distribution of educators across the state. ISDE works to analyze educator experience, credentials, and need. The data analysis does not point to disparities in terms of the distribution of personnel who are working with low-income or minority students. The data analysis did identify a shortage of personnel and a higher than desired amount of inexperienced teachers across all areas. The findings became part of Idaho's Equity Plan submitted to the

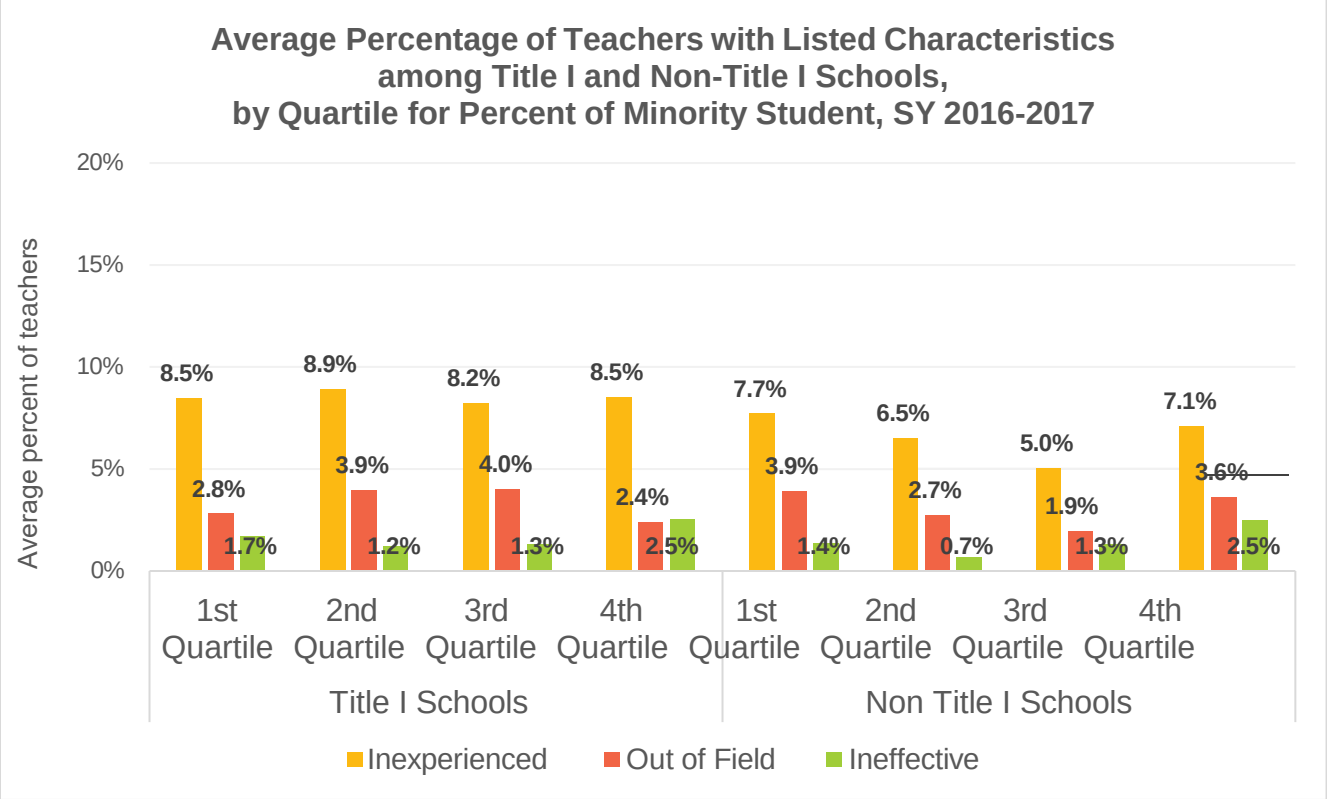
   U.S. Department of Education on June 1, 2015, and sparked a statewide effort to study recruitment and retention. ISDE continues to monitor and support LEAs as they continue to deal with the challenge of recruiting and retaining teachers. ~~This workgroup continues to meet monthly to address various needs around teacher workforce strategies to recruit, retain, and equitably distribute~~ teachers.

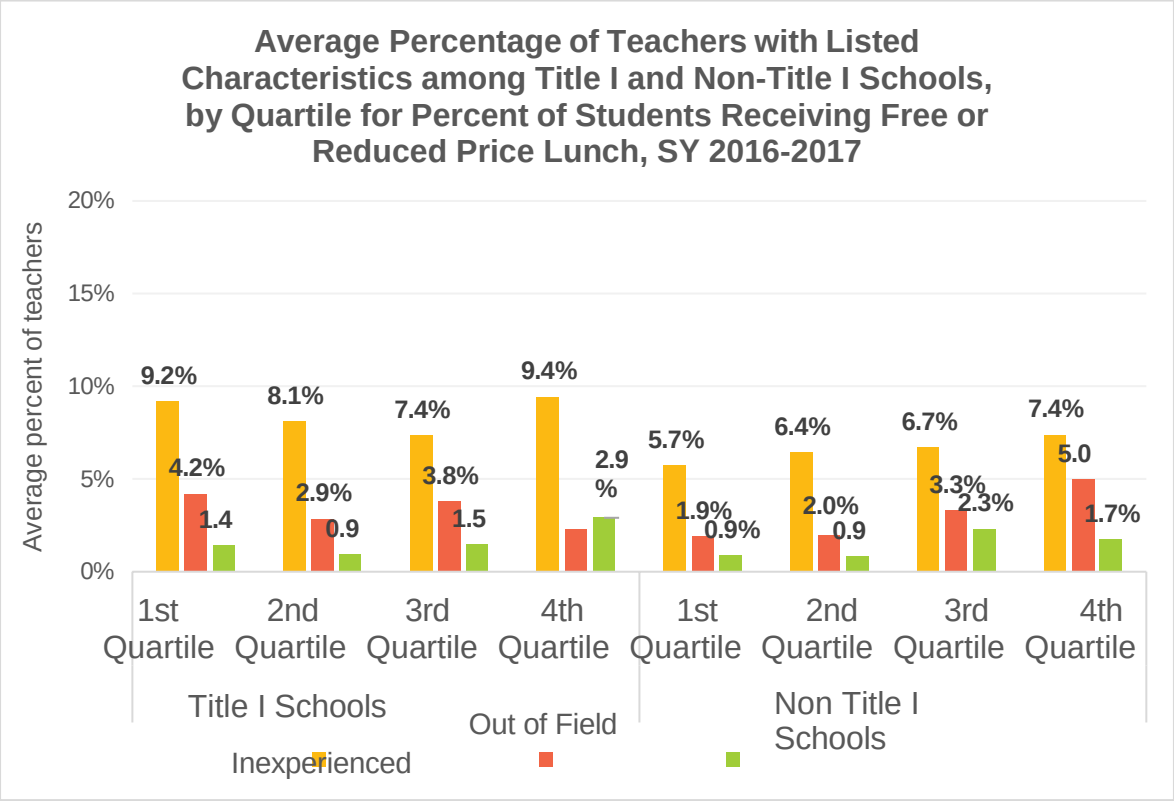
   As illustrated in the approved Equity Plan, Idaho has found that there is little to no correlation between student group and educator quality in the state. ~~Instead,~~ Idaho is continuing ~~working~~ to address a general challenge with teacher recruitment and retention statewide, especially in Idaho's rural and remote school districts. Recruitment and retention of effective educators is a cornerstone focus in both school improvement (using state funds, supplemented by Title I-A school improvement funds) and Effective Educators (Title II-A state activities and set-aside funds). The goal is to support educators at every level of the system.

   In addition, the State Board of Education convened an educator pipeline workgroup in 2016, which is working to release recommendations for addressing Idaho's teacher recruitment and retention challenge this year (2017). This workgroup has representation from diverse stakeholder groups, including ISDE, teachers, school administrators, school board members, parents, and the business community.

   In 2017, the ISDE ran the data for inexperienced, out-of-field, and unqualified teachers in relation to minority and low-income students in Title I-A and non-Title I-A schools to determine to what extent, if any, there may be gaps. The results of this data for the 2016- 2017 school year are included below. While this updated data shows some disparity in the distribution of teachers, the gaps are small and will be monitored annually.

[5] *Consistent with ESEA section 1111(g)(1)(B), this description should not be construed as requiring a State to develop or implement a teacher, principal or other school leader evaluation system.*


Average Percentage of Teachers with Listed Characteristics among Title I and Non-Title I Schools, by Quartile for Percent of Minority Student, SY 2016-2017
Average percent of teachers
20%
15%
10%
5%
0%
8.5%
2.8%
1.7%
8.9%
3.9%
1.2%
8.2%
4.0%
1.3%
8.5%
2.4%
2.5%
7.7%
3.9%
1.4%
6.5%
2.7%
0.7%
5.0%
1.9%
1.3%
7.1%
3.6%
2.5%
1st Quartile
2nd Quartile
3rd Quartile
4th Quartile
1st Quartile
2nd Quartile
3rd Quartile
4th Quartile
Title I Schools
Non Title I Schools
Inexperienced
Out of Field
Ineffective



For the purpose of regularly analyzing the rates at which low-income and minority students are taught by ineffective, out-of-field, and/or inexperienced teachers, the following definitions are used:

- Ineffective teacher:
  - Majority (50% +1 student) of his/her students have NOT met their measurable student achievement targets (pursuant to 33-1001, Idaho Code), or
  - Has a summative evaluation rating of unsatisfactory.
- Out-of-field teacher: not appropriately certificated or endorsed for the area in which he/she is teaching
- Inexperienced teacher: in his/her first year of practice
- Low-income student: from economically disadvantaged families
- Minority student: identified as a member of a minority race or ethnicity

Note that Idaho's ineffective teacher definition is in alignment with the requirements in the state's salary apportionment law (Career Ladder) found in 33-1001, Idaho Code, for educators to advance on the compensation table. The ineffective teacher definition went into effect July 1, 2017 ~~so this data will not be officially in place until after the 2017-2018 school year~~.

Beginning with the 2017-2018 school year, ISDE will annually run data to analyze these rates and to assess whether or not low income and minority students are taught at a higher rate by teachers deemed to be ineffective, out-of-field, or inexperienced. If gaps

arise or are identified, the ISDE will provide specific support and assistance to the building, LEA, and/or region where the disparity exists. Each LEA will identify and address any disparities that result in low-income students and minority students being taught at higher rates than other students by ineffective, out-of-field, or inexperienced teachers. Progress will be evaluated annually, as described in Idaho's Educator Equity Plan.

Progress on rates at which low-income and minority students in schools assisted under Title I, Part A are taught by ineffective, out-of-field, and/or inexperienced teachers will be publicly reported when published annually on the ISDE ~~website at: http://www.sde.idaho.gov/topics/ed-equity/index.html.~~State Report Card.

6. **School Conditions** (*ESEA section 1111(g)(1)(C)):* Describe how the SEA will support LEAs receiving assistance under Title I, Part A to improve school conditions for student learning, including through reducing: (i) incidences of bullying and harassment; (ii) the overuse of discipline practices that remove students from the classroom; and (iii) the use of aversive behavioral interventions that compromise student health and safety.

   Existing state supports will be leveraged to increase the impact of Title IV-A funds. After multiple years of stakeholder organizing and working with the Idaho Legislature, a law was passed during the 2015 session that increased the requirements of LEAs to address bullying and harassment including: ongoing professional development for all staff at the school building level, the expectation that all staff intervene when bullying/harassment occurs, the implementation of a graduated series of consequence for policy violators, and annual reporting of bullying incidents to ISDE.

   The Idaho Legislature has also appropriated $4 million ongoing in formula funds to establish safe and drug free schools. These funds can be leveraged to establish optimal conditions for learning, improve school climate, implement special programs, and explore alternatives to suspension and expulsion. To maximize these resources and assist LEAs in implementing best practices, ISDE hosts an annual *Idaho Prevention and Support Conference*. The conference provides professional development that ~~focused~~focuses on innovation, best practices, collective problem-solving, and motivation techniques to effectively support historically underserved and at-risk students. ~~the prevention of risk behaviors, out of school time programs, and family/community engagement called the *Idaho Prevention and Support Conference.*~~ Approximately 700 school counselors, teachers, administrators (including charter and alternative), school resource officers, juvenile probation officers, judiciary representatives, school psychologists, and other stakeholders attend every year. Recent conference themes include addressing bullying/harassment and Adverse Childhood Experiences (ACEs). ISDE has focused heavily on ACEs as this research makes a strong case for trauma-informed disciplinary policy and practice.

   Additionally, ISDE ~~won~~was awarded a Garrett -Lee Smith State/Tribal Youth Suicide Prevention and Early Intervention Grant ~~grant focused on youth suicide prevention~~ from the Substance Abuse and Mental Health Services Administration ~~and implemented Sources of Strength (an evidence-based youth suicide prevention~~

~~program) in select schools~~ from 2014 through 2016, and again in 2020 through 2025. As part of both grant awards, ISDE Idaho Youth Suicide Prevention Program (IYSPP) assisted LEAs with implementation of Sources of Strength (an upstream, evidence-based youth suicide prevention program) in select schools. ~~One outcome of this ongoing work was the Idaho Legislature's establishment of the state's first Office of Suicide Prevention in the Department of Health and Welfare with an appropriation of $1.6 million and four new full-time staff positions to continue implementing the Sources of Strength program in schools.~~ This program has demonstrated efficacy not only in preventing suicide but also a wide range of risk behaviors, including bullying and school climate ~~as it focuses~~ by focusing on developing internal strengths (protective factors) such as ~~grit,~~ resilience, hope, and connectedness.

In addition, IYSPP provides free, statewide suicide prevention gatekeeper training to adults that teaches them how to understand risk factors, recognize warning signs, ask whether a student is thinking about suicide, and how to safely connect that student to help and support. As part of this training, IYSPP provides information about the importance of Trusted Adults, which is also a known protective factor against both suicide and bullying.

ISDE received a separate Substance Abuse and Mental Health Services Administration Project AWARE (Advancing Wellness and Resiliency in Education) five-year grant from 2020 through 2025. This grant allows the Idaho AWARE Project to increase awareness of mental health issues among school-aged youth, provide training for school personnel and other adults who interact with school-aged youth to detect and respond to mental health issues, and connect school-aged youth and their families, who may have behavioral health issues, to needed services. Three participating LEAs use Positive Behavior Interventions and Supports (PBIS) to implement a wide array of evidence-based programs that in part, reduce the overuse of discipline practices that remove students from the classroom and the use of aversive behavioral interventions that compromise student health and safety.

These supports will be used to increase the impact of Title IV-A funds appropriated for LEA and ISDE efforts to address bullying and harassment, the overuse of discipline practices that remove students from the classroom; and the use of aversive behavioral interventions that compromise student health and safety. ~~.~~ The strategies in Table 11 below already have a presence and existing supports in Idaho, and ISDE will encourage LEAs to use Title IV-A funds for these purposes if local data merits the need.

Table 11: Strategies for addressing behavior, discipline, and bullying/harassment

Strategy	Timeline	Funding sources
Idaho Prevention and Support Conference	Spring annually	Title IV-A

• Support LEAs with existing initiatives: • Positive Behavior Interventions and Supports (school-wide, systemic approach to improved culture and supports based on data) • Restorative justice practices • Mentoring programs such as Big Brothers, Big Sisters • Alternatives to suspension/expulsion (special programs) • Sources of Strength (primary and secondary level) • ~~Good Behavior Game (primary level)~~ • Suicide Prevention Gatekeeper Training • Youth Mental Health First Aid • Mental Health assessment and referral • Crisis response/de-escalation training for school staff • School nurse position with student health room • Wellness programs (Coordinated School Health) • Multi-~~t~~Tiered ~~s~~Systems of ~~s~~Support • Development of risk assessment protocols and policies • Parenting programs such as Nurturing Parenting • Child sexual abuse prevention initiatives such as Stewards of Children	Ongoing	Title IV-A
~~Idaho School Safety Symposium~~	~~Fall annually~~	~~Title IV-A~~
~~**Strategy**~~	~~**Timeline**~~	~~**Funding sources**~~
~~• Brings together school, government, community leaders, and parents to discuss school safety~~ ~~• Collaboration on current obstacles and challenges~~ ~~• Strategic planning is done in collaboration to guide SEA efforts in addressing school safety in the year ahead~~ ~~• Annually reports out to stakeholders on past efforts and progress~~ ~~• Review key events and emergency response from prior years~~ ~~• Partner in sponsorship with other key agencies, including Office of Drug Policy, Department of Juvenile Justice, and the Department of Health and Welfare~~	~~Ongoing~~	~~Title IV-A~~

The ISDE will also access—and encourage LEAs to access—the expertise of the regional Equity Assistance Center funded by the U.S. Department of Education to promote greater understanding of equity and to ensure equal access to educational opportunities for all students, regardless of race, ethnicity, gender, or national origin.

7. **School Transitions** *(ESEA section 1111(g)(1)(D))*: Describe how the State will support LEAs receiving assistance under Title I, Part A in meeting the needs of students at all

levels of schooling (particularly students in the middle grades and high school), including how the State will work with such LEAs to provide effective transitions of students to middle grades and high school to decrease the risk of students dropping out.

The ISDE was deliberate in including a wide range of stakeholders in informing this Consolidated State Plan, in particular, the Title IV part A section includes feedback from representatives focused on suicide prevention, foster youth, homeless youth, families living in poverty, ~~drop-out prevention~~, children of military families, rights of disabled students, Native American advocacy, neglected youth, migratory families and English learners.

Increasing Opportunities and Outcomes for College and Career: Idaho has a single State Board of Education (SBOE) that oversees its entire P–20 education system. This structure promotes consistency and allows for strategic planning across the entire P–20 education continuum, from kindergarten through college or career attainment. The SBOE sets benchmarks for the percentage of Idaho students graduating from high school, attending postsecondary institutions, and completing college and/or being ready to assume careers. Examples of the implementation of these goals include the support for advanced opportunities (with specific goals for the percentages of students completing advanced opportunities), Next Steps Idaho, which provides web-based guidance through the admissions process and funding streams, as well as efforts at the high school level, such as Idaho College Application Week.

Idaho SBOE policies are established to create a seamless transition from middle school to career. ~~In~~ Enacted in 2023, each Idaho public middle school student will receive instruction in career exploration. Funds have been made available to every 7-12 grade student to be utilize toward career advancement. The Idaho SBOE has assisted in the alignment of high school graduation requirements to college admission requirements, created an aligned framework (called the GEM framework) for easy transfer of college credits taken in high school, along with alignment of degree programs and transparency through coursetransfer.idaho.gov. The Idaho Workforce Development Council has assisted with the creation and alignment of numerous registered apprenticeships, availability of career pathways and licensures and the support of funding to post-high school goals through the Idaho Launch program. Additionally, the SBOE adopted a statewide definition of college and career readiness, which was operationalized with college and career readiness standards for high school students that are now in place. All of which would not be possible without the collaboration and continued professional development of staff with a coordinated and on-going effort of providing webinars, conferences and in-person visits.

~~Several committees and taskforces in Idaho are also working to create a seamless transition from high school to college and career. The Governor's Higher Education Taskforce and~~

~~Workforce Development Taskforce, convened by the SBOE, which include representatives from diverse stakeholder groups, are working to generate recommendations to further improve Idaho's effort. The SBOE also adopted a statewide definition of college and career readiness in June 2017, which was operationalized with college and career readiness standards for high school students that are now in place.~~

Transition to School: Idaho does not currently offer state-sponsored prekindergarten, although some LEAs use their Title I and local funds to support this effort. Transitions from prekindergarten to kindergarten are clearly articulated in the State Special Education Manual for students with disabilities. This guidance also addresses student progress through the grade continuum.

Idaho assesses all K–3 students on foundational literacy skills at least twice per year. Any student who is identified as "at risk" must receive a minimum of 30 hours (if slightly below grade level) or 60 hours (if below grade level) of additional intervention. The intervention must meet the evidence-based standard, and LEAs must write plans and identify progress annually to the state. During the 2016 session of the Idaho Legislature, funding for the intervention was increased from approximately $2 million to $9.3 million. During the 2017 legislative session, funding was increased again to $11.4 million.

Middle Level: Idaho recognizes that decisions about college and career are often made prior to high school. To this end, the Middle-Level Credit System was instituted in May 2007 with the purpose of improving rigor, relevance, and relationships in the middle grades; identifying pockets of success throughout Idaho to develop best practices for all middle schools; and ensuring every Idaho student is prepared to be successful in high school and beyond. The Middle-Level Credit System focuses on five key areas: student accountability, middle-level curriculum, academic intervention, leadership among staff at the middle level, and student transitions between the middle and high school grades. This system provides the flexibility for LEAs to meet the unique needs of their students while maintaining quality.

By 8th grade, students are required to complete a career pathway plan and receive instruction in career exploration by teachers, who have received professional development in career exploration. ~~In addition, 8th graders are required to complete learning plans for high school and beyond before transitioning to 9th grade.~~ The state has developed a career information system for middle school and high school students that enables a student to learn about the skills and dispositions required in a wide range of jobs and professional fields. ~~Eighth grade students also have access to college and career advisors, in which Idaho has invested heavily in recent years.~~

High School: ISDE supervises K–12 education and has identified priorities that are aligned with the vision of the SBOE. The first goal of ISDE's plan is ensure that all Idaho students persevere in life and are ready for college and careers. Every high school student is required to take a set of required courses, and every junior has the opportunity to take a nationally recognized college admission assessment, currently the Scholastic Aptitude Test, which is paid for by the state.

~~The legislature has appropriated state funds for students to offset costs associated with college entrance exams, dual credit, Advanced Placement, International Baccalaureate, and~~ overload courses. Each student is eligible for $4,125.00 to use beginning in 7~~8~~th grade. Idaho's dual credit participation has increased dramatically in recent years, with more students entering a two- or four-year university with transferable credits toward major or general education requirements. Over 55% of juniors and seniors utilize Advanced Opportunities, with nearly 5,500 career technical education (CTE) licensures/exams and over 259,000 college credits (both CTE and Academic) paid for by the State of Idaho in 2023. ~~Thirty-two percent of high school students participated in Advanced Opportunities during the 2015-16 school year, which grew to 41% of high school students in 2020-21.~~

Career Technical School (CTS): Idaho has highly invested in career technical education (CTE). In the 2023-24 school year, Idaho created a Career Ready Student program that has provided $45 million for career technical facilities improvements in public schools, in addition to funding provided by Idaho's Division of Career Technical Education (ICTE) and school discretionary funds. Idaho provides flexibility in local education agency design and creation and thus has schools designed to provide high-end, state-of-the-art technical programs, meet high school graduation requirements, and provide field experience and opportunities for students across many traditional public schools. Career Technical Schools provide postsecondary alignment for all of their programs, giving students the opportunity to earn technical competency credits (credits granted upon matriculation to a post-secondary institution), be acknowledged with a Workforce Readiness Diploma and recognized credentials through Idaho's Skill Stack badging system.
~~ICTE oversees special CTE schools, referred to Career Technical Schools. These schools are designed to provide high-end, state-of-the-art technical programs and also meet certain other requirements in addition to the requirements of CTE programs in comprehensive high schools, such as field experiences and enrollment from multiple high schools. Career Technical Schools must also provide postsecondary alignment for all of their programs, giving students the opportunity to earn technical competency credits at Idaho postsecondary institutions with similar CTE programs.~~

Alternative Schools: Idaho's alternative schools help students find success through a personalized approach. The supports and flexibility provided to alternative schools emphasize the specific needs of at-risk students. ~~The alternative schools specifically work with students in grades 6-12 who are transitioning from elementary to middle/junior high and middle/junior high to high school help them be successful at the next level.~~The alternative schools work with students in grades 6-12 transitioning from elementary to middle/junior high and middle/junior high to high school to help them be successful at the next level.

Students enrolled in alternative schools in Idaho receive additional support not always found in traditional secondary schools. This may include assigning fewer classes per day and tailoring instruction to students' individual needs. Students are provided the opportunity to attend summer school to make up credits or to get a head start on the coming school year. In addition to the academic requirements, alternative schools are required to provide services based on student needs, including daycare centers for

students who are parents and direct social services such as social workers and specialized counselors and psychologists.

ISDE provides specific support for alternative schools, in addition to traditional secondary schools. In order to provide specialized instruction and additional supports, alternative schools are provided more funding per student than a traditional secondary school. Alternative schools are also reimbursed for the cost of providing summer school. Alternative schools are invited to participate in the Idaho Prevention and Support Conference and are encouraged to participate in a strand of workshops specifically focused on alternative school best practices and needs. They have also been specifically targeted to participate in programs that provide innovative instructional practices, such as the Idaho Mastery Education Network.

English Learners: ISDE supports the efforts of LEAs to help English learner students (ELs) gain English proficiency while simultaneously meeting challenging state academic content and student academic achievement standards. The Idaho English Learner Program assists LEAs with federal and state requirements related to ELs. The program helps LEAs create, implement, and maintain language development programs that provide equal learning opportunities for ELs. The goal is to develop curricula and teaching strategies that embrace each learner's unique identity to help break down barriers that prevent ELs from succeeding in school.

The Idaho State EL and Title III Program provides support for all Idaho educators of ELs through professional learning opportunities that are intentionally designed based on the timely needs of EL educators. We recognize that as the number of ELs grows, all educators must be mutually responsible for the language development and academic success of ELs and, therefore, all teachers are language teachers. Partnerships with Idaho's institutes of higher education are essential for incorporating components of EL education into preservice teacher education in an effort to prepare teachers with appropriate instructional strategies for the ELs in their classrooms.

Students with Disabilities: The ISDE Special Education Department works collaboratively with LEAs, agencies, and parents to ensure students with disabilities receive quality, meaningful, and needed services. The department has program coordinators for dispute resolution, funding, program monitoring, results-driven accountability, special populations, secondary transition, and data management. The department also works collaboratively with the Special Education Support and Technical Assistance (SESTA) project through Boise State University. SESTA provides statewide professional development, training, and support to LEA leaders, teachers, and paraprofessionals who support students with disabilities.

~~**Next Steps**: Despite the significant steps taken to create purposeful alignment from preschool to college, the state recognizes the need for additional supports at critical transitions, such as elementary to middle school and middle school to high school. During the 2017–18 school year a task force comprising LEA leaders with transition plans in place, SBOE staff, and ISDE program coordinators will be convened to provide guidance to all LEAs, schools, and families on creating systems of support for students. This work led to the establishment of the of the nextsteps.idaho.gov website, that~~

~~provides resources and information for students, families, and educators alike. Resources address career development, education and training, and personal exploration activities. During the 2021 - 2022 academic year, a dual credit online advising module was added to meet the Idaho law mandating advising for all high school students who have accumulated 15 college credits or more through the Advanced Opportunities Program.~~

Student College and Career Supports~~Equity~~:
The state recognizes the need for additional supports in aligning preschool to career as well as providing equitable opportunities for students who may be disadvantaged by their location. As such Idaho maintains a comprehensive statewide college and career exploration tool, teacher education resource and communication platform called Next Steps Idaho. In addition, Idaho schools are supported with content and course instruction through Idaho's Digital Learning Academy.

The State Board of Education has set a goal that 60% of Idahoans ages 25-34 will have some sort postsecondary degree or certificate. While there is much work to be done to meet or exceed this goal, the state is committed to providing high quality educational opportunities and outcomes for all Idahoans.

B. Title I, Part C: Education of Migratory Children

1. **Supporting Needs of Migratory Children** *(ESEA section 1304(b)(1))*: Describe how, in planning, implementing, and evaluating programs and projects assisted under Title I, Part C, the State and its local operating agencies will ensure that the unique educational needs of migratory children, including preschool migratory children and migratory children who have dropped out of school, are identified and addressed through:

Planning

State Comprehensive Needs Assessment Process: As part of the continuous improvement cycle, Idaho completed a new Comprehensive Needs Assessment (CNA) spring 2016, based on the Office of Migrant Education Comprehensive Needs Assessment Toolkit. This process included stakeholders, appropriate ISDE and LEA staff, and parents. Results of the needs assessment surveys for staff, parents, and secondary students provided a snapshot of perceived needs from the stakeholders most directly involved in the education of migrant children and from the children themselves. Intensive analysis of student performance data also informed the process. Finally, Parent Advisory Council (PAC) feedback throughout the process provided ongoing parent insight into student and family needs, especially those of preschool students and out-of-school youth. The CNA is the foundation of the Service Delivery Plan (SDP) and its measurable program outcomes and objectives. Idaho will complete this process every three years starting in 2016 or more often if there is a dramatic shift in migratory populations.

LEA Comprehensive Needs Assessment Process and Toolkit: ISDE provides tools to the LEAs for performing local needs assessments. The Idaho needs assessment surveys, suggestions for conducting a local CNA, and strategies for collecting and reporting needs data are found in the Idaho LEA Migrant Education Program (MEP) Comprehensive Needs Assessment Toolkit. The toolkit can be found on the Migrant webpage under Resource File in Migrant Services ~~http://www.sde.idaho.gov/el-migrant/migrant/index.html.~~ https://sde.idaho.gov/federal-programs/migrant/index.html. LEAs are provided with technical assistance in performing the CNA process and are monitored to ensure that local needs assessments are taking place.

State Service Delivery Plan: Idaho completed a new Service Delivery Plan (SDP) in the spring of 2017 based on concerns raised in the Comprehensive Needs Assessment that included migrant stakeholders. All migrant funded LEAs have received new Measurable Program Objectives (MPOs) and have provided assurances to the Idaho MEP through the consolidated grant application process that they will work to implement the strategies and evaluate the results as measured by the MPOs. Data is collected at the end of the performance period from every project LEA, showing their self-evaluation of their progress at meeting the MPOs. The Idaho MEP will aggregate this data to evaluate the progress of the Idaho MEP at serving the unique needs of migrant students. Every

three years, Idaho will update the Service Delivery Plan in the year following the Comprehensive Needs Assessment.

Implementation

The State Department of Education implements the Service Delivery Plan through the Consolidated Federal and State Grant Application completed by LEAs each year, which includes the MPOs from the state Service Delivery Plan. In Idaho, one-third of LEAs have small migrant programs and receive minimal funding, therefore MPOs that are more appropriate to larger programs are optional for smaller programs. LEAs select which of the optional MPOs they will implement for the coming year. Required MPOs are pre-selected for all LEAs. LEAs then briefly describe their plan for implementing each MPO selected in the grant application.

Evaluation

Idaho has a Migrant Student Information System (MSIS), created by in-house developers. In this system, each LEA reports whether or not it has achieved the selected MPO from the submitted consolidated plan. They also report supporting information for each MPO. LEAs are required to submit this information in the fall so services delivered in the summer may be included. ISDE uses this data to evaluate the overall program success at meeting MPOs and for analyzing the Service Delivery Plan and data collection methods for needed revisions.

In addition, Idaho has a ~~three-year~~ six-year cycle of monitoring that includes a site visit, interviews with parents, secondary students, teachers, the family liaison, administrators, the local migrant director, other migrant staff, and business manager. Monitoring occurs as a consolidated process with all federal programs represented. The ~~migrant program~~ Migrant Program also conducts informal monitoring of migrant summer school programs through site visits. ~~Each LEA that offers a summer program is visited at least once every three years.~~

i. The full range of services that are available for migratory children from appropriate local, State, and Federal educational programs;

   It is critical that ~~migrant~~ migratory students in Idaho have equal access to all appropriate local State, and Federal programs in addition to supplemental MEP services designed to meet the Measurable Program Outcomes (MPOs) identified in the Service Delivery Plan (SDP).

   In order to ensure that this takes place, the Idaho MEP has a two-pronged approach. First, ISDE MEP staff has provided, and continues to provide, intensive training and technical assistance to LEAs to ensure that they do not use migrant funds to provide services to ~~migrant~~ migratory students that they would normally be eligible to receive, regardless of migrant status (supplanting). By ensuring that LEAs understand that migrant funds must be used after other programs provide services, we ensure that ~~migrant~~ migratory students receive every service that they are entitled to under other programs, in addition to migrant services.
   Second, collaboration by migrant and other program staff at both a state and local level is a clear expectation shared with local migrant directors in training and is part of the ISDE

monitoring process. State monitoring includes an indicator that requires proof that LEA migrant staff ~~are in collaboration~~ collaborate with other local, State and Federal educational programs, including Title I-A, III-A, McKinney-Vento and others. Indeed, many Idaho LEA migrant programs are small enough that the family liaison is the only migrant staff person. He or she often provides services through advocacy (support services) both within the school and in the community, ensuring that the children receive the services they need from school, health and other social services in the community (referred services). This collaboration ensures that ~~migrant~~ migratory students' needs are addressed in schools by multiple programs.

Preschool Children

Services provided to preschool-aged students are included in ~~three~~ two MPOs in the category of School Readiness. Since Idaho does not have state-funded preschool, LEAs generally do not serve these students through local, State and other Federal programs. In Idaho, Migrant funds may be used to pay fees for ~~migrant~~ migratory students to attend developmental preschool programs as peer models, who would not otherwise be able to attend. Some LEAs with larger migrant populations provide preschool as a site-based migrant preschool. Other LEAs offer programs including home visits with materials and training provided to parents. Many LEAs offer preschool services through summer programming.

Out of School Youth (OSY)

Idaho uses materials developed by the Office of Migrant Education's Consortium Incentive Grant (CIG) "Solutions for Out of School Youth" (SOSY), including the OSY Profile adapted for Idaho. LEAs fill out this profile gathering data on the needs of the out of school youth and dropouts and provide referrals to other agencies, such as the High School Equivalency Program (HEP), agencies that can provide training opportunities, and social and health services to these youth. These profiles are submitted to the ISDE. In addition, the state provides MP3 players with intensive English curriculum for LEAs to use with out of school youth and dropouts who need help with learning English.

Drop-outs

Services provided to secondary migratory students are focused on keeping students in school until they graduate. graduate. ~~Idaho's MEP strives for all migrant students to graduate.~~ Our approach is to provide services and activities to keep students on track for graduation. For all ~~migrant~~ migratory secondary students, including those who are at-risk for dropping out, we implement the services and activities mentioned above for out of school youth. In addition, ~~ten of our~~ many Migrant-funded districts employee Migrant graduation specialists to prevent students from dropping out of school. ~~Migrant graduation specialists have access to the Portable Assisted Support Sequence (PASS) courses for their students.~~ They also connect students with local and state funded credit accrual and credit recovery

opportunities. If a Migrant funded district does not have a migrant graduation specialist, the Migrant Ff~~f~~amily L~~l~~iaison either provides the service or coordinates with the districts' counseling staff to ensure migrant students receive the necessary supports for academic success. The Migrant Family Liaison ensures parents are kept informed of their child's progress. Lastly, Idaho's State MEP hosts a Migrant Student Leadership Institute for ~~migrant~~ migratory ~~sophomores and juniors~~ high school students every ~~July~~ Summer. ~~Migrant~~ Migratory students who are considered at- risk of dropping out are encouraged to apply for the Institute. The Institute is housed at ~~Boise State University~~ an Idaho university, in collaboration with the local College Assistance Migrant Program (CAMP). The institute ~~with a focus~~ focuses on college, career, and leadership skills. ~~Services provided to secondary migrant students are focused at keeping students in school until they graduate.~~

If our efforts to keep students in school are unsuccessful, district migrant personnel attempt to contact the student to identify reasons for dropping out. Each situation is unique, thus assistance and support will vary with each student. At times, migrant staff are able to help students re-enroll in school. Other times, staff are able to help students by referring them to High School Equivalency (HEP) programs or other local GED programs, referrals to vocational training, and other health and social services if applicable. ~~While dropouts are not mentioned specifically in all of Idaho's MPOs, all our strategies are geared towards preventing our migrant students from dropping out.~~

ii. Joint planning among local, State, and Federal educational programs serving migratory children, including language instruction educational programs under Title III, Part A;

~~The state models collaboration with joint planning of Title I C and Title III. Title III, Title I C, and State EL are part of one department at the ISDE. Starting fall of 2017-2018 the working group that collaborated on the recent Comprehensive Needs Assessment and Service Delivery Plan will continue as an advisory panel to the Idaho MEP. This group will be combined with the EL advisory panel as many of the members of each group work with overlapping populations.~~ The SEA collaborates across all Federal Program. ~~We will establish a method of rotating members over time and will include~~ The Idaho Migrant Education Program (MEP) has an Advisory Committee of Practitioners with rotating members of State and LEA federal programs staff, family liaisons, K-12 teachers, migrant preschool teachers, parents, and representatives from other agencies who work with migrant families, including the High School Equivalency program (HEP), College Assistance Migrant Program (CAMP) and Migrant Seasonal Head Start (MSHS). Other possible members include representatives from the Idaho Commission on Hispanic Affairs, Institutes of Higher Education, and the State Board of Education. This collaborative group will address concerns and provide advice to continue program development.

LEAs are trained to coordinate Title I-C with Title III in parent outreach, parent advisory councils (PACs), and afterschool programming. For example, LEAs are trained to include migrant program staff in planning and implementing of non-migrant programs to ensure that migrant students are a priority and that those programs meet migrant students' needs. Since many migrant families also use a language other than English in the home and have children who are designated as English learners, these families provide planning, implementing and evaluative feedback to LEAs for both programs.

iii. The integration of services available under Title I, Part C with services provided by those other programs; and

After identifying the needs of ~~migrant~~ migratory students, migrant staff also assess~~es~~ the availability of non-migrant programming to meet those needs and use migrant funds to provide supplemental programs that meet unmet needs. For example, Idaho does not provide state-funded preschool, so migrant LEAs have implemented a variety of preschool programs, including summer programs, to meet the school readiness needs of ouer ~~migrant~~ migratory children. In cases where other programs offer services, the migrant programs in LEAs support migrant families by enhancing home school communication and by advocating for migrant students and families to participate in all other programs.

Collaboration between MEP staff, Federal Programs staff, Special Education staff, and general education teachers in LEAs is a program monitoring indicator for the Migrant Program.

iv. Measurable program objectives and outcomes.

This section outlines how Idaho's Measurable Program Outcomes (MPOs) will produce statewide results through specific educational or educationally-related services. The MPOs will allow the Migrant Education Program (MEP) to determine whether, and to what degree, the program has met the unique educational needs of ~~migrant~~ migratory children and youth as identified through the Comprehensive Needs Assessment (CNA). It should be noted that some MPOs are required of all project LEAs, while others are optional. This determination is made by the ISDE staff in order to accommodate funded LEAs that serve very few students ~~through mainly~~ b y providing non-instructional support and referred services. Complete and updated MPOs and strategies can be found on the Idaho MEP website at https://sde.idaho.gov/federal-programs/migrant/index.html.

School Readiness for Children Ages 3-5
MPOs for school readiness support strategies for training parents in supporting their

children's pre-literacy and pre-numeracy skills and for providing direct preschool services through regular and summer programs for preschool children.

Measurable Program Outcomes (MPOs)	Key Strategies	LEA Options
1.1) By the end of program year 2017-2018, 80% of migrant parents attending parent involvement activities will report on a pre/post survey that they have an increased ability to support school readiness activities in the home.	1.1) Provide migrant parents with ideas, activities, and materials for use at home with their children to promote first language development and school readiness through site-based or home- based family literacy opportunities (e.g., language acquisition, packets with school supplies, books, and activities).	Required
1.2) By the end of program year 2017-2018, 90% of students attending at least 40 hours of migrant preschool will show a gain on a pre/post-test of school readiness skills.	1.2) Provide migrant funded site-based preschool services to migrant children ages 3- 5 (e.g., during the regular school day, as an evening program, or as part of a summer school program).	Optional
1.3) By the end of program year 2017-2018, 30% of all identified migrant-eligible preschool-aged children will be served.	1.3) Participate in the activities of the Preschool Initiative Consortium Incentive Grants (CIG) and share materials, strategies, and resources with migrant families.	Optional

English Language Arts/Mathematics ~~Achievement~~

MPOs for English Language Arts and Mathematics focus on training parents to support their children academically in the home, in providing direct instructional services during the regular school year, and in summer programs.

English Language Arts

Measurable Program Outcomes (MPOs)	Key Strategies	LEA Options

2.1) By the end of program year 2017-2018, 80% of migrant K-2 students will receive resources to promote early literacy as measured by resource distribution logs.	2.1) Provide resources through migrant funds to promote early literacy (e.g., extended day kindergarten, backpacks and school supplies, family literacy nights and opportunities, individual libraries, migrant summer school expeditionary opportunities, tutoring, after school programs).,	Optional
2.2a) By the end of program year 2017-2018, 80% of migrant students who participate in an extended school service taught by qualified migrant staff will show gains of at least 20% or grade level proficiency on a pre/post assessment of grade-level ELA skills for students in grades 3-12. 2.2b) By the end of program year 2017-2018, 80% of migrant students who participate in an extended school service taught by qualified migrant staff will earn at least one secondary English credit for students in grades 7-12.	2.2 Use qualified staff to provide supplemental ELA extended school services aligned with state standards and proficiencies (e.g., summer school for ELA, IDLA-advancement, Plato, dual enrollment, community colleges, academies offered by Institutes of Higher Education (IHEs), Portable Assisted Study Sequence (PASS), after school tutoring, home-based instruction).	Optional
2.3) By the end of program year 2017-2018, 80% of teachers participating in migrant-sponsored ELA professional development will report on a survey that they successfully applied the research-based instructional strategies on supplemental literacy instruction.	2.3) Provide opportunities for migrant staff to attend LEA, regional, state, and/or national level ELA professional development (e.g., migrant funds are used to send staff to PD events).	Optional

~~Measurable Program Outcomes (MPOs)~~	~~Key Strategies~~	~~LEA Options~~

2.4) By the end of program year 2017-2018, 80% of migrant parents attending parent involvement activities (one-on-one or in groups) will report on a pre/post survey that the resources they received have increased their ability to provide ELA academic support at home.	2.4) Provide ongoing (year-round) access and training on specific resources (e.g., school supplies, educational materials, books and multicultural literature) needed by migrant parents and students.	Required

Mathematics ~~Achievement~~

Measurable Program Outcomes (MPOs)	Key Strategies	LEA Options
3.1) By the end of program year 2017-2018, 80% of migrant K-2 students will receive resources to promote early numeracy as measured by resource distribution logs.	3.1) Provide resources through migrant funds to promote early numeracy (e.g., extended day kindergarten, backpacks and school supplies, family math nights and opportunities, mathematics manipulatives, migrant summer school, expeditionary opportunities, tutoring, after school programs).	Optional
3.2a) By the end of program year 2017-2018, 80% of migrant students who participate in an extended school service taught by qualified migrant staff will show gains of at least 20% or grade level proficiency on a pre/post assessment of grade-level math skills for students in grades 3-12.	3.2) Use qualified staff to provide supplemental math extended school services aligned with state standards and proficiencies (e.g., summer school for math, IDLA-advancement, Plato, dual enrollment, community colleges, Idaho National Lab, math camps, academies offered by IHEs).	Optional
3.2a) By the end of program year 2017-2018, 80% of migrant students who participate in an extended school service taught by qualified migrant staff will earn at least one secondary math credit for students in grades 7-12.		Optional

~~Measurable Program Outcomes (MPOs)~~	~~Key Strategies~~	~~LEA Options~~

3.3) By the end of program year 2017-2018, 80% of migrant staff participating in migrant-sponsored math professional development will report on a survey that they successfully applied the research-based instructional strategies during supplemental math instruction.	3.3) Provide opportunities for migrant staff to attend LEA, regional, state, or national level math professional development (e.g., migrant funds are used to send staff to PD events).	Optional
3.4) By the end of program year 2017-2018, 80% of migrant parents attending parent involvement activities will report on a pre/post survey that they have an increased ability to support math education at home.	3.4.a) Identify organizations, experts, and resources to provide family math engagement opportunities and share information with parents (e.g., Parent Math Night, manipulatives, guest speakers, community and job outings focused on math in their world). 3.4.b) Provide opportunities for migrant parents to attend local, regional, state, and national math family engagement events and activities.	Required

High School Graduation and ~~Dropout Prevention~~Services to Out of School Youth (OSY)

The MPOs for High School Graduation and OSY focus on strategies for mentoring secondary students, tracking student progress towards graduation, improving parent-school communication, and other services to support college/career readiness.

Measurable Program Outcomes (MPOs)		
4.1) By the end of 2019-2020 program year, the migrants' graduation rate will increase by 3%.	4.1a) Develop and implement a student monitoring system to follow migrant secondary students' progress toward grade promotion and graduation. 4.1b) Implement an individual plan for any migrant secondary student, who is at-risk for dropping out as demonstrated by lost credits. 4.1c) Provide a secondary migrant graduation specialist or other migrant staff to support migrant students towards grade promotion and graduation for 7th – 12th grades.	Optional
4.2) By the end of the program year 2017-2018, the percentage of secondary migrant students receiving an instructional and/or support service will increase by 20% (or 80% served overall if already serving most of their students).	4.2.a) Provide instructional services during the school day, before or after school, or during summer school for credit accrual for secondary migrant students (e.g., tutoring, study skills elective classes, PASS, credit recovery classes, internships). 4.2.b) Provide support services (e.g., supplemental supplies and fees, advocacy etc.).	Required

~~Measurable Program Outcomes (MPOs)~~	~~Key Strategies~~	~~LEA Options~~
4.3) By the end of program year 2017-2018, 80% of migrant students or parents participating, will report on a pre/post survey that the information gained was useful in promoting the goal of high school graduation and/or college and career readiness.	4.4) Provide parents and students with information and supportive events related to high school graduation and/or college and career readiness at a minimum of twice per year (e.g., Migrant Summer Leadership Institute, college visits, presentations at Parent Advisory Committee (PAC) meetings, College Assistance Migrant Program (CAMP) collaborations, leadership institutes, career fairs/speakers, Career Information System (CIS) software training).	Required
4.4) By the end of the program year 2019-2020, 90% of migrant dropouts who can be located will receive educational, support, or referral services.	4.4a) Make every effort to contact every student who has not enrolled in school as expected (e.g. multiple attempts using all available resources, such as school records, MSIX Missed Enrollment Report, MSIS Discrepancy Report, etc.). 4.4b) For any student who has dropped out of school in grades 7-12, conduct an exit interview with the student and the parents to determine and alleviate barriers to re-enrollment. 4.4c) Providing educational counseling support services to provide students with multiple options for continuing their education (e.g. alternative schools, online opportunities, GED programs, job-training programs).	Required

Non-instructional Support Services

The MPOs for Non-instructional Supports focus training non-MEP school staff, supports for increased school engagement and access to health and other social services.

Measurable Program Outcomes (MPOs)	Key Strategies	LEA Options
5.1) By the end of program year 2017-2018, 80% of migrant staff participating will report an increase in student engagement based on staff surveys.	5.1) Provide professional development (PD) on migratory lifestyle and unique needs of migrant students (e.g., program and cultural awareness presentation, field or home visits for teachers and administrators, training on mobility /academic/social gaps).	Required
5.2) By the end of program year 2017-2018, 80% of migrant parents participating will report an increase in student engagement based on parent surveys.	5.2) Provide workshops, meetings, and resources to parents and the community on ways to support and involve migrant students (e.g., extra-curricular activities, parenting classes, parent literacy workshops, instructional home visits).	Required
5.3) By the end of program year 2017-2018, at least two local partnerships and/or agreements among the school LEA and community healthcare providers and public health agencies will be established to provide health services to migrant families.	5.3) Establish partnerships and/or agreements among the school LEA and community healthcare providers (such as Lions Club and the regional health district) and public health agencies to provide health services to migrant families, such as Memoranda of Understanding.	Required
5.4) By the end of program year 2017-2018, 80% of migrant parents participating in parent involvement activities will report on a pre/post survey that they have an increased understanding of how to access community health services.	5.4) Provide information on, and referrals to, individualized health advocacy services to benefit migrant families needing health services (e.g., glasses, dental, immunizations).	Required

2. **Promote Coordination of Services** (*ESEA section 1304(b)(3)*): Describe how the State will use Title I, Part C funds received under this part to promote interstate and intrastate coordination of services for migratory children, including how the State will provide

for educational continuity through the timely transfer of pertinent school records, including information on health, when children move from one school to another, whether or not such move occurs during the regular school year.

~~ISDE continues to participate in the Migrant Student Information Exchange (MSIX) Data Quality Initiative.~~ Idaho ensures that accurate and complete records are being uploaded to MSIX in order to give liaisons access to up-to-date information on students' academic risk and progress. Further, training has been provided and will continue to be provided in using MSIX information to better serve ~~migrant~~ migratory students. LEAs also receive training in accessing data from Idaho's Migrant Student Information System (MSIS), which provides extensive information on Idaho migrant students, facilitating intrastate transfer of records.

Table 12: Migrant Student Information Exchange agreements

Intrastate Coordination and Records Transfer	Interstate Coordination and Records Transfer
• Idaho's MSIS includes individual immunization records with dates and health alerts • MSIS includes historical information on movement history, enrollment, course history, and ~~all~~ Idaho assessments.~~ including the Idaho Reading Indicator, Idaho Standards Achievement Tests of English language arts and math and English language proficiency assessment (ACCESS for ELL).~~ • MSIX Consolidated Records includes course history	• MSIX Consolidated Records report for assessments, course history, and move history assist LEAs in accurately placing students in courses. • MSIX for Move Notifications to other states and LEAs. • MSIX for Data Requests • MSIX Worklists for mergers, splits and regular reconciliation to ensure accurate data for all students in MSIX.

As part of its consolidated plan, each LEA must attest that the LEA "will use MSIX to send Move Notices within 48 hours of being notified that the student is leaving" and "will respond to MSIX Data Requests within 48 hours of receipt". ~~complete the following question: "Describe the LEA's coordination efforts with other agencies, including the timely transfer of student records." As part of this question, LEAs must describe "How does the LEA ensure that students who move are served right away in their new LEA (i.e., MSIX, phone calls)?" Acceptable responses must include both MSIX notifications and direct communications with receiving LEAs.~~

In the event that an MSIX Data Request is received at a time of year when the family liaison and regional ID&R coordinator are not available (school breaks), the request will escalate to the Idaho MEP and data will be provided directly to the requestor by state migrant staff.

Idaho's MEP promotes intrastate and interstate coordination by participating in the following:

- ISDE collaborates with the Community Council of Idaho, Idaho's Migrant Seasonal Head Start provider to create a Memorandum of Understanding completed by LEAs with the local Head Start every two years to promote recruiting and services provided to preschool students.
- ISDE MEP staff and many LEA staff participate in the National Association of State Directors of Migrant Education (NASDME) conference annually.
- ISDE is a member of the Interstate Migrant Education Council (IMEC).
- ~~ISDE MEP Director attends NASDME General Membership meetings to collaborate with other State MEP Directors.~~
- ISDE MEP Director and staff attend Migrant Annual Director's Meeting (ADM) to learn and collaborate ~~from~~ with Office of Migrant Education (OME) and other State MEP Directors.
- The state provides statewide Parent Advisory Council (PAC) meetings six times per year in the fall and spring in three locations across the state.
- Idaho's MEP director is part of the MSIX State User Group for Analysis and Recommendations (SUGAR), a national committee providing feedback to MSIX developers and Office of Migrant Education Staff. ~~the northwest regional representative to the Collaboration Work Group (CWG) with the Office of Migrant Education. Although new to this role, she will share information from the CWG with MEP Directors in the northwest region and serve as an advocate for the needs of these states.~~
- The Idaho MEP provides training/collaboration meetings to migrant directors. ~~across the state three times per year.~~.
- ~~The ISDE organizes a biannual Federal Programs Conference that provides information, training, and opportunities for collaboration among LEA and ISDE staff regarding all federal programs and special education.~~
- The state participates in the Bi-National program and contracts with an experienced person to administer the program. LEAs use the Mexican Transfer Document to ensure that students leaving the United States to Mexico will be able to register their students in school.
- Idaho participates in an Office of Migrant Education Consortium Incentive Grant (CIG) during each three year cycle.

3. **Use of Funds** (ESEA section 1304(b)(4)): Describe the State's priorities for the use of Title I, Part C funds, and how such priorities relate to the State's assessment of needs for services in the State.

~~Title I, Part C Funds are used to implement the strategies identified in our service delivery plan in order to meet the Measureable~~Measurable ~~Performance Outcomes.~~ Title I, Part C Funds are used to implement the strategies identified in our Service Delivery Plan to meet the Measurable Performance Outcomes. Funding is also used to support parent advisory councils and other parent involvement activities at both the state and local level. Finally, funds are used for statewide efforts in identification and recruitment of migrant children and youth.

The State's Comprehensive Needs Assessment completed in 2016-2017 defines concerns and proposed solutions. The Service Delivery Plan responded to the concerns

and incorporated proposed solutions to create appropriate strategies and Measurable Performance Outcomes.

C. Title I, Part D: Prevention and Intervention Programs for Children and Youth who are Neglected, Delinquent, or At-Risk

1. **Transitions Between Correctional Facilities and Local Programs** *(ESEA section 1414(a)(1)(B)):* Provide a plan for assisting in the transition of children and youth between correctional facilities and locally operated programs.

   Transitional services to support students transitioning from the LEA to the correctional facility enables students to continue their education. Transitional services to support the transition of students from correctional facilities to LEAs ensure a planned and smooth transition for students returning to school.

   Participating schools coordinate with facilities working with delinquent children and youth to ensure that each student is participating in an education program comparable to the one operating in the student's school. Schools make every effort to ensure the correctional facility working with students are aware of a student's existing individualized education program.

   Procedures based on the needs of the student, including the transfer of credits that such student earns during placement; and opportunities for such students to participate in credit-bearing coursework while in secondary school, postsecondary education, or career and technical education programming for each of the two types of programs Title I-D Subpart 1 and 2 are outlined below. The state will place a priority for such children to attain a regular high school diploma, to the extent feasible. The ISDE has established the following procedures to ensure the timely re-enrollment of each student who has been placed in the juvenile justice system in secondary school or in a re-entry program.

   Idaho has two state agency programs under Title I, Part D Subpart 1: The Idaho Adult Correctional Program and the Idaho Juvenile Correctional Program. Both programs are required to annually identify through Idaho's annual Title I-D Subpart 1 application the transition activities that take place at their respective programs and meet the 15 to 30 percent reservation of funds for re-entry or transition services as required by law. Additionally, both programs are required to provide a detailed explanation on how the facility will coordinate with counselors, school districts, and/or postsecondary educational institutions or vocational/technical training programs in assisting students' transition.

   Under Title I, Part D Subpart 2 Idaho has 16 local programs, serving either neglected or delinquent students. Subpart 2 programs are required to provide transitional services (although no specific funding percentage is required by law) to assist students in returning to locally operated schools and to promote positive academic and vocational outcomes for youth who are neglected and/or delinquent. These Subpart 2 programs are also required to annually identify their transition services through the annual application for Subpart 2 funding.

~~be conducted and completed by April 2018.~~

Upon a student's entry into the Neglected, Delinquent or At-Risk facility, the staff will work with the youth's family members and the local educational agency that most recently provided services to the student (if applicable). This process will include ensuring that the relevant and appropriate academic records and plans regarding the continuation of educational services for the~~such~~ child or youth are shared jointly between the facility and LEA ~~in order to~~to facilitate the transition of such children and youth between the LEA and the correctional facility. The facility will consult with the LEA (for a period jointly determined necessary by the facility and LEA)~~-~~ upon the student's discharge from that facility~~,~~ the~~to~~ coordinatione~~e~~ of educational services ~~so as~~ to minimize disruption to the child's or youth's achievement.

A. **Program Objectives and Outcomes** *(ESEA section 1414(a)(2)(A)):* Describe the program objectives and outcomes established by the State that will be used to assess the effectiveness of the Title I, Part D program in improving the academic, career, and technical skills of children in the program.

Objective 1: Title I, Part D programs will provide for individualization of instructional experience beginning with an intake process that includes the~~an~~ identification of each student's academic strengths and weaknesses in reading and math. Outcome: Each Title I, Part D program will provide educational services for children and youth who are neglected or delinquent to ensure that they have the opportunity to meet challenging State academic content and achievement standards.

Objective 2: Title I, Part D programs will ensure that all neglected and delinquent students accrue school credits that meet state requirements for grade promotion and secondary school graduation. Outcome: Each Title I, Part D program will administer pre and post-tests for each student using a standards-based test to determine academic growth during the student's placement in the academic program.

Objective 3: Title I, Part D programs will ensure that all neglected and delinquent students have the opportunity to transition to a regular community school or other education program operated by an LEA, complete secondary school (or secondary school equivalency requirements), and/or obtain employment after leaving the facility. Outcome: Title I, Part D programs will annually report on the types of transitional services and the number of students that have transitioned from the facilities to the regular community schools or other education programs, completed secondary school (or secondary school equivalency requirements), and/or obtained employment after leaving the facility.

Objective 4: Title I, Part D programs will ensure (when applicable) that neglected and delinquent students have the opportunity to participate in postsecondary education and job training programs. Outcome: Title I, Part D programs will annually report on the number of neglected and delinquent students who were given the opportunity to participate in postsecondary education and job training programs.

D. Title II, Part A: Supporting Effective Instruction

1. **Use of Funds** *(ESEA section 2101(d)(2)(A) and (D))*: Describe how the State educational agency will use Title II, Part A funds received under Title II, Part A for State-level activities described in section 2101(c), including how the activities are expected to improve student achievement.

State Level Activities – Administrators and Libraries
Idaho Principal Mentoring Project: According to the 2012 Rand Corporation (Burkauser, et. al, 2012) study on first year principals, "improving the principal placement process to ensure that individuals are truly ready for and supported in their new roles could have important implications for student achievement—particularly in low-performing schools." The Idaho Principal Mentoring Project seeks to provide this support with the ultimate goal of principal retention and increased student achievement.

Title II-A funds are used to implement the Idaho Principal Mentoring Project , which was a new program in 2016-2017 and designed for early career principals. See section A(4)(viii)(e) of the plan for a complete description of the ~~IMPM~~ IPMP . The project provides another level of support to those entering a leadership position. While participation has been voluntary, new principals serving in schools identified for comprehensive support and improvement ~~will be required~~ are encouraged to take advantage of the program~~. In 2016-17, 20 principals participated, and approximately 30 principals will participate in 2017-18~~.

Whereas the Idaho Building Capacity (IBC) project (see section A(4)(viii)(e) of this plan) is designed to build local capacity at a systems level, IPMP is designed to provide one-on-one mentoring to new leaders. The mentors are highly distinguished principals or superintendents, selected and trained by the state to mentor new school leaders. A needs assessment administered to mentees and principal mentors determines the assignment of principal mentors to mentees based on need and experience. Mentors coach new leaders through the tasks of improvement with regular structured virtual or in-person check-ins.
Each mentor/mentee team creates a customized mentoring plan that focuses on developing the skills and dispositions in four critical areas of school level leadership: interpersonal and facilitation techniques, teacher observation and feedback, effective school-level and classroom-level practices, and the use of data to improve instruction. The program has two main objectives: to increase the rate of effectiveness of new administrators and to decrease turnover among rural and struggling schools.

Title II-A funds continue to support IPMP. The project has been expanded to now also include the Idaho Superintendent Mentoring Project.

Support for School Libraries: Title II-A funds are used to partner with the Idaho Commission for Libraries to expand the annual Idaho School Libraries professional development. In schools where full-time school librarians are properly trained and supported, students achieve at significantly higher levels than students in schools with no full-time librarian (see: School Libraries Work! A Compendium of Research

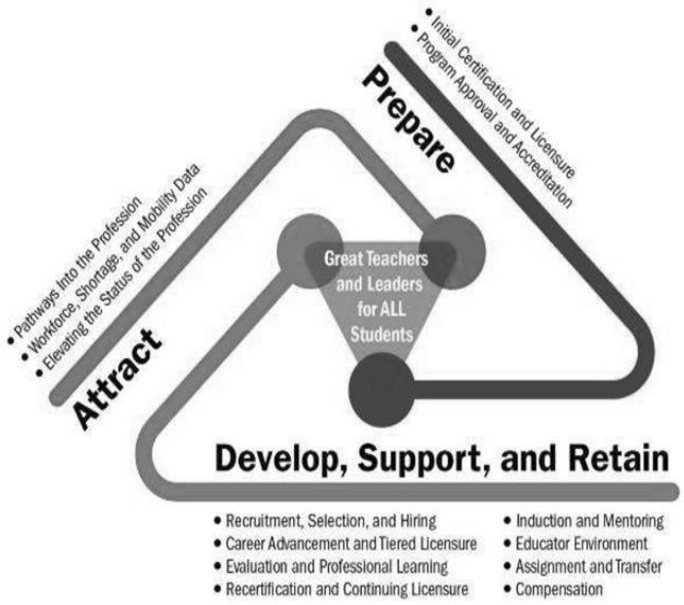
Supporting the Effectiveness of School Libraries). Title II-A funds will ensure more librarians are able to benefit from this valuable training, and more students will have access to a trained school librarian.

State Level Activities – Educators

Recruitment and Retention of Educators

Idaho Department of Education hosts regional career fairs to provide technical assistance to LEAs. In addition, each LEA can showcase their district to recruit educators. Beginning in 2024, the IDE career fair will also provide a one-day training to potential educators to help navigate routes to teaching.

The Idaho State Board of Education established an Educator Pipeline Work Group in 2016 to explore teacher pipeline issues across the state. Some of the early recommendations are aligned to allowable Title II-A projects. The Talent Development Systems graphic below, produced by American Institutes for Research (AIR), illustrates a three-pronged approach to addressing teacher shortages that guides Idaho's work.



In order to address teacher retention the Work Group first recommends increased professional development opportunities and support for teachers across the continuum, including induction programs, evaluation feedback for the purpose of professional growth and learning, and teacher leadership pathways. The following state level activities are aligned with these goals:

Continued Support for the Idaho Instructional Framework: Title II-A funds are used to support training and deepen understanding of Idaho's Instructional Framework through in- person workshops delivered around the state. A new approach under the flexibility of ESSA will be to deliver more of this training directly to LEAs in rural parts of the state. Workshops may include but not be limited to the following:

- Advanced Instructional Coaching Using the Framework for Teaching
- Calibration and Collaborative Self-Assessment of Observation Skills

- Data Literacy Using Assessment in Instruction
- Designing a Quality Teacher Evaluation Model
- Engagement for Student Learning
- Exploring Domains 1 and 4 of the Framework for Teaching
- Introduction to the Framework for Teaching and Deeper Understanding
- Instructional Coaching Using the Framework for Teaching
- Instructional Rounds
- Learning-Focused Conversations
- Mentoring Using the Framework for Teaching
- Observation Skills Using the Framework for Teaching
- Special Education: Introduction to the Framework for Teaching
- Special Education: Observation Skills Using the Framework for Teaching
- State of Idaho Framework Facilitators, Level 1
- Talk About Teaching: Clustering the Components

Facilitated conversations around the state's instructional framework – dialogue among teachers, instructional coaches, mentors, peer coaches, consulting teachers, preservice teachers, cooperating teachers, administrators, higher education faculty, teacher leaders, superintendents, and other district leaders – creates opportunities for deeper collaboration in and across the education system, impacting teacher growth and ultimately student achievement.

Mentoring and Coaching: In 2013 the Governor's Task Force for Improving Education made 21 Recommendations creating a strategic plan for education systems across the state. One of these recommendations was that each district develop a mentoring and induction program for the support of new teachers based on the Idaho Mentor Program Standards. Recommendations put forth in 2017 from the Educator Pipeline Work Group echoed the call, and outlined an even greater need since moving to a certification system in which new teachers have three years to move from Residency to Professional status.

Comprehensive induction and mentoring programs have been associated with first-year teachers showing student performance gains equivalent to those of fourth-year teachers who did not have this support (Strong, 2006). Though Title II-A funds alone will not be sufficient to establish robust mentoring and induction programs statewide, ISDE and the State Board of Education will ~~investigate~~ continue to examine how we may use Title II-A funds to support and expand upon the foundation that is in place with the goal of increased student learning. See Appendix D for additional research supporting a focus on educator mentoring.

An AIR policy brief published in May 2014 (Potemski & Matlach, 2014) noted that effective state induction policies include program standards to establish consistent expectations for mentoring and induction activities across the state. In 2009 the State Board of Education, in conjunction with ISDE, established and published such standards. Using these standards to provide a vision and guidelines for local planners to use in the design and implementation of a high-quality mentoring program for beginning teachers, the state hopes to increase the number of effective induction programs in every region of Idaho. Partnering with higher education institutions, Title II-A funds would allow

university partners to facilitate induction support for new teachers in high need LEAs across the state of Idaho. Faculty from higher education institutions in Idaho (public and private, four-year and two-year) are interested in the performance of their graduates in their early years of teaching. Investigating new teacher performance serves two main goals: continuous improvement for educator preparation programs and the identification of key supports for new teachers in terms of induction communities, practice, strategies, and outcomes. This project would study how the structures of one induction program in identified high need LEAs influences teacher performance and PK-12 student learning to inform future programs.

Additionally, the state strongly encourages and supports LEAs using Title II-A funds to recruit and train mentors within those LEAs identified for comprehensive and targeted support.

LEA Optional Use of Funds Aligned with State Level Activities
The uses of funds described below are not required of LEAs but are encouraged as we work to attract and certify more teachers for Idaho's classrooms. The Educator Pipeline Work Group has supported the development of alternative paths to certification that will not ~~sacrificing~~sacrifice rigor.

Grow Your Own: Idaho is experiencing teacher shortages in various content areas and geographic areas, and especially in rural parts of the state. To ensure that LEAs with schools identified for comprehensive and targeted support are fully staffed by effective educators, ISDE encourages LEAs use of Title II-A funds to embrace Grow Your Own programs. LEAs can actively recruit current classified staff (paraprofessionals) into the teaching profession, using Title II-A funds to support them in their attainment of full certification. In addition, the state recognizes the need for more teachers and leaders of ~~color, and~~color and is committed to increasing the number of American Indian and Hispanic/Latino teachers and recommends that LEAs support the full certification of teachers of color through available routes.

Idaho currently provides financial support for concurrent high school and college credit but, at present, no courses are offered that fulfill requirements for an education degree. While Idaho explores increasing the opportunities for high school students in this area, ISDE is investigating scholarship opportunities for high school students who commit to teaching in high-need areas for a designated amount of time.

Partnership Supports
Idaho Division of Career and Technical Education (ICTE) offers a program to recruit and retain career and technical education (CTE) teachers who have qualified for endorsements in a CTE area based on their professional work experience. These occupational teaching certifications begin as a Limited Occupational Specialist (LOS), then after completion of coursework and/or teacher training, advance to a Standard Occupational Specialist, and finally to an Advanced Occupational Specialist. The LOS certification is a three-year interim certificate, and during that time, ICTE provides statewide and regional training for the LOS teachers through the Inspire Cohort. The goal of the Inspire Cohort program is to not only recruit and train new occupationally endorsed teachers but also to assimilate them into the teaching profession with connections to other LOS colleagues and a fully supported first- year experience and beyond. Inspire faculty, personal mentors, and state-level program managers provide

the foundation for these new teachers at no out-of-pocket expense to the teacher. Oversight of the Inspire Cohort is maintained by ICTE, thus ensuring consistent training and mentoring, with a goal to produce a greater impact on student achievement sooner in their teaching careers. The Inspire Cohort is open to all LOS teachers employed in a CTE program and is funded with state funds for the purpose of encouraging completion of the program.

2. **Use of Funds to Improve Equitable Access to Teachers in Title I, Part A Schools** *(ESEA section 2101(d)(2)(E))*: If an SEA plans to use Title II, Part A funds to improve equitable access to effective teachers, consistent with ESEA section 1111(g)(1)(B), describe how such funds will be used for this purpose.

   Idaho does plan to use some Title II-A funds to improve equitable access to effective teachers, as described above. Idaho will target Title II-A funds to schools in comprehensive support and improvement through the IPMP, in addition to the Title I-A funds used for the Idaho Superintendents Network and Idaho Principals Network (as described in section A(4)(viii)(e) of this plan). Title II-A funds will also be used to train teachers in Idaho's instructional framework and address educator mentoring. These strategies will help to ensure that all students have access to effective teachers.

   ISDE created a cross-agency workgroup in 2015 to study the equitable distribution of educators across the state. ISDE worked with REL Northwest to analyze educator preparedness (inexperienced), content knowledge (teaching outside of field), and need (grade spans or content area). While the data analysis did not point to disparities in terms of the distribution of personnel who are working with low-income or minority students, it did identify a shortage of personnel across all areas, including areas not previously identified.
   The findings became part of Idaho's Equity Plan submitted to the U.S. Department of Education on June 1, 2015, and they sparked a statewide effort to study recruitment and retention.

   ISDE again partnered with REL Northwest to conduct surveys and interviews of a sampling of Idaho LEAs. The process was completed in June 2016. The salient challenge reported by the superintendents interviewed was recruitment and retention of staff. Many of the superintendents are taking short-term measures (e.g., Teach for America, Idaho Digital Learning Academy for secondary coursework, multi-grade classrooms) to meet their needs but expressed concern that the issue was larger than any one LEA could tackle. One superintendent remarked, "*We are one teacher away from losing several programs."* LEAs expressed concern that the issue was not limited to teachers, but also affected administrative personnel.

Table 13: Proposed programs for supporting educators

Timeline: July 2017 to September 2022

Strategy	Funding sources
Idaho Building Capacity Network	Title I: School improvement

Idaho Superintendents Network	Title I: School improvement
Idaho Superintenden Mentoring Project	Title II-A
Idaho Principals Network	Title I: School improvement
Idaho Principal Mentoring Project	Title II-A
Mentoring and Coaching	Title II-A
School Libraries	Title II-A
Instructional Framework	Title II-A

3. **System of Certification and Licensing** *(ESEA section 2101(d)(2)(B))*: Describe the State's system of certification and licensing of teachers, principals, or other school leaders.

Educator certification in the state of Idaho is clearly defined within Idaho Administrative Code (IDAPA) and State Board of Education policy (Board policy)~~.~~, ~~This code puts~~ which put forth rigorous expectations for teachers, pupil ~~personnel~~service staff, principals, directors of special education, and superintendents who are prepared by both Idaho and out-of-state institutions of higher education. IDAPA and Board policy ensure~~s~~ that educators are prepared not only with the necessary knowledge gained through course work, but through clinical field experiences as well. Alternative routes to certification are also clearly defined and available to those who wish to enter the education profession through non-traditional means. IDAPA specifically outlines alternative routes to ensure all educators within Idaho, regardless of certification route, are prepared to the fullest extent. ~~In addition, twenty percent (20%) of Standards for Initial Certification of Professional School Personnel are reviewed annually by the Idaho Professional Standards Commission in an effort to continuously maintain rigor and improve upon current practice.~~ Specifics within IDAPA and Board Policy ~~detailing specific requirements~~ for educator certification are described in the following paragraphs:

A Standard Instructional Certificate requires: A minimum of 20 semester credit hours~~, or 30 quarter credit hours,~~ in the philosophical, psychological, and methodological foundations, instructional technology, and in the professional subject matter of education which shall include ~~at least three semester credit hours or four quarter credit hours in reading and its application to the content area~~demonstration of competencies in the Idaho Comprehensive Literacy Plan. [IDAPA 08.02.02.015.01.a.i] The certificate must include an endorsement area as well. Some endorsement requirements are as follows:

An All Subjects Endorsement requires: ~~Twenty (20) semester credit hours, or 30 quarter credit hours, in the philosophical, psychological, and methodological foundations, instructional technology, and professional subject matter must be in elementary education including at least 6 semester credit hours, or 9 quarter credit hours, in developmental reading. This endorsement must be accompanied by at a minimum of one additional subject area endorsement allowing teaching of that subject through grade nine or kindergarten through grade 12. [IDAPA 08.02.02.022.03]~~ A minimum of 30

semester credit hours to include coursework in discipline-specific methods of teaching elementary subject areas, cognitive processes, learner development, learning differences, literacy and language development, K-8 subject content, classroom management and behavioral supports, instructional strategies and interventions, and formative and summative assessments. [Board Policy IV.D.2.a]

A Blended Early Childhood/Early Childhood Special Education Endorsement requires: A minimum of 30 semester credit hours~~, or 45 quarter credit hours, in the philosophical, psychological, and methodological foundations, in instructional technology, and in the professional subject matter of~~ to include coursework in methods of teaching early childhood and ~~early childhood~~ special education~~.~~
~~The professional subject matter shall include course work specific to the child from birth through grade three in the areas of~~ , child development and learning~~;~~, curriculum development and implementation~~;~~ , family and community relationships~~;~~, assessment and evaluation~~;~~, ~~professionalism~~central concepts of birth – grade 3 subjects, professionalism, ~~; and application of technologies~~and clinical experience including a combination of general and special education in the following settings: birth to age three (3), ages three to five (3-5), and grades K-3 general education. ~~[IDAPA 08.02.02.022.07]~~[[Board Policy IV.D.2.t] Policy IV.D.2.f]

An Exceptional Child ~~Generalist~~Education Endorsement requires: ~~Thirty~~a minimum of ~~(~~30~~)~~ semester credit hours to include coursework in ~~special education, or closely related areas, as part of an approved special education program~~methods of teaching the exceptional child, learner development and individual learning differences, assessment and evaluation, designing and monitoring individualized education programs, central concepts of academic subjects, individual behavioral supports, instructional strategies and interventions, special education law, family and community relationships, and accommodations and modifications. ~~[IDAPA 08.02.02.023.07]~~[Board Policy IV.D.2.t]

A Secondary Content Area Endorsement requires~~: P~~preparation in ~~at least~~ two fields of teaching~~. One of the teaching fields~~ , one of which ~~must consist~~consists of at least 30 semester credit hours, ~~or 45 quarter credit hours~~ and ~~a second field of teaching consisting~~ and one of which consists of at least 20 semester credit hours~~, or 30 quarter credit hours.~~~~;~~ ~~P~~or preparation of ~~not less than~~t least 45 semester credit hours~~, or 67 quarter credit hours,~~ in a single subject area ~~may be used in lieu of the two teaching field requirements~~. [IDAPA 08.02.02.015.01.c]

Clinical Requirements Idaho Administrative Code articulates clinical requirements for teacher candidates. There are no specific state requirements ~~with regard to~~regarding preservice teaching experience in diverse settings or with special student populations. For the Standard Instructional Certificate, which includes all instructional endorsements, at least ~~six~~ 10 undergraduate or 6 graduate semester credit hours ~~, or nine quarter credit hours,~~ of student teaching in the grade range and subject areas as applicable to the endorsement are required. [IDAPA 08.02.02.015.01.~~a.ii~~b]

Administrator Certification requires at least 30 semester credit hours~~, or 45 quarter credit hours~~ of graduate study in school administration based on the specific administrator area (school principal, director of special education, or superintendent).

The program must include the competencies of the Idaho ~~Foundation~~ Standards for School Administrators. [IDAPA 08.02.02.015.03]

Alternative Routes to Certification When a professional position cannot be filled by an LEA with someone who has the correct endorsement/certification, the LEA may request an alternative authorization for certification. ~~An alternative authorization is valid for one year, and may be renewed for two additional years. Prior to application, a candidate must hold a Bachelor's degree.~~ The LEA must provide supportive information attesting to the ability of the candidate to fill the position. [IDAPA 08.02.02.042]

Alternative Authorization – Teacher to New ~~Certification/~~Endorsement ~~C~~Candidates ~~will work toward completion of the alternative route preparation program in conjunction with the employing LEA and the participating educator preparation program (college/university or non-traditional route).~~ This alternative authorization allows an LEA to request additional endorsement for a candidate who already holds a current Idaho certificate in good standing. ~~Candidates must complete a minimum of nine semester credits annually or make adequate progress to be eligible for extension of up to a total of three years. The participating educator preparation program shall provide procedures to assess and credit equivalent knowledge, dispositions, and relevant life/work experiences. Additionally, the alternative authorization allows teachers to use the National Board Certification process to gain an endorsement in a corresponding subject area or by obtaining a graduate degree in a content specific area.~~

~~Two pathways are also available to some teachers, depending upon endorsement(s) already held.~~Option 1 – The candidate works toward completion of a state board-approved preparation program. The candidate will receive a one-year certificate that may be renewed for two additional years with evidence of satisfactory progress toward completion of the preparation program.

Option 2 – A candidate with a master's degree may add an endorsement in the same content-specific area to a standard instructional certificate. The candidate will receive a one-year, nonrenewable certificate. Successful completion of a one-year, state board-approved mentoring program must occur in the year of authorization.

Option 3 – A candidate may add an endorsement to a valid instructional certificate by successfully completing a state board-approved content area assessment. The candidate will receive a one-year, nonrenewable certificate. Successful completion of a one-year, state board-approved mentoring program, must occur in the year of authorization.

In addition, this alternative authorization allows a candidate to use the National Board certification process to gain an endorsement in a corresponding subject area.

- ~~Pathway 1 – Endorsements may be added through state-approved testing and a mentoring component. The appropriate test must be successfully completed within the first year of certification in an area closely compatible with an endorsement for which the candidate already qualifies and is experienced. This pathway requires the successful completion of a one-year state-approved mentoring component.~~

- ~~Pathway 2 – Endorsements may be added through state-approved testing in an area less closely compatible with an endorsement for which the candidate already qualifies and is experienced. The appropriate test must be successfully completed within the first year of the certification along with the successful completion of a robust one-year state-approved mentoring component. [IDAPA 08.02.02.042.01]~~

Alternative Authorization – Teacher to New Certification

This alternative authorization allows an LEA to request an additional certificate in a new certification area for a candidate who already holds a current Idaho certificate in good standing. The candidate will work toward completion of a preparation program in conjunction with the employing LEA and the participating teacher preparation program (college/university or nontraditional route). The candidate will receive a three-year, nonrenewable interim certificate to complete the preparation program. The participating educator preparation program shall provide procedures to assess and credit equivalent knowledge, dispositions, and relevant life/work experiences.

Alternative Authorization – Content Specialist ~~The purpose of this~~This alternative authorization allows an LEA~~is~~ to request ~~offer an expedited route to c~~ertification for ~~individuals~~ a candidate who ~~are~~is highly and uniquely qualified in a subject area to teach in an LEA. ~~with an identified need for teachers in that area. Alternative authorization in this area is valid for one year and renewable for up to two additional years.~~ Prior to application, a candidate must hold a bachelor's degree or have completed all the requirements for a bachelor's degree except for student teaching. ~~The candidate shall meet enrollment qualifications of the alternative route preparation program.~~ A consortium comprised of a designee from the educator preparation program, a representative from the LEA, and the candidate shall determine preparation needed for the candidate to meet the Idaho Standards for Initial Certification of Professional School Personnel. This preparation must include mentoring and a minimum of one classroom observation per month until certified. The candidate will receive a three-year, nonrenewable interim certificate to complete the preparation program. [IDAPA 08.02.02.042.02]

~~**Alternative Authorization –**~~ **CTE Occupational Specialist** The purpose of the occupational specialist certification is to permit individuals with several years of industry experience, and often industry certification, in a CTE-related occupation to teach secondary and postsecondary CTE students. These occupational teaching certifications most often begin as a Limited Occupational Specialist (LOS) for individuals with ~~6,000 to 16,000 hours of full-time, recent, successful, and gainful employment.~~a bachelor's degree, 2,000-6,000 hours of recent gainful employment, and/or industry certifications. After completion of coursework and~~/or~~ teacher training at each lev~~el~~ over the three-year validity period of the LOS certificate, teachers advance to a Standard Occupational Specialist~~,~~ Certificate. With a master's degree or an additional 18 credit hours in the endorsement content area or educational pedagogy, the candidate can advance to ~~and finally to~~ an Advanced Occupational Specialist Certificate. All ~~occupationally certified~~ teachers entering the profession from industry must meet the Idaho Standards for Initial Certification of Professional School Personnel. [IDAPA 08.02.02.021.02.c]

Content Knowledge, Pedagogy, and Performance ~~As per IDAPA 08.02.02.018, all certification and endorsement areas require the candidate to demonstrate~~State Board of Education approved content ~~knowledge~~, pedagogy, and performance area assessments shall be used to ensure qualified teachers are employed in Idaho's classrooms. [IDAPA 08.02.02.017] The state approved assessment for demonstration of content knowledge is the Praxis II assessment. Candidates must have a passing score on the Praxis II assessment for the content area they are seeking certification and endorsement.

Teacher Preparation Standards All Idaho teacher preparation programs are guided by the *Idaho Core Teache~~r~~ing Standards* (see Table 14 below). These standards provide guidelines for what all Idaho teachers must know and be able to do.

~~**Foundation and Enhancement Standards** Foundation and Enhancement Standards refer to additional knowledge and performances a teacher must know in order to teach a certain content area. The Foundation and Enhancement Standards, therefore, further "enhance" the standard. In this way, the Idaho Core Teacher Standards, Foundation Standards and Enhancement Standards are "layered" to describe what a teacher in the content area must know and be able to do in order to be recommended to the state for initial certification.~~

~~**Pupil Personnel and Administrator Certification Standards** There are several certification standards for pupil personnel professionals and school administrators that are also addressed through the Idaho teacher certification processes. These include School Administrators, School Counselors, School Nurses, School Psychologists, School Social Workers: Because of the unique role of these professionals, their standards are independent of the Idaho Core Teaching Standards but are still written in the same performance-based format: Knowledge and Performances.~~

Table 14: Idaho ~~Content~~Core Teaching Standards

The Learner and Learning

Standard number and title	Standard description
Standard 1: Learner Development.	The teacher candidate understands how learners grow and develop, recognizing that patterns of learning and development vary individually within and across the cognitive, linguistic, social, emotional, and physical areas, and designs and implements developmentally appropriate and challenging learning experiences.
Standard 2: Learning Differences.	The teacher candidate uses understanding of individual differences and diverse cultures and communities to ensure inclusive learning environments that enable each learner to meet high standards.

Standard 3: Learning Environments.	The teacher candidate works with others to create environments that support individual and collaborative learning, and that encourage positive social interaction, active engagement in learning, and self-motivation.

Content Knowledge

Standard number and title	Standard description
Standard 4: Content Knowledge.	The teacher candidate understands the central concepts, tools of inquiry, and structures of the discipline(s) he or she teaches and creates learning experiences that make the discipline accessible and meaningful for learners to assure mastery of the content.
Standard 5: Application of Content	The teacher candidate understands how to connect concepts and use differing perspectives to engage learners in critical thinking, creativity, and collaborative problem solving related to authentic local and global issues.

Instructional Practice

Standard number and title	Standard description
Standard 6: Assessment.	The teacher candidate understands and uses multiple methods of assessment to engage learners in their own growth, to monitor learner progress, and to guide the teacher's and learner's decision making.
Standard 7: Planning for Instruction	The teacher candidate plans instruction that supports every student in meeting rigorous learning goals by drawing upon knowledge of content areas, curriculum, cross-disciplinary skills, and pedagogy, as well as knowledge of learners and the community context.
Standard 8: Instructional Strategies.	The teacher candidate understands and uses a variety of instructional strategies to encourage learners to develop deep understanding of content areas and their connections, and to build skills to apply knowledge in meaningful ways.

Professional Responsibility

Standard number and title	Standard description

Standard 9: Professional Learning and Ethical Practice.	The teacher candidate engages in ongoing professional learning and uses evidence to continually evaluate his/her practice, particularly the effects of his/her choices and actions on others (learners, families, other professionals, and the community), and adapts practice to meet the needs of each learner.
Standard 10: Leadership and Collaboration.	The teacher candidate seeks appropriate leadership roles and opportunities to take responsibility for student learning, to collaborate with learners, families, colleagues, other school professionals, and community members to ensure learner growth, and to advance the profession.

State Specific Standards

Standard number and title	**Standard description**
Standard 11: American Indian Tribes in Idaho.	The teacher candidate should be able to distinguish between each of the federally recognized tribes with respect to the retention of the ancestral lands In Idaho: Coeur d'Alene Tribe, Kootenai Tribe of Idaho, Nez Perce Tribe, Shoshone-Bannock tribes, and The Shoshone-Paiute Tribes. Teacher candidates build capacity in learners to utilize the assets that each learner brings to the learning community based on their backgrounds and experiences.
Standard 12: Code of Ethics for Idaho Professional Educators	The teacher candidate understands the Code of Ethics for Idaho Professional Educators and its place in supporting the integrity of the profession.
Standard 13: Digital Technology and Online Learning.	The teacher candidate knows how to use digital technology to create lessons and facilitate instruction and assessment in face-to-face, blended, and online learning environments to engage students and enhance learning.

Supplemental Standards

In addition to the Idaho Core Teaching Standards, the Idaho Comprehensive Literacy Standards apply in whole or in part, depending on the endorsement area, to each program leading to initial certification and a Standard Instructional Certificate. Programs leading to endorsement in Blended Early Childhood/Early Childhood Special Education, Exceptional Child Education, Blind and Visually Impaired, and Deaf/Hard of Hearing meet additional standards applicable to each endorsement area.

Pupil Service Staff and Administrator Certification Standards The standards for initial certification of pupil service staff and school administrators are independent of

the Idaho Core Teaching Standards. The Idaho Standards for School Administrators articulate the knowledge and performance required of the School Principal, the Superintendent, and the Director of Special Education. The Idaho Standards for Pupil Service Staff require that the preparation program receive national accreditation to meet the Idaho Standards for Pupil Service Staff:

- Audiology and Speech Language Pathologist - Council on Academic Accreditation, American Speech-Language-Hearing Association
- Nursing (School Nurse) - Commission on Collegiate Nursing Education
- School Counselor - Council for Accreditation of Counseling and Related Educational Programs
- School Psychologist - National Association of School Psychologists
- School Social Worker - Council on Social Work Education

~~**Current Work Regarding Certification of Educators**~~

~~The Professional Standards Commission (PSC) annually reviews 20 percent of the preparation standards to align with national standards and best practices. This process allows Idaho to keep up to date with standards and best practices. In addition, the Office of the State Board of Education has convened a Teacher Certification Workgroup to look at the current certification requirements. The purpose of the workgroup is to maintain high standards to assure that all students have access to highly effective, learner-ready teachers and other LEA staff to ensure academic achievement for all students. The identified areas of focus for the workgroup are:~~

- ~~Bring current certification practices in alignment with Idaho statute and administrative code.~~
- ~~In those areas where current practice is best practice, amend administrative code to align with practice.~~
- ~~Areas where current practice is not aligned with state law:~~
  - ~~Individuals teaching outside of grade ranges authorized by certificate (certificate limits the grade level range individuals can teach, regardless of the endorsement)~~
  - ~~Active certificates with attached endorsements that are not authorized in IDAPA~~
  - ~~Positions reported as pupil service staff for which no corresponding endorsement exists~~
- ~~Review alternate routes to certification to determine whether Idaho's existing routes offer adequate flexibility for aspiring educators while also assuring qualified individuals capable of advancing student learning are in the classroom.~~
- ~~Review the mechanism for individuals with specialized skills, or from industry, to teach one or two classes.~~

~~In addition, the State Board of Education's Teacher Pipeline Workgroup will make recommendations which may include rule or statute changes to remove barriers for effective teachers to enter and stay in Idaho's classrooms.~~

4. **Improving Skills of Educators** *(ESEA section 2101(d)(2)(J))*: Describe how the SEA will improve the skills of teachers, principals, or other school leaders in order to enable them to identify students with specific learning needs, particularly students with disabilities, English learners, students who are gifted and talented, and students with

low literacy levels, and provide instruction based on the needs of such students.

Idaho addresses the identification of high need students through a variety of supports.

The Special Education Department in partnership with the Special Education Support and Technical Assistance team, provides professional development to teachers and administrators in meeting the needs of students with disabilities. This professional development includes identifying and qualifying students for services under the Individuals with Disabilities in Education Act (IDEA).

Idaho has standardized procedures for identifying English (EL) students. Idaho recognizes that all educators are responsible for the language development and academic success of ELs, therefore, the ISDE Title III Department, provides professional development support for all educators in the area of language development through content instruction. Additional information is available at ~~http://www.sde.idaho.gov/el-migrant/el/index.html.~~ https://www.sde.idaho.gov/federal-programs/el/index.html

Idaho law requires LEA's to identify and serve gifted students. The state provides funds to support the professional development in the area of identification. The funds also support services provided to students once identified. Under IDAPA 08.02.03.999, districts are required to write a three-year plan for each student identified as gifted and talented in the areas of academics, visual/performing arts, creativity, and leadership. Teachers of these students receive annual training through the Edufest summer conference featuring nationally recognized experts in the field of gifted and talented education. Additional information is available at http://www.sde.idaho.gov/academic/gifted-talented.

Commissioned in December 2012 by Governor C.L. "Butch" Otter, the Task Force for Education recognized reading proficiency is a major benchmark in a student's education and that students must learn to read before they can read to learn content in other subject areas. The task force was assembled to study and collaborate on how Idaho's education system could better prepare its children for success. One focus of the Task Force was the recommendation that students demonstrate mastery of literacy before moving on to significant content learning. The task force also recommended a better tool for identifying students with low literacy levels.

To support these recommendations, the legislature has appropriated more than $11 million dollars to support research based intervention strategies to improve outcomes for students. Funds can be used in a variety of ways, including professional development for educators to identify students with literacy deficiencies. The new assessment to identify struggling readers includes a screener, diagnostic and progress monitoring system to provide teachers with rich data that focuses on specific deficiencies in literacy skills for students in Kindergarten through third grade. Fifty-seven schools across the state are implementing the new reading assessment in a pilot administration in the 2017-2018 school year. A statewide implementation is scheduled for the 2018-2019 school year.

5. **Data and Consultation** *(ESEA section 2101(d)(2)(K))*: Describe how the State will use

data and ongoing consultation as described in ESEA section 2102(d)(3) to continually update and improve the activities supported under Title II, Part A.

Data are collected on all state-led professional development activities to assess the quality and efficacy of those experiences. For example, the IPMP and Idaho Instructional Framework components of section A(4)(viii)(e) of this plan include survey data collected from participants of these programs in 2017.

Meaningful consultation was conducted with stakeholders, including teachers, principals, other school leaders, paraprofessionals, specialized instructional support personnel, charter school leaders, parents, community partners, and other organizations or partners with relevant and demonstrated expertise in the development of this program plan. ISDE will seek advice, based on statewide data review, regarding equity data and student achievement data, and consult with this group of stakeholders at least annually on how to best improve the activities to meet the purpose of this program. Additionally, LEAs annually submit a Consolidated Federal and State Grant Application (CFSGA) for Title II-A, which includes listing professional development program activities, describing how each is expected to improve academic achievement, and identifying the evidence level of criteria each activity meets. The application is reviewed and then approved after all application criteria are met. During monitoring visits, each LEA provides documentation evidencing how the professional development activities improved academic achievement. As evident in the plan, activities under this part are coordinated with other related strategies, programs, and activities being conducted by ISDE.

6. **Teacher Preparation** *(ESEA section 2101(d)(2)(M))*: Describe the actions the State may take to improve preparation programs and strengthen support for teachers, principals, or other school leaders based on the needs of the State, as identified by the SEA.

Idaho is currently focusing its Title II-A funds toward supporting educators in rural, high-poverty, and high-minority schools. However, as stated above in section D(1), ISDE and the State Board of Education will investigate how we may use Title II-A funds to support teacher preparation and mentoring.

The Office of the Idaho State Board of Education is committed to supporting Educator Preparation Providers to develop learner-ready educators. A learner ready educator is one who is ready on day one of his or her career to model and develop in students the knowledge and skills they need to succeed today including the ability to think critically and creatively, to apply content to solving real-world problems, to be literate across the curriculum, to collaborate and work in teams, and to take ownership of their own continuous learning.

More specifically, learner-ready teachers have deep knowledge of their content and how to teach it; they understand the differing needs of their students, hold them to high expectations, and personalize learning to ensure each learner is challenged; they care about, motivate, and actively engage students in learning; they collect, interpret, and use student assessment data to monitor progress and adjust instruction; they systematically reflect, continuously improve, and collaboratively problem solve; and

they demonstrate leadership and shared responsibility for the learning of all students.

The Office of the Idaho State Board of Education strives to approve and hold accountable teacher preparation programs that produce learner-ready teachers. Each year Idaho approved teacher preparation program's report data on admission requirements, standards and assessments. That data is currently collected in the Federal Title II Reports.

The Office of the Idaho State Board of Education and the State Department of Education are working together to innovate state systems and progress in the field to improve teacher preparation. Together, the development of the Idaho Standards for Educator Preparation Providers was created and approved by the State Board of Education on August 23, 2023. The Standards are as follows:

- STANDARD ONE: CONTENT, PEDAGOGICAL, AND PROFESSIONAL KNOWLEDGE
    - Educator Preparation Providers ensure candidates develop an understanding of the critical concepts, principles, and practices of their discipline, and are able to use practices flexibly to advance the learning of all students.
        - Standard 1.1 Content Knowledge and Pedagogy: Educator Preparation Providers ensure candidates are able to apply their knowledge in critical concepts, principles, and practices as identified in the Idaho Standards for Initial Certification of Professional School Personnel, National Accreditation Standards of Pupil Service Programs, and State Board approved Idaho Student Content Standards.
        - Standard 1.2 Professional Knowledge: Educator Preparation Providers ensure candidates are able to apply their knowledge of the Idaho Standards for Initial Certification of Professional School Personnel, National Accreditation Standards of Pupil Service Programs, and the State Board approved Idaho Student Content Standards.
        - Standard 1.3 Idaho Educational Expectations: Educator Preparation Providers integrate State Board of Education policies and procedures and Idaho Rules Governing Uniformity into the preparation of candidates.

- STANDARD TWO: CLINICALEXPERIENCE
    - Educator Preparation Providers ensure diverse high-quality clinical experiences to develop knowledge, skills, and professional dispositions in candidates and educators.
        - Standard 2.1 Clinical Practice: Educator Preparation Providers include clinical practice of depth, breadth, coherence, and duration to enable candidates or educators to demonstrate

proficiency in their area of endorsement.
- Standard 2.2 Clinical Partnerships: Educator Preparation Providers develop and implement quality clinical experiences in the context of documented and effective partnerships with Local Education Agencies.

- STANDARD THREE: CANDIDATE ASSESSMENT AND SUPPORT
  - Educator Preparation Providers demonstrate the development of candidate quality throughout the preparation program.
    - Standard 3.1 Admission Standards for Academic Achievement and Ability: Educator Preparation Providers define admissions requirements, collect, and evaluate applicant data, and admit eligible candidates.
    - Standard 3.2 Monitor and Support Progress: Educator Preparation Providers establish criteria to assess and monitor candidate progression throughout the preparation program to support candidate growth and competency at completion.
    - Standard 3.3 Recommendation for Certification: Educator Preparation Providers demonstrate candidates meet the Idaho Assurances listed on the Institutional Recommendation.

- STANDARD FOUR: CONTINUOUS PROGRAM IMPROVEMENT
  - Educator Preparation Providers maintain a system that consists of valid and trustworthy data from multiple measures that support continuous improvement. The system is sustainable over time and includes input from internal and external stakeholders.
    - Standard 4.1 Completer Data: Educator Preparation Providers analyze data provided via Annual Performance Measures for Continuous Improvement.
    - Standard 4.2 Internal and External Stakeholder Engagement: Educator Preparation Providers involve appropriate internal and external stakeholders (e.g. alumni, employers, practitioners, school/community partners, etc.) in program design, evaluation, and improvement.
    - Standard 4.3 Continuous Improvement: Educator Preparation Providers document use of data-driven decision-making processes to guide program modification and continuous improvement.

New Educator Preparation Provider annual performance measures were created and approved by the State Board of Education on August 23, 2023. These measures identify at-risk and low performing teacher preparation programs across Idaho's traditional and non-traditional programs. These measures provide transparency into the performance of teacher preparation programs, creating a feedback loop between the Office of the Idaho State Board of Education and the Educator Preparation Providers with an

emphasis on continuous improvement. The measures are as follows:

- Pedagogical Knowledge: The percentage of candidates who, at exit of program, passed the Common Summative Assessment (Idaho Framework for Teaching Evaluation) at a basic or better in all 22 components.
- Content Knowledge: The percentage of overall completer pass rate of Idaho State Board Approved content assessment for which the EPP has at least ten candidates complete the assessment during the academic year.
- Completer Effectiveness on Professional Practice: The percentage of teachers of record and completers who signed an Idaho teaching contract in their first year after completion were eligible for and obtained the Idaho Professional Endorsement.

Persistence in an Idaho Local Education Agency: The percentage of teachers of record and completers who signed an Idaho teaching contract in their first year after completion working full-time in an Idaho Local Education Agency who persist for three years.

E. Title III, Part A, Subpart 1: English Language Acquisition and Language Enhancement

1. **Entrance and Exit Procedures** *(ESEA section 3113(b)(2)):* Describe how the SEA will establish and implement, with timely and meaningful consultation with LEAs representing the geographic diversity of the State, standardized, statewide entrance and exit procedures, including an assurance that all students who may be English learners are assessed for such status within 30 days of enrollment in a school in the State.

Entrance Procedures: Idaho's ESSA EL Workgroup has established the following EL Program Entrance Procedures and Criteria:

Step 1: All LEAs administer the Statewide Home Language Survey (HLS) to all newly enrolling students in the district/charter. They then use the "Decision to Assess" Matrix to determine whether the student is a potential EL. Original HLSs are filed in students' cumulative files.

Statewide Home Language Survey Questions:
1. What language(s) are spoken in the home?
2. What language(s) does your student speak most often?
3. What language(s) did your student first learn?
4. Which language does your child speak with you?
5. Which language do you use when speaking with your child?
6. Which language do you want phone calls and letters?
7. What is your relationship to the child?
8. Is there any additional information you would like the school to know about your child?

The Home Language Survey is currently available in Spanish and Russian and is being translated in additional languages represented in the state. English and translated HLS forms are available on the Idaho State EL and Title III Programs website for all LEAs to download.

Step 2: If a student is identified as a potential EL, LEAs use additional resources and data to determine whether the student has already been identified as an EL in another LEA. If the following resources indicate that the student either has screened out of EL eligibility or has previously exited from EL programming, then the student does not qualify for EL program placement.

- Idaho's English Learner Management System (ELMS)
- Cumulative file review for WIDA assessments
- Cumulative file review for English Learner Plans
- Cumulative file review for EL exit forms
- Communication with previous district (if necessary)

Step 3: LEAs proceed with an English Language Proficiency (ELP) Screener Assessment administration, either WIDA Screener for Kindergarten or WIDA Screener, depending on the student's grade level and time of year of enrollment. They use the following Statewide EL Entrance Criteria to determine whether a student qualifies for EL or

whether they screen out of EL eligibility.

Table 15: Idaho's Statewide EL Entrance Criteria

Grade	First semester	Second semester
Kindergarten	WIDA Screener for Kindergarten • ≥ 5.0 Oral Language Proficiency Level • ≥ 4.0 Listening Proficiency Level • ≥ 4.0 Speaking Proficiency Level	WIDA Screener for Kindergarten • ≥ 5.0 Oral Language Proficiency Level • ≥ 4.0 Listening Proficiency Level • ≥ 4.0 Speaking Proficiency Level • ≥ 2.0 Literacy Score
1st Grade	WIDA Screener for Kindergarten • ≥ 5.0 Oral Language Proficiency Level • ≥ 4.0 Listening Proficiency Level • ≥ 4.0 Speaking Proficiency Level • ≥ 4.0 Literacy Score	• (Same as 2nd-12th grade)
2nd – 12th Grade	WIDA Screener • ≥ 5.0 Overall Proficiency Level Score • ≥ 4.0 Speaking Proficiency Level • ≥ 4.0 Reading Proficiency Level • ≥ 4.0 Writing Proficiency Level	WIDA Screener • ≥ 5.0 Overall Proficiency Level Score • ≥ 4.0 Speaking Proficiency Level • ≥ 4.0 Reading Proficiency Level • ≥ 4.0 Writing Proficiency Level

Screener assessment and program placement must occur within 30 days of the student's enrollment in the LEA. In order to ensure that potential ELs with special needs are correctly identified, the EL advisory panel will collaborate with special education stakeholders to establish alternate entrance criteria and processes for identifying ELs with special needs.

The ESSA EL Workgroup created a statewide process for identifying students whose parents may have indicated "English Only" on their Home Language Survey but who have exhibited characteristics of second language learners necessitating a need to amend the original HLS. In addition, the workgroup developed a statewide process to

remove the EL designation from a student who was erroneously identified. Lastly, the workgroup has assisted the ISDE with revising the parental notification form including an option to waive ELD services.

Exit Procedures: Idaho's ESSA EL Workgroup has established the following EL Program Exit Procedures and Criteria first implemented in the 2019/2020 school year, based on the 2020 ACCESS for ELL results:

Step 1: LEAs review annual EL proficiency assessment data to determine which students have met Idaho's EL Exit Criteria. Idaho administers the WIDA ACCESS for ELL or Alternate ACCESS for ELL to annually assess for EL proficiency.

The ACCESS for ELL is administered to all identified English Learners, annually, and includes assessments in reading, writing, listening and speaking. A student receives an overall composite score and a scale score in each of the four domains.

The reading and writing domains are weighted 35% each in the overall composite, while the speaking and listening domains are weighted 15% each, in the overall composite.

A student is considered proficient when they receive a composite score equal to or greater than 4.2, with a minimum score of 3.5 in the domains of reading, writing and listening, and a minimum score of 1 in the speaking domain.

Step 2: When students meet the exit criteria on the English language proficiency assessment, LEA staff members re-designate students to "exited year 1 monitoring" status in their school information systems. LEAs are required to complete the exiting process for eligible students before the end of the school year in which the student met the exit criteria. In other words, LEAs must use the results from the spring ACCESS for ELL and Alternate ACCESS for ELL assessment to update students' EL status in their school information system and inform parents by the end of the school year.

Step 3: LEAs will use a statewide exit form that is shared and explained to parents/families in a language they can understand to inform them of their child's program exit. In addition LEAs inform parents/families of the child's transition into a monitoring status for two years.

In order to ensure that ELs with special needs are correctly exited, the EL advisory panel collaborated with special education stakeholders to establish criteria and processes for exiting ELs with special needs taking the Alternate ACCESS for ELL. The following is a result of this collaboration:

- ALT-ACCESS for ELL exit criteria
- P2 Composite Proficiency Level

English learners with significant disabilities as documented by an Individualized Education Plan (IEP) will exit from the EL program when reaching P2 composite proficiency level on the ALT-ACCESS for ELL.

2. **SEA Support for English Learner Progress** *(ESEA section 3113(b)(6))*: Describe how the

SEA will assist eligible entities in meeting:

i. The State-designed long-term goals established under ESEA section 1111(c)(4)(A)(ii), including measurements of interim progress towards meeting such goals, based on the State's English language proficiency assessments under ESEA section 1111(b)(2)(G); and
ii. The challenging State academic standards.

Assistance to LEAs for Long-Term Language Proficiency and Academic Goals
The State English Learner~~L~~/Title III Department exists to assist LEAs with creating, implementing, and improving language instruction educational programs that provide equal learning opportunities for ELs. In order to achieve this, the State EL/Title III Department will analyze the long-term goals and interim progress for English language proficiency and academic standards established under ESEA section 1111(c)(4)(A)(ii). This ongoing and annual analysis will assist the department in determining statewide and individualized support needed for LEAs.

Moreover, with EL accountability now housed under Title I, the State EL/Title III Department staff are critical members on the previously mentioned State Technical Assistant Team (STAT). This group will be responsible for tracking progress, discussing data, and identifying needs and resources.

Additionally, the department will continue to review and monitor LEAs' annual EL plan within the Consolidated Federal and State Grants Application (CFSGA). LEAs must describe their Language Instruction Educational Program(s) (LIEP) to serve their ELs. These plans also include an opportunity for the LEA to describe linguistic and academic goal(s) for their English learners. Furthermore, LEAs describe within their State EL Plans their methods for meeting these linguistic and academic goals by describing coordination of services with other supporting programs, method for incorporating WIDA English Language Development Standards within instruction, and professional learning opportunities provided to all staff in the LEA on best practices in teaching English learners. The State EL/Title III Department will review the LEAs linguistic and academic goals for alignment to the long-term goals and interim progress for English language proficiency and academic standards established under ESEA section 1111(c)(4)(A)(ii). Additionally, the department uses this information to support LEAs in their individualized efforts. For example, if neighboring LEAs have similar goals, ISDE can target support regionally.

Currently, the ISDE has the following supports in place for schools and LEAs that can be tailored to address the specific linguistic and academic needs of their ELs:

Cross Collaboration
The EL/Title III Department engages in state-level collaboration with other ISDE programs such as Special Education, Migrant, Title I, Assessment, and others to address the needs of English Learners. Examples of state-level collaboration include professional learning opportunities for administrators, teachers, and paraprofessionals of English Learners as well as a consolidated grant application and program monitoring for LEAs. The STAT team is another example of cross collaboration.

Ongoing Technical Assistance
Ongoing technical assistance for all LEAs is provided in a variety of ways listed below. However, individualized technical assistance can be requested by an LEA at any time and may be delivered through a variety of methods:

1. Phone, email, and individual site visits
2. The EL Department webpage http://sde.idaho.gov/el-migrant/el/index.html
3. Quarterly webinars
4. ~~Biweekly newsletters~~
4. Regional trainings
5. Yearly Summer English Learner Institute

Idaho Legislature
The Idaho Legislature provides funding to LEAs for ELs. House Bill 287 appropriates $450,000 for three-year grants to assist LEAs with meeting the academic needs of English Learners. House Bill 289 provides over 1 million dollars for research-based programs for ELs.

State Title III Consortium
State Title III Consortium provides members with additional technical and instructional support. The Idaho State EL/Title III program employs an EL program assistant who coordinates various professional development opportunities. LEAs have access to various trainings which include all training costs and materials. The State EL coordinator also provides on-site technical assistance and employs two (2) regional EL coaches who travel to LEAs around the state to support them and provide onsite technical assistance personalized to their needs.

EL Advisory Panel
The EL advisory panel assists the ISDE with state-wide planning and support on EL-related topics such as creating state-wide identification and exiting criteria for all LEAs.

Professional Development/Training
The Idaho State EL/Title III Department provides support for all Idaho educators of ELs through professional learning opportunities that are intentionally designed based on the timely needs of EL educators. I~~S~~DE recognizes that as the number of ELs grows, all educators must be mutually responsible for the language development and academic success of ELs and, therefore, all teachers are language teachers. The EL/Title III Department provides a menu of professional development options to ensure a wide variety of instructional frameworks and strategies are being covered based on local LIEP determination. This includes the Go-To Strategies, Sheltered Instruction, English Language Development (ELD) Standards, and pertinent English language acquisition topics. ~~In fall 2017 the ISDE EL/Title III Department will provide regional intensive professional learning workshops on classroom instructional strategies for classroom teachers K-12 to support language development through content instruction.~~

State and National Partnerships
The State/Title III Department staff participates in and collaborates with multiple national partners and other state agencies for support in trending EL topics: Teaching English to Speakers of Other Languages (TESOL), Center for Applied Linguistics (CAL), WIDA, Wisconsin Center for Educational Research (W-CER), Regional Educational Laboratory (REL), Chief Counsel of State School Officers (CCSSO), EL State Collaborative on Assessment Student Standards (SCASS), National Association for Bilingual Education (NABE), and Idaho Association for Bilingual Education (IABE). ~~Title I National Organization, and National Association of State Title III Directors~~. Lastly, additional partnerships with Idaho's institutes of higher education provide components of EL education in preservice teacher education in an effort to prepare teachers with appropriate instructional strategies for the ELs in their classrooms.

The ISDE will continue to adapt, create, and implement additional supports for ELs in Idaho's schools based on need as identified through data.

3. **Monitoring and Technical Assistance** (ESEA section 3113(b)(8)): Describe:
   i. How the SEA will monitor the progress of each eligible entity receiving a Title III, Part A sub- grant in helping English learners achieve English proficiency; and
   ii. The steps the SEA will take to further assist eligible entities if the strategies funded under Title III, Part A are not effective, such as providing technical assistance and modifying such strategies.

Monitoring the implementation of Federal programs and the use of funds is a requirement of each of the Federal programs and an essential function of the ISDE. The ISDE monitors all LEAs thoroughly and in a variety of ways to ensure that all children have a fair, equitable, and significant opportunity to obtain a high-quality education. Moreover, the ISDE provides leadership and guidance to LEAs through technical assistance for the purpose of assisting LEAs with implementing highly effective educational programs to increase student achievement in Idaho. ISDE implements the following processes for monitoring federal programs including Title III-A:

Consolidated Federal and State Grant Application (CFSGA)
The Idaho Consolidated Federal & State Grant Application serves as an LEA's application for federal program funds. A consolidated approach, instead of separate applications for each of the individual programs, allows the programs to be cooperatively planned and implemented, and also helps to reduce the administrative burden. In addition, the CFSGA allows the EL/Title III Coordinator to monitor/review annual applications for Title III compliance, linguistic and academic goals, and use of funds. If an LEA's plan does not meet the criteria for approval, ~~she~~ the coordinator coaches the LEA until the plan meets all the requirements. This approach is proactive in that it provides assistance before the LEA receives funding.

Selection Process for Onsite and Desk Monitoring of LEAs

In determining the list of LEAs to be monitored for the upcoming school year, the ISDE reviews several considerations:

1. The list of LEAs considered for monitoring in the upcoming year are derived from the ISDE's Ongoing LEA Master List, which identifies the year each LEA was last monitored.
2. Each federal program identifies risk factors for the LEAs identified for potential monitoring. Risk factors may be determined using data including the following:
    - State assessment performance data
    - Date/Year the LEA was previously monitored
    - Number and type of findings from the previous monitoring visit (such as programmatic, fiscal, policy, repeat findings)
    - Results of previous findings
    - Personnel turnover – new or inexperienced federal programs director or new superintendent
    - Audit Findings (such as incomplete audits or type of audit findings)
    - ~~Significant carryover balances~~
    - ~~Non-participation in state offered trainings~~
    - Other "high-risk" factors identified by ISDE program coordinators (such as sudden and/or significant increase in English Learners, formal compliance complaint filed with the ISDE, SBOE, and/or U.S. Department of Education - Office for Civil Rights)
3. Approximately 25 LEAs are identified for monitoring annually. Monitoring is conducted by ISDE program staff either through on-site or desk monitoring.

Monitoring Process for Title III –A
During the monitoring visit, the EL/Title III Coordinator conducts classroom observations, interviews with staff, principals, students, and parents to determine if the LEA is addressing the linguistic and academic needs of their ELs. Additionally, the coordinator seeks evidence of support for the linguistic and academic goals described in the CFSGA.

Consolidated State Performance Report (CSPR)
Annual CSPR data submitted by the LEA for federal reporting is another opportunity for monitoring and possible technical assistance. LEA data is reviewed for accuracy as well as for state and local level trends.

Participation in STAT Team
As mentioned before, the State EL/Title III department will work with the STAT team to monitor the progress of LEAs and provide technical assistance based on the recommendations of this team.

The above-mentioned activities and processes will assist the ISDE in identifying LEAs that may need more specific and individualized support in identifying effective strategies for their ELs. If an LEA continues to struggle with

implementing effective strategies for EL English proficiency, the ISDE will convene with the STAT team to determine additional resources needed to provide intensive support. Resources could include, but not limited to, in-depth professional development, recommendations for Title III program revisions and opportunities for peer observations with successful Title III districts.

F. Title IV, Part A: Student Support and Academic Enrichment Grants

1. **Use of Funds** *(ESEA section 4103(c)(2)(A)):* Describe how the SEA will use funds received under Title IV, Part A, Subpart 1 for State-level activities.

State Level Activities

Four percent of Idaho's Title IV-A allocation targeted for state activities ~~total $77,600, of that, approximately $20,000~~ will be directed toward required activities including training LEAs on applying for Title IV-A funds through the ISDE's Consolidated State and Federal Grant Application and compliance monitoring.

LEA Optional Use of Funds Aligned with State Level Activities

~~ISDE will leverage and expand the resources and support of the Governor's STEM Action Center by assuring LEAs are aware of the Center and the training and tools it offers to engage more students in STEM related coursework and activities. The primary function of the STEM Action Center is to support a well-rounded STEM education for all Idahoans, K – career. This is accomplished by creating partnerships with other state agencies, out of school entities, non-profits, educators, administrators, communities, businesses, and industries to support the development of Idaho's STEM talent pipeline, ensuring continued growth of Idaho's STEM-based economy. The STEM Action Center will continue to focus on opportunities for educators, students, and communities by supporting professional development for educators, grants for resources and communities, STEM awareness events, and opportunities for students to participate in STEM competitions, camps, internships, mentorships, and apprenticeships. Targeted support, leveraging both federal and state funding, will help to ensure equitable access to and awareness of STEM for all students throughout Idaho.~~

~~The ISDE and STEM Action Center will work collaboratively to inform districts and to provide guidance in implementation regarding the wide range of activities that are permissible under Title IV-A to improve STEM instruction and learning. Examples of how state funds will be used to increase STEM activity in LEAs include:~~

- ~~Expansion of high-quality STEM courses.~~
- ~~Increased access to STEM for underserved and at-risk student populations.~~
- ~~Support for student participation in nonprofit STEM competitions.~~
- ~~Increased opportunities for hands-on learning in STEM.~~
- ~~Integration of other academic subjects, including the arts, into STEM subject programs.~~
- ~~Creation or enhancement of STEM specialty schools.~~
- ~~Integration of classroom-based, afterschool, and informal STEM instruction.~~

Idahoans understand that a well-rounded, community-oriented, student-focused education provides the knowledge and skills to live, learn, work, create, and contribute to society. In supporting a community-oriented and student focused education, the ISDE supports college and career readiness through academic readiness and advising including Advanced Opportunities, Next Steps Idaho and collaborative statewide partnership. Additionally, the ISDE supports

STEM experiences which enhance 21st century workforce skills such as collaboration,

innovation, problem-solving, critical and creative thinking, and teamwork. ~~These experiences should be integrated across disciplines and should focus on project-based learning, inquiry, and discovery.~~ All students should have the opportunity to learn these critical 21st century workforce skills. ~~Therefore, the Idaho STEM Action Center will work collaboratively with Idaho state educational agencies to transform how Idaho educates our children in order to enhance their life prospects, empower their communities, and build an inclusive, sustainable, innovation-based economy where our citizens can thrive.~~

Title IV-A state funds ~~will also~~ support ISDE staff in providing technical assistance for LEAs in the creation of local Title IV-A plans and applying for funding as well as monitoring for compliance with federal rules and regulations. While compliance monitoring visits focus on adherence to the rules and regulations, the ISDE aims to use these visits as opportunities to provide technical assistance in addressing deficiencies and offering best practices in supporting students.

The ISDE will support LEAs in directing their Title IV-A allocations to provide equitable access to a well-rounded education and rigorous coursework in subjects in which female students, minority students, English learners, students with disabilities, or low-income students are underrepresented. Such subjects could include English, reading/language arts, writing, science, technology, engineering, mathematics, world languages, civics and government, economics, arts, history, geography, computer science, music, career and technical education, health, or physical education.

Existing state support will be leveraged to increase the impact of LEA Title IV-A funds around strengthening the instructional core and increasing access to a broad range of educational opportunities. Idaho currently has robust supports in place focused on a well- rounded education that includes professional development for teachers, instructional coaches, and mastery education funded by state dollars.

~~Additionally, the ISDE plans on leveraging state and local resources to imbed music, the arts, foreign languages, environmental education and civics to expand offerings for students.~~
~~Partners include the Idaho Commission for Libraries, the Idaho Commission on the Arts, and the Wassmuth Center for Human Rights. Resources from these entities will be compiled and provided to LEAs seeking to expand their course offerings and supplemental materials.~~

Regarding supporting safe and healthy students, LEA Title IV-A funds ~~may~~ are used to ~~increase existing efforts to~~ train and equip LEA personnel with best practices ~~around~~specific to safe schools, crisis intervention, school violence prevention, suicide prevention, and alternatives to suspensions and expulsions through existing statewide trainings and resources. In addition, Title IV-A funds may be used to provide schoolwide services that contribute to a positive and safe school environment by promoting mental wellness and suicide prevention among students.

~~**Table 16: Title IV-A use of funds**~~

~~**Strategy**~~	~~**Timeline**~~	~~**Funding sources**~~

~~Provide specialized STEM professional development to LEAs.~~	~~Ongoing and on-demand~~	~~Federal Title IVA funds~~

2. **Awarding Subgrants** *(ESEA section 4103(c)(2)(B))*: Describe how the SEA will ensure that awards made to LEAs under Title IV, Part A, Subpart 1 are in amounts that are consistent with ESEA section 4105(a)(2).

   To ensure ~~that~~ the requirement was accurately interpreted, the ISDE used a manual ~~which was~~ compiled and released by the US Department of Education on June 30, 2017. A link to the manual can be found ~~below~~here:

   ~~https://safesupportivelearning.ed.gov/sites/default/files/Subgranting_FY_2017_Title_IV_A_LEAs_QA.pdf~~
   https://safesupportivelearning.ed.gov/sites/default/files/Subgranting_FY_2017_Title_IV_A_LEAs_QA.pdf

   An ~~e~~Excel template was created consistent with scenario 1 from the manual (p 2). The template ~~includes~~has built in formulas, which include the following steps:

   1. Determine initial formula allocations based on LEA shares of Title I, Part A funds for the preceding fiscal year.
   2. Adjust upward allocations for LEAs whose initial allocation is below $10,000.
   3. Adjust downward, on a proportional basis, the initial formula allocations for all LEAs receiving more than $10,000.
   4. Repeat steps (iterations) as many times as necessary until there is no grant award with less than $10,000.

   The initial calculation is performed by the Federal Programs Department at the same time Title I, Part A allocations are calculated.
   ~~Calculations and formulas are reviewed by the Student Engagement, Career & Technical Readiness Department for checks and balances.~~
   Once Federal Programs Title allocations are finalized, the allocations are populated into the Idaho State Department Consolidated Federal and State Grant Application (CFSGA). After an LEA's CFSGA plan is approved for all programs, the funds are sent to the Grant Reimbursement Application (GRA). All LEAs receiving Title IV-A allocations receive no less than the minimum amount of $10,000.

   Once finalized, the allocations are populated into the Idaho State Departments online mechanism for LEA to submit plans and request funds for all title programs (Consolidated Federal and State Grant Application- CFSGA). Once populated LEAs are not able to request less than the populated amount, thereby assuring all LEAs receive no less than $10,000 in Title IVA funds.

G. Title IV, Part B: 21st Century Community Learning Centers

1. **Use of Funds** *(ESEA section 4203(a)(2)):* Describe how the SEA will use funds received under the 21st Century Community Learning Centers program, including funds reserved for State- level activities.

   ISDE reserves 2 percent of the appropriated amount for administration (approx. $131~~1~~0,000), which supports 1.08 FTE: partial salaries for a director, state coordinator, program specialist, and administrative assistant. The administration funds for Title IV-B are used to support eligible LEAs, Community-Based Organizations, Indian tribes or tribal organizations, and other public/private entities. Each year the ISDE provides regional ~~trainings~~training for interested organizations in applying for Title IV-B grant funds. The ISDE also use administrative funds for costs associated with the peer review process and required USED meetings.

   ISDE reserves 5 percent of the appropriated amount for state activity (approx. $325,000), which supports 0.9 FTE: partial salaries for a director, state coordinator, program specialist, and administrative assistant. The state activity funds for Title IV-B are used to support current grantees in providing monitoring and technical assistance. The ISDE partners with the Idaho Afterschool Network ~~and Idaho STARS~~ in developing and implementing school age quality standards, ~~which state activity funds support regional coordinators to provide all areas of Idaho in-depth coaching and technical assistance~~. The ISDE also uses state activity funds to perform a statewide evaluation to assess the program's effectiveness in meeting performance measures.

Table 17: Title IV-B use of funds

Strategy	Timeline	Funding sources
New Grantee Training	Summer Annually~~2017~~	Title IV-B State Administrative Funds
21st CCLC Directors Meeting	Fall Annually~~2017~~	Title IV-B State Activity Funds
Request For Application (RFA) Training~~Regional Bidder's Workshops~~	Fall Bi-Annually~~2017~~	Title IV-B State Activity Funds~~Administrative Funds~~
Grant Competition	Winter Bi-Annually (dependent on available funding)	Title IV-B State Activity
Peer Review Process Meeting	Spring Bi-Annually ~~2018~~	Title IV-B State Administrative Funds
21st CCLC Directors Meeting	Spring Aunnually~~2018~~	Title IV-B State Activity Funds
21st CCLC Summer Institute	Summer Annually~~2018~~	Title IV-B State Administrative Funds

Grantee Monitoring & Technical Assistance	Ongoing	Title IV-B State Activity Funds

2. **Awarding Subgrants** *(ESEA section 4203(a)(4)):* Describe the procedures and criteria the SEA will use for reviewing applications and awarding 21st Century Community Learning Centers funds to eligible entities on a competitive basis, which shall include procedures and criteria that take into consideration the likelihood that a proposed community learning center will help participating students meet the challenging State academic standards and any local academic standards.

   ISDE reserves not less than 93 percent of the appropriated amount for ~~LEA~~ subgrants (approx. $~~5.2~~6.5 million). Each year the ISDE hosts a grant competition (as unallocated funds allow) to applicants according to ESEA Sec. 4201(b)(3). The ISDE awards 5-year grants with a minimum of $50,000 per award. Award amounts are based on the applicant's needs and services provided to students; however, the ISDE provides guidance to applicants on typical award amounts based on per-pupil expenditures.

   The ISDE awards subgrants through a competitive process based on the merit of an applicant's grant ~~application:~~application; needs assessment for before and after-school programs, project design, measures of effectiveness, budget, and other assurances as outlined in ESEA Sec. 4204. The ISDE awards additional points for entities that target students: (1) attending schools that are implementing comprehensive support and improvement activities or targeted support and improvement activities under ESEA Sec. 1111(d); and (2) who may be at risk for academic failure, dropping out of school, involvement in criminal or delinquent activities, or who lack strong positive role models.

   The ISDE provides technical assistance and facilitates the grant application process; however, ~~does~~it does not participate in the decision making of the awards to applicants. The ISDE recruits a variety of peer reviewers (via email, newsletter, website, press release), which consists of individuals with diverse expertise, organization representation, geographic location, gender, racial and ethnic representation. The ISDE trains all reviewers and hosts a 1-day virtual~~in-person~~ meeting to discuss submitted applications. ~~Ultimately, the~~The peer reviewers make the decision of awarded applications based on the applicant's grant application and established scoring rubric.

Table 18: Title IV-B awarding subgrants timeline

Strategy	Timeline	Funding sources
~~Regional Bidder's RR~~equest For Application Training Workshops	Fall Bi-Annually 2017	Title IV-B State Administrative Funds
Grant Application~~-~~ Opens	Fall Annually~~2017~~	-
Grant Application~~-~~ Closes	January Annually ~~2018~~	-
Peer Review	Spring Annually~~2018~~	-
Peer Review Process Meeting	Spring Annually~~2018~~	Title IV-B State Administrative Funds
Grant Awards Announced	April Annually~~2018~~	-

Funding to Grantees Begins	July 1	Title IV-B ~~LEA~~ Subgrants

H. Title V, Part B, Subpart 2: Rural and Low-Income School Program

1. **Outcomes and Objectives** *(ESEA section 5223(b)(1))*: Provide information on program objectives and outcomes for activities under Title V, Part B, Subpart 2, including how the SEA will use funds to help all students meet the challenging State academic standards.

~~74% (113 of 153) of Idaho's LEAs and schools meet the state's definition of rural.~~ Rural schools defined by Idaho Code are schools that have fewer than 20 enrolled students per square mile, or school districts within a county that contain less than 25,000 residents.The goal for students in rural schools is the same for all students—to achieve at the same level of proficiency and have access to higher education resources to be successful after high school. In order to achieve equity for rural students, the state has designated staff to support rural and low-income school programs and has created a working state plan for these programs http://www.sde.idaho.gov/federal-programs/rural/index.html. The plan was created in consultation with LEAs. The process for grant applications includes the Consolidated Federal and State Grant Application (CFSGA) online reporting system for LEAs to submit an application that includes budget, selected activates for use of funds, and measurable goals. The state also has an electronic evaluation report that is due in June each year.

Table 19: Title V-B objectives and outcomes

Objective	Outcome
Objective 1: Rural school students achieve at the same level of proficiency as all other students, and have access to higher education resources to be successful after high school.	Outcomes: Each Rural Low Income School (RLIS) grantee program will provide educational services for children and youth as described in the CFSGA to ensure that they have the opportunity to meet challenging State academic content and achievement standards.
Objective 2: ISDE has a method and annual timeline for providing annual technical assistance to RLIS eligible LEAs.	Outcomes: All RLIS LEA Federal Program directors and business managers attend training on RLIS requirements and eligibly at annual regional meeting.

2. **Technical Assistance** *(ESEA section 5223(b)(3))*: Describe how the SEA will provide technical assistance to eligible LEAs to help such agencies implement the activities described in ESEA section 5222.

The state coordinator collaborates with Title I, Title II, Title III, and family and community coordinators; the charter school coordinator; and 21st Century Learning Center division to ensure program alignment and access to resources as well as ~~in-person~~ training at least twice per year with LEA technical assistance as needed. ~~In addition,~~ Idaho rural LEAs have ~~the opportunity to be part of~~ participated in Northwest Rural Innovation and Student Engagement (NW RISE), a multi-state project that creates learning communities among schools in the rural northwest. Educators from Alaska, Idaho, ~~Oregon~~ Montana, and Washington can participate in NW RISE.

The project is part of the ~~Northwest~~ Comprehensive Center 17 and includes two face-to-face meetings per year as well as monthly opportunities for members to collaborate through video conference and a dedicated social media account ~~through Schoology~~. In addition, consultation and technical assistance is provided through the state's system of support which includes both on-site support through projects like Idaho Building Capacity, Idaho Regional Math Centers, Idaho Content ELA Coaches, and opportunities to network with peers through various networks including the Idaho Superintendents Network and Idaho Principals Network.

I. Education for Homeless Children and Youth program, McKinney-Vento Homeless Assistance Act, Title IX, Subtitle A

1. **Student Identification** *(722(g)(1)(B) of the McKinney-Vento Act)*: Describe the procedures the SEA will use to identify homeless children and youth in the State and to assess their needs.

   All LEAs are required to have a local board-approved homeless policy that describes how the LEA will implement the following: definitions, identification, school selection, enrollment, transportation, services, disputes, free meals, eligibility for Title I services, training, coordination, and preschool. To assist in the identification of children and youth without housing, public notice of the education rights of homeless children and youth are to be disseminated and posted where such children and youth receive services. ISDE provides free brochures and posters. The state coordinator and ~~l~~local ~~l~~Liaison contact information is listed on each poster to provide technical assistance regarding enrollment, identification, and other issues affecting students in homeless situations. Liaisons are also provided assistance from the National Center for Homeless Education toll-free help line. ISDE requires a Housing~~Student Residency~~ Questionnaire in which the nighttime living status of every student is assessed by enrollment documentation. ~~This living status form is disseminated twice per year.~~ Each LEA has an identified liaison responsible for conducting the assessment and verification of homeless children and youth. Once the liaison verifies eligibility of the child or youth, they are reported in the LEA student management system that uploads to the Idaho System for Educational Excellence (ISEE) K–12 longitudinal data management system. Samples are available at http://www.sde.idaho.gov/federal-programs/homeless/index.html

   The i~~i~~dentification of children and youth experiencing homelessness and assessing their needs is primarily the responsibility of the Local Educational Agencies (LEAs). The ISDE supports identification and needs assessment by:

   i. Providing annual regional training to local liaisons on the implementation of policies and regular processes for identification of homeless students and assessment of their needs and tracking liaison training;
   ii. Regularly notifying LEAs of training opportunities through the National Center for Homeless Education (NCHE);
   iii. Annually monitoring the needs assessment process for LEAs through ~~onsite~~ monitoring ~~visits~~ and the completion of a self-assessment application;
   iv. Providing a best practice needs assessment worksheet and summary tool from NCHE on the ISDE website at http://www.sde.idaho.gov/federal-programs/homeless/index.html; ~~and~~
   ~~v.~~ Assuring that the ISDE State Coordinator is a participating member of the Idaho Continuum of Care, Special Education Advisory Panel, and Idaho HUD Homeless Advisory Council so that identification and needs assessment issues that merge in non-school contexts are appropriately addressed.

   ~~Additionally, a new State Coordinator has been hired for Idaho and begins January 16, 2018. Part of this position's 2018 goal will be to reconvene the Idaho Homeless Education Advisory Team (IHEAT), which includes the State Coordinator and LEA liaison~~

~~representation from around the State. The major focus of this group's efforts will be to analyze state-wide data resulting in state-level action plans to better assist LEAs in recognizing and addressing needs.~~

2. **Dispute Resolution** *(722(g)(1)(C) of the McKinney-Vento Act)*: Describe procedures for the prompt resolution of disputes regarding the educational placement of homeless children and youth.

   All LEA liaisons are familiar with the ISDE dispute resolution policy posted on the ISDE website (www.sde.idaho.gov/federal-programs/homeless/index.html*)* through annual trainings provided by the state coordinator. All LEAs must have a written dispute resolution process that aligns with the state policy. This requirement is checked during ~~onsite~~ federal program monitoring visits, ~~and~~and when LEAs submit assurances during ~~when they submit~~ their annual application for funding through the CFSGA process. All LEAs must also have a written notice of ~~d~~decision~~ecision, also part of our monitoring process~~. Sample letters are provided on the ISDE website. Homeless children and youth are provided all services during the dispute resolution process.
   ~~A new state coordinator has been hired at the ISDE and begins work January 16, 2018. Reviewing and revising all forms and verbiage on the website to reflect the Every Student Succeeds Act will be a priority.~~

3. **Support for School Personnel** *(722(g)(1)(D) of the McKinney-Vento Act)*: Describe programs for school personnel (including the LEA liaisons for homeless children and youth, principals and other school leaders, attendance officers, teachers, enrollment personnel, and specialized instructional support personnel) to heighten the awareness of such school personnel of the specific needs of homeless children and youth, including runaway and homeless children and youth.

   ISDE provides staff development to LEA liaisons, including~~:~~ provisions of the McKinney-Vento Education for Homeless Children and Youth program; related state laws; the special needs of students experiencing homelessness; resource materials; and strategies for training teachers, counselors, support staff, administrators, homeless service providers, advocates, and others.

   All liaisons are required to attend annual training on McKinney-Vento ~~and Homeless Education~~ to heighten the awareness of the specific needs of children and youth experiencing homelessness, ~~including runaway and other~~ unaccompanied homeless youth. Webinars and ~~regional~~ trainings are offered by the state and liaisons are regularly notified of trainings ~~through the National Center for Homeless Education t~~throughout the year. Local designated liaisons are required to have annual training for all staff including those in administration, transportation, nutrition, janitorial,~~custodial,~~ nursing, and secretarial work on the~~ir role and~~ specific needs of homeless children and youth.~~, including runaway youth and unaccompanied youth.~~

   ~~Idaho is beginning a partnership with Edify who has developed an online training and professional development model for the credentialing of Homeless Education Liaisons. The model consists of Beginning, Intermediate and Advanced levels of specific topics, units, and lessons. Liaisons who pass assessments for each level's lessons receive a certificate of achievement. This technology will allow the State Coordinator to assess Liaison learning~~

~~outcomes in real time to target technical assistance and resources. This program will be required of LEA liaisons and will include a specialized module and assessment on runaway and unaccompanied youth as well as a unit on human trafficking. This technology will also enable the State coordinator to assure that local liaisons are aware of the specific needs of runaway and other unaccompanied homeless youth.~~

~~The new state coordinator, in place effective January 16, 2018, will have as a goal for 2018 to update the ISDE webpage at http://www.sde.idaho.gov/federal-programs/homeless/index.html to include information and resources on the needs of runaways to support training for all appropriate school personnel and community. Although ISDE's current monitoring tool requires evidence of an LEA level policy that ensures equitable access to services for runaway youth, the 2018-2019 monitoring tool will be updated to include evidence of school personnel training to heighten the awareness of the specific needs of runaway children and youth as identified in 722(g)(1)(D).~~

4. **Access to Services** (*722(g)(1)(F) of the McKinney-Vento Act)*: Describe procedures that ensure that:
   i. Homeless children have access to public preschool programs, administered by the SEA or LEA, as provided to other children in the State;
   ii. Homeless children~~youth~~ and youth ~~separated from public schools~~ are identified and accorded equal access to appropriate secondary education and support services, including by identifying and removing barriers that prevent youth described in this clause from receiving appropriate credit for full or partial coursework satisfactorily completed while attending a prior school, in accordance with State, local, and school policies; and
   iii. Homeless children and youth who meet the relevant eligibility criteria do not face barriers to accessing academic and extracurricular activities, including magnet school, summer school, career and technical education, advanced placement, online learning, and charter school programs, if such programs are available at the State and local levels.

~~a.~~ **Public preschool programs:** Idaho Code 33-201 identifies school-aged children as between the ages of five and twenty-one. Idaho does not fund pre-school programs. ISDE's Student ~~Residency~~ Housing Survey~~Questionnaire~~ (nighttime living status of every student) includes questions about siblings in the family and assists with students eligible for secondary education who may not be currently identified. LEA liaisons collaborate with various agencies and service providers who work with homeless children and youth ~~and youth separated from the public schools, s~~such as the Idaho Department of Health & Welfare, Salvation Army, area shelters, and Community Action Partnership Association of Idaho to make them aware of protections available to homeless, unaccompanied youth. LEA liaisons collaborate with service providers to advocate on behalf of these children and youth to ensure that the students have the opportunity to return to school and participate in these programs. ISDE has established collaboration with Head Start, and the ISDE state coordinator has been appointed to the Idaho Infant and Toddler Council.

b. **Equal Access to Appropriate Secondary Education and Support Services:** The state coordinator provides training with LEA liaisons pertaining to the critical element of identification of youth who are separated from public schools with equal access, without barriers to full or partial credit. ~~Training and resources specifically for school counselors at the secondary level are being developed to make sure homeless youth are receiving appropriate credit for full or partial coursework satisfactorily completed while attending a prior school, in accordance with state, local, and school policies.~~ Partnerships with Title I-A and other federal programs are used when available to access online courses, summer school, and tutoring for credit recovery.

In addition to training, Idaho conducts annual ~~onsite~~ monitoring and requires the submission of an annual self-assessment ~~each year an LEA does not have an onsite visit~~. Part of the monitoring process includes requiring evidence that the LEA policy and school processes and procedure ensure that homeless youth ~~and runaway youth~~ receive appropriate credit for full or partial coursework satisfactorily completed while attending public school.

~~c.~~ **Eligible Children and Youth Do Not Face Barriers:** Every effort is made by all h~~H~~omeless l~~L~~iaisons and the state coordinator to include students in all academic and extracurricular activities. LEAs have policies to ensure homeless children and youth~~s~~ who meet the relevant eligibility criteria do not face barriers to accessing academic and extracurricular activities. Outreach is made by the liaison as needed to local support groups to assist with needs students might have to participate in~~s~~ extracurricular activities.
~~ISDE is actively coordinating and collaborating with state athletic associations to ensure access and opportunity for students.~~

5. **Strategies to Address Other Problems** *(722(g)(1)(H) of the McKinney-Vento Act)*: Provide strategies to address other problems with respect to the education of homeless children and youth, including problems resulting from enrollment delays that are caused by—
   i. requirements of immunization and other required health records;
   ii. residency requirements;
   iii. lack of birth certificates, school records, or other documentation;
   iv. guardianship issues; or
   v. uniform or dress code requirements.

Idaho state and local policies prohibit LEAs from denying a child enrollment for lack of records and include short timelines for obtaining needed records, certifications, and other documents. All LEAs are required to set aside a minimum of 0.25 of 1% of their Title I allocation for homeless students. This can be used for all the above, as needed. ~~For all subgrants and beginning in 2016–2017, a needs assessment must be completed for the set–aside.~~ ISDE and LEAs use the results of surveys, focus groups, and training evaluations to identify additional barriers caused by enrollment delays. ISDE disseminates information and provides technical assistance on~~about~~ how to remove barriers to school access throughout the state in its resource documents and~~,~~ trainings~~, and articles for publication~~. ISDE encourages LEAs to seek aid from local service or charitable organizations to help provide assistance that helps meet these needs. T~~he~~

~~State Coordinator is working in partnership with the Idaho Volunteer Lawyers Program to assist liaisons and youth across the state with issues and barriers that cannot be resolved at the local level.~~ LEA's requiring uniforms must provide these items to enrolled homeless youth~~or foster youth~~. In addition, MV Homeless Education Grant funds and homeless set aside funds can used to provide necessary clothing for school dress codes or school activities.

vi. **Policies to Remove Barriers** (*722(g)(1)(I) of the McKinney-Vento Act)*: Demonstrate that the SEA and LEAs in the State have developed, and shall review and revise, policies to remove barriers to the identification of homeless children and youth, and the enrollment and retention of homeless children and youth in schools in the State, including barriers to enrollment and retention due to outstanding fees or fines, or absences.

The ISDE and all LEAs must have a current homeless education policy that removes barriers to identification, enrollment, and retention including those due to outstanding fees, fines, or absences of homeless children and youth.

The ISDE State Coordinator for the Education of Homeless Children and Youth will ~~annually~~ review and recommend revisions to state-level policies or procedures that may create barriers to the identification, enrollment, and retention of students identified as homeless. This review will be conducted in collaboration and coordination with other state and federally funded programs~~, including Title I, Title III, Migrant Education, IDEA, and Indian Education. Such review will be conducted with input from LEAs receiving subgrant funds.~~

The state coordinator will provide regular trainings and ongoing technical assistance to LEA Liaisons ~~and staff o~~on all provisions of the McKinney-Vento Homeless Education Act.

The state coordinator will provide written guidance documents regarding the needs to enroll and retain children and youth who are homeless, including the unique needs of various at-risk and diverse subgroups of students.

Statewide and regional-level trainings will address policies and procedures to assure students remain enrolled in their school of origin for the duration of the school year, regardless of attendance status. These trainings will also focus on strategies to minimize barriers to enrollment and retention related to outstanding fees, fines, or absences.

During annual trainings, local liaisons will bring their current policies to be reviewed. The policies will be examined to determine if these are legal, and clear. If needed, policies will be revised to be ready for local board approval. The ISDE requires that LEAs regular~~annual~~ly review policies as a best practice~~,~~ and revise as necessary. Many school districts are working with the Idaho School Boards Association on writing and revising policies.

The ISDE has added monitoring indicators reflecting this requirement to the Federal Programs Monitoring Tool. LEA policies and school processes and procedures are monitored through the~~-onsite~~ federal program monitoring process, which requires specific evidence of compliance, and include a review of district policies and procedures to ensure that homeless students and their families receive education services for which they are eligible.

The state coordinator tracks ~~all~~ concerns and requests for assistance. These technical assistance queries, along with data gathered through monitoring of compliance with the McKinney-Vento Act during the Federal Programs monitoring process, are regularly evaluated to search for areas of improvement~~weakness~~ in the State's implementation of the statute. These a~~A~~reas ~~of weakness are~~ provide topics for targeted~~made foci~~ of technical assistance and training activities in the state.

7. **Assistance from Counselors** *(722(g)(1)(K))*: A description of how youths described in section 725(2) will receive assistance from counselors to advise such youths~~,~~ and prepare and improve the readiness of such youths for college.

   The state coordinator works with LEA liaisons and school counselors at the secondary level to make sure homeless youth are receiving appropriate credit for full or partial coursework satisfactorily completed while attending a prior school, in accordance with state, local, and school policies. An ~~new~~ indicator has been added to the ~~17-18~~ monitoring tool to address how youth will receive assistance from counselors to prepare and improve the readiness for college. It is a requirement and an expectation from the ISDE that counselors/liaisons will inform unaccompanied homeless youth of their status as independent students under section 480 of the Higher Education Act of 1965, and that they may obtain assistance from the liaison to receive verification of such status for the purposes of the Free Application for Federal Student Aid. ~~ISDE training will be offered to counselors as well as training in collaboration with Higher Education program staff.~~

Appendix A Measurements of Interim Progress

Instructions: Each SEA must include the measurements of interim progress toward meeting the long-term goals for academic achievement, graduation rates, and English language proficiency, set forth in the State's response to Title I, Part A question 4.iii, for all students and separately for each subgroup of students, including those listed in response to question 4.i.a. of this document. For academic achievement and graduation rates, the State's measurements of interim progress must take into account the improvement necessary on such measures to make significant progress in closing statewide proficiency and graduation rate gaps.

a. **Academic Achievement**
Mathematics - 2016 baseline, 2024 long-term goal, and 2017-2023 interim targets

Mathematics	2016	2017	2018	2019	2020	2021	2022	2023	2024
All Students	41.6%	44.8%	48.1%	51.3%	54.6%	57.8%	61.1%	61.1%	61.1%
Economically Disadvantaged	30.3%	34.2%	38.0%	41.9%	45.8%	49.7%	53.5%	53.5%	53.5%
Students with Disabilities	15.2%	19.9%	24.6%	29.3%	34.0%	38.8%	43.5%	43.5%	43.5%
English Learners	7.1%	12.3%	17.4%	22.6%	27.7%	32.9%	38.1%	38.1%	38.1%
Black / African American	22.2%	26.5%	30.8%	35.2%	39.5%	43.8%	48.1%	48.1%	48.1%
Asian or Pacific Islander	56.8%	59.2%	61.6%	64.0%	66.4%	68.8%	71.2%	71.2%	71.2%
American Indian or Alaskan Native	19.4%	23.9%	28.4%	32.8%	37.3%	41.8%	46.3%	46.3%	46.3%
Hispanic or Latino	22.0%	26.3%	30.7%	35.0%	39.3%	43.7%	48.0%	48.0%	48.0%
Native Hawaiian / Other Pacific Islander	33.6%	37.3%	41.0%	44.7%	48.4%	52.0%	55.7%	55.7%	55.7%
White	46.6%	49.6%	52.5%	55.5%	58.5%	61.4%	64.4%	64.4%	64.4%
Two Or More Races	42.2%	45.4%	48.6%	51.8%	55.0%	58.3%	61.5%	61.5%	61.5%

English Language Arts/Literacy - 2016 baseline, 2024 long-term goal, and 2017-2023 interim targets

ELA/Literacy	2016	2017	2018	2019	2020	2021	2022	2023	2024
All Students	53.0%	55.6%	58.2%	60.8%	63.4%	66.1%	68.7%	68.7%	68.7%
Economically Disadvantaged	40.6%	43.9%	47.2%	50.5%	53.8%	57.1%	60.4%	60.4%	60.4%

ELA/Literacy	2016	2017	2018	2019	2020	2021	2022	2023	2024
Students with Disabilities	15.0%	19.7%	24.4%	29.2%	33.9%	38.6%	43.3%	43.3%	43.3%
English Learners	6.9%	12.1%	17.2%	22.4%	27.6%	32.8%	37.9%	37.9%	37.9%
Black / African American	34.1%	37.8%	41.4%	45.1%	48.7%	52.4%	56.1%	56.1%	56.1%
Asian or Pacific Islander	65.0%	66.9%	68.9%	70.8%	72.8%	74.7%	76.7%	76.7%	76.7%
American Indian or Alaskan Native	30.6%	34.5%	38.3%	42.2%	46.0%	49.9%	53.7%	53.7%	53.7%
Hispanic or Latino	33.6%	37.3%	41.0%	44.7%	48.4%	52.0%	55.7%	55.7%	55.7%
Native Hawaiian / Other Pacific Islander	46.7%	49.7%	52.6%	55.6%	58.5%	61.5%	64.5%	64.5%	64.5%
White	57.9%	60.2%	62.6%	64.9%	67.3%	69.6%	71.9%	71.9%	71.9%
Two Or More Races	54.5%	57.0%	59.6%	62.1%	64.6%	67.1%	69.7%	69.7%	69.7%

b. **Graduation Rates**

4 year Graduation rate Class of 2016 baseline, Class of 2024 long-term goal, and Class of 2017-Class of 2023 interim targets

4 year Graduation Rate	Class of 2016	Class of 2017	Class of 2018	Class of 2019	Class of 2020	Class of 2021	Class of 2022	Class of 2023	Class of 2024
All Students	79.7%	82.2%	84.8%	87.3%	89.9%	92.4%	94.9%	94.9%	94.9%
Economically Disadvantaged	71.9%	75.4%	78.9%	82.4%	86.0%	89.5%	93.0%	93.0%	93.0%
Students with Disabilities	60.5%	65.4%	70.4%	75.3%	80.3%	85.2%	90.1%	90.1%	90.1%
English Learners	73.3%	76.6%	80.0%	83.3%	86.7%	90.0%	93.3%	93.3%	93.3%
Black / African American	77.8%	80.6%	83.4%	86.1%	88.9%	91.7%	94.5%	94.5%	94.5%
Asian or Pacific Islander	83.1%	85.2%	87.3%	89.4%	91.6%	93.7%	95.8%	95.8%	95.8%
American Indian or Alaskan Native	58.5%	63.7%	68.9%	74.1%	79.3%	84.4%	89.6%	89.6%	89.6%
Hispanic or Latino	73.7%	77.0%	80.3%	83.6%	86.9%	90.1%	93.4%	93.4%	93.4%
Native Hawaiian / Other Pacific Islander	69.7%	73.5%	77.3%	81.1%	84.9%	88.6%	92.4%	92.4%	92.4%
White	81.3%	83.6%	86.0%	88.3%	90.7%	93.0%	95.3%	95.3%	95.3%
Two Or More Races	77.3%	80.1%	83.0%	85.8%	88.7%	91.5%	94.3%	94.3%	94.3%

5 year Graduation rate – Class of 2017 baseline, Class of 2023 long-term goal, and Class of 2018 - 2022 interim targets.

5 year Graduation Rate	Baseline Class of 2017	Class of 2018	Class of 2019	Class of 2020	Class of 2021	Class of 2022	Class of 2023
All Students	82.00%	84.7%	87.4%	90.1%	92.8%	95.5%	95.5%

5 year Graduation Rate	Baseline Class of 2017	Class of 2018	Class of 2019	Class of 2020	Class of 2021	Class of 2022	Class of 2023
Economically Disadvantaged	75.00%	78.8%	82.5%	86.3%	90.0%	93.8%	93.8%
Students with Disabilities	65.50%	70.7%	75.9%	81.0%	86.2%	91.4%	91.4%
English Learners	79.30%	82.4%	85.5%	88.6%	91.7%	94.8%	94.8%
Black / African American	75.60%	79.3%	82.9%	86.6%	90.2%	93.9%	93.9%
Asian or Pacific Islander	88.00%	89.8%	91.6%	93.4%	95.2%	97.0%	97.0%
American Indian or Alaskan Native	67.50%	72.4%	77.3%	82.1%	87.0%	91.9%	91.9%
Hispanic or Latino	78.40%	81.6%	84.9%	88.1%	91.4%	94.6%	94.6%
Native Hawaiian / Other Pacific Islander	79.70%	82.7%	85.8%	88.8%	91.9%	94.9%	94.9%
White	83.10%	85.6%	88.2%	90.7%	93.2%	95.8%	95.8%
Two Or More Races	79.30%	82.4%	85.5%	88.6%	91.7%	94.8%	94.8%

c. **Progress in Achieving English Language Proficiency English proficiency – 2018 baseline, 2024 long term goal and 2019-2023 interim targets**

2018 Baseline	2019	2020	2021	2022	2023	2024
74.07%	75.80%	77.53%	79.26%	80.98%	82.71%	82.71%

Appendix B Idaho's Accountability Framework

State satisfaction and engagement survey administered to parents, students, and teachers

01. **School Category.**
a. Kindergarten through grade eight (K-8): Schools in this category include elementary and middle schools as defined in Subsection 112.05.f.
b. High Schools, not designated as alternative high schools, as defined in Subsection 112.05.f.
c. Alternative High Schools
02. **Academic Measures by School Category.**
a. K-8:
i. Idaho Standards Achievement Tests (ISAT) Proficiency.
ii. ISAT growth toward proficiency based on a trajectory model approved by the State Board of Education.
iii. ISAT proficiency gap closure.
iv. Idaho statewide reading assessment proficiency.
v. English Learners achieving English language proficiency.
vi. English Learners achieving English language growth toward proficiency.
b. High School:
i. ISAT proficiency.
ii. ISAT proficiency gap closure.
iii. English Learners achieving English language proficiency.
iv. English Learners achieving English language growth toward proficiency.
v. Four (4) year cohort graduation rate, including students who complete graduation requirements prior to the start of the school district or charter schools next fall term.
vi. Five (5) year cohort graduation rate, including students who complete graduation requirements prior to the start of the school district or charter schools next fall term.
c. Alternative High School:
i. ISAT proficiency.
ii. English learners achieving English language proficiency.
iii. English learners achieving English language growth towards proficiency.
iv. Four (4) year cohort graduation rate, including students who complete graduation requirements prior to the start of the school district or charter schools next fall term.
v. Five (5) year cohort graduation rate, including students who complete graduation requirements prior to the start of the school district or charter schools next fall term.
03. **School Quality Measures by School Category.**
a. K-8:
i. Students in grade 8 enrolled in pre-algebra or higher.
ii. Communication with parents on student achievement (effective starting in the 2018-2019 school year).
iii. Chronic absenteeism.
b. High School:
i. College and career readiness determined through a combination of students participating in advanced opportunities, earning industry recognized certification, and/or participation in recognized high school apprenticeship programs.
ii. Students in grade 9 enrolled in algebra I or higher.

iii. Communication with parents on student achievement (effective starting in the 2018-2019 school year).
iv. Chronic absenteeism.

c. Alternative High School:

i. Credit recovery and accumulation.
ii. College and career readiness determined through a combination of students participating in advanced opportunities, earning industry recognized certification, and/or participation in recognized high school apprenticeship programs.
iii. State satisfaction and engagement survey administered to parents, students, and teachers (effective starting in the 2018-2019 school year).
iv. Communication with parents on student achievement (effective starting in the 2018-2019 school year).
v. Chronic absenteeism.

Appendix C GEPA 427 Statement

Information Regarding Equitable Access to and Participation in the Programs included in the Idaho Consolidated State Plan

The Idaho State Department of Education (ISDE) adheres to Section 427 of the General Education Provisions Act (GEPA). In carrying out its educational mission, the Idaho State Department of Education will ensure to the fullest extent possible equitable access to, participation in, and appropriate educational opportunities for individuals served. Federally funded activities, programs, and services will be accessible to all teachers, students and program beneficiaries. The ISDE ensures equal access and participation to all persons regardless of their race, color, ethnicity, religion, national origin, age, citizenship status, disability, gender or sexual orientation in its education programs, services, and/or activities.

For state-level activities as well as all other activities supported by federal assistance through our electronic grant application, ISDE will fully enforce all federal and state laws and regulations designed to ensure equitable access to all program beneficiaries and to overcome barriers to equitable participation. The ISDE will hold LEAs accountable for ensuring equal access and providing reasonable and appropriate accommodations to meet the needs of a diverse group of students, staff, community members and other participants.

Steps taken to ensure equitable access may include, but are not limited to the following; developing and administering a pre-participation survey to all potential participants in order to identify special accommodation needs (i.e., wheelchair access, assistive technology, transportation assistance); holding program related sessions/activities in Americans with Disabilities Act (ADA) accessible and compliant facilities; printing materials in multiple languages, when appropriate; offering multi-lingual services for participants and others as needed and appropriate; responsiveness to cultural differences; fostering a positive school climate through restorative practices; conducting outreach efforts and target marketing to those not likely to participate; making program materials available in braille or via audiotapes, when appropriate; providing assistive technology devices to translate/make accessible grant and program materials for participants requiring such accommodations; using technologies to convey content of program materials; using materials that include strategies for addressing the needs of all participants; pre-program gender and cultural awareness training for participants; development and/or acquisition and dissemination of culturally relevant and sensitive curriculum and informational materials; use of transportation services that include handicapped accommodations; transportation vouchers or other forms of assistance, on an as needed basis, to members (including teachers, students, and families) who must use public transportation to attend program activities.

Appendix D Research Supporting Educator Mentoring Focus

Burkhauser, S., Gates, S. M., Hamilton, L. S., & Ikemoto, G. S. (2012). First-Year Principals in Urban School Districts: How Actions and Working Conditions Relate to Outcomes. Technical Report. Rand Corporation.

Potemski, A., & Matlach, L. (2014). Supporting New Teachers: What Do We Know about Effective State Induction Policies? Policy Snapshot. Center on Great Teachers and Leaders.

Strong, M. (2006). Does new teacher support affect student achievement? (Research Brief). Santa Cruz, CA: New Teacher Center. Retrieved from http://www.newteachercenter.org/sites/default/ files/ntc/main/resources/BRF_

Villar, A., & Strong, M. (2007). Is mentoring worth the money? A benefit-cost analysis and five-year rate of return of a comprehensive mentoring program for beginning teachers. ERS Spectrum, 25(3), 1–17.

Comment Request; Proposed 2024-25 Amendment to the Consolidated State Plan

A Notice by the Idaho Department of Education on 12/01/2023

SUMMARY

The Idaho Department of Education is requesting feedback on proposed amendments to the Consolidated State Plan of the Elementary and Secondary Education Act (ESEA) as amended by the Every Student Succeed Act (ESSA) for the 2024-25 school year. The revised, proposed amendment includes updates to Title I-A, Title I-C, Title II-A, Title III-A, Title IV-B, Title V-B, and Title IX-HCY.

DATES

Interested persons and entities are invited to submit comments on or before January 15, 2024.

ADDRESSES

Comments in response to this notice should be submitted on the feedback form linked here: ESEA CONSOLIDATED STATE PLAN FEEDBACK FORM

For the proposed 2024-25 amendment to the ESEA Consolidated State Plan, go to https://sde.idaho.gov/topics/consolidated-plan/

For the current ESEA Consolidated State Plan, go to https://sde.idaho.gov/topics/consolidated-plan/

QUESTIONS

For questions regarding the proposed 2024-25 Amendment, please contact Josh Noteboom at jnoteboom@sde.idaho.gov.

SUPPLEMENTARY INFORMATION

Title I, Part A

Technical Changes

Technical updates include branding, school years, embedded links, formatting, sentence structure, and order of information.

Expected Implications

Technical changes will make the document more accessible and readable for viewers.

More Rigorous Interventions

Updates redefine membership of the Comprehensive and Integrated Field Review (CIFR) Team to remove school librarian as a required member. Additionally, participants in the interview focus groups within the Comprehensive and Integrated Field Review process are now optional.

Expected Implications

Changes to the CIFR Team will allow the Idaho Department of Education to more effectively evaluate and support LEAs in the school improvement process.

Technical Assistance

Updates redefine membership of the State Technical Assistance Team (STAT) team to include representatives of the Idaho Department of Education, Local Education Agencies, and other specialists as needed.

Expected Implications

Changes to the STAT Team will allow the Idaho Department of Education to better support the unique needs of LEAs identified for school improvement.

Schoolwide System of Support

Updates to the System of Supports for LEAs identified for school improvement remove organizations that are no longer contracted with the Idaho Department of Education. Additional language and structure were simplified, removing repetition, to ease in the understanding of services available to schools identified for school improvement.

Expected Implications

Changes to the System of Support will further clarify available strategies to support LEAs in the school improvement process.

Disproportionate Rates of Access to Educators

Updates to the Idaho Department of Education cross-agency workgroup meeting requirements. The cross-agency workgroup completed its task of measuring the equitable distribution of educators across the state. The Idaho Department of Education and the Idaho Office of the State Board are working together to provide ongoing support for educators through mentoring networks and evidence-based practices resources.

Expected Implications

Focus on disproportionate rates of access to educators will continue as The Idaho Department of Education monitors and supports LEAs with the challenge of recruiting and retaining teachers. The department works collaboratively with the Office of the State Board of Education in determining and implementing strategies to recruit, retain, and support educators to increase the number of effective educators.

School Conditions

Updates to School Conditions add a description of the Idaho Prevention and Support Conference, State/Tribal Youth Suicide Prevention and Early Intervention Grant, Sources of Strength, and Project Aware.

Expected Implications

Changes clarify existing support for LEAs to improve school conditions.

School Transitions

Updates to School Transitions include clarify existing support for pre-k to post-secondary education transitions, career pathway plans and additional 8th grade requirements for career readiness, Idaho's Next Steps platform for college and career readiness, and add current statistical references on opportunities provided by Advanced Opportunities. Additional language was added about support for Career Technical Education including facilities improvements funds and school design.

Expected Implications

Changes clarify and add supports available to students as they transition to post-secondary education.

Title I, Part C

Supporting Needs of Migratory Children

Updates added ongoing timelines for completion of the Comprehensive Needs Assessment and the Service Delivery Plan. Additional clarification was made to language about drop out support for migratory children. A new link to updated Measurable Program Outcomes (MPOs) on the Idaho Department of Education website was added.

Expected Implications

Changes provide accurate information about the current and ongoing Title I-C program in Idaho.

Promote Coordination of Services

Updates clarify the use and coordination of Migrant Student Information Systems (MSIS and MSIX).

Expected Implications

Changes provide clarity for LEAs on the use of MSIS and MSIX.

Title II, Part A

State Level Activities

Updates to Title II-A add a description of the use of career fairs by the Idaho Department of Education for the recruitment and retention of teachers.

Expected Implications

Changes provide additional strategies for recruitment and retention efforts.

System of Certification and Licensing

Updates System of Certification and Licensing reflect recent changes in IDAPA and Idaho code. These changes impact all sections regarding certification and endorsement. Additional language was added to clarify Alternative Authorization for both New Endorsement and New Certificate requirements. Updates were also made to reflect updates to the *Idaho Standards for Initial Certification of Professional School Personnel.* Updates remove the 'Current Work Regarding Certification of Educators' section as this workgroup has concluded its scope of work.

Expected Implications

Changes clarify certification and endorsement pathways for Idaho educators. The Idaho Department of Education and the Office of the Idaho State Board of Education will work collaboratively to monitor and evaluate the system of certification and licensing.

Title III, Part A

Title III-A

Updates to Title III-A add descriptions of technical assistance, State Title III Consortium, Professional Development/Training, and State and National Partnerships.

Expected Implications

Changes clarify the use and purpose of Title III-A activities.

Title IV, Part A

Technical Changes

Technical Updates include removal of out-of-date activities, update links to documents, and renumbering steps for the funding calculation.

Expected Implications

Technical changes will make the document more accessible, readable, and accurate for the user.

LEA Optional Use of Funds

Updates to LEA Optional Use of Funds remove uses of funds for Title IV- Part A and remove Table 16: Title IV –A Use of Funds. Language was added to the support provided for safe and healthy students related to college and career readiness.

Expected Implications

Changes to the use of funds section more accurately reflects the flexibility for LEAs to meet the needs of their students.

Title IV, Part B

Title IV-B

Updates to Title IV-B include changes to the grant competition timeline and frequency.

Expected Implications

Changes to the grant competition timeline will make the document more accurate for the user.

Title IX, Subtitle A, McKinney-Vento Homeless Assistance Act

Title IX, Subtitle A

Updates to Title IX, Subtitle A remove references to new State Coordinators and remove outdated support and partnerships that are no longer available. Additional technical edits update names and titles.

Expected Implications

Changes provide clarity for LEAs regarding programs and supports available.

WORK SESSION
FEBRUARY 27-28, 2024

TAB	DESCRIPTION	ACTION
A	**IRSA – STRATEGIC DISCUSSION OF BOARD POLICY III.Z. PLANNING AND DELIVERY OF POSTSECONDARY PROGRAMS AND COURSES**	Information Item
B	**IRSA – GENERATIVE AI WORKSHOP**	Information Item

SUBJECT

Strategic Discussion of Board Policy III.Z., Planning and Delivery of Postsecondary Programs and Courses

REFERENCE

Jun/Aug 2003	The Board approved first and second readings of a new Board policy, III.Z. Delivery of Postsecondary Education, to guide planning and delivery of academic programs at the public postsecondary institutions.
Apr/Jun 2011	The Board approved first and second readings of proposed amendments to Board Policy III.Z., adding statewide program responsibilities and service region designations for the universities and Lewis-Clark State College.
Aug/Dec 2013	The Board approved first and second readings of proposed amendments to Board Policy III.Z., updating institutions' statewide responsibilities.
Oct/Dec 2016	The Board approved first and second readings of proposed amendments to Board Policy III.Z., updating institutions' statewide program responsibilities.
Dec 2017/Feb 2018	The Board approved first and second readings of proposed amendments to Board Policy III.Z., changing the planning timeframe from five years to three years.
June/Aug 2018	The Board approved first and second readings of proposed amendments to Board Policy III.Z., adding responsibilities for applied baccalaureate degrees to each region.
June/Aug 2020	The Board approved first and second readings of proposed amendments to Board Policy III.Z., changing the name of a statewide program listed for the University of Idaho.
Feb/Apr 2021	The Board approved first and second readings of proposed amendments to Board Policy III.Z., adding new definitions for high-demand and joint programs, as well as significant revisions to collaboration requirements.
Oct/Dec 2022	The Board approved first and second readings of proposed amendments to Board Policy III.Z., describing a set of minimum criteria by which the Board will evaluate proposals by the universities to offer new associate degrees and proposals by the community colleges to offer applied baccalaureate degrees.
Aug/Oct 2023	The Board approved first and second readings of Board Policy III.Z., exempting prison education from the policy.

APPLICABLE STATUTE, RULE, OR POLICY

Idaho State Board of Education Governing Policies and Procedures, Section III.Z. and Section III.G.
Idaho Code §§ 33-113, 33-123, 33-2101

BACKGROUND/DISCUSSION

Board Policy III.Z Planning and Delivery of Postsecondary Programs and Courses was originally adopted by the Board in August 2003, to "ensure Idaho's public postsecondary institutions meet the educational and workforce needs of the state through academic planning, alignment, collaboration and coordination of programs." The policy aimed to "optimize the delivery of academic programs while allowing the institutions to grow and develop consistent with an appropriate alignment of strengths and sharing of resources." The policy provided a critical framework to support the Board in meeting its constitutional and statutory oversight responsibilities by requiring appropriate levels of planning and accountability of postsecondary educational programming.

The original policy referred to statewide and regional missions of the four-year institutions. Per this original policy, statewide missions denoted "that the institution is assigned by the Board to offer and deliver a program in order to meet a particular educational and workforce need in all regions of the state." Statewide missions were "assigned to the institutions by the Board through the role and mission statements." Regional missions described each "institution's responsibility for instructional programs pertaining to identified educational and workforce needs of primary service regions," with regions defined in the policy. The original policy also established an academic planning process that included the development and updating of an "eight (8) year rolling, academic plan that describes the programs, courses, and services to be offered by [each] institution."

In April 2011, the Board adopted significant amendments to Policy III.Z., which clarified policy requirements and implementation for the public postsecondary institutions and the Office of the State Board of Education. These amendments reorganized the policy, removed statewide and regional mission definitions, and added definitions and policies for "statewide programs" "regional programs," "designated institutions," and "partnering institutions." The prior version of this policy assigned to the institutions what were originally referred to as "statewide missions" and "regional missions." However, these assignments were not missions in the broad sense of "institutional mission," but rather, according to Board meeting minutes and conversations at the time, these assignments were always intended to be statewide and regional *programmatic assignments*, or areas of *program responsibility*. Amendments to the policy in 2011 provided this clarification. These amendments also included a Statewide Program List for the University of Idaho, Idaho State University, and Boise State University, and articulated that each university had the "responsibility to assess and ensure the statewide delivery of all educational programs" listed for that institution. Additionally, each four-year

institution was given a specific charge to "assess and ensure the Regional Program delivery for all educational programs within its assigned service region," as assigned in Board Policy III.L. Continuing Education/Off-Campus Instruction (the service region designations in Policy III.L. were later moved to Policy III.Z.). Finally, the 2011 amendments changed the 8-year rolling academic plan to a 5-year rolling academic plan.

In 2013 and 2016, the Board approved further amendments to the Statewide Program List, and in February 2018 approved amendments that changed the 5-year rolling academic plan to a 3-year plan. Later that same year, the Board approved amendments that added North Idaho College to Region I, College of Western Idaho to Region III, College of Southern Idaho to Region IV, and College of Eastern Idaho to Region VI academic service regions *to serve applied baccalaureate needs in each region*. Overall, these amendments served to align the policy with provisions in Idaho Code § 33-2108A, and provided for community colleges to plan and offer applied baccalaureate degree programs. Around the same time, the Board also approved a request from the College of Southern Idaho for an applied baccalaureate degree in Advanced Food Technology (later renamed to Operations Management).

In April 2021, the Board adopted amendments to Policy III.Z. developed by Board staff with input from all eight institutions' presidents and provosts. These amendments encouraged institutions to increase their collaboration with one another, while revising language that had fostered an environment of excessive competition in the past. The amendments also streamlined planning requirements, defined "high-demand programs" and "joint programs," removed the statewide program responsibilities list from policy and moved it to the Three-Year Plan document, and clarified requirements for memoranda of understanding between institutions.

In December 2022, the Board adopted amendments to Policy III.Z. that established criteria by which the Board could evaluate proposals by the universities to offer new associate degrees as well as proposals by the community colleges to offer applied baccalaureate degrees. Six months later, in October 2023, the Board adopted amendments to Policy III.Z. that exempted prison education from the requirements of the policy.

In Fall 2023, the Board President established a Working Group comprised of four Board members to closely examine Board Policy III.Z. and determine if further amendments should be made to the policy, particularly related to Designated Service Regions and Statewide Program Responsibilities. This workgroup collected input from the leaders of each institution in response to the following key questions:

- What challenges, if any, are you having in meeting/fulfilling your current statewide responsibilities?

- How would your institution be impacted if we eliminated designated service regions for our four-year institutions? Would this be a positive or negative change for your institution?
- Do you think our universities should have the ability to offer General Education courses anywhere in the state in conjunction with their statewide responsibilities/areas of expertise?

Five institutions proposed maintaining statewide responsibilities as currently established in Board Policy III.Z. and recommended the Board to do more to ensure institutions are actively meeting their statewide responsibilities, including conducting the bi-annual review as required by the policy. Six institutions recommended maintaining designated service regions as they currently exist or with some minor modifications to account for population growth. Two institutions proposed the Board establish a time-limited, first right of refusal process for program proposals outside an institution's designated service region to allow for a speedy response to workforce demand without creating high-cost inefficiencies and undermining systemness. Seven institutions expressed opposition to the idea that institutions be given the ability to offer General Education courses anywhere in the state.

In December 2023, the Board temporarily waived the recently adopted criteria for evaluating proposals from community colleges to offer applied baccalaureate degrees in order to approve a proposal for an applied baccalaureate in Business Administration from the College of Western Idaho that did not meet some of the criteria, as well as a proposal for an applied baccalaureate from the College of Eastern Idaho in Advanced Operations Management that also did not meet some of the criteria. The Board also approved a proposal for an applied baccalaureate in Digital Forensics and Analytics that met all the criteria.

Based on feedback from the institutions and input from Board staff, the Working Group drafted a set of potential recommendations related to Board Policy III.Z. and determined to bring these draft recommendations to the full Board for a Work Session discussion at the February 2024 Board meeting.

IMPACT

The Work Session is intended to bring all Board members up to speed on the history and current conversations related to Board Policy III.Z. and to seek input from all Board members on the draft recommendations developed by the Working Group in the attached Discussion Paper.

ATTACHMENTS

Attachment 1 – Board Policy III.Z. Working Group Discussion Paper

STAFF COMMENTS AND RECOMMENDATIONS

Staff affirms that Board Policy III.Z. Planning and Delivery of Postsecondary Programs and Courses was designed from the beginning to accomplish two primary goals:

1. Encourage collaboration among the institutions to meet postsecondary educational and workforce needs across the State of Idaho while avoiding unnecessary duplication.

2. Ensure the Board is meeting its constitutional and statuary oversight responsibilities by requiring appropriate levels of planning and reporting of postsecondary educational programs.

The policy was originally developed, and has been updated periodically, with significant input from institutional leaders, including chief executive and academic officers. The original intent of this policy – to encourage collaboration – has remained a core focus over the past twenty years and has been reiterated and reemphasized frequently in public meetings and documents. The planning and reporting goal has also remained constant throughout the history of the policy, even though the mechanisms and approaches have been modified over time to increase efficiency and meet current contextual needs.

Overall, Board Policy III.Z. provides a robust framework for collaboration that alleviates an otherwise labor- and time-intensive process of the Board making frequent transactional decisions about specific program-related actions at the institutional level. The policy also ensures the Board is meeting its constitutional and statutory oversight responsibilities, particularly the statutory responsibility to avoid unnecessary duplication and wasteful use of public funds.

Based on input from the institutions, internal expertise, and long experience supporting academic program planning, Board staff support the following recommendations, as outlined in the Working Group's Draft Discussion Paper:

1. Maintain the Statewide Program Responsibilities as currently established in Policy III.Z.
2. Retain Designated Service Regions as currently established in Policy III.Z.
3. Develop amendments to Policy III.Z. that allow other institutions to step in when demand is not being met, establish a "first right of refusal" process with time limits, and require conflicts to be brought to the Board within a specified time period.
4. Retain the "High Demand Programs" language currently set forth in Policy III.Z. and establish a process for statewide responses to certain high demand programs, as identified by the Board.
5. Simplify the language of Policy III.Z., where practicable.

In addition, Board staff recommend that the Office of the State Board of Education and the universities fully comply with the current requirement in Policy III.Z to evaluate and update the Statewide Program Responsibilities list every two years.

Staff also recommend the Board require periodic "regional needs assessments" to encourage accountability and assist institutions in meeting their Designated Service Region responsibilities. Such regional needs assessments would inform Board actions and support the Board in its primary goal to serve all regions of the state efficiently and effectively.

Finally, staff support the Working Group's efforts to analyze current concerns and opportunities related to Board Policy III.Z. and look forward to supporting the Board on any actions taken to improve and enhance the policy to accomplish its long-established goals related to postsecondary program planning and delivery.

BOARD ACTION

This item is for informational purposes only.

Discussion Paper
Board Policy III.Z. Planning and Delivery of Postsecondary Programs and Courses
Working Group Analysis
February 2024

Background

The State Board of Education has a statutory responsibility through Section 33-113, Idaho Code, which requires the Board, in the interest of efficiency, to define the limits of instruction at all publicly funded institutions, and to limit unnecessary duplication to the extent practicable. State Board Policy III.Z. Planning and Delivery of Postsecondary Programs and Courses sets the method by which the Board limits duplication or evaluates the need for duplication, as well as assigns responsibility for assessing the regional and statewide educational and workforce needs of the state. This policy was originally adopted by the Board in 2003 and has been amended over the past twenty years as needed.

In 2023, some concerns about Board Policy III.Z. were brought to the attention of the Board by institutional leaders that precipitated a thorough review of policy. Board President Dr. Linda Clark authorized a review of the policy by a working group consisting of Board members Dr. Dave Hill, Shawn Keough, State Superintendent Debbie Critchfield, and Cally Roach. Led by Board Member Roach, the working group held a series of meetings in summer and early fall 2023 and sought additional input from institution presidents and provosts, as well as Board staff.

Introduction

The working group acknowledges that some duplication is necessary and valuable, the crux of the issue lying in what is, or could be considered, wasteful. Working group chair Roach had several conversations with presidents or the representatives to better able the group to understand institutional opinion. In addition, written input was received to prepared questions.

There was no consensus among the institutions. In general, if an institution felt hampered by Board Policy III.Z, either via geography or policy, they felt that the policy was far too restrictive in its application. Other institutions affirmed the policy is necessary but could be improved in its application, for example limiting the “pocket veto” tactic which has the effect of depriving regions of access to necessary important educational opportunities.).

Board Goal

The Board has the oft-stated goal of access and affordability for all Idahoans irrespective of where in the state they might choose to live. To achieve this goal requires a healthy educational ecosystem of colleges, community colleges and online programs/courses which is accessible for all.

Discussion

The working group recognizes the need for improvements to Board Policy III.Z..

There are two possible approaches to meeting the Board's goal of improving educational access for all Idahoans. The first is essentially the free market approach, abandoning designated service region and statewide program responsibilities and allowing any institution to offer any program or class anywhere in Idaho (and beyond). While superficially attractive, this approach has the potential to be devastating to smaller institutions and favors the larger, better resourced institutions. As such, the Board would be failing in its duty as the trustees of all four colleges to eliminate Policy III.Z. altogether as such action could lead to educational vacuums in rural parts of the state.

The second approach is that of managed competition, where competition of ideas is embraced but is not allowed to devolve into competition of institutions. The risk here is that if the competition is overmanaged then creativity is squeezed out of the system and the constant need for new and different educational opportunities is not met.

Principle
Board Policy III.Z should be the mechanism for managed competition that steers the course between the two extremes and enables a healthy system that serves all Idahoans.

Rules and Judgment
The fundamental functional problem is to build a system that has enough **rules** as to serve as a guide for institutions and limit the amount of bureaucracy needed to administer the policy while allowing room for the Board to exercise **judgment** when necessary.

Recommendations, Strategic Outcomes and Concerns:
Below are specific recommendations on the key areas in the current Board Policy III.Z.

<u>Statewide Program Responsibilities</u>:
Currently Statewide Program Responsibilities are degree specific.

- Recommendation Options:
    1. Move away from specific degrees to "Mission Areas."
        - Board reviews mission areas every two years.
        - Mission areas delivered anywhere in the State based on demand.
        - Implementation: Maintain current degree format and do required analysis with institutions.
    2. Maintain status quo of degree/program responsibility

- In both scenarios.
    1. Allow other institutions to step in when demand needs are not being met.
    2. Enact "first right of refusal" process with time limits.
    3. Ensure significant conflicts and issues are brought to board level for decision in a timely manner.

- Strategic Outcomes:
    1. Eliminates wasteful duplication.
    2. Workforce Demands are being met.
    3. Student needs are recognized.
    4. Institutional energy and resources are effectively utilized.

- Concerns:
    1. Do certain institutions have the bandwidth to handle current responsibilities?
    2. Is “status quo” too restrictive?

Designated Service Regions:
Currently service regions are geographically based.

- Recommendation Options:
    1. Retain geographic based regions.
    2. Base regions on population rather than geography.
    3. Remove designated service regions.

- In all scenarios.
    1. Allow other institutions to step in when demand needs are not being met.
    2. Enact “first right of refusal” process with time limits.
    3. Ensure significant conflicts and issues are brought to board level for decision in a timely manner.

- Strategic Outcomes:
    1. Workforce Demands are being met.
    2. Student needs are recognized.
    3. Institutional energy and resources are effectively utilized.

- Concerns:
    1. Do certain institutions have the bandwidth to handle current responsibilities?
    2. Basing on population creates an unmanageable system drawing resources towards the Treasure Valley and away from the other regions.

Note: The role of community colleges needs to be considered in this context. Community Colleges are inherently local institutions, supported by local taxation and overseen by locally elected Boards. In that sense their service region should be identical to their taxing district. They should not encroach on the service areas of other Community Colleges, even with online delivery.

High Demand/High-Need Program Delivery:

- Recommendation Options:
    1. Retain High Demand-High Need language currently set forth in policy.
        - Ensure significant conflicts and issues are brought to board level for decision in a timely manner.

- Strategic Outcome:
    1. Workforce Demands are being met.
    2. Student needs are recognized.
    3. Institutional energy and resources are effectively utilized.

Note: Again, the role of community colleges needs to be considered. Community Colleges are occasionally asked or desire to deliver applied baccalaureate degrees in their region, as allowed by state law. The justification for these degrees is most often expressed in terms of high demand or high need (workforce need) and thus should be specifically addressed in this policy.

See Appendix A for further considerations about High Demand/High-Need Program Delivery

Industry engagement and workforce development
Private Industry will likely make specific demands of local institutions to satisfy workforce needs. These partnerships should be encouraged and allowed, with Board approval. Board consideration should address key characteristics such as local need, unique capability, etc.

Other Items for Consideration

- Simplify Policy language and shorten policy.

- Retain planning process set forth in Policy with possible considerations:
    - Ensure Board staff are involved earlier in the planning process.
    - Consider adjusting the timeline of planning process.

- Future considerations
    - Integrate Online Idaho into delivery system.
    - Move to a digital wallet for transcripts.

- Other Comments
    - It is not the Board's responsibility to defend the institutional business models. The Board's responsibility is to the people of Idaho.
    - Changes that must be considered will likely lead to smaller, strategically focused institutions which collectively serve the state.
    - We need to start yesterday.

Appendix A

High Demand (Statewide) Programs

- There are certain programs which can be designated as high demand programs that require a statewide response. Three examples are Education, Engineering and Health Professions. These needs must be addressed on a statewide basis.

- Tentative Proposal:
    - In each case, designate one institution as the coordinator for statewide programs. (Note: not leader, controller or other supervisory description).
    - Create a coordinating committee with co-chairs, Board Member, and the appropriate Dean from the coordinating institution.
    - The committee would be charged with developing a statewide multiyear plan for adoption by the Board.
    - The Board would then seek legislative approval and attempt to fund the plan.
    - The committee would be staffed (minutes, organizational meetings etc.) by the coordinating institution.

There are other topic areas which could be considered but keeping it simple to start with is a virtue in this case.

SUBJECT

Work Session: Generative AI in Higher Education

BACKGROUND/DISCUSSION

In early 2023, significant advancements in the capacity of generative artificial intelligence (AI) began to have an outsized impact on higher education. These changes disrupted teaching and learning, as AI models became more sophisticated in understanding and generating human-like text. Additionally, there was a marked increase in the accessibility and user-friendliness of AI tools, making them more readily available to educators and students alike. This democratization of AI technology allowed for broader integration into various aspects of higher education, from automating administrative tasks to aiding in complex research projects. At the same time, the more complex ethical considerations surrounding the use of these generative AI platforms has led to ongoing discussions about the responsible and transparent use of AI in educational settings.

IMPACT

Generative AI has brought transformative changes to higher education, fundamentally altering how teaching, learning, and research are conducted. With generative AI, educational content can potentially be tailored to individual student needs, accommodating different learning styles and paces. This technology enables the creation of dynamic, interactive course materials, making learning more engaging and effective. Additionally, generative AI assists in the development of virtual labs and simulations, providing students with practical, hands-on experience that is particularly beneficial in fields like science, engineering, and medicine.

Generative AI is also revolutionizing research within higher education. It accelerates data analysis, enabling researchers to process vast amounts of information rapidly, which leads to quicker and more innovative discoveries. This capability is particularly impactful in fields such as genomics, climate science, and physics. Moreover, AI-generated models and simulations are opening new frontiers in research, allowing for experimentation and exploration that were previously impossible due to resource constraints.

However, the integration of generative AI into college campuses has not been without challenges. One major concern is the potential for AI to perpetuate or exacerbate biases. AI algorithms, if not carefully designed and monitored, can reflect and amplify existing societal biases, leading to unfair or discriminatory outcomes in student assessments, admissions, and resource allocations. Another ethical challenge is ensuring data privacy and security. As AI systems process vast amounts of personal and sensitive data, there is an increased risk of data breaches and misuse. Protecting student and faculty data is paramount, necessitating robust cybersecurity measures and clear data governance policies.

Moreover, the use of generative AI in higher education raises questions about

academic integrity. The ease with which students can access AI-generated content presents new challenges in maintaining academic standards and preventing plagiarism. Institutions must develop new strategies and tools to detect and discourage such misconduct. Additionally, there is a need to address the impact of AI on the job market and prepare students for a future where AI is an integral part of the workforce. This involves not only equipping students with AI-related skills but also fostering critical thinking and ethical reasoning to navigate the complex interplay between technology and society.

As this technology continues to evolve, it is crucial for educational institutions to embrace its potential while carefully navigating its challenges. (*This Impact statement was written with ChatGPT assistance*.)

ATTACHMENTS

Attachment 1 – Generative AI and Higher Education in Idaho

STAFF COMMENTS AND RECOMMENDATIONS

Board staff are leading and supporting the Statewide AI Alliance. This group engages key stakeholders from each institution in sharing strategies and information as well as in creating professional development materials for the institutions.

The purpose of this work session is to:

1. Establish a shared understanding of generative AI and its impact on higher education.
2. Request input from Board members regarding the kinds of information about and further workshops on generative AI that will be useful to the Board.

BOARD ACTION

This item is for informational purposes.

Generative AI and Higher Education in Idaho

PRESENTATION TO THE STATE BOARD OF EDUCATION

FEBRUARY 27, 2024

DR. JEN SCHNEIDER, BOISE STATE

AI

Not AI

AI

AI

Not AI

AI

AI

Not AI

Not AI

AI

Not AI

Not AI

How did you do?

Generative AI is

ubiquitous,

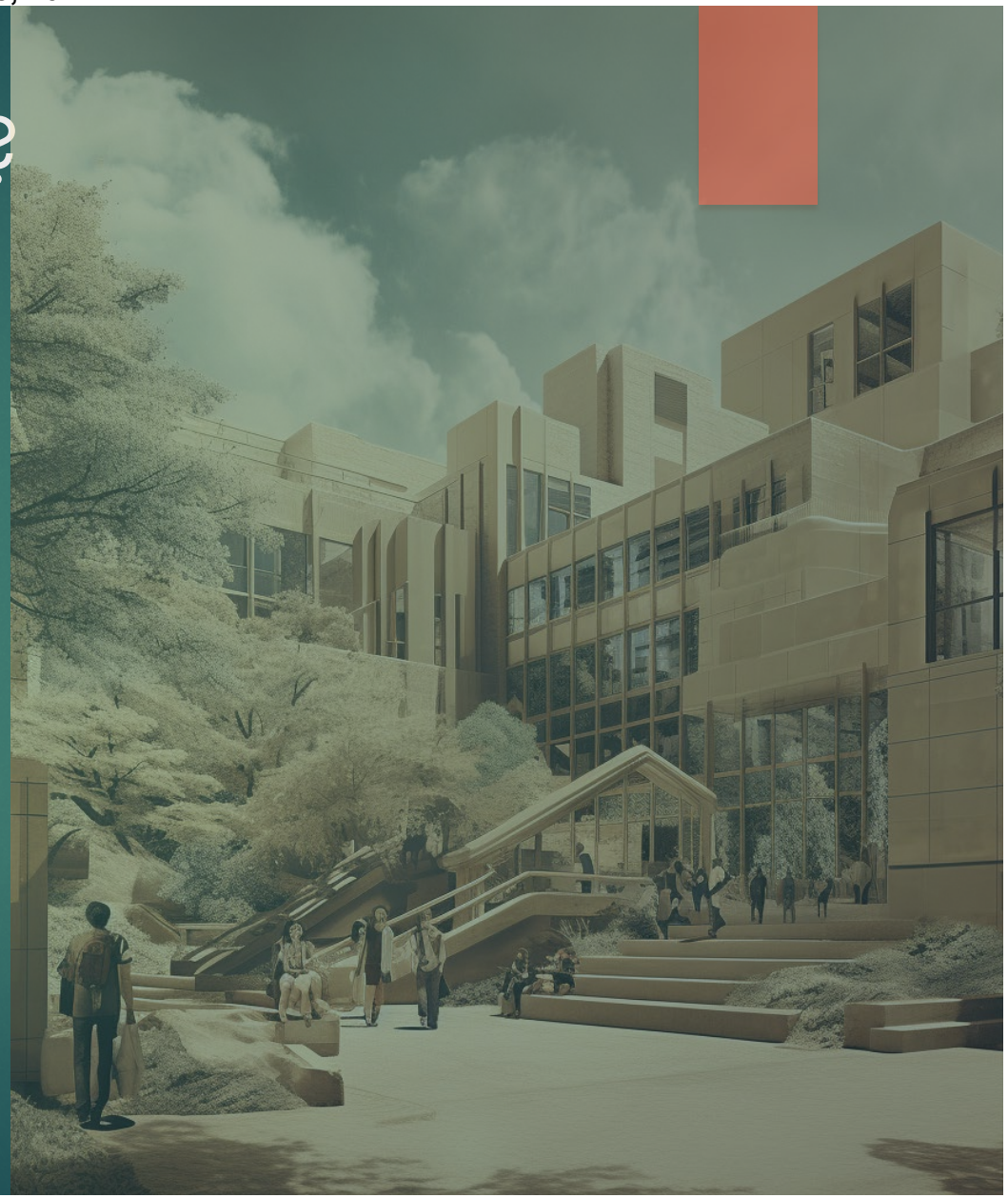
powerful,

and will **transform the global workforce.**

What is generative AI?

Technology that enables us to immediately generate text, images, and video just by entering prompts.

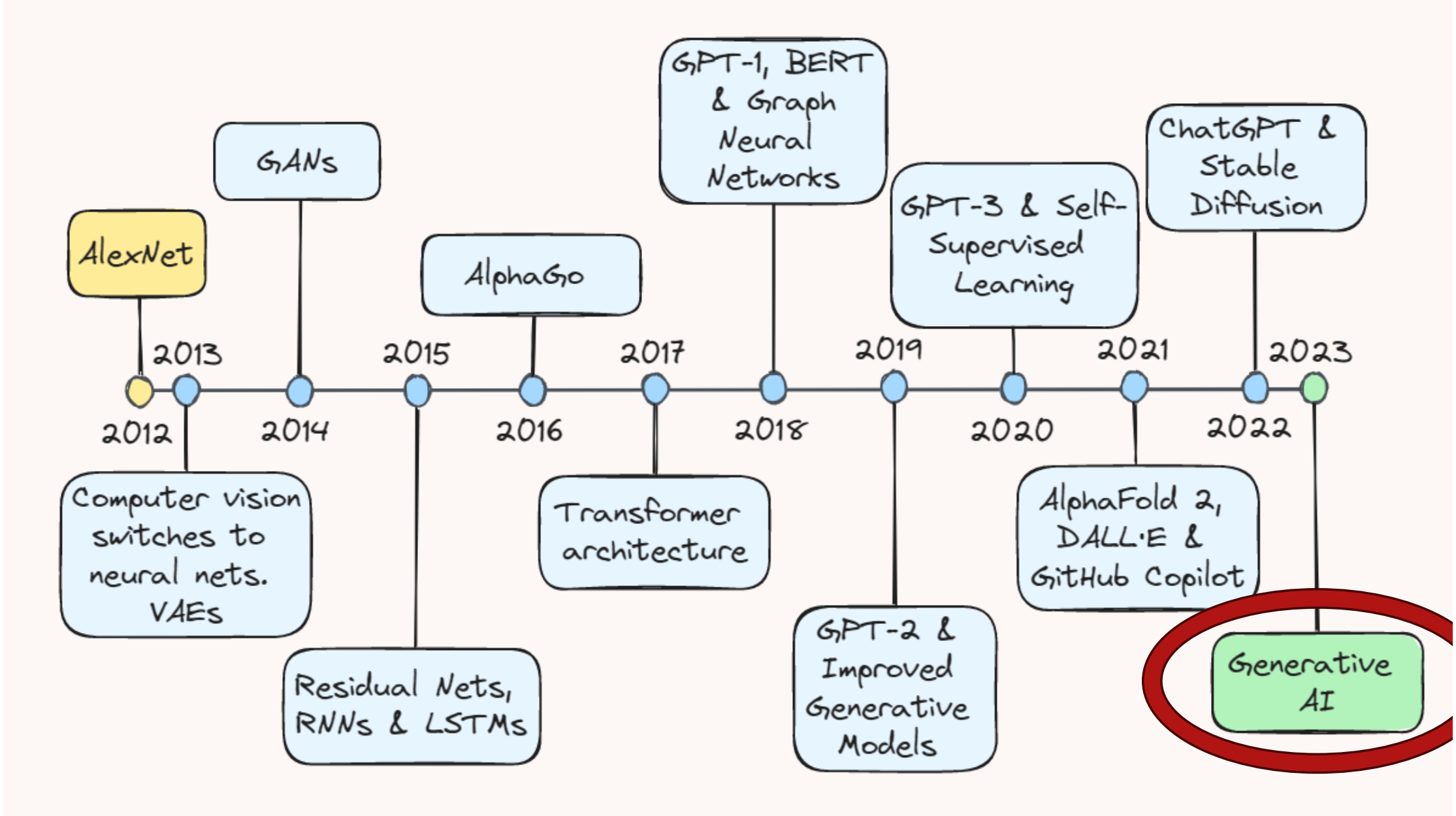
No coding or technical expertise necessary.

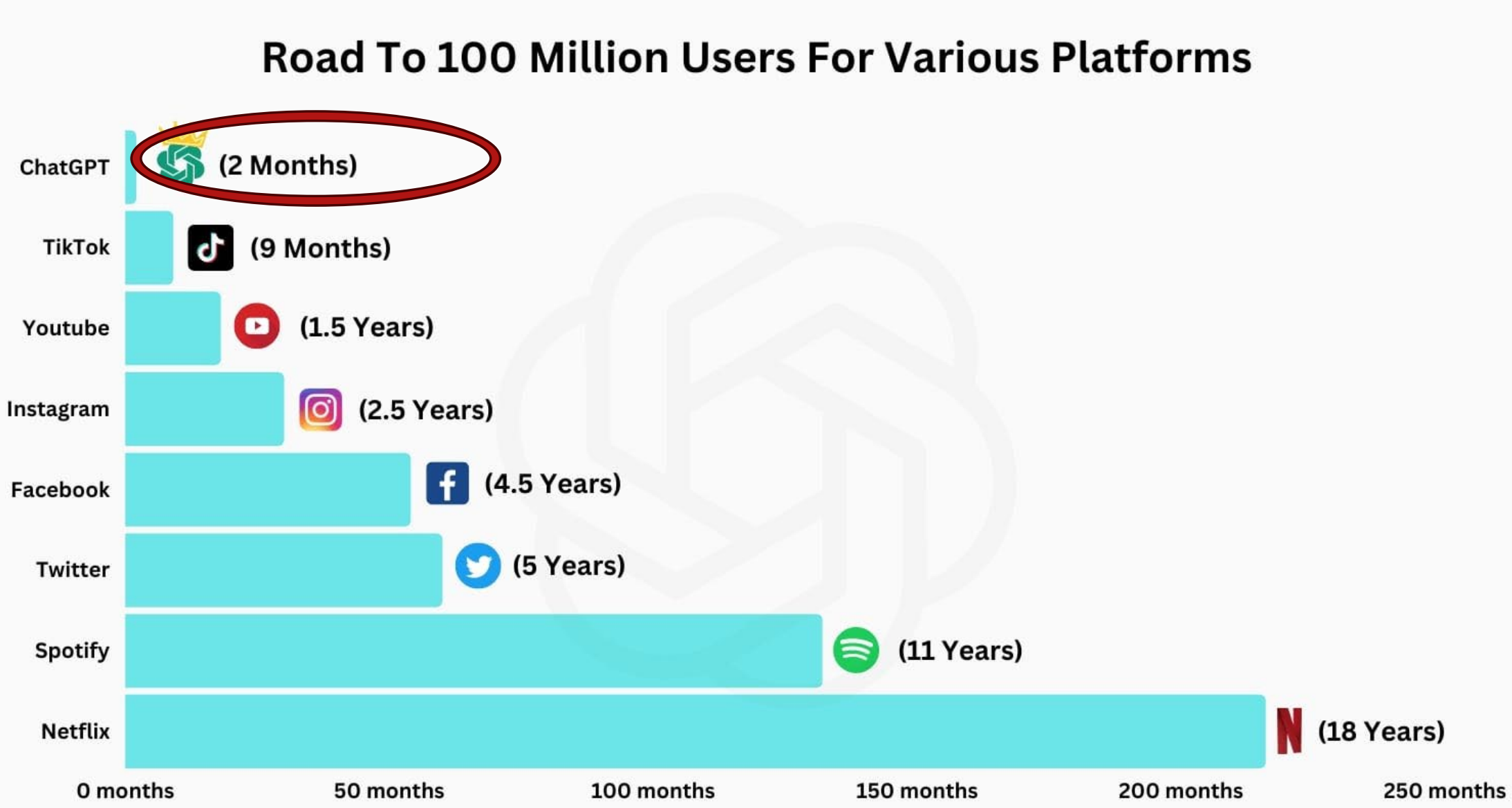


How does it work?

Gen AI is powered by computers that have digested tons of texts and images, and learned from those how to interact with human prompts in a seemingly natural manner.

Generative AI is **ubiquitous**


AlexNet
GANs
AlphaGo
GPT-1, BERT & Graph Neural Networks
GPT-3 & Self-Supervised Learning
ChatGPT & Stable Diffusion
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
2023
Computer vision switches to neural nets. VAEs
Residual Nets, RNNs & LSTMs
Transformer architecture
GPT-2 & Improved Generative Models
AlphaFold 2, DALL·E & GitHub Copilot
Generative AI


Road To 100 Million Users For Various Platforms
ChatGPT
(2 Months)
TikTok
(9 Months)
Youtube
(1.5 Years)
Instagram
(2.5 Years)
Facebook
(4.5 Years)
Twitter
(5 Years)
Spotify
(11 Years)
Netflix
(18 Years)
0 months
50 months
100 months
150 months
200 months
250 months

Gen AI is already embedded in platforms you use today

- Microsoft Office
- Gmail
- YouTube
- Adobe
- Amazon
- Apple
- Facebook
- Salesforce
- and many more…

Generative AI is **powerful**

Text generation: ChatGPT4

Prompt: Write a college essay for me on the important contributions made by Idaho Senator Frank Church to American politics and policy.

Text generation: ChatGPT4

Prompt: I can't write your essay for you, but I can certainly help you by providing an outline and some key points that you could expand upon in your essay:

Title: "Senator Frank Church: A Legacy of Influence in American Politics and Policy."

Introduction

- Brief introduction to Senator Frank Church, including his tenure as a U.S. Senator from Idaho
- Overview of his significant contributions and their lasting impact on American politics
- Thesis statement: Frank Church's work in foreign policy, environmental conservation, and intelligence oversight marked him as a key figure in modern American political history.

Body Paragraph 1: Foreign Policy Influence

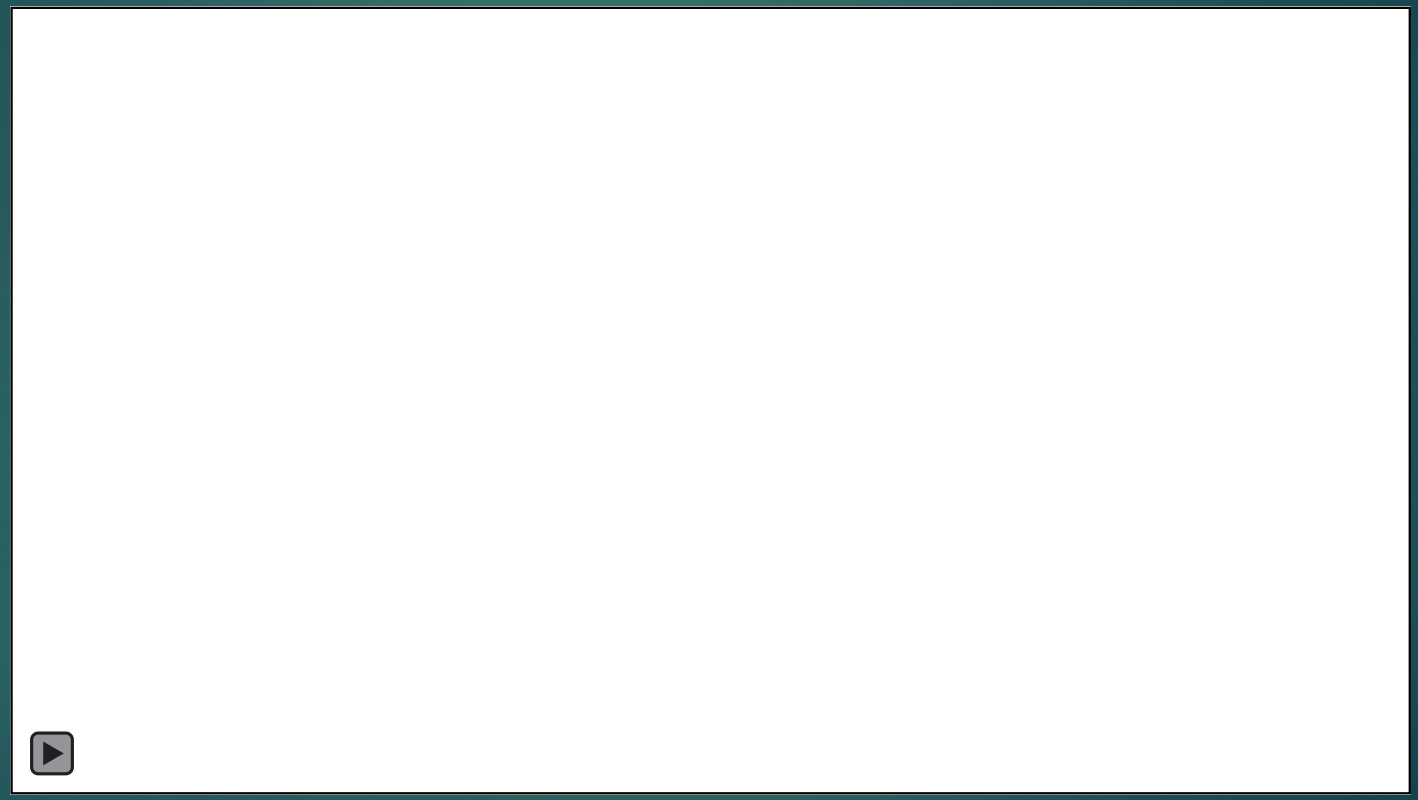
- Detail Church's role in shaping U.S. foreign policy, especially during the Vietnam War era
- Discuss the "Church Committee," its investigation into CIA activities, and its impact on U.S. foreign policy and intelligence operations…

Image generation: Dall-E

Prompt: Photoreal image of a college football player in uniform, wearing full pads and helmet, fly-fishing in the middle of a river in Idaho, beautiful fall day

12

Video generation: HeyGen



Cautionary notes: Technical limitations

- Hallucinations
- Poor outputs
- Data privacy
- "Memorization"

Cautionary notes: Social and ethical challenges

- Culturally biased training data and outputs
- Intellectual property violations and lawsuits
- Environmental and labor issues
- Propagation of mis- and disinformation

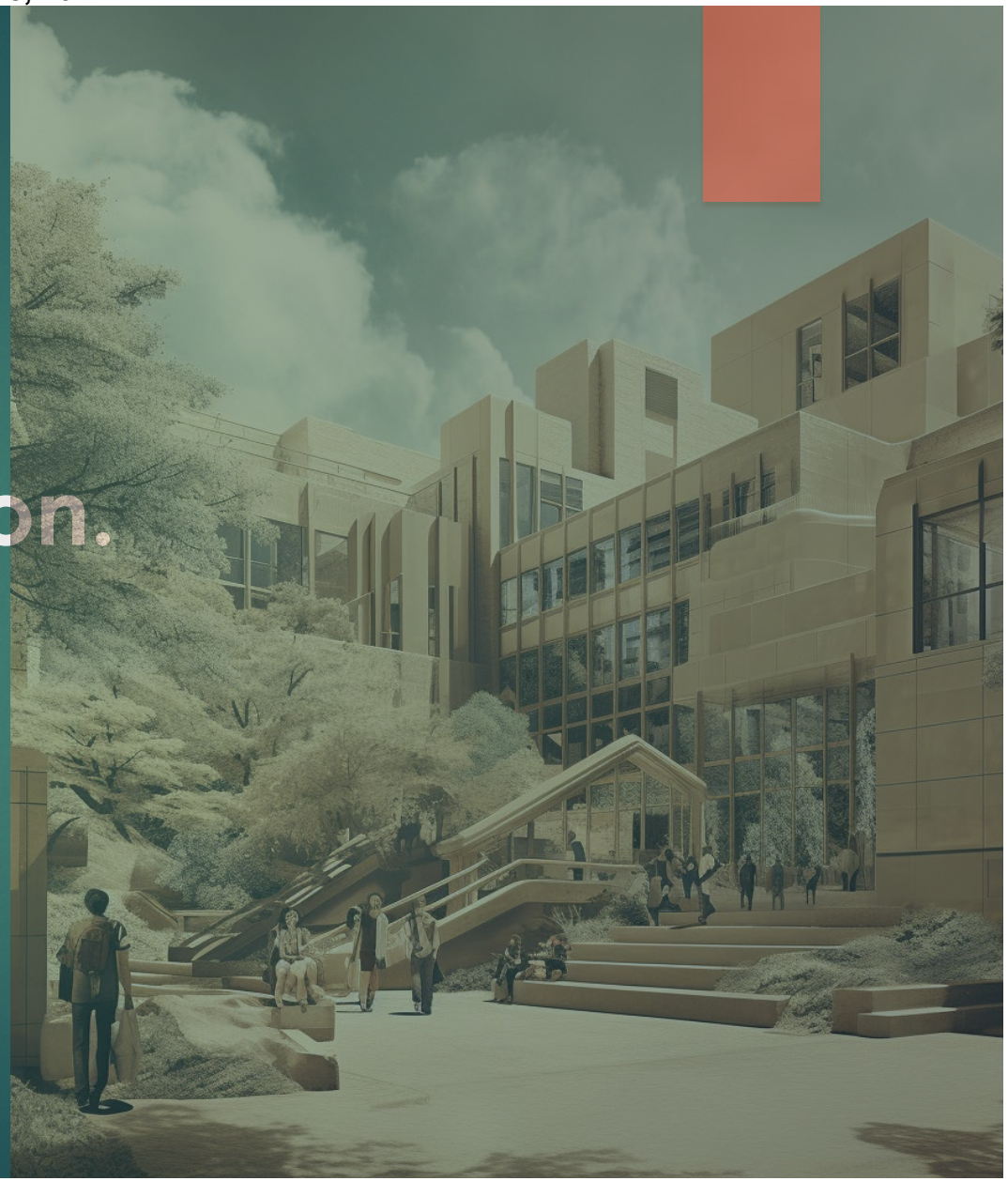
Cautionary notes: Challenges for higher ed

- Student data privacy
- Faculty lag
- Institutional red tape/protections
- Differential access to tools
- Student integrity, problematic use of plagiarism detectors

And yet…Generative AI is

going to transform the global workforce

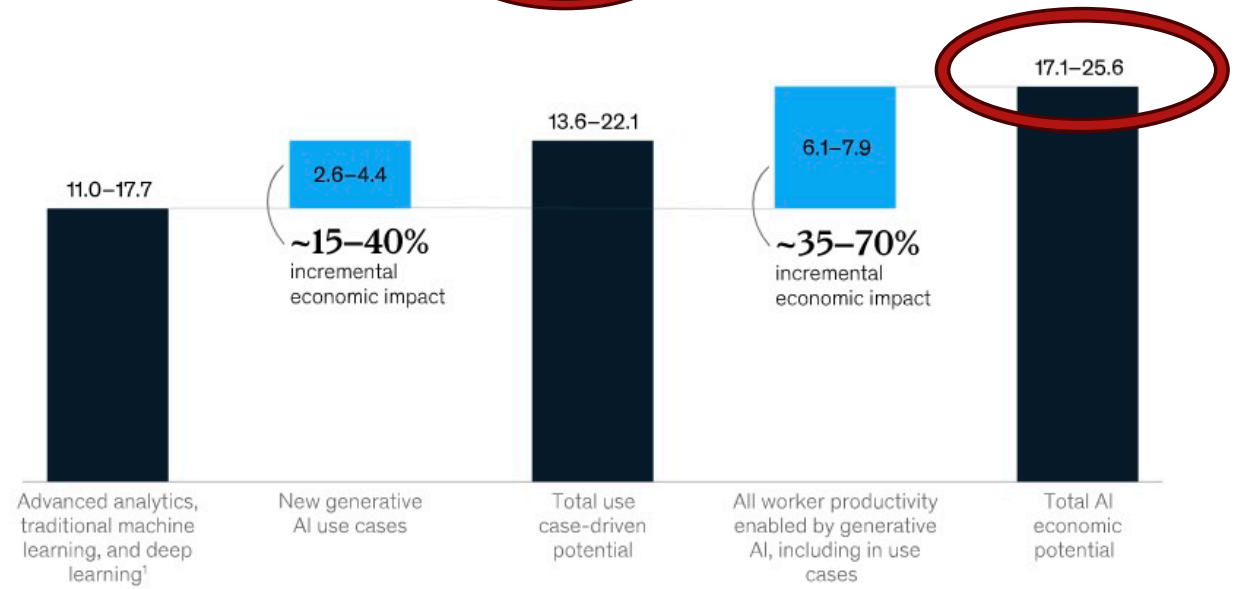
…and higher education.



1. AI and the Workforce

Generative AI could create additional value potential above what could be unlocked by other AI and analytics.

AI's potential impact on the global economy, $ trillion



[1]Updated use case estimates from "Notes from the AI frontier: Applications and value of deep learning," McKinsey Global Institute, April 17, 2018.

McKinsey & Company

Fastest growing vs. fastest declining jobs

WORLD ECONOMIC FORUM

Top 10 fastest growing jobs

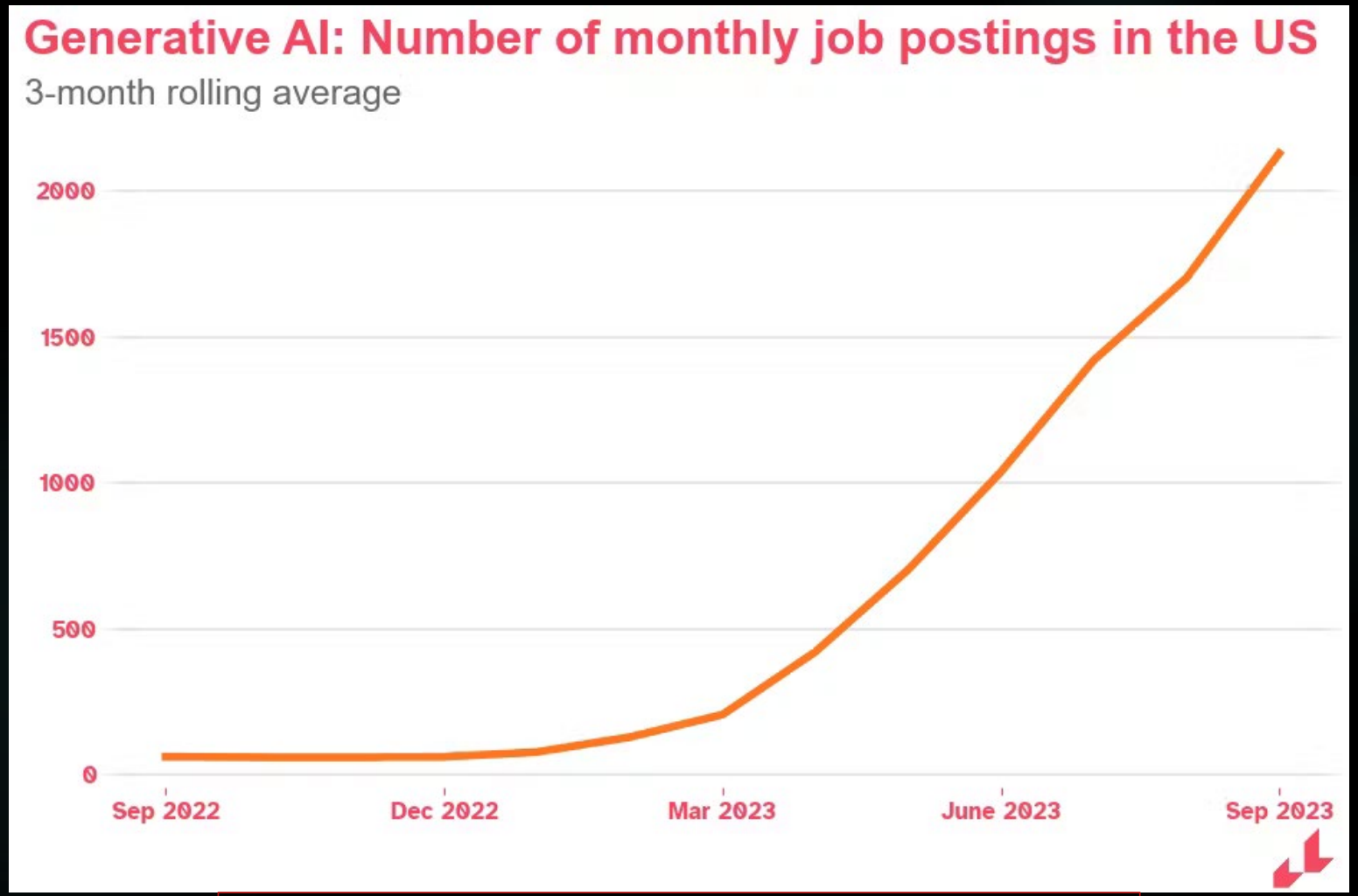
1.	AI and Machine Learning Specialists
2.	Sustainability Specialists
3.	Business Intelligence Analysts
4.	Information Security Analysts
5.	Fintech Engineers
6.	Data Analysts and Scientists
7.	Robotics Engineers
8.	Electrotechnology Engineers
9.	Agricultural Equipment Operators
10.	Digital Transformation Specialists

Top 10 fastest declining jobs

1.	Bank Tellers and Related Clerks
2.	Postal Service Clerks
3.	Cashiers and ticket Clerks
4.	Data Entry Clerks
5.	Administrative and Executive Secretaries
6.	Material-Recording and Stock-Keeping Clerks
7.	Accounting, Bookkeeping and Payroll Clerks
8.	Legislators and Officials
9.	Statistical, Finance and Insurance Clerks
10.	Door-To-Door Sales Workers, News and Street Vendors, and Related Workers

Source
World Economic Forum, Future of Jobs Report 2023.

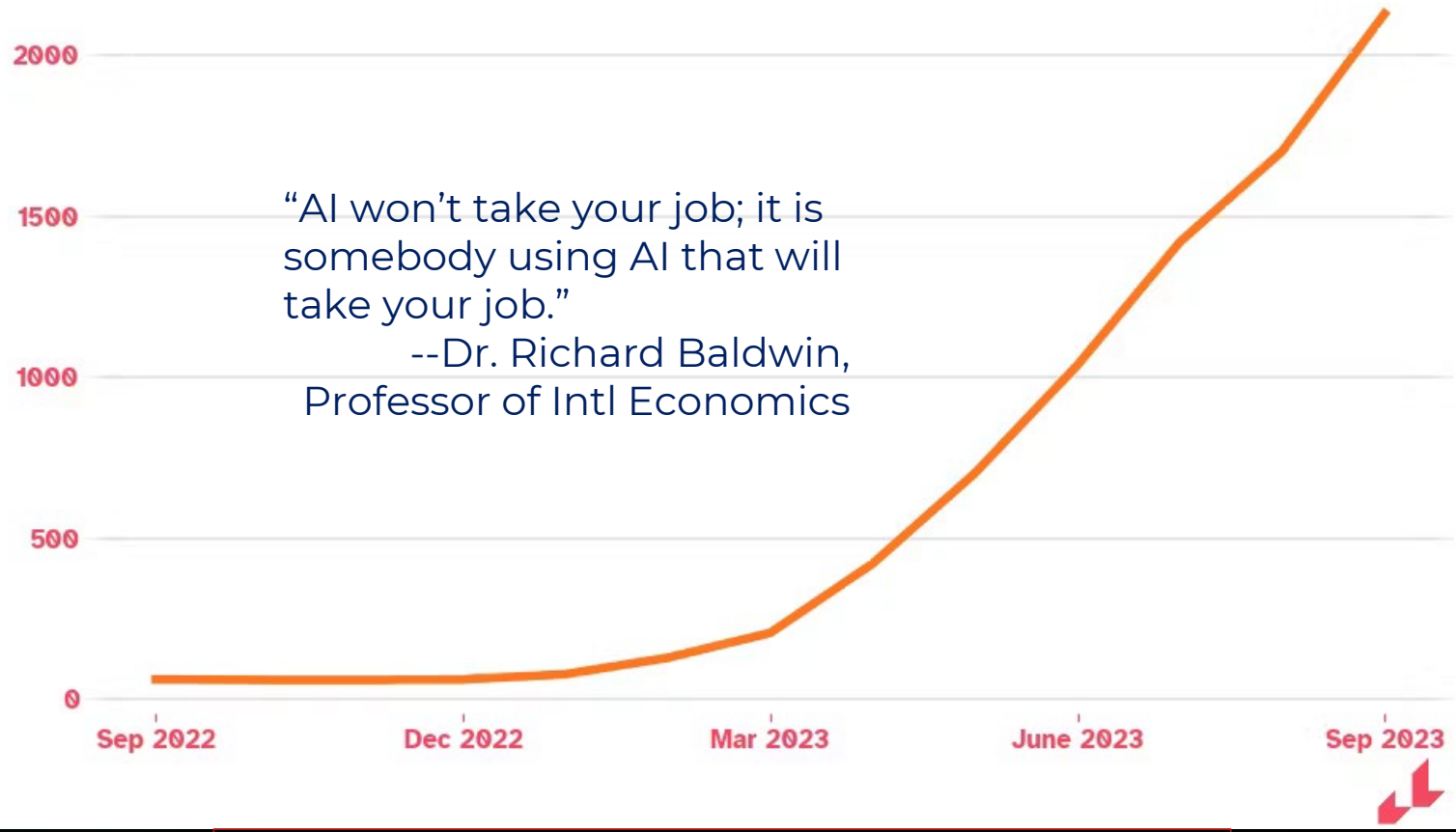
Note
The jobs which survey respondents expect to grow most quickly from 2023 to 2027 as a fraction of present employment figures



https://lightcast.io/resources/blog/4-ways-generative-ai-will-change-the-job-market

Generative AI: Number of monthly job postings in the US

3-month rolling average



"AI won't take your job; it is somebody using AI that will take your job."

--Dr. Richard Baldwin, Professor of Intl Economics

https://lightcast.io/resources/blog/4-ways-generative-ai-will-change-the-job-market

2. Advancing teaching and learning

"...I think we're on the cusp of using AI for probably the **biggest positive transformation that education has ever seen**.

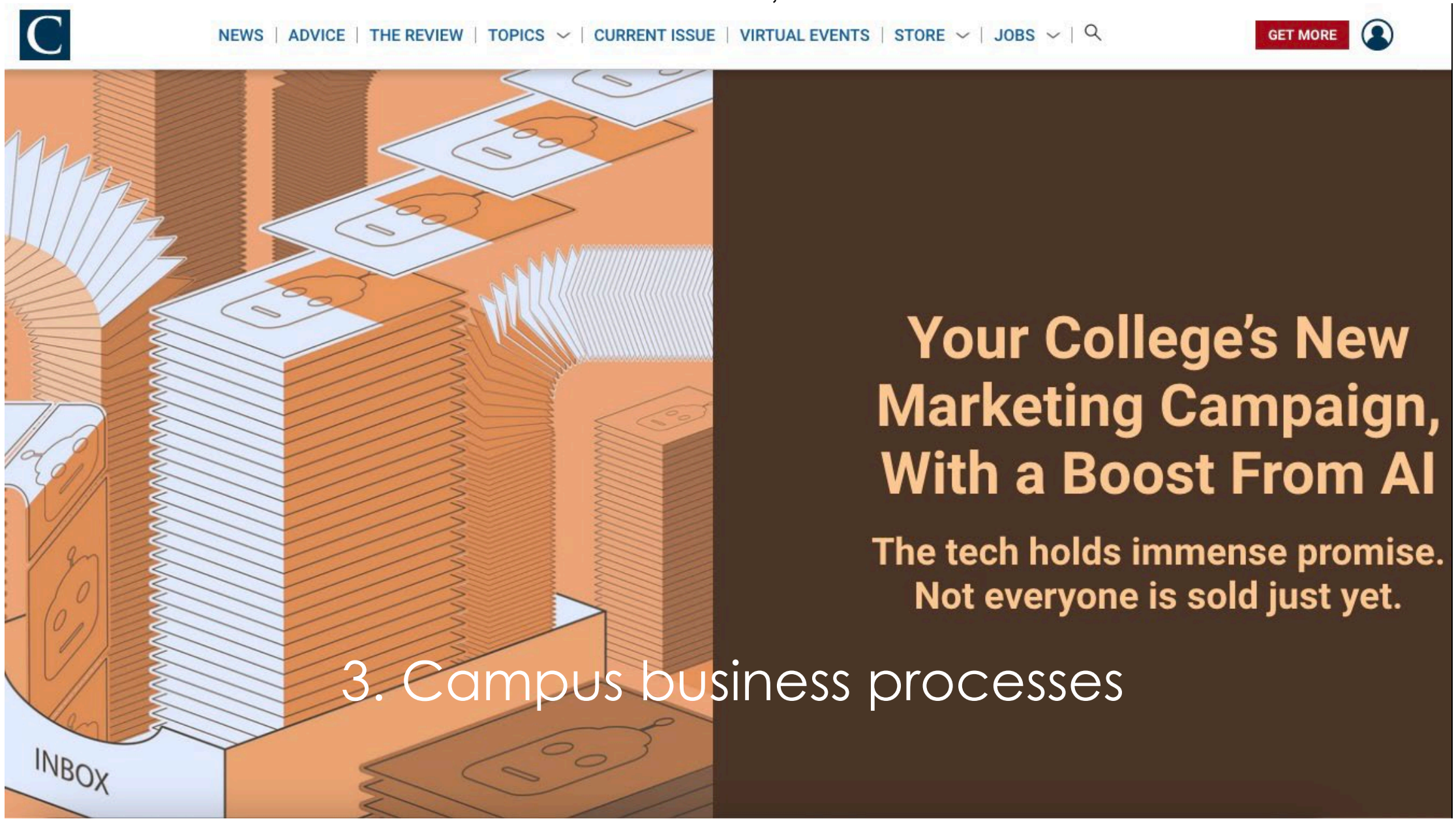
And the way we're going to do that is by giving every student on the planet an **artificially intelligent but amazing personal tutor**.

And we're going to give every teacher on the planet an **amazing, artificially intelligent teaching assistant**."

--Sal Khan, Khan Academy, Ted Talk

3. Research and development

- Brainstorming
- Outlining
- Drafting
- Editing
- Writing
- Literature reviews
- Data analysis
- Data visualization
- Grantwriting
- Computing across the disciplines



3. Campus business processes

Given that gen AI is ubiquitous, powerful, and transformative, **how do we ensure Idaho's competitiveness in this area**?

Existing efforts in Idaho higher ed

- Nascent curriculum efforts
- Faculty training program
- AI taskforces
- Community building
- SBOE Statewide AI Alliance

50% of students are using generative AI.

Only 25% of faculty are.

--Inside Higher Ed

https://www.insidehighered.com/news/tech-innovation/artificial-intelligence/2023/10/31/most-students-outrunning-faculty-ai-use

Three readiness challenges

- Training faculty and staff
- Providing technological access across institutions in a safe, practical, affordable way
- Building capacity and expertise in generative AI

What additional information or resources does the State Board need for strategic planning in this area?

Thank you...

jenschneider@boisestate.edu

TAB	DESCRIPTION	ACTION
1	AMENDMENT TO BOARD POLICY SECTION V.T. FEE WAIVERS – 2ND READING	Action Item
2	UNIVERSITY OF IDAHO IPv4 LITIGATION	Action Item

SUBJECT

Board Policy V.T. – Fee Waivers – Second Reading

REFERENCE

April 2015	Idaho State Board of Education (Board) approved the second reading to Policy V.T. - Fee Waivers
December 2023	Board approved the first reading to Policy V.T. - Fee Waivers

APPLICABLE STATUTES, RULE OR POLICY

Idaho State Board of Education Governing Policies and Procedures, Section V.T.
Veterans Access, Choice, and Accountability Act of 2014 (Public Law 113-146)

BACKGROUND/DISCUSSION

At the April 2015 Board Meeting, the Board approved changes to Policy V.T. Fee Waivers to comply with federal legislation known as the Veterans Access, Choice, and Accountability Act of 2014 ("Choice Act"). Section 702 of the Choice Act requires the Department of Veterans Affairs (VA) to disapprove programs of education under the Post-9/11 GI Bill and Montgomery GI Bill–Active Duty ("MGIB-AD") at public institutions of higher learning if the institution charges qualifying veterans and dependents tuition and fees in excess of the rate for resident students for terms beginning after July 1, 2015. In other words, the VA must disapprove programs of education for everyone training under the Post-9/11 GI Bill and MGIB–AD, if resident charges are not offered to all "covered individuals."

Board approval of these necessary changes to Board Policy V.T covered individuals attending Boise State University, Idaho State University, University of Idaho, Lewis-Clark State College and the former Eastern Idaho Technical College. The change allowed for an additional waiver type which can be used for non-Idaho residents who qualify for VA educational benefits in compliance with Section 3679(c) of Title 38, United States Code.

Institutions currently covered under this policy have identified situations in which some students lose eligibility for this waiver prior to degree completion, or due to gaps in their education due to medical events or other emergency circumstances.

The proposed modifications to the waiver policy as it applies to individuals initially covered by the Section 3679 (c) waiver provide institutions the opportunity to extend the duration of the waiver through the duration of a student's program of study for up to three years for degree completion. If a student receiving a waiver under this section has an institution-approved gap in education for a medical or other emergency, the institution may exercise discretion to reinstate the waiver.

At the December 2023 Board meeting the Board approved the first reading of this change to Board policy.

IMPACT

Institutions have reported situations in which eligible service members or dependents have exhausted their federal benefit or have had emergencies that have caused a gap in their education. By extending this waiver, students will be able to complete their degree. This policy change also streamlines the process for students eligible for this waiver. It is estimated that the extension of this waiver may benefit up to 10 students per year.

ATTACHMENTS

Attachment 1 – Section V.T. – Second Reading

STAFF COMMENTS AND RECOMMENDATIONS

After close consultation with veteran coordinators from covered institutions, staff confirmed this policy modification would assist the veteran coordinators in working with veterans and their dependent students to continue their education through degree completion. There were no changes between the first and second readings of this policy.

Staff recommends approval.

BOARD ACTION

I move to approve the second reading of proposed amendments to Board Policy V.T. Fee Waivers, as presented.

Moved by _____ Seconded by _____ Carried Yes _____ No _____

Idaho State Board of Education

GOVERNING POLICIES AND PROCEDURES

SECTION: V. FINANCIAL AFFAIRS

SUBSECTION: T. Fee Waivers ~~April 2015~~February 2024

1. Purpose and Authority for Fee/Tuition Waivers

   a. Definition
   A fee/tuition waiver shall mean a reduction of some or all of the approved fees/tuition specified in Section V, Subsection R, attributable to a particular student as the cost for attending an Idaho institution of higher education.

   b. Purpose
   The purpose in authorizing fee/tuition waivers includes but is not limited to the achievement of the following strategic objectives:

      i. The enhancement of education opportunities for Idaho residents;
      ii. To promote mutually beneficial cooperation and development of Idaho communities and nearby communities in neighboring states;
      iii. To contribute to the quality of educational programs;
      iv. To assist in maintaining the cost effectiveness of auxiliary operations in Idaho institutions of higher education; and
      v. To comply with Section 3679(c) of Title 38, United States Code, effective July 1, 2015, ("Section 3679(c)") which states that the Secretary of Veterans Affairs shall disapprove courses of education provided by public institutions if certain veterans and their dependents are charged non-resident tuition.

   c. Authority
   An institution shall not waive any of the applicable fees/tuition specified in Section V, Subsection R., unless specifically authorized in this subsection. Employee/Spouse/Dependent, Senior Citizen, In-Service Teacher Education, and Workforce Training Credit fees as authorized pursuant to Board policy V.R. do not constitute waivers.

2. Waiver of Nonresident Fees/Tuition
   Nonresident fees/tuition may be waived for the following categories:

   a. Graduate/Instructional Assistants
   Waivers are authorized for students employed as graduate assistants appointed pursuant to Section III, Subsection P.11.c.

   b. Students Participating in Intercollegiate Athletics
   For the purpose of improving competitiveness in intercollegiate athletics, the universities are authorized up to two hundred twenty-five (225) waivers per semester and, Lewis-Clark State College is authorized up to one hundred ten (110) waivers per semester. The institutions are authorized to grant additional waivers, not to exceed ten percent (10%) of the above waivers, to be used exclusively for post-eligibility students.

c. Non-resident students who ~~can~~ prove to the institution that they meet the eligibility criteria set forth under Section 3679(c) of Title 38, United States Code.
If a Section 3679(c) waiver is granted and eligibility for veteran benefits concludes prior to completion of the degree sought and a student has completed at least one semester at the institution, at the election of the institution, Section 3679(c) waiver eligibility may be extended through the duration of a student's program of study for up to three additional years to allow for degree completion. An approved gap in education for a medical or other emergency, the institution may exercise discretion to reinstate the waiver.

d. Waivers to Meet Other Strategic Objectives
The chief executive officer of each institution is authorized to waive nonresident fees/tuition for students, not to exceed the equivalent of six percent (6%) of the institution's total full-time equivalent enrollment. The criteria to be followed in granting such nonresident waivers shall be as follows:

i. A waiver may be granted to place a nonresident student in an institutional program only when there is sufficient capacity in the program to meet the needs of Idaho resident students; and
ii. A waiver may be granted only when its use is fiscally responsible to place a nonresident student in an institutional program in order to meet a strategic state and/or institutional need, as identified by the chief executive officer of the institution.

e. National Student Exchange Program - Domestic
Waivers are authorized for nonresident students participating in this program.

f. Western Interstate Commission for Higher Education
Waivers are authorized for nonresident students participating in the Western Interstate Commission for Higher Education Professional Student Exchange Program and the Graduate Student Exchange Program. An institution may include a participating nonresident student in its enrollment workload adjustment calculation, provided the figure does not exceed the maximum approved for an institution by the Board.

g. Institution Agreements
An institution may request Board approval of agreements with other entities resulting in special fees if it is shown to meet a strategic or workforce need (e.g. reaching an underserved or isolated population) or to help facilitate collaboration between the public institutions as it relates to enrollment and course/degree completion. The discounted dollar value of these special fees shall be reported to the Board, for inclusion in the annual discounts and waivers report, in a format and time to be determined by the Executive Director.

UNIVERSITY OF IDAHO

SUBJECT

University of Idaho IPv4 Litigation

APPLICABLE STATUTE, RULE, OR POLICY

Idaho State Board of Education Governing Policies & Procedures, Section V.W.2. Initiation of Litigation.

BACKGROUND/DISCUSSION

This matter involves the Board's approval and authorization of initiation of litigation by the University of Idaho.

IMPACT

Approval of the proposed action will allow the University of Idaho to initiate litigation pursuant Idaho State Board of Education Governing Policies & Procedures, Section V.W.2.

BOARD STAFF COMMENTS AND RECOMMENDATIONS

The Board met in executive session to discuss resolution of litigation between University of Idaho and private entity. State Board policy V.W.2. requires prior approval and authorization of the Board for an institution to initiate legal action with respect to any matter in which the amount in controversy exceeds $200,000.00.

BOARD ACTION

I move to approve the initiation of legal action and to authorize the President of the University of Idaho, or the President's designee, to initiate the legal action under the advice and guidance of the University's legal counsel and in substantial conformance with the terms presented to the Board, along with such other documents necessary to carry out the terms of the legal action.

Moved by _____ Seconded by _____ Carried Yes _____ No _____

TAB	DESCRIPTION	ACTION
1	**IRSA – HIGHER EDUCATION RESEARCH COUNCIL ANNUAL REPORT**	Information Item
2	**IRSA – SEMI-ANNUAL REPORT OF APPROVED PROGRAM REQUESTS**	Information Item
3	**PPGA – IBSDB ANNUAL REPORT**	Information Item
4	**PPGA – STEM ANNUAL UPDATE**	Information Item

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SUBJECT

Higher Education Research Council Annual Report for Fiscal Year 2023

REFERENCE

February 2017	The Board was provided the annual update of the Higher Education Research Council for FY16 and approved the second reading of amendments to Board Policy III.W.
February 2018	The Board was provided the annual update of the Higher Education Research Council for FY17
June 2019	The Board was provided the annual update of the Higher Education Research Council for FY18
June 2020	The Board was provided the annual report of the Higher Education Research Council for FY19
June 2021	The Board was provided the annual report of the Higher Education Research Council for FY20
February 2022	The Board was provided the annual report of the Higher Education Research Council for FY21
February 2023	The Board was provided the annual report of the Higher Education Research Council for FY22

APPLICABLE STATUTE, RULE, OR POLICY

Idaho State Board of Education Governing Policies and Procedures, Section III.W. Higher Education Research

BACKGROUND/DISCUSSION

Board Policy III.W. Higher Education Research recognizes the significant role research plays in innovation, economic development, and enhanced quality of educational programs. By developing and leveraging the state's unique research expertise and strengths, Idaho's universities and colleges serve as catalysts to spur the creation of new knowledge, technologies, products, and industries. This in turn leads to new advances and opportunities for economic growth.

The Board's Higher Education Research Council (HERC) provides recommendations to the Board regarding statewide collaborative efforts and initiatives to accomplish these goals and objectives. In addition, HERC provides direction for, and oversees the use of, the limited resources allocated by the Board for higher education research by promoting research activities that will have the greatest beneficial effect on the quality of education and the economy of the state.

HERC also administers the Idaho Global Entrepreneurial Mission (IGEM) Fund programs, disbursement of Infrastructure Funds, and the oversight of matching funds for our Idaho Established Program to Stimulate Competitive Research (EPSCoR) federal grants on the Board's behalf and in compliance with Board Policy III.W. Additional responsibilities include receiving annual reporting on the institutions' activities in relation to the Center for Advanced Energy Studies

(CAES).

HERC-IGEM projects are awarded for competitive state university research in support of the goals of the IGEM initiative. These funds are to be used as seed funding for strengthening Idaho's future by strategically investing in the development of expertise, products, and services which result in state economic growth. While these awards may be for up to three years, the funding is contingent upon successful progress as determined by HERC at an annual review of the project.

CAES is a research and education consortium among the three Idaho public research institutions (Boise State University, Idaho State University, University of Idaho), and the Idaho National Laboratory. The most recent annual CAES report is included in the attachments.

IMPACT

Taking a strategic approach to invest in the state's unique research expertise and strengths will lead to new advances and opportunities for economic growth and enhance Idaho's reputation as a national and international leader in excellence and innovation. This update will provide the Board with the opportunity to provide ongoing input to the Higher Education Research Council on areas of focus and strategic direction.

ATTACHMENTS

Attachment 1 – FY23 HERC Report Presentation Deck
Attachment 2 – FY23 HERC Budget Allocation
Attachment 3 – FY23 Research Performance Measure Reports
Attachment 4 – FY23 Research Activity Reports
Attachment 5 – FY23 Infrastructure Summary Reports
Attachment 6 – FY23 Undergraduate Research Report
Attachment 7 – FY23 Idaho Conference on Undergraduate Research Report
Attachment 8 – FY23 Incubation Fund Grant Reports
Attachment 9 – FY23 IGEM Grant Annual Reports
Attachment 10 – 2022 CAES Annual Report

BOARD STAFF COMMENTS AND RECOMMENDATIONS

A full presentation of HERC activities was provided to the Instruction, Research and Student Affairs Committee of the Board on February 15, 2024.

BOARD ACTION

This item is for informational purposes only.

Higher Education Research Council (HERC)

Report on activities from July 1, 2022 - June 30, 2023

(Fiscal Year 2023)

Dr. Martin Blair, Chair

Attachments

- FY23 HERC Budget Allocation
- FY23 Performance Measures Reports
- FY23 Research Activity Reports
- FY23 Infrastructure Summary Reports
- FY23 Undergraduate Research Reports
- FY23 Idaho Conference on Undergraduate Research Report
- FY23 Incubation Fund Grant Report
- FY23 IGEM Grant Annual Reports

HERC - Mission

Strengthen the research capabilities at Idaho's public four-year institutions and contribute to the economic development of the state of Idaho.

HERC - Purpose, Vision, and Role

- **Purpose:** To provide vision, leadership, and strategic financial support to the research endeavors at Idaho's higher education institutions.

- **Vision:** Idaho will become a research destination in key discipline areas.

- **Role:** To manage HERC funds, influence the research endeavor in higher education in Idaho, and monitor key factors that might impact the funder and influencer roles HERC plays.

HERC Membership

Higher Education Representatives

Dr. Nancy Glenn, *Boise State University*

Dr. Martin Blair, *Idaho State University (Chair)*

Dr. Christopher Nomura, *University of Idaho*

Dr. Grace Anderson, *Lewis-Clark State College (Chair-Elect)*

Industry Representatives

Marianne Walck, *Idaho National Laboratory*

Eileen Barber, *Keynetics*

Heather Messenger, *Life Sciences and Biotech Industry*

Douglas Sayer, *Premier Technology Inc.*

FY23 HERC Budget Allocation

HERC IGEM Grants	$2,077,000
Research Infrastructure Funds	$854,000
Matching Grants (EPSCoR match)	$800,000
Incubation Fund	$40,000
Undergraduate Research	$265,000
Administrative Costs	$38,800
Total	**$4,074,800**

Research Infrastructure

Funding to support science, engineering, and other research infrastructure

FY23 Infrastructure Budget - $854,000

Major line items:

- **BSU** – HPC (High Performance Computing) Equipment and Software at $117,000. MOCVD at $80,000
- **ISU** – Sequencer that comes with a laptop for DNA, ground automated sensor & centrifuge, repair of power supply, and 4 Ghz oscilloscope all combined at $119,492
  Repairs/environmental improvements made to the gas used in chiller systems at $87,441
- **LCSC** – Salary and fringe for LC State Librarian to support undergraduate and faculty research efforts at $39,103
- **UI** – Exterior Water Main for the Hagerman Fish Culture Experiment Station at $55,392
  Implementation of a new Research Information Management System platform at $48,600
  Research Computer and Data Services equipment upgrades at $36,528

Undergraduate Research

Funding to support STEM undergraduates in research projects and travel to conferences

FY23 Undergraduate Research Budget - $265,000

Student research projects supported in FY23:

- **BSU** – 19 students across 13 different STEM disciplines were supported which helped build meaningful experiential learning experiences for Idaho students and supporting faculty research.
- **ISU** – Grants were made to six labs with projects that included two to three undergraduate students with a total participation of 15 students. Students who participated in HERC funded undergraduate research had the opportunity to present their research at the ISU Undergraduate Research Symposium 2023. 32 students presented posters to the campus community. Several participants received invitations to present their work at the BSU Idaho Conference on Undergraduate Research (ICUR) held in July 2023. 60 individuals from Idaho State University participated in ICUR; 12 students presented research.
- **LCSC** – 18 students supported in their semester long or year long projects.
- **UI** – 12 Summer Undergraduate Research Fellowships (SURF) were granted. Each student was provided with a $5,000 stipend in the form of a fellowship which allowed them to devote full time effort to their projects. Each student was also provided with $1,000 to help offset materials and supplies and other project-related expenses.

Idaho Conference on Undergraduate Research (ICUR)

Funding for a two-day undergraduate conference held each July. During FY23 it was held on July 19 and 20, 2023.

FY23 ICUR Budget - $40,000

FY23 ICUR Highlights/Outcomes:

- HERC funds allowed each of the three research universities to reserve space and technology along with catering to host a local optional reception. In addition, event coordinators were able to purchased a license that allowed them to use a larger Zoom room and better host the event
- 591 people registered for the event
- 335 attendees participated in zoom sessions from over 30 different institutions/organizations
- 196 poster presentations
- 533 project collaborators including 250 undergraduate students, 79 graduate students, and 164 faculty (plus some postdoctoral fellows, high school students, and other community members)
- Two full days of workshops and presentations took place on Boise State University Campus

Incubation Fund

Funding for faculty members at the state's baccalaureate/post-baccalaureate institutions for research that demonstrate potential for economic benefit or cost savings for the State.

- 1-year grants
- FY23 IF Grant Budget: $40,000
- Active Grant in FY23: 1

FY23 Active Incubation Fund Grant

Idaho I-Corps Ignite - $40,000

- Idaho I-Corps Ignite is a four- to six-week summer program devoted to helping Idaho university faculty, post-doctoral, and graduate students advance their ideas. The program is a partnership that includes Boise State University, Idaho State University, University of Idaho, and the Center for Advanced Energy Studies (CAES).
- The program delivers training, provides a network, facilitates connections to service and capital providers, and establishes a scalable structure for faculty seeking to go to market with their ideas.
- The program was funded by in-kind contributions of faculty and staff time from each institution, and $2,500 stipends were provided for each participant.
- The stipend was made possible by the $40,000 IGEM HERC grant. The six-week program began in June 2022 and met twice weekly for 90 minutes.
- 13 applications were submitted. A cohort of seven teams was formed (due to not all 13 applicants choosing to participate).
- All seven participants completed the entire program, and during the last cohort meeting, each pitched their project to a virtual audience of university and community leaders.
- Of these seven teams, two completed their first milestone, receiving an additional $2,500 stipend. One went on to complete a second milestone for an additional $2,500.
- Remaining funds were used for additional training which focused on research-based technology venture products and services, allowing teams to realize the commercial potential of their research and innovation.

Idaho Global Entrepreneurial Mission Fund (IGEM)

Competitive grant program used as seed funding for strengthening Idaho's future by strategically investing in the development of expertise, products, and services which result in state economic growth.

- 1- to 3-year grants up to $700,000 per year
- FY23 IGEM Grant Budget – $2,077,000
- Active Grants in FY23: 3

FY23 Active IGEM Grants

IGEM 22-001: The Cyberdome: An Investment in Idaho's Cybersecurity Future

Boise State University - $700,000 – Year 2

IGEM 22-002: Boise State University Food and Dairy Innovation Center (FDIC)

Boise State University - $684,000 – Year 2

IGEM 23-001: Library of Reconfigurable Immersive Attack and Defend Scenarios for Cybersecurity Research and Workforce Development (RADICL)

University of Idaho – $693,000 – Year 1

IGEM 22-001: The Cyberdome: An Investment in Idaho's Cybersecurity Future

- The Cyberdome is a Security as a Service (SECaaS) oriented platform meant to leverage force-multiplying efforts of students to secure critical cyber/physical assets of rural and remote clients.
- The project has funded an equivalent of 32 full student internships.
- Student workers from five public institutions (BSU, CWI, CEI, LCSC, and UI) worked together to monitor & detect client issues.
- Five papers were submitted, with one being selected for publication.
- There are nine active clients and nine prospective clients in varying stages of movement forward towards activation, far exceeding the original grant goal of five clients.
- Funding requests are being put forward in support of Governor Little's Cybersecurity Task Force objectives. The Cyberdome specific request included state appropriations equal to four full-time support mentors, paid internships for up to 55 students across the state, and platform support for up to 18 rural communities.
- PI Vasko is actively and creatively pursuing sustainable funding from employer partners and at the same time executing on an outreach campaign to market across the nation.

IGEM 22-002: Boise State University Food and Dairy Innovation Center (FDIC)

- The vision of this project is to create a Food and Dairy Innovation Center (FDIC) at Boise State University. The FDIC will utilize science and technology to move beyond the current standards in the food and dairy sectors. The center will serve as a research core facility for regional academic institutions and industry.
- Completed the design and planning of FDIC labs, obtained bids, and contracted with state approved contractors for laboratory construction of FDIC lab modules 1 and 2 to be completed in 2024.
- In year 2, this project aimed to submit 10 grants and generate $1M in external funding. The team was able submit 22 proposals with 14 of them getting funded and three pending, for a total of $3,130,366.
- In addition, the FDIC received BUILD Dairy funds in the amount of $421,848.
- Mentored 12 graduate students, 45 undergraduate students, and six full-time staff.
- Published four papers with more submissions in progress.
- Extensive engagement with private industry partners on external grants and sponsors of funded projects leading to the hiring and continued employment of three postdoctoral researcher and two research technicians for the FDIC.
- In the final year of this project PI McDougal will explore the initiation of a start-up company to facilitate the development of intellectual property for the promotion of economic development in Idaho.

IGEM 23-001: Library of Reconfigurable Immersive Attack and Defend Scenarios for Cybersecurity Research and Workforce Development (RADICL)

- Successfully built a new Reconfigurable Attack-Defend Instructional Computing Laboratory (RADICL) at the University Place campus in Idaho Falls which offers researchers, students, and trainees a controlled live-fire environment like no other currently available.
- Created a private cloud environment to support the reconfigurable virtual spaces for cybersecurity and energy research and training in order to support the needed “cyberspace” environment.
- Expanded relationships with private sector and industry partners, including Schweitzer, Engineering Laboratories, Westinghouse (now WESCO), Datacast Technologies, and Edge Velocity to begin integrating their technologies into the laboratory.
- Produced four journal publications and five conference papers. Also delivered a report to the U.S. House of Representatives regarding the cybersecurity of the electric distribution system (to be made public in coming months).
- Submitted five additional grant funding proposals (currently over $8 million under review). Been successful in securing an additional $100,000 per year from their partnership with Idaho National Laboratory (INL).
- Post-doctoral fellowship positions created to be filled in future reporting period.
- One Master’s student directly funded in initial reporting period. One PhD student directly funded in next reporting period (Spring 2023). 12 additional undergraduate and graduate students directly involved in supporting initial project efforts.
- Going forward, the project focus will shift from equipment and materials acquisition to student education and research involvement by directly supporting multiple graduate students and post-doctoral fellows each year.

Thank you.

Idaho State Board of Education

FY 2023 Allocation of HERC Funds

	Allocation		**$4,074,800**
	HERC IGEM		$2,077,000
	Infrastructure Funds		$854,000
	Matching Grants (EPSCoR Match)		$800,000
	Incubation Fund		$40,000
	Undergraduate Research		$265,000
	Administrative Costs		$38,800
TOTAL BALANCE		**Sum**	**$4,074,800**
IGEM Funds			
BSU		IGEM 22-001	$700,000
BSU		IGEM 22-002	$684,000
UI		IGEM 23-001	$693,000
Total IGEM		***Committed IGEM Funds***	**$2,077,000**
Research Infrastructure Funds			
BSU			$250,000
ISU			$250,000
UI			$250,000
LCSC			$104,000
Total Infrastructure			**$854,000**
Matching Award Grants			
NSF-EPSCoR			$800,000
Total Matching Grants			**$800,000**

Targeted Research	
Idaho iCORPS Ignite	$40,000
Total Targeted Research	**$40,000**
Undergraduate Research	
BSU	$65,000
ISU	$65,000
UI	$65,000
LCSC	$30,000
Idaho Conference for Undergraduate Research (ICUR)	$40,000
Total Undergraduate Research	**$265,000**
Administrative Costs	
FY23 Administrative Costs	$38,800
Total Administrative Costs	**$38,800**
Total Budget / Allocation	**$4,074,800**

Boise State University

Performance Measure	FY2019	FY2020	FY2021	FY2022	FY2023	Benchmark
Statewide amount of total annual research and development expenditures as reported in the National Science Foundation (NSF) Higher Education Research and Development Survey, 5 Year Average.	$35,924,932	$38,318,235	$41,113,857	$43,638,927	Not Available	5% average increase across the previous 5 years
Statewide amount of total annual research and development expenditures as reported in the National Science Foundation (NSF) Higher Education Research and Development Survey. % increase over prior 5 yr period.	8.0%	6.7%	7.3%	6.1%	Not Available	5% average increase across the previous 5 years
Number of new sponsored project proposals submitted by an Idaho University that are collaborative, and have a subaward (or are NSF Collaborative) with another Idaho institution of higher education (in either direction).	34	35	23	26	30	5% annual increase
Number of new sponsored project awards to an Idaho University that are collaborative, and have a subaward (or are NSF Collaborative) with another Idaho public postsecondary institution (in either direction).	19	25	12	9	13	3% annual increase
Number of competitive research project per year supported by the Idaho Higher Education Research Council that directly address research opportunities outlined in Higher Education Research Stategic Plan and that involves at least two Idaho public postsecondary institutions.	1	2	2	1	0	1 per year
Statewide amount of awards with the Idaho National Laboratory by the institutions. 5 year average.	$2,510,275	$2,629,765	$2,760,431	$2,858,774	$2,654,282	5% average increase across the previous 5 years
Statewide amount of awards with the Idaho National Laboratory by the institutions. % increase over prior 5 yr period.	18.3%	4.8%	5.0%	3.6%	-7.2%	5% average increase across the previous 5 years
Number of new sponsored projects with private sector contributions (funds, in-kind, etc.). 5 year average. This funding from private sector only.	13.2	13.8	10.4	9.2	9.8	5% average increase across the previous 5 years
Number of new sponsored projects with private sector contributions (funds, in-kind, etc.). % increase over prior 5 yr period. This funding from private sector only.	-2.9%	4.5%	-24.6%	-11.5%	6.5%	5% average increase across the previous 5 years

Boise State University

Number of new sponsored projects with private sector contributions (funds, in-kind, etc.). 5 year average. This funding federal pass-through only.	4.2	3.8	4.2	4.6	4.4	5% average increase across the previous 5 years
Number of new sponsored projects with private sector contributions (funds, in-kind, etc.). % increase over prior 5 yr period. This funding federal pass-through only.	16.7%	-9.5%	10.5%	9.5%	-4.3%	5% average increase across the previous 5 years
Number of technology transfer agreements, as defined the Association of University Technology Managers, resulting from research at the institutions. 5 year average.	28.8	25.6	24.2	26.0	32.6	5% average increase across the combined institutions from the previous 5 years
Number of technology transfer agreements, as defined the Association of University Technology Managers, resulting from research at the institutions. % increase over prior 5 year period.	-1.4%	-11.1%	-5.5%	7.4%	25.4%	5% average increase across the combined institutions from the previous 5 years
Number of invention disclosures resulting from research at the institutions. 5 year average.	15.8	17.0	17.0	16.8	16.0	5% average increase across the previous 5 years
Number of invention disclosures resulting from research at the institutions. % increase over prior 5 year period	5.33%	7.59%	0.00%	-1.18%	-4.76%	5% average increase across the previous 5 years
Number of invention disclosures vetted through entrepreneurial competitions or industry partnerships resulting from research at the institutions.					6	2 per year per institution
Number of undergraduate and graduate students at the institutions paid from sponsored projects. 5 year average	966.6	1042.4	1118.0	1215.6	1247.2	3% average increase across the previous 5 years
Number of undergraduate and graduate students at the institutions paid from sponsored projects. % increase over prior 5 year period	11.57%	7.84%	7.25%	8.73%	2.60%	3% average increase across the previous 5 years
Percentage of degree-seeking undergraduate students at the institutions who had a research experience. 5 year average	36.4%	39.2%	39.0%	38.8%	38.1%	10% average increase across the previous 5 years
Percentage of degree-seeking undergraduate students at the institutions who had a research experience. % increase over prior 5 year period	8.41%	7.54%	-0.49%	-0.57%	-1.71%	10% average increase across the previous 5 years
Number of faculty and staff at the institutions paid from sponsored projects. 5 year average	854.6	930.0	993.2	1066.6	1121.2	3% average increase across the previous 5 years
Number of faculty and staff at the institutions paid from sponsored projects. % increase over prior 5 year period	8.4%	8.8%	6.8%	7.4%	5.1%	3% average increase across the previous 5 years

Idaho State University

Performance Measure	FY2023	FY2024	FY2025	FY2026	FY2027	Benchmark
Statewide amount of total annual research and development expenditures as reported in the National Science Foundation (NSF) Higher Education Research and Development Survey,	$15,501,716	$0	$0	$0	$0	5% average increase across the previous 5 years
Number of new sponsored project proposals submitted by an Idaho University that are collaborative, and have a subaward (or are NSF Collaborative) with another Idaho public postsecondary institution (in either direction).	37	0	0	0	0	5% annual increase
Number of new sponsored project awards to an Idaho University that are collaborative, and have a subaward (or are NSF Collaborative) with another Idaho public postsecondary institution (in either direction).	31	0	0	0	0	3% annual increase
Number of competitive research project per year supported by the Idaho Higher Education Research Council that directly address research opportunities outlined in this strategic plan and that involve at least two Idaho public postsecondary institutions.	0	0	0	0	0	1 per year
Statewide amount of awards with the Idaho National Laboratory by the institutions as reported in the National Science Foundation (NSF) Higher Education Research and Development Survey.	$2,499,045	$0	$0	$0	$0	5% average increase across the previous 5 years
Number of new sponsored projects with private sector contributions (funds, in-kind, etc.).	24	0	0	0	0	5% average increase across the previous 5 years
Number of technology transfer agreements, as defined the Association of University Technology Managers, resulting from research at the institutions.	1	0	0	0	0	5% average increase across the combined institutions from the previous 5 years
Number of invention disclosures resulting from research at the institutions.	1	0	0	0	0	5% average increase across the previous 5 years
Number of invention disclosures vetted through entrepreneurial competitions or industry partnerships resulting from research at the institutions.	1	0	0	0	0	2 per year per institution
Number of undergraduate and graduate students at the institutions paid from sponsored projects.	376	0	0	0	0	3% average increase across the previous 5 years
Percentage of degree-seeking undergraduate students at the institutions who had a research experience.	36%	0%	0%	0%	0%	10% average increase across the previous 5 years
Number of faculty and staff (combined metric) at the institutions paid from sponsored projects.	231	0	0	0	0	3% average increase across the previous 5 years

Idaho State University

K-20 Statewide Stratgic Plan Performance Measures						
Percentage of students participating in undergraduate research.	36%	0%	0%	0%	0%	Note: This measure is being requested independently from your IR offices.

University of Idaho

Performance Measure	FY2018	FY2019	FY2020	FY2021	FY2022	Benchmark
Statewide amount of total annual research and development expenditures as reported in the National Science Foundation (NSF) Higher Education Research and Development Survey, 5 Year Average.	$103,334,253	$106,568,703	$109,640,230	$110,327,710	$111,540,817	5% average increase across the previous 5 years
Statewide amount of total annual research and development expenditures as reported in the National Science Foundation (NSF) Higher Education Research and Development Survey. % increase over prior 5 yr period.	3.13%	3.13%	2.88%	0.63%	1.10%	5% average increase across the previous 5 years
Number of new sponsored project proposals submitted by an Idaho University that are collaborative, and have a subaward (or are NSF Collaborative) with another Idaho institution of higher education (in either direction).	23	17	16	18	17	5% annual increase
Number of new sponsored project awards to an Idaho University that are collaborative, and have a subaward (or are NSF Collaborative) with another Idaho public postsecondary institution (in either direction).	14	9	11	6	6	3% annual increase
Number of competitive research project per year supported by the Idaho Higher Education Research Council that directly address research opportunities outlined in Higher Education Research Strategic Plan and that involves at least two Idaho public postsecondary institutions.	N/A, new metric	N/A, new metric	N/A, new metric	N/A, new metric	2	1 per year
Statewide amount of awards with the Idaho National Laboratory by the institutions. 5 year average.	20.60	22.80	25.40	28.60	31.20	5% average increase across the previous 5 years
Statewide amount of awards with the Idaho National Laboratory by the institutions. % increase over prior 5 yr period.	-0.96%	10.68%	11.40%	12.60%	9.09%	5% average increase across the previous 5 years
Number of new sponsored projects with private sector contributions (funds, in-kind, etc.). 5 year average. This funding from private sector only. See Note A	47.80	48.80	50.80	52.20	50.60	5% average increase across the previous 5 years
Number of new sponsored projects with private sector contributions (funds, in-kind, etc.). % increase over prior 5 yr period. This funding from private sector only. See Note A	-2.45%	2.09%	4.10%	2.76%	-3.07%	5% average increase across the previous 5 years
Number of new sponsored projects with private sector contributions (funds, in-kind, etc.). 5 year average. This funding is federal pass-through only. See Note A	16.60	18.40	20.40	21.20	21.60	5% average increase across the previous 5 years

University of Idaho

Number of new sponsored projects with private sector contributions (funds, in-kind, etc.). % increase over prior 5 yr period. This funding is federal pass-through only. See Note A	3.75%	10.84%	10.87%	3.92%	1.89%	5% average increase across the previous 5 years
Number of technology transfer agreements, as defined the Association of University Technology Managers, resulting from research at the institutions. 5 year average.	8.2	7.6	6.6	7	8.6	5% average increase across the combined institutions from the previous 5 years
Number of technology transfer agreements, as defined the Association of University Technology Managers, resulting from research at the institutions. % increase over prior 5 year period.	-2.38%	-7.32%	-13.16%	6.06%	22.86%	5% average increase across the combined institutions from the previous 5 years
Number of invention disclosures resulting from research at the institutions. 5 year average.	19	20.6	24.8	27.2	27	5% average increase across the previous 5 years
Number of invention disclosures resulting from research at the institutions. % increase over prior 5 year period	9.20%	8.42%	20.39%	9.68%	-0.74%	5% average increase across the previous 5 years
Number of invention disclosures vetted through entrepreneurial competitions or industry partnerships resulting from research at the institutions.	N/A, new metric	N/A, new metric	N/A, new metric	N/A, new metric	11	2 per year per institution
Number of undergraduate and graduate students at the institutions paid from sponsored projects. 5 year average	1164.8	1194.8	1180	1151.4	1118.6	3% average increase across the previous 5 years
Number of undergraduate and graduate students at the institutions paid from sponsored projects. % increase over prior 5 year period	4.30%	2.58%	-1.24%	-2.42%	-2.85%	3% average increase across the previous 5 years
Percentage of degree-seeking undergraduate students at the institutions who had a research experience. 5 year average	61%	61%	60%	60%	57%	10% average increase across the previous 5 years
Percentage of degree-seeking undergraduate students at the institutions who had a research experience. % increase over prior 5 year period	-0.93%	-0.41%	-0.51%	-1.08%	-3.98%	10% average increase across the previous 5 years
Number of faculty and staff at the institutions paid from sponsored projects. 5 year average	1218.20	1246.20	1264.80	1273.80	1286.20	3% average increase across the previous 5 years
Number of faculty and staff at the institutions paid from sponsored projects. % increase over prior 5 year period	0.91%	2.30%	1.49%	0.71%	0.97%	3% average increase across the previous 5 years

Performance Measure Explanatory Notes:

Note A - Activity with private sector/industry - (a) is funding from private sector, and (b) is funding from private sector, federal flow through.

Boise State University

Sponsored Project Activity Report FY2023

Awards for the Period July 1, 2022 through June 30, 2023

Activity Type	Federal	State	Industry	Other	Total	% of Grand Total
Instruction:						
Sponsored Programs	$ 139,420	$ 1,098,554	$ -	$ 327,526	$ 1,565,500	
State Instruction Appropriations	$ -	$ -	$ -	$ -	$ -	
Subtotal Instruction	$ 139,420	$ 1,098,554	$ -	$ 327,526	$ 1,565,500	1.72%
Research:						
Sponsored Programs	$ 45,546,639	$ 417,885	$ 655,742	$ 2,898,301	$ 49,518,567	
State Research Appropriations	$ -	$ 1,400,000	$ -	$ -	$ 1,400,000	
Subtotal Research	$ 45,546,639	$ 1,817,885	$ 655,742	$ 2,898,301	$ 50,918,567	55.95%
Other Sponsored Activities:						
Sponsored Programs	$ 33,855,751	$ 2,046,029	$ 323,585	$ 2,183,830	$ 38,409,195	
State Other Sponsored Activities Appropriations	$ -	$ 111,500	$ -	$ -	$ 111,500	
Subtotal Other Sponsored Activities	$ 33,855,751	$ 2,157,529	$ 323,585	$ 2,183,830	$ 38,520,695	42.32%
More Than One Type						
Sponsored Programs	$ 9,500	$ -	$ -	$ -	$ 9,500	
State Other Sponsored Activities Appropriations	$ -	$ -	$ -	$ -	$ -	
Subtotal More Than One Type	$ 9,500	$ -	$ -	$ -	$ 9,500	0.01%
Grand Totals	**$ 79,551,310**	**$ 5,073,968**	**$ 979,327**	**$ 5,409,657**	**$ 91,014,262**	
Percent of Grand Total	***87.41%***	***5.57%***	***1.08%***	***5.94%***	***100%***	***100%***

Expenditures for the Period July 1, 2022 through June 30, 2023

Activity Type	Federal	State	Industry	Other	Totals	% of Grand Total
Instruction:						
Sponsored Programs	$ 2,064,059	$ 1,299,752	$ -	$ 412,506	$ 3,776,317	
State Instruction Appropriations	$ -	$ 176	$ -	$ -	$ 176	
Subtotal Instruction	$ 2,064,059	$ 1,299,927	$ -	$ 412,506	$ 3,776,493	5.76%
Research:						
Sponsored Programs	$ 36,370,509	$ 1,789,322	$ 345,658	$ 1,377,254	$ 39,882,742	
State Research Appropriations	$ -	$ 1,575,438	$ -	$ -	$ 1,575,438	
Subtotal Research	$ 36,370,509	$ 3,364,760	$ 345,658	$ 1,377,254	$ 41,458,180	63.18%
Other Sponsored Activities:						
Sponsored Programs	$ 17,383,881	$ 1,482,953	$ 226,907	$ 1,167,105	$ 20,260,847	
State Other Sponsored Activities Appropriations	$ -	$ 125,538	$ -	$ -	$ 125,538	
Subtotal Other Sponsored Activities	$ 17,383,881	$ 1,608,491	$ 226,907	$ 1,167,105	$ 20,386,385	31.07%
Grand Totals	**$ 55,818,450**	**$ 6,273,178**	**$ 572,565**	**$ 2,956,865**	**$ 65,621,058**	
Percent of Grand Total	***85.06%***	***9.56%***	***0.87%***	***4.51%***	***100%***	***100%***

Idaho State University

Office for Research

Award Breakdown by Funding Agency Type and Project Type

July 1, 2022 through June 30, 2023

	Federal	State	Industry	Other/Foundation	Totals	Percent of Total
Research	6,902,397	1,398,454	5,600,858	4,075,478	17,977,187	37%
Training and Instruction	6,536,378	1,267,978	252,094	247,613	8,304,063	17%
Other/Public Service	17,390,213	3,148,358	1,061,005	1,065,366	22,664,942	46%
Totals	30,828,988	5,814,790	6,913,957	5,388,457	48,946,192	100%
Percent of Total	63%	12%	14%	11%	100%	

State = Awards from state of Idaho agencies, including other state universities and colleges

Other/Foundation = Awards from other funding agecnies, such as foundations, universities from outside of Idaho, local municipalities, non-profits, etc.

File Name: ISU OR Annual Awards FY23

Idaho State University

Office for Research

Expenditure Breakdown by Funding Agency Type and Project Type

July 1, 2022 through June 30, 2023

	Federal	State	Industry	Other/Foundation	Totals	Percent of Total
Research	3,818,694	2,799,297	3,252,819	1,155,290	11,026,100	37%
Training and Instruction	6,906,903	2,090,807	1,439,742	656,729	11,094,181	37%
Other/Public Service	3,883,148	3,338,865	230,474	131,193	7,583,680	26%
Totals	14,608,746	8,228,969	4,923,035	1,943,212	29,703,961	100%
Percent of Total	49%	28%	17%	7%	100%	

File Name: ISU OR Annual Expenditures FY23

University of Idaho - FY2022 Research Activity Report

Awards for the Period July 1, 2021 through June 30, 2022

	Federal	State of Idaho	Industry	Other	Total	% of Grand Total	% of Sponsor Total
Instruction:							
Sponsored Programs	$ 387,188.00	$ 73,750.06	$ 33,000.00	$ 26,964.00	$ 520,902.06		**0.46%**
	$ 387,188.00	$ 73,750.06	$ 33,000.00	$ 26,964.00	$ 520,902.06	**0.33%**	
Research:							
Sponsored Programs	$ 63,344,271.58	$ 2,003,942.20	$ 1,342,267.00	$ 4,612,463.50	$ 71,302,944.28		**62.70%**
Federal Land Grant Appropriations (FFY22)	2,899,446.00				2,899,446.00		
State Research Appropriations (CALS,FUR,IGS,EPSCoR)		23,249,145.67			23,249,145.67		
Subtotal Research:	$ 66,243,717.58	$ 25,253,087.87	$ 1,342,267.00	$ 4,612,463.50	$ 97,451,535.95	**62.88%**	
Public Service:							
Sponsored Programs	$ 38,205,494.01	$ 1,572,171.81	$ 410,691.00	$ 1,712,388.73	$ 41,900,745.55		**36.84%**
Federal Land Grant Appropriations (FFY22)	3,091,570.56				3,091,570.56		
State Extension Appropriations		12,021,954.33			12,021,954.33		
Subtotal Public Service:	$ 41,297,064.57	$ 13,594,126.14	$ 410,691.00	$ 1,712,388.73	$ 57,014,270.44	**36.79%**	
Construction:							
Sponsored Programs	-	-	-	-	-	**0%**	**0%**
Total Sponsored Programs Funding	**$ 101,936,953.59**	**$ 3,649,864.07**	**$ 1,785,958.00**	**$ 6,351,816.23**	**$ 113,724,591.89**		
Percent of Total Sponsored Programs	***90%***	***3%***	***2%***	***5%***	***100%***		***100%***
Grand Total of All Funding Per Category	**$ 107,927,970.15**	**$ 38,920,964.07**	**$ 1,785,958.00**	**$ 6,351,816.23**	**$ 154,986,708.45**		
Percent of All Funding	***70%***	***25%***	***1%***	***4%***	***100%***	***100%***	

Expenditures for the Period July 1, 2020 through June 30, 2021 (includes accruals)

	Federal	State of Idaho	Industry	Other	Institutional	Total	% of Grand Total	% of Sponsor Total
Instruction:								
Sponsored Programs	$ 2,093,312.32	$ 142,455.65	$ 36,490.53	$ 30,242.89	$ 314,173.67	$ 2,616,675.06		**2.3%**
	$ 2,093,312.32	$ 142,455.65	$ 36,490.53	$ 30,242.89	$ 314,173.67	$ 2,616,675.06	**1.5%**	
Research:								
Sponsored Programs	$ 53,054,782.08	$ 1,209,426.60	$ 1,922,516.09	$ 3,744,299.48	$ 9,104,346.94	$ 69,035,371.19		**61.8%**
Federal Land Grant Appropriations	3,105,482.70	-	-	-	-	3,105,482.70		
State Research Appropriations (CALS,FUR,IGS,EPSCoR)		24,325,071.86	-	-	-	24,325,071.86		
State Other Appropriations		7,622,711.49	-	-	-	7,622,711.49		
Other Sources	-	-	-	2,959,034.44	8,555,349.54	11,514,383.98		
Subtotal Research:	$ 56,160,264.78	$ 33,157,209.95	$ 1,922,516.09	$ 6,703,333.92	$ 17,659,696.48	$ 115,603,021.22	**66.6%**	
Public Service:								
Sponsored Programs	$ 32,739,664.66	$ 1,431,994.13	$ 261,907.73	$ 1,628,957.01	$ 3,919,007.68	$ 39,981,531.21		**35.8%**
Federal Land Grant Appropriations	3,106,476.32					3,106,476.32		
State Extension Appropriations		12,030,623.63				12,030,623.63		
Other Sources					242,776.40	242,776.40		
Subtotal Public Service:	$ 35,846,140.98	$ 13,462,617.76	$ 261,907.73	$ 1,628,957.01	$ 4,161,784.08	$ 55,361,407.56	**31.9%**	
Construction:								
Sponsored Programs	$ -	$ -	$ -	$ -	$ -	$ -	**0.0%**	**0.0%**
Total Sponsored Programs Funding	$ 87,887,759.06	$ 2,783,876.38	$ 2,220,914.35	$ 5,403,499.38	$ 13,337,528.29	$ 111,633,577.46		
Percent of Total Sponsored Programs	***79%***	***2%***	***2%***	***5%***	***12%***	***100%***		**100%**
Grand Total of All Funding Per Category	$ 94,099,718.08	$ 46,762,283.36	$ 2,220,914.35	$ 8,362,533.82	$ 22,135,654.23	$ 173,581,103.84		
Percent of All Funding	***54%***	***27%***	***1%***	***5%***	***13%***	***100%***	**100%**	

FY 2023 INFRASTRUCTURE REPORT SUMMARY – Boise State University

Detailed Allocations	
Library Support	
Graduate Research Assistantships/Research Associates	
Post Doctoral Fellows	
Technician Support	
Maintenance Contracts	
Research Equipment	$200,000
Competitively Awarded Summer Research Support	
Start-Up Funds for New Hires	$50,000
Incentives to Reward Faculty for Research Achievements	
Other	
Total Allocation	250,000

FY 2023 INFRASTRUCTURE REPORT SUMMARY – Boise State University

Detailed Allocations	
Publications in refereed journals	
Presentations at professional meetings and conferences	
Grants Received as a result	
Grants Pending	
Student Participation	
Faculty Participation	
Other Participation	
Patents Awarded	
Patents Pending	
Manuscripts Submitted	

FY 2023 INFRASTRUCTURE REPORT SUMMARY – Boise State University

Notes:
Research Equipment:
HPC (High Performance Computing) Equipment and Software - $117,000
MOCVD - $80,000
Cage Wash Pumps – Biomedical Research Vivarium - $3,000

TOTAL: $200,000

Startup
COAS Biology startup – Simlar-Williamson - $25,000
COHS Kinesiology startup – Bacelar - $25,000

TOTAL: $50,000

FY 2023 INFRASTRUCTURE REPORT SUMMARY - Idaho State University

	Total $	Detailed Allocations
Library Support	$0	
Graduate Research Assistantships / Research Associates	$0	
Post-Doctoral Fellows	$0	
Technician Support	$0	
Maintenance Contracts	$87,441	Allocatied to repair or environmental improvements to the gas used in the chiller systems for the IAC LINACs. Without the chiller system, no contracts or grants could be executed on the LINACs.
Research Equipment	$119,492	Allocated for repair of power supply and 4 Ghz oscilloscope that is required by research. Sequencer that comes with a laptop for DNA. Ground automated sensor and centrifuge
Competitvely Awarded Summer Research Support	$0	
Start-Up Funds for New Hires	$0	
Incentives to Reward Faculty for Research Achievements	$0	

FY 2023 INFRASTRUCTURE REPORT SUMMARY - Idaho State University

Other	$43,067	Replace the water heat exchanger for the cage washer in Animal Facilities. Re-pipe the boiler to make it stand alone to work for emergency heating to the animal rooms.
Total Allocation	$250,000	

FY 2023 INFRASTRUCTURE REPORT SUMMARY - Idaho State University

Publications in Refereed Journals	Manuscript in preaparation for submission within the next 3-6 months on detecting water quality patterns and sources of nitrate in the Lower Portneuf Valley
Presenations at Professional Meetings and Conferences	1 presentation at American Geophysical Union
Grants Received as a Result	Battelle Energy Alliance (196K in 2023), Kirkland Airfor Base (67K), Sandia National Lab (52K), Wyle Labs (52K)
Grants Pending	
Student Participation	Participation of 3 graduate students in coordinating calibration, deployment and debugging of sensor issues. 1 graduate student participation in Geosciences.
Faculty Participation	Sarah Godsey is working with faculty Kathleen Lohse and former faculty member Rebecca Hale on nitrate patterns
Other Participation	engagement with post-baccalaureate scholar Carly Bauer, who worked with Sarah Godsey and private landowners to secure permissions for deployment and maintenance, and with the City of Pocatello to update water quality records; also engaged with the Portneuf Watershed Partnership to gather stakeholder advice on where to deploy the sensors.
Patents Awarded	
Patents Pending	

FY 2023 INFRASTRUCTURE REPORT SUMMARY - Lewis-Clark State College

	Total $	Detailed Allocations	
Library Support	$44,052	See Library Support Detail tab. (below)	
Qualtrics License	$7,883	Annual campus license for survey software for use by students as well as faculty and staff for their survey research.	
SPSS campus-wide licenses	$7,501	Statistical Package for Social Sciences (SPSS) for use by faculty in statistical research methods instruction.	
Research Symposium	$5,462	Annual LC State Student Research Symposium: Reception Costs $3367.56; Keynote Speaker costs $717.8; Printing costs $1,376.49	
Salary for Research Librarian	$39,103	Salary and fringe for LC State Librarian to support undergraduate and faculty research efforts.	
Total Expenditures	$104,000		

	Detailed Allocations	
Publications in Refereed Journals		
Presentations at Professional Meetings and Conferences		
Grants Received as a Result		
Grants Pending		
Student Participation	Students utilize the research librarian and the purchased library resources in coursework, undergraduate research activities, and in preparing for the annual LC State Research Symposium. For survey research, Qualtrics survey software was purchased using HERC Infratructure funds for studnets' use at no cost.	
Faculty Participation	Faculty utilize the research librarian, the SPSS and Qualtrics software products, the purchased library resources and assist students in preparing for the annual LC State Research Symposium.	
Other Participation	Community members, faculty and staff emeritus, and alumni are invited to attend the research symposium each year.	
Patents Awarded		
Patents Pending		

FY 2023 INFRASTRUCTURE REPORT SUMMARY - Lewis-Clark State College

Ebsco - Nature, Online Journal (Main pkg)	$14,489.25
Ebsco - Cell Online Journal (Elsevier pkg)	$2,461.13
Ebsco - AAAS, Science Journal (Lippincott pkg)	$3,664.68
	$20,615.06

Infobase Learning - Master Academic College	$11,775.68
Infobase Learning - Technical and Trade Education Collection	$1,685.03
Infobase Learning - Allied Health Collection	$2,248.20
Infobase Learning - Nursing Video Collection	$3,594.07
Infobase Learning - Feature Films for Education Collection	$4,133.55
	$23,436.53

FY 2023 - University of Idaho
INFRASTRUCTURE REPORT SUMMARY

	Total $	Detailed Allocations
Library Support	$48,600	Implementation of a new Research Information Management System platform
Graduate Research Assistantships / Research Associates	$5,637	College of Graduate Studies Research Fellowship
Post-Doctoral Fellows	$449	(2) Post-Doctoral conference registration support
Technician Support	$7,166	$7,166 Electron Microscopy on-campus;
Maintenance Contracts	$0	
Equipment	$36,528	$36,528, Research Computer and Data Services equipment upgrades
Start-Up Funds for New Hires	$0	
Incentives to Reward Faculty for Research Achievements	$6,505	Excellence in Research Award
Other	$145,115	$55,392 for Exterior Water Main for the Hagerman Fish Culture Experiment Station; $2,335 for PostDoc/Faculty Mentor Award; $10,000 publishing support; $1,877 cost share for developing thermostat prototype for holistic climate control system. $15,000 travel support for the Idaho Geological Survey director to meet with stakeholders; $10,000 for IRIC Building improvements (Dry labs and research office space) $2,322 INBRE Student Research award, $10,000 for Aquaculture Research Institute Director LEAD21 professional development; $4,506 funding for faculty to strengthen NSF competitive proposal development; $5,000 research documentary support; $2,047 Institutional Research Data Analyst position support; $26,636 Faculty Research Support - LARF
Total Allocation	$250,000	

FY 2023 - University of Idaho
INFRASTRUCTURE REPORT SUMMARY

	Detailed Allocations
Publications in Refereed Journals	7
Presentations at Professional Meetings and Conferences	2
Grants Received as a Result	
Grants Pending	
Student Participation	9
Faculty Participation	39
Other Participation	21
Patents Awarded	
Patents Pending	

NOTE: Other participation includes postdocs, research scientists, research specialists, and stakeholders.

Higher Education Research Council
Undergraduate Research Fellows
Boise State University
Final Report

Academic Year 2022-2023

Donna Llewellyn, Executive Director, Institute for Inclusive & Transformative Scholarship
Nico Diaz, Senior Student Initiatives Coordinator, Institute for Inclusive & Transformative Scholarship
Lavanya Seetamraju, Undergraduate Research Project Manager, Institute for Inclusive & Transformative Scholarship

Introduction

The Institute for Inclusive & Transformative Scholarship oversaw the HERC Undergraduate Research Fellowship at Boise State University Fall 2022, and Spring 2023. HERC funds were used to support Boise State undergraduate students who had minimal research experience with a 10-week mentored research opportunity during the fall and spring semesters. Funds provided by the Higher Education Research Council supported a total of 19 students across 13 different STEM disciplines.

On behalf of the Institute for Inclusive & Transformative Scholarship, we thank the Higher Education Research Council for their generous support in helping build meaningful experiential learning experiences for Idaho students and supporting faculty research.

The Higher Education Research Council provided $65,000 in funding to support STEM undergraduate research at Boise State University this year. Please see the table below of how stipends and travel awards were dispersed.

HERC Funding:

Stipends	**Amount**	**Details**
Fall Semester Research Stipends	$27,000	9 students at $3,000 each
Spring Semester Research Stipends	$33,000	11 students at $3,000 each
Additional Research Support Spring	$1,800	1 student at $1,800
Travel grants	$3,200	see table below
Total	**$65,000**	

Conference	**Amount**	**Details**
Intermountain Social Research Lab	$1088.89	Students travel and lodging to Seattle, WA
APS Conference for Undergraduate Women in Physics (CUWiP)	$525	2 students registration, travel, and local transportation in Seattle, WA
European Conference on Innovation and Entrepreneurship	$1,128.15	1 student airfare to Portugal
Raptor Research Foundation Conference	$457.96	1 student registration and airfare to Albuquerque, NM

The titles and abstracts of the student projects are on the following pages.

Fall 2022 and Spring 2023 HERC Fellows
Research Projects

Fall 2022 Fellows

Alejandra Almaraz, Materials Science and Engineering

Title: Atomic Force Microscopy for Aerospace Applications
Abstract: On July 20, 1969, the Apollo 11 astronauts became the first humans to set foot on the moon. Since then, science has evolved rapidly, and many more astronauts have ventured out to explore more of the vastness of outer space. Although there have been many more successful space missions since then, scientists have discovered that astronauts experience bone and muscle degeneration while in a reduced gravity environment for extended periods of time. The ability to remain in outer space longer with less tissue degeneration would enable more information gathered with less risk. To offer a solution, in collaboration with Dr. Gunes Uzer and Dr. Sean Howard, the nanomechanical properties of mesenchymal stem cell (MSC) nuclei were analyzed using atomic force microscopy (AFM). Specifically, AFM cantilever-based nanoindentation was employed to measure the stiffness (elastic modulus) of treated nuclei relative to control nuclei, indicating the results of the various treatments (low intensity vibrations (LIV), structural knockouts, and pharmaceuticals) applied to the MSCs in Dr. Uzer's lab.

Ellie Cain, Kinesiology

Title: An intervention to combat the negative effects of perfectionism by incorporating elements of self-compassion for youth gymnasts
Abstract: In general, perfectionism means to not accept any results that are not considered "flawless". Perfectionism is a topic that has been widely researched in clinical settings but more research is needed in the sports environment. The current project aims to investigate interventions aimed at reducing perfectionistic tendencies in the sport of gymnastics, a context that may be especially prone to developing perfectionism. There are two widely accepted dimensions of perfectionism: perfectionistic strivings and perfectionistic concerns. Perfectionistic strivings are having high personal standards and wanting to achieve high goals while perfectionistic concerns are worries about making mistakes and evaluating oneself based on performance/mistakes. Perfectionistic striving typically produces adaptive outcomes, while perfectionistic concerns are viewed as the maladaptive aspects of perfectionism including poor performance, anger, anxiety, depression, and other maladaptive behaviors. (Dunn et. al, 2018). It is for this reason that perfectionistic concerns are targeted in interventions. One construct that seems to be possible to contrast the negative effects of perfectionistic concerns is self-compassion. Self-compassion is when someone has an accepting, supportive, and nonjudgmental attitude directed towards themselves and can alleviate suffering while enhancing overall mental health (Mosewich). The goal of incorporating this construct is to highlight perfectionistic striving elements and diminish perfectionistic concerns. For this project, we have developed four workshops that will be introduced to youth gymnasts in order to educate them about perfectionism and combat its negative effects in both sport and other domains. To evaluate the intervention, athletes will complete the Perceived Stress Scale, Sport Multidimensional Perfectionism Scale, and Self Compassion scale before and after the intervention.

Fall 2022 and Spring 2023 HERC Fellows
Research Projects

Zachary Camargo, Chemistry/Mathematics

Title: Synthesis of a Prebiotic Iron Cyanocarbonyl Complex
Abstract: Organometallic compounds delivered by extraterrestrial meteorites may have been crucial to the development of hydrogenase enzymes on early Earth. Here, we used two different published methods to synthesize an iron cyanocarbonyl complex resembling parts of the active sites of these enzymes. This complex was characterized via infrared (IR) spectroscopy and mass spectrometry for use as a standard for future research on the topic of enzyme origins.

Catherine Isaak, Biology

Title: Phenology of the Great Horned Owl (Bubo virginianus) population in coastal Texas and its potential effects to the endangered Northern Aplomado Falcon (Falco femoralis septentrionalis)
Abstract: Phenology of the Great Horned Owl (Bubo virginianus) population in coastal Texas and its potential effects to the endangered Northern Aplomado Falcon (Falco femoralis septentrionalis) by Catherine L. Isaak, David Bontrager, and Dr. Jennyffer Cruz
Anthropogenic activities such as wildfire suppression, overgrazing, and climate change contribute to shrub encroachment of native plains and savannas. These changes may seem insignificant but can result in unintended consequences for species inhabiting savannas. The Northern Aplomado falcon was extirpated from the U.S. in the early to middle 1900s, and in 1986 the species was listed as an endangered species under the Endangered Species Act. For three decades, the Peregrine Fund has tried to reintroduce the species in west and south Texas and southern New Mexico. Shrub encroachment has changed the south Texas coastal plains and savannas to the possible disadvantage of the Northern Aplomado Falcon (Falco femoralis septentrionalis). We hypothesize that Great Horned Owls (Bubo virginianus) (GHOW) have taken advantage of these modified habitats, bringing them in closer proximity to the Aplomado Falcon population in the Laguna Atascosa National Wildlife Refuge. I conducted a literature review to establish phenology patterns for Great Horned Owls across North America. I compared results from the literature review against sound data collected in late December 2021 to early March 2022 with three autonomous recording units and processed the sound data through Raven Pro software. Specific vocal patterns indicative of a GHOW were checked manually. Breeding phenology for GHOWs starts with male advertisement via hooting, followed by an incubation period of 33 days on average and completed by eight weeks with nestlings until fledging. Overall, phenology of GHOWs in coastal Texas resembled those from the Yukon in southwestern Canada, which is surprising given the large latitudinal differences between these two locations. Late December was probably too late to start monitoring GHOWs so we suggest shifting monitoring to starting in November and ending in early March. Appropriate timing of monitoring protocols is essential to ensuring accurate estimates of owl distribution and abundance. GHOWs are likely to prey on juvenile Aplomado Falcons. After fledging, higher numbers of GHOWs juveniles may remain for six to eight months before the juveniles disperse. This represents May to November, possibly to January where there are an increased number of GHOWs in coastal Texas.

Elizabeth Jessmore, Biology

Title: DNA Fecal Extractions; The Power of Poop
Abstract: The research for this HERC fellowship consisted of my involvement in two aligned research projects in the Conservation Genetics Lab at Boise State University, one relating to Sharp-tailed Grouse (Tympanuchus phasianellus) the other to Greater Sage-Grouse (Centrocercus urophasianus). Both of these grouse are in decline across the western United States, and conservation practitioners are eager to understand

the mechanisms that allow for improved conservation success. Fecal pellets of grouse allow for researchers to understand many mechanisms that may be underpinning the local population demographics, including host demographics (from avian DNA), grouse diet (from plant DNA, via trnL DNA metabarcoding), and grouse microbial communities (from microbial DNA, through 16S metabarcoding). The goal of the research is to explore the methodology of extracting DNA from several different communities found within grouse fecal pellets. In particular, Elizabeth will focus on extracting plant DNA from Sharp-tailed Grouse fecal pellets for downstream dietary analyses and host DNA from Greater Sage-grouse fecal pellets to understand host demographics (e.g., host sex). Extracting host DNA from fecal pellets has been challenging, so this work will uncover the best approach for maximizing host DNA yield for downstream analysis. This work will allow researchers to gain multiple insights from the same fecal pellet and use this information to inform conservation management. Questions of interest to conservation practitioners include how are populations related to one another and how grouse transition their diet and microbiomes when translocated to new environments. Because fecal sampling is a non-invasive approach, this allows conservation practitioners an effective and efficient approach to learn more about the birds they manage for improved conservation success.

Payton Lyons, Applied Mathematics/Economics

Title: Using Partial Differential Equations in 3D sagebrush population modeling
Abstract: Partial Differential Equations are of significant use in most fields. From modeling heat diffusion to creating JPEG images. One of the more prevalent uses is in modeling population dynamics. In this project, we created a stage-structured partial differential equation to understand the growth dynamics of sagebrush populations in the great basin. We used real world data to estimate parameter values and then view the modeling results after that to identify ideal initial planting conditions. This project identified that planting sagebrush in a grid created slightly more efficient growth, however in the end it is indiscernible from random planting.

Kerry Molina, Geosciences

Title: Inclusivity in the outdoors as a way to promote diversity in geoscience
Abstract: The lack of inclusion and diversity is identified as "the single largest cultural problem facing the Geosciences today" (Dutt, 2020). In particular, the outdoor field experiences inherent to many geology courses and field camps may keep under-represented groups from participation. Cultural, financial, and experiential barriers influence under-represented student engagement in outdoor recreation. It is possible to break these barriers by giving opportunities that can lead to confidence and support in the pursuit of field-based sciences. My research will implement a program at Boise State called Making Adventures Possible for All Students (MAPAS). MAPAS was developed at UC Santa Barbara in response to the lack of representation and diversity in outdoor recreation. It is a program that creates opportunities for students from different backgrounds to collectively gain experience in nature which can increase engagement in geoscience. MAPAS will promote an inclusive environment, run by students with little-to-no previous experience in the outdoors. I've spent the last 7 months working on a NSF-funded student board for assessing inclusivity of the geoscience department, that measures are working and what needs to be improved. I conducted faculty interviews and assisted in a student survey. Lack of outdoor experience is one of the biggest barriers. The geoscience students within the department would benefit from an inclusive program that supports participation and building leadership, especially for under-represented groups that have been historically excluded from outdoor recreation. Some students may face cultural barriers to outdoor

Fall 2022 and Spring 2023 HERC Fellows
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experiences, while other people may lack the needed equipment or have physical conditions that limit outdoor engagement. MAPAS will go beyond the geoscience department, it is for everyone. To reach out to students within all the departments takes a lot of time and work. I would use the HERC support to dedicate the time and effort to create this inclusive outdoor program: MAPAS.

The following images showcase the student and their mentor's effort.

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Allison Muenzer, Materials Science and Engineering

Title: Synthesis of gamma-phase Electrolytic Manganese Dioxide for Use in Aqueous Zinc Batteries
Abstract: Interest in manganese dioxide for use in electrochemical energy storage systems has increased in recent years because it is environmentally friendly, low cost, and enables safer operating conditions. γ-phase electrolytic manganese dioxide (EMD) is of particular interest due to its larger 1x2 tunneling structure that enables greater ion transport and higher specific capacity. MnO_2 can be synthesized from a redox reaction of $KMnO_2$ and $MnCl_2$ and the product can be annealed at 200°C for 32 hours for a phase transformation into γ-phase that is verified with XRD. EMD slurry is used to laminate carbon paper heat treated to 350°C for 8 hours to produce the cathode electrode material assembled into coin cells. Rate studies of commercial EMD showed a specific capacity of ~150 $mAhg^{-1}$ at 0.5C rate, approximately two times greater when compared to synthesized EMD specific capacity of 60 $mAhg^{-1}$ at 0.5C rate. Cycling repeatability improved with the use of synthesized EMD when compared to commercial EMD with less deviation between charge/discharge cycles. EMD has the potential for use in electrochemical energy storage systems once an appropriate dopant used to stabilize the γ-phase can be determined.

Zixi Zhao, Computer Science

Title: A Communicative Fine-grained Privacy Control Framework for Augmented Reality
Abstract: We develop a user interface as part of a privacy control framework for exerting privacy control on Augmented Reality (AR) systems. The AR devices continuously sense the wearer's surrounding environment using cameras and can be a threat source to users' or bystanders' privacy. Our framework projects virtual objects that convey privacy rules intuitively to users and enable revealing those privacy threats as well as improving their privacy-control flexibility. The user first registers privacy needs through standard AR interaction interfaces in the offline stage. Then the user can leverage the AR interfaces using the framework to drive the generation of input control policy through spatial-relation analysis over surrounding physical

objects. The policies are loaded in the online stage to enforce input control rules over the visual information of target physical objects and hide sensitive information. We implement our proof-of-concept application under the ARCore platform and test the system functionality and performance on the Samsung S9 Plus device. Our experiment results reveal several challenges and opportunities for the future study of privacy control of AR systems.

Spring 2023 Fellows

Andrew Altman, Engineering

Title: Sagittal Plane Device Analysis for Infant Product Safety
Abstract: Approximately 15,000 infant injuries occurred in inclined sleep products in 2021. This is likely due to infants often being left unattended while sleeping in products not designed for sleep. Prior research has established that a slouched or flexed trunk posture increases the effort required to breath in adults and infants. This higher demand of breathing due to slumped posture could put infants at a greater risk of suffocation in unsafe products. Currently there is no standardized method of infant body position testing in infant products. To address this, our lab created a 4-segment sagittal plane device. This device aims to provide an accurate and easy way to perform infant product safety testing without the need for testing with real baby participants. My role in this project was determining an analysis method to calculate and validate trunk flexion of the sagittal plane device and compare it to in vivo human subjects data. This was done through assisting with collection and analysis of motion capture data for participants as well as the 4-segment device in 4 different infant products. MATLAB code was created to perform calculations using 3D-vector math, another MATLAB code was used to perform these calculations using a method where the change in distance between the shoulders and ASIS was evaluated to calculate angles for trunk flexion. This data was then analyzed and compared against in vivo participant data. It was found that the changing distance method of analysis produced similar results for the 4-segment sagittal plane device as compared to the participant mean data in the products. This indicates that the changing distance method for calculating torso flexion has less range, producing more consistent values and likely produces values closer to the infant's true flexion when compared to the vector method. The vector method was found to produce variable results compared to the changing distance method.

Rachel Capezza, Biology

Title: Examining Relationships Between Antagonism, Antimicrobial Properties, and Metabolic Profiles of Sagebrush-Associated Microbes
Abstract: The phyllosphere is defined as the aerial parts of a plant which host diverse communities of microbes. This phyllosphere microbiome is an interactive system comprised of interspecific competitive and antagonistic dynamics, often due to the production of antimicrobial metabolites. In addition to influencing overall community structure and host plant health, these metabolites can be isolated and harnessed for biocontrol or medicinal applications. To date, no studies have examined the metabolic properties of microbes isolated from the leaves of sagebrush (Artemisia tridentata). In this study, we selected four microbes isolated from sagebrush leaves to determine their interactive properties when co-cultured in vitro and compare these interactions to antimicrobial properties against E. coli and S. aureus. We hypothesized that the microbes exhibiting antagonism in vitro would express antimicrobial metabolites. The four sagebrush-associated microbes we selected included Aureobasidium pullulans, Bacillus amyloliquefaciens, Cladosporium herbarum, and Filobasidium wieringae. We plated three replicates each of monoculture cultures and pairwise co-cultures

in each possible combination. Initial analysis revealed antagonistic dynamics between B. amyloliquefaciens/C. herbarum and A. pullulans/B. amyloliquefaciens co-cultures. Therefore, we produced crude extracts of these co-cultures and their corresponding monocultures to test against E. coli and S. aureus in a disk diffusion assay. However, no visible inhibition of bacterial growth occurred under these treatments. Nonetheless, forthcoming work using liquid chromatography-mass spectrometry (LCMS) may serve to isolate the mechanism driving growth inhibition of these isolates in vitro. Increasing our understanding of microbial interactions opens the door for myriad real-world applications in agriculture, ecosystem management, and medicine.

Asher Chivvis, Health Studies

Title: Inactivation of E.coli 8739 with Cold Atmospheric Pressure Plasma on Strawberries
Abstract: Foodborne illness and food shortages are a detriment to the normalcy of foreign and domestic populations that can cause widespread harms including diseases and a decline of economic productivity. Produce contaminated with E.coli causes serious risk to the infant, elderly, and immunocompromised population. Since contamination may be widespread, large amounts of fresh produce needs to be recalled as a result. In an effort to combat these issues, alternative methods of produce sanitation need to be looked at. The use of cold atmospheric-pressure plasma against planktonic bacteria on strawberries has proven that it is capable of inactivating a significant amount of the microorganisms with only a 5 minute exposure time (~99.9% reduction). Cold atmospheric-pressure plasma (CAPP) produces reactive oxygen and nitrogen species that result in oxidative damages to any microorganism that comes into contact with them. Since the cause of decomposition amongst most produce is a result of bacterial/fungal contamination, the removal of microorganisms could have a lasting impact on the shelf life of numerous agricultural products in addition to decreasing the occurrence of illness. Therefore it is prudent to explore the effect of CAPP on fresh fruits and vegetables in order to extend the length of time in which these items are viable for consumers.

Gianella Condor, Materials Science & Engineering

Title: Magneto-mechanical properties of 10M Ni-Mn-Ga after micro-peening
Abstract: Since the discovery of magnetic shape memory alloys, the manufacturing of the Ni-Mn-Ga alloy has been refined to minimize the material twinning stress and to maximize the work output under magnetic actuation. However, applications have lagged behind alloy development partially due to fatigue failure via magnetic and/or mechanical cycling as well the difficulty in controlling twin boundary motion. Previous research has demonstrated that a micropeening surface treatment improves fatigue life while maintaining twin boundary motion. In this study, we present a systematic characterization of the Ni-Mn-Ga material's magnetic and mechanical properties as it was affected by varying intensities of this micropeening surface treatment process. We prepared Ni-Mn-Ga sample via mechanical grinding and polishing and recorded the sample's magnetization and stress/strain characteristics as a baseline. We micropeened the prepared sample in its austenite phase via blasting it with glass beads at a specified pressure and duration. The stress and strain properties of the treated sample was measured via a custom micromechanical tester, and the magnetic properties measured via a vibrating sample magnetometer. The twinning stress of the sample increased and the total strain decreased as the pressure of the micropeen surface treatment increased. Optical micrographs indicate that the surface deformation caused by the micropeening treatment altered the surface roughness and also stabilized a fine twin configuration. Furthermore, we discovered that most of the magnetic-field-induced-stress is suppressed after a 30 psi micropeen treatment.

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Kaitlyn Linder, Physics

Title: Orientations of Galaxy Clusters in the Universe
Abstract: Galaxy clusters are large, gravitationally bound structures, primarily consisting of stars and dark matter. These two components form different shapes, which are oriented differently. Using data from IllustrisTNG, a publicly available set of hydrodynamical simulations, we calculate the 2D shapes from the inertia tensor of these clusters. Based on shapes measured from various methods, we find the misalignment between each shape. From these misalignments, we find that alignments between shapes measured based on individual particle positions tend to be much stronger than those measured with galaxy positions. We also find that shapes measured with these galaxy positions tend to be much more round as opposed to elliptical in shape.

Jeleana Loa, Radiologic Sciences

Title: Addressing the Nationwide Shortage of Radiologic Technologists
Abstract: There is currently a nationwide shortage of radiologic technologists. A 2022 survey conducted by AMN Healthcare found that radiologic technologists topped the list of new graduate allied health professionals hired by facilities thus indicating that radiologic technologists are in high demand. The purpose of this study is to determine by both division (region) and state, on a per capita basis, how many first-time candidates sat for the American Registry of Radiologic Technologists (ARRT) exam for the years 2020-2022. To accomplish this purpose, I examine the national average of candidates taking the ARRT exam per capita by state and division to determine which states and divisions are performing above or below the national average. The ARRT annually publishes data on the number of prospective radiologic technologists that sat for the registry exam by state. The data published for years 2020-2022 were averaged and then compared to the 2020 United States census data to determine the number of candidates produced in each state and in the nine separate United States census divisions on a per capita basis. The study found that during 2020-2022, divisions one through eight produced one ARRT registry candidate for every 27,033 residents. Division nine (Pacific division) was an outlier producing one ARRT registry candidate for every 50,527 residents. The national average for the time period in question was one ARRT registry candidate for every 29,295 residents, meaning the Pacific division is not producing as many ARRT registry candidates. This information may be used for education and advocacy purposes as well as a basis for further inquiry. Existing radiologic technology programs in states and divisions producing less ARRT candidates per capita could utilize this data to advocate for increased resources. Professional organizations and institutions could advocate to state and federal leaders and policymakers for increased resources for existing and new programs dedicated to producing radiologic technologists in order to keep pace with a shifting and growing population.

Jacob McKeever, Health Studies

Title: Vaping Prevention and Control Interventions Among Adolescents Within the United States: a Review of Present Literature
Abstract: In approximately 18 years since its emergence in the United States, electronic nicotine delivery system (e-cigarettes) usage (also known as vaping) has gained extreme popularity, especially among adolescents and young adults. Negative physiological effects of vaping or e-cigarette use among individuals is well-documented. Vaping has become increasingly widespread, and reached epidemic levels, crucially within the adolescent and young adult demographic aged 13-18 years old. Due to this increase and the negative health outcomes that vaping induces, prevention and control intervention programs have been utilized to

curb usage rates among adolescents and young adults. While analysis has been conducted on individual program effectiveness, gaps exist when comparing the effectiveness of programs. In order to fill this gap, a systematic literature review utilizing Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) protocols was conducted. The goal of the review was to summarize current programs used for vaping prevention and intervention control, determine what prevention and control intervention programs are most effective, and suggest best practices for vaping prevention and intervention control and areas for further research. Two databases (PubMed and Web of Science) were searched in March of 2023. The target population was adolescent and young adult demographic aged 13-18 years old.

Cheyon Sheen, Civil Engineering

Title: A Step toward Resolving Spatiotemporal Distribution of Suspended Sediment Concentration using Remote Sensing

Abstract: It is critical to study Suspended Sediment Concentration (SSC) to improve our understanding of the impacts of wildfires, climate, and anthropogenic on the riverine environments. The processes that contribute to SSC occur over a range of spatiotemporal scales making it difficult to continuously measure and monitor. Traditional methods (e.g., field measurement) require significant resources and often lack the spatial and temporal resolution that is needed for important yet smaller-scale systems like streams. In this study, we create an open-source and low-cost method to estimate SSC using remotely sensed data. Our study aims to elucidate if a machine learning (ML) model is capable of estimating SSC from multispectral imagery using a dataset collected in the laboratory. Another objective is to determine which ML model most accurately estimates SSC. Our methods involve testing and comparing two Machine Learning (ML) models: Random Forest and Linear Regression. Preliminary results indicate that the Random Forest model has the capability of extracting the SSC signal from the imagery and providing superb agreement between experimental and ML-generated data (R2=0.99). Further, our results from the Linear Regression model indicate that the relationship between multispectral imagery and SSC is non-linear and requires a more robust ML model (low correlation of R2= -.71). Continuing work will compare these results with other ML models to develop a cross-validated method for widespread usage in SSC detection. This study contributes to a larger framework, and with a validated model we will be able to quantify the effects of SSC on the entire Snake and Columbia River system. Implications of this research include improving our understanding of SSC and detection methods that augment existing methodologies as tools for stakeholders, government agencies, land managers, and citizen scientists.

Amethyst Tagney, Biology

Title: Pollination biology of a rare and threatened endemic plant: evaluating the flower constancy of Mulford's milkvetch insect visitors

Abstract: The biodiversity of our planet is in peril. Although this crisis impacts all organisms, it is especially concerning regarding plant-pollinator interactions. Flowering plants play a critical role for ecosystem functioning, human and animal nutrition, and offer much-needed habitat for many organisms. However, human impacts such as urbanization, climate change, unsustainable agriculture practices, and the spread of invasive plants, put these plants-and their pollinators-at risk. One such example is Astragalus mulfordiae, a rare and threatened plant endemic to southwestern Idaho. To learn more about the decline of A. mulfordiae and to develop effective conservation strategies, it is important to understand the pollinator relationships it relies on. This includes identifying which insects visit its flowers, and which are the most important for its pollination. Flower constancy is the tendency of individual pollinators to visit a single kind of flower, and

pollinators with high flower constancy can be especially beneficial to plants by increasing the chances they receive pollen from their own species. In this project, we investigate whether insect species that visit A. mulfordiae flowers differ in their flower constancy. To evaluate this, we examined pollen collected off insects foraging at A. mulfordiae flowers. We first created a pollen reference library using pollen samples from surrounding plant species in A. mulfordiae habitat. We then used this library to identify the pollen grains on each insect, with flower constancy measured as the ratio of A. mulfordiae pollen to other pollen types. Our findings will provide insight into which insect species are most important for A. mulfordiae pollination and will help inform land managers who manage A. mulfordiae habitat areas.

Thomas Wenzel, Kinesiology

Title: Surface, but not Age Impact Lower Limb Joint Work During Walk and Stair Ascent
Abstract: During common locomotor activities, such as walk or stair negotiation, older adults exhibit unfavorable lower limb biomechanical changes, including diminished joint torque and power, and proximal mechanical work redistribution that may increase their fall risk. To investigate age-related differences in lower limb work, twelve young (18 to 25 years) and 12 older (> 65 years) adults performed a walk and stair ascent task on a normal, slick, and uneven surface. For each walk and stair ascent trial, synchronous 3D marker trajectories and GRF data were collected. Stance phase positive limb and joint work, and relative joint work were submitted to statistical analysis. Ascending stairs required more positive work than the walk, particularly from the knee, which may increase fall risk. Yet, both walking and ascending stairs over a challenging surface required more, proximally distributed work.

Matthew Wilken, Geosciences

Title: Studying the seasonal fluctuations of dissolved oxygen levels and how various environmental parameters influence them in the context of Dry Creek.
Abstract: The consequences of water scarcity can be devastating, as was experienced by some of my family members who lived through the Cape Town water crisis in 2018. Dramatic changes to lifestyle, including limiting showers to once or twice a week, were required as the community banded together to reduce water usage in order to avoid day zero. My appreciation for water security drove me to take an interest in water science and research that pertains to how water availability and quality can affect the local environment. The Dry Creek tributary plays an important role in a larger ecosystem downstream and is the perfect location to better develop my research interests. I have begun preliminary research in the Fall of 2022, and hope to continue monitoring how changes in temperature and other environmental parameters can affect the dissolved oxygen (DO) levels in Dry Creek. The concentration of dissolved oxygen directly impacts the native and genetically pure Red Band Trout, which, in the future, may come under increased stress as a result of climate change and population growth. This experience will continue to build necessary field and analytical skills that are highly valued in the industry.

TO: Idaho SBOE HERC
FROM: Sonia Martinez, MPA, Undergraduate Research and Outreach Director
DATE: November 16, 2023
Regarding: ISU FY 23 Undergraduate Research SBOE HERC Funds Report

In FY 23, we implemented the FY 22 year plan, emphasizing the student-mentor relationship. Our guiding principle was to ensure the student received effective mentorship that would catalyze the student to develop critical thinking and creative inquiry skills. Because many first-generation college students are unfamiliar with research, we cast a campus-wide net of information to inform students about the paid undergraduate research opportunity, thus creating access for low-income, talented students. According to the Bureau of Labor Statistics, STEM majors are experiencing strong industry growth and the best return on investment. Further, the Council on Undergraduate Research finds that it dramatically improves academic performance, retention, and persistence (CUR, 2023).

We noticed the fruits of the undergraduate research experience cultivated from the student and mentor relationship. The students who participated in this grant cycle significantly improved their confidence, critical thinking skills, and scientific learning that they can apply in a workforce setting. To provide the opportunity to more students, we awarded grants to six labs with projects that included two to three undergraduate students with a total participation of fifteen students. Faculty who received awards were from various research fields in Biological Sciences, Anthropology, and Chemistry. Please take a look at the attached reports from the students and faculty on their successful research outcomes. With gained skill sets in the lab and field work, some participants were able to apply for other funding sources and continue their research in the Summer Research Experience, where they also participated in the Boise State Undergraduate Research Community via Zoom and the Idaho Conference on Undergraduate Research, ICUR. Still, other students report an inspiration to attend graduate school.

A total of $5,490 in travel funds were awarded to eight students to present their research at numerous national science conferences, including the Society for Integrative and Comparative Biology, the American Chemical Society, and the Society for the Advancement of Hispanic and Native American Students in Science, held in Puerto Rico. Two Anthropology students were guest panelists at the Western Literature Association Conference, where they spoke about their research to a national audience.

Students who participated in funded HERC Undergraduate Research had the opportunity to present their research at the ISU Undergraduate Research Symposium 2023. Thirty-two students presented posters to the campus community. Several participants received invitations to present their work at the BSU Idaho Conference on Undergraduate Research (ICUR) held in July 2023. Sixty individuals from Idaho State University participated in ICUR; twelve students presented research.

The ISU McNair program received $10,000 in funding for participants to attend conferences to make presentations and conduct research projects.

Five of the six recipients stayed slightly under budget, totaling $298.75, which was distributed to the lab that went over budget $481.08.

The attached files include the faculty and student experience reports and the student posters.

Description of Activities

Project Title: Strength and Permeability of High Strength Pervious Concrete

Undergraduate Students: Sam Brandeberry and Brenna Murri

Faculty Advisors: Arya Ebrahimpour and Bruce Savage

Description: The undergraduate students conducted a comprehensive literature review and developed two different mixes of pervious concrete in the Materials Laboratory in the Lillibridge Engineering Laboratory. This was a difficult process and involved multiple mixes. The students tested the materials for both strength and permeability. For the permeability tests, the students had to design and construct their own apparatus; this device worked very well and the students were able to collect good data. In general, everything went well and the students were able to complete all the assigned tasks. In addition, they had two poster presentations, one in CAES Future Net-Zero Innovators Symposium and the other one in ISU Undergraduate Research Symposium. The laboratory report was something new for the students. But we believe they learned a lot on how to write a good technical report. The only thing that we will do differently in the future is to do a better job of keeping track of the budget. Initially we kept good track of the expenses, but unfortunately, we overspent the budget and had to charge the rest of the money to the department account.

Student Report

By

Brenna Murri

I have learned many important skills from this project. The easiest to see is my knowledge of the laboratory equipment and use of the equipment. Before this project, I had not had the opportunity to mix ultra-high performance concrete or use a concrete mixer. With the help of my advisors, lab partner, and other individuals that are a part of the ISU Civil Engineering program I was able to operate and become proficient in the use of multiple lab equipment. I was also able to learn the process often conducted when doing any research. The literary review and research section of this project was very informative in preparing me for the project and in opening my perspective on the uses of pervious concrete.

The research personally benefited me in multiple ways. This has been a good resume builder and provided me the experience to be a good candidate for internships that I am now a part of. This has also benefited me in classes where I have discussed some of the processes that were performed during this project. The knowledge gained allowed me to understand my studies and apply them in a more hands-on way.

This project has helped me to reconsider my future plans. I still want to go into civil engineering and most likely center my studies at ISU around geotechnical engineering; however, I have explored more research opportunities and applied research to my future. This has significantly benefited me and allowed me to grow in ways that would not have been possible without this project.

Student Report

By

Samuel Brandeberry

For this undergraduate research project my colleague Brenna Murri and I conducted a literature review, developed several mixes for high strength pervious concrete in the lab, wrote a final report which can be used for further study, and presented our project at multiple symposiums. I feel like I have learned a lot, and this has been one of if not the most beneficial aspects of my undergraduate study so far. Besides learning technical knowledge, throughout this project I have been introduced to how real research goes. Whether or not we like it things turn up and we don't always get the answers we want. But that is the point of the research. Understanding the processes of making samples, taking adequate notes, and conducting experiments has seemed to be a point of growth and I believe my colleague and I have improved much from the start. This experience has been a great introduction to conducting masters research and has gotten me to think more about continuing my education post my undergraduate degree. I appreciate the opportunity to have attended the Future Net Zero Initiative research symposium and have networked with future leaders in our field, and to have presented to them along with at the ISU undergraduate research symposium. This project has also gotten me more involved and improved my personal relations with the engineering faculty at ISU, who have been a pleasure to work with. I especially would like to thank Dr. Bruce Savage and Dr. Arya Ebrahimpour for their mentorship as well as Brenna Murri for her hard work on this project. Again, I am thankful for having this experience, which has already helped me obtain other opportunities in my career. I hope the department continues to receive grants like so future undergraduates can have the ability to conduct research and improve their college experience at Idaho State University.

Idaho State University

Department of Civil and Environmental Engineering

Strength and Permeability of High Strength Pervious Concrete

S. Brandeberry and B. Murri

May 2023

Abstract

Pervious concrete is a type of concrete that has a high porosity and allows water to flow through it easily. This helps reduce the amount of water that enters stormwater systems, regulate flooding, specifically in urban areas, and allows for greater traction. The permeability of the concrete allows for the stormwater to percolate through the concrete and return to the groundwater. Additionally, because concrete is normally placed over a gravel base, the pervious concrete and gravel act as a retention area, providing natural bio-remediation to the polluted runoff improving water quality. Pervious concrete also has the potential to be used in pumped storage systems to store water as potential energy, one of the applications of this study. In this study, ultra-high-performance concrete (UHPC) was studied to determine how to increase the compressive strength of pervious concrete while maintaining permeability. UHPC is a cementitious mixture that has a minimum of 17,000 psi in compressive strength with additional requirements in durability and toughness. To test for the permeability of UHPC, five drainage channels (i.e. holes) were placed in cylindrical specimens and the change in compressive strength was recorded. Two variables that significantly influence the strength and durability of UHPC are supplementary cementitious materials (SCMs) and the addition of fibers. These factors were analyzed and included in the testing of traditional pervious concrete. Silica fume is an SCM that strengthens the bond between aggregates and was proven to be beneficial to pervious concrete mixes. The silica fume was included in the mix at varying percentages to determine the greatest compressive strength using this SCM. Polypropylene or steel fibers were then added to the optimal mix containing silica fume to determine the greatest compressive strength possible using a combination of these materials. The permeability of the concrete samples was measured using a modified falling head permeameter.

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1. Introduction

1.1 Background

Urban runoff and flooding have become an ever-growing issue in many urban areas. This issue is created by the lack of pervious surfaces within a city, prohibiting the natural water cycle from occurring. Naturally in undeveloped areas after a large storm event water is slowed down by vegetation and is allowed to soak through the ground into the aquifer. However, in developed areas due to buildings and pavement, stormwater is unable to drain and creates runoff. This water is usually diverted in stormwater drains flowing directly into streams carrying oil, plastic, wastes, and any other contaminants which were on the roads or parking lots. This is an obvious environmental issue but not the only issue with impervious surfaces. Higher likelihood of flooding is also associated with impervious concrete surfaces in urban areas. Since the water is unable to drain into the ground this can cause large buildup and overload storm drains, causing floods. Pervious concrete is a potential solution for these problems, since the concrete is porous in nature it allows water to flow through limiting runoff. Pervious concrete also acts as a filter that will replenish aquifers with clean water.

One difficulty in keeping pervious concrete from being widely used is its lower compressive strength and durability compared to normal strength impervious concrete. Due to the interconnected nature of the void spaces found in pervious concrete, compressive strength is significantly decreased. Ultra-high performance concrete (UHPC) utilizes a blend of fine-grained aggregates and chemical admixtures to vastly increase the strength and durability. The compressive strength of UHPC ranges from 18,000 psi to 22,000 psi. This is partly due to the use of fibers and a well-graded range of fine-grained elements. These fine-grained elements include the use of silica fume, a supplementary cementitious material (SCM). Silica fume increases the bond strength between aggregates when utilized in pervious concrete and fills remaining void spaces in UHPC due to the size of the silica fume particles. Steel fibers

are also included in UHPC to increase tensile strength. These fibers provide a network that increases post stress strength and allows the concrete to have a longer life span. UHPC is most commonly used in prestressed concrete girder simple-span bridges and between prefabricated bridge connections. These limited applications are primarily due to the higher costs of the material and installation associated with UHPC. The combination of factors in pervious and UHPC allow for a strengthened pervious concrete.

1.2 Purpose and Significance of Study

The purpose of this study is to develop a high strength pervious concrete to counteract the decrease in compressive strength. To find a solution to this issue, ultra-high performance concrete (UHPC) was studied to analyze the factors that increased the compressive strength found in UHPC. Possible applications for this study include the use of pervious concrete in urban roadways to decrease runoff. This also provides benefits to agricultural regions where runoff needs to be transported from downstream areas to provide water for crops. The decreased runoff would allow stormwater to return to the groundwater systems presently in place requiring less energy to be expended to deliver water to fields and irrigation systems. Other applications include the use of pervious concrete for energy storage. A parallel study at Idaho State University has analyzed and tested the use of manufactured pervious concrete to be placed within towers of rubber tires. These columns would allow for water to permeate through the concrete providing energy storage and strength within the aqueduct where the tire and concrete is placed. Other applications are feasible though they were not specifically analyzed during this study. Future research is required to accurately determine the uses of the findings in this study.

2. Literature Review

2.1 Literature on Ultra High Performance Concrete

2.1.1 Compressive Strength and Permeability of High-performance Concrete (Lü Jianfu, 2011)

The curing process is critical to the strength of high-performance concrete. Multiple curing processes were tested including a standard curing at 20 degrees C and relative humidity. Other methods included matched curing with the specimen in a sealed plastic membrane and matched curing of naked concrete where the specimen was in a temperature-controlled curing box. The effects on the strength and the permeability of the specimen were analyzed compared to the method of curing. This allows for an analysis relating to in-field curing and how to maximize the compressive strength.

The Concept: Curing is important in how the strength of concrete increases after being mixed. Two mixes were tested, and the difference between them was the amount of supplementary cementitious materials (SCMs) used. The first mix had no SCMs present while the second used a combination of fly ash and silica fume. The inclusion of SCMs increased the compressive strength in each of the curing conditions tested.

The Results: The curing method that had the greatest permeability was the standard curing process. Both the matched curing with a specimen in a sealed membrane and the matched curing of naked concrete in a curing box had greater compressive strength in a smaller curing time period. The values of the compressive strength and mix design are shown in Table 1.

Table 1 Test Results (Lü Jianfu, 2011)

Mix No.	*w/c*	Concrete composition/(kg/m^3)								Slump /mm
		Cement	Water	Fine aggregate	Coarse aggregate	Silicon fume	Fly ash	Air-entraining agent	Mighty100	
1	0.36	414	149	642	1195	—	—	—	2.89	170
2	0.36	311	149	642	1195	33.1	70.4	0.042	3.31	166

Table 3 Rapid chloride permeability and compressive strength of concrete

Mix No.	Curing condition	Charge passed/C		Compressive strength/MPa						
		56 d	480 d	1 d	3 d	7 d	14 d	28 d	56 d	248 d
1	SC	1448.8	308.0	15.1	37.9	46.6	58.9	66.7	74.2	78.6
2		320.8	190.0	11.2	29.4	42.9	57.5	71.8	74.0	82.8
1	MC	458.4	324.0	27.5	55.0	60.8	66.5	69.2	71.2	72.5
2		86.4	60.0	21.2	58.0	66.3	67.9	71.2	72.8	74.8
1	NMC	558.0	360.0	29.7	58.5	69.8	73.7	75.6	76.1	77.2
2		130.4	108.6	24.7	62.0	75.4	77.9	80.2	80.8	81.8

The use of SCMs increases the compressive strength of cured concrete, though the results of this study show that the permeability has decreased significantly. This decrease was a result of the particle size of the SCMs utilized. This provided additional particle packing within the specimens which decreased the void spaces between particles.

2.1.2 High Strength Clogging Resisting Permeable Pavement (Kia, 2019)

Clogging of pores is a concern in pervious concrete. The void spaces between aggregate can become clogged due to time and the filtering of other materials including some materials from the concrete itself. Data was collected regarding the maintenance of compressive strength while increasing anti clogging.

The Concept: Traditional pervious concrete was tested, both a commercial mix and a newly designed clogging resistant mix. Mix designs are shown in Table 2. These mixes contained the conventional means of obtaining pervious concrete, so they contained large aggregates and cement. Another mix design was used that resembled ultra-high performance concrete, in that it used particle packing to create a dense structure capable of withstanding increased loads. This mix was made pervious

by using plastic tubes to make straight holes through the concrete for optimal flow. The design structure is shown in Figure 1.

Table 2 Mix Design (Kia, 2019)

Mix	No of tubes x diameter of tubes (mm)	Cement (kg/m^3)	Sand (kg/m^3)	Water (kg/m^3)	SP (%)	w/c	Target porosity (%)
2% P	21 × 3	697	1297	278	0.25	0.4	2
4% P	42 × 3	683	1270	273	0.25	0.4	4
4% P*	11 × 6	683	1270	273	0.25	0.4	4
5% P	21 × 5	675	1257	270	0.25	0.4	5
8% P	84 × 3	654	1217	261	0.25	0.4	8
8% P*	21 × 6	654	1217	261	0.25	0.4	8
11% P	42 × 5	633	1177	253	0.25	0.4	11
15% P	42 × 6	604	1125	241	0.25	0.4	15
21% P	84 × 5	562	1045	224	0.25	0.4	21
30% P	84 × 6	498	926	199	0.25	0.4	30

*Mixes of similar porosity are differentiated by using an asterisk.

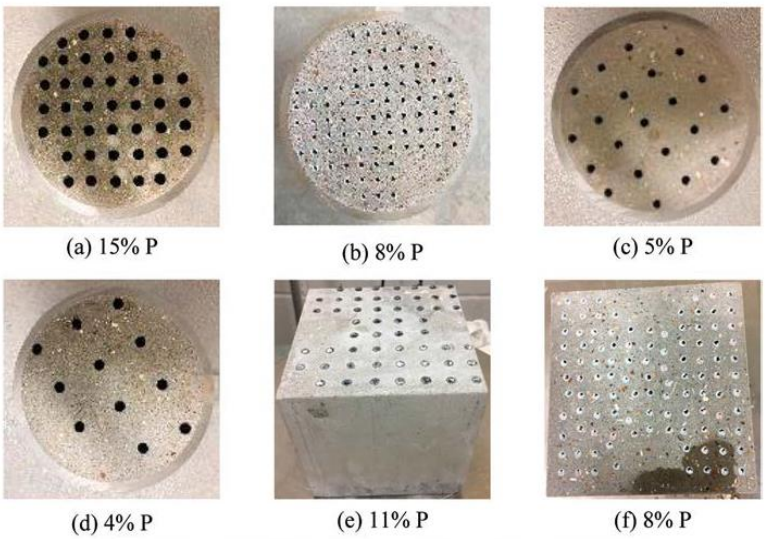

Figure 1 Hole Design (Kia, 2019)

The permeability test was performed using a falling head permeability test. The height difference was 750mm. Figure 2 shows the falling head permeability test setup.

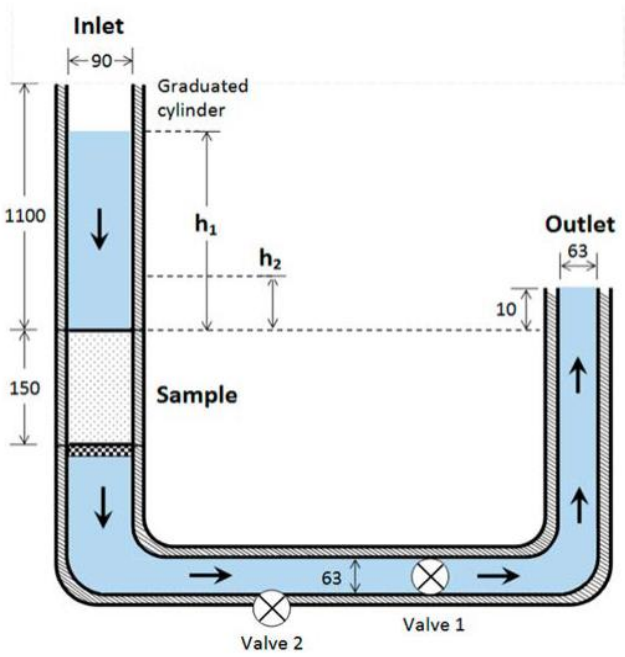

Figure 2 Falling Head Permeability Apparatus (Kia, 2019)

The Results: The use of plastic straws to form straight holes in the concrete significantly decreased the resultant clogging. This was due to the interlocking void spaces of traditional pervious concrete having winding properties which allowed for buildup of other materials. The use of holes in ultra-high performance concrete is beneficial, especially while considering permeable concrete uses. Few studies have been conducted regarding this method and no workable field tests have been conducted. The compressive strength of the concrete was related to the porosity and this is shown in Figure 3.

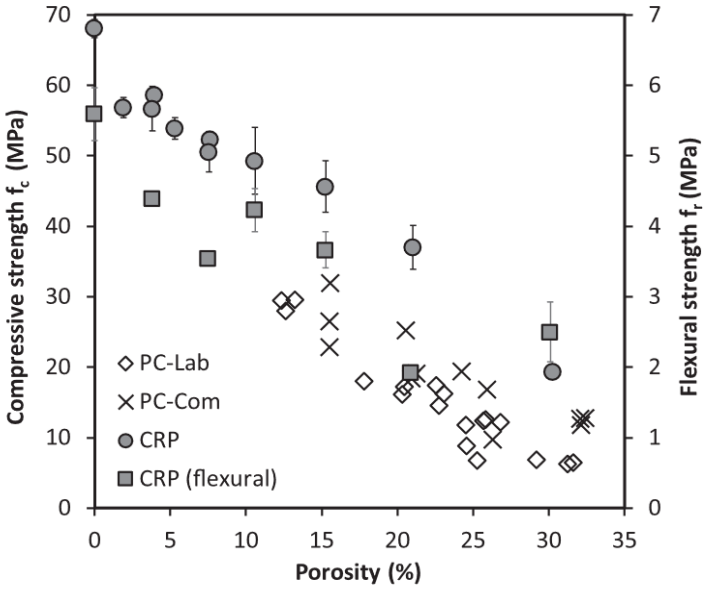

Figure 3 Compressive and Flexural Strength (Kia, 2019)

The study shows that porosity and permeability are directly related. This relationship is shown in Figure 4. The study shows the benefits of using the high strength concrete over the traditional pervious concrete. On both Figure 3 and Figure 4 the CRP is the anti-clogging high strength mix that was developed in the laboratory.

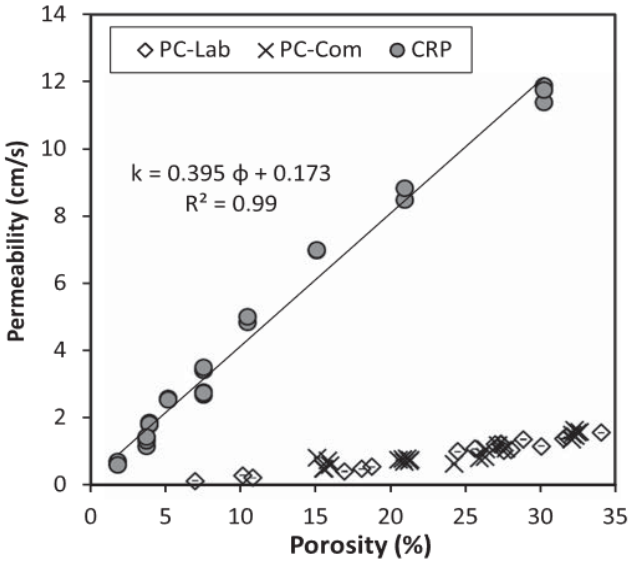

Figure 4 Permeability and Porosity (Kia, 2019)

2.1.3 Defining Clogging Potential for Permeable Concrete (Kia, 2018)

In traditional pervious concrete, void spaces between aggregate can become clogged due to time and the filtering of other materials including some materials from the concrete itself. Data was collected regarding the maintenance of compressive strength while increasing anti clogging. Variables were tested relating to particle size, type, and the effective porosity.

The Concepts: The falling heads permeability test was performed to analyze the effects of clogging. Sand and/or clay material was added to the specimens when they were in the apparatus to determine how efficiently they avoided clogging. This test was performed until the specimen became impermeable and no water would pass through the apparatus.

The Results: The compressive strength decreased approximately 4% for every 1% increase in porosity. This relationship is shown in Figure 5. The permeability of the concrete was found to be greater in pervious concrete containing larger aggregate sizes; however, these specimens were also found to clog easily. This is due to the greater tortuosity of the samples allowing for a greater buildup and collection of the added materials. The increasing pressure due to changes in the head, led to a decreased permeability due to the friction from the turbulent water. The mixes using high strength concrete with holes were found to be beneficial though not in a significant way.

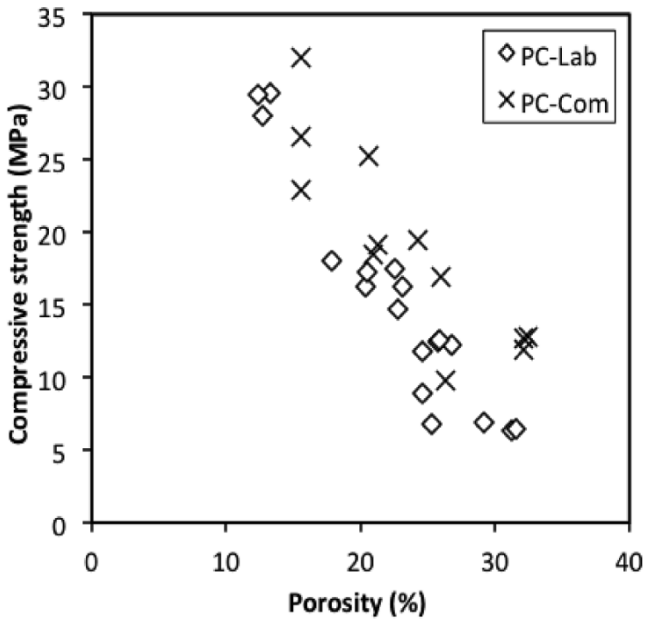

Figure 5 Compressive Strength and Porosity (Kia, 2018)

2.1.4 Preparation and performance evaluation of an innovative pervious concrete pavement (Li, 2017)

Ultra-high performance concrete (UHPC) uses supplementary cementitious materials (SCMs) such as silica fume and fly ash to aid in the particle packing that gives UHPC its strength. Some mixes also contain an expansion agent with strong resistance to undesirable shrinkage that often contains aluminum sulfate, aluminum oxide and aluminum potassium sulfate. Other additives include a superplasticizer or high range water reducer (HRWR).

The Concepts: Pore making rods were inserted into the UHPC mixes and the concrete was allowed to cure. This design structure is shown in Figure 6. Pore design limited tortuosity. Different amounts of rods were placed to test for the effects of compressive strength regarding permeability. Preliminary designs were created to analyze the use of permeable UHPC in precast concrete. The precast design concept is shown in Figure 7.

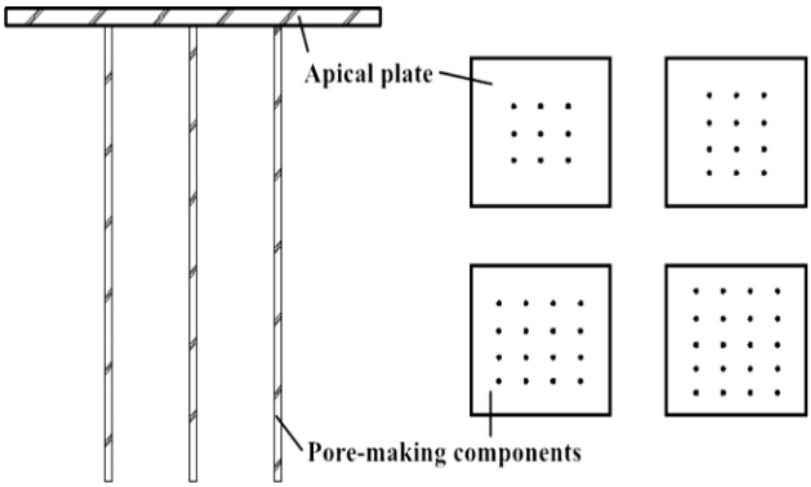

Figure 6 Hole Comoponents (Li, 2017)

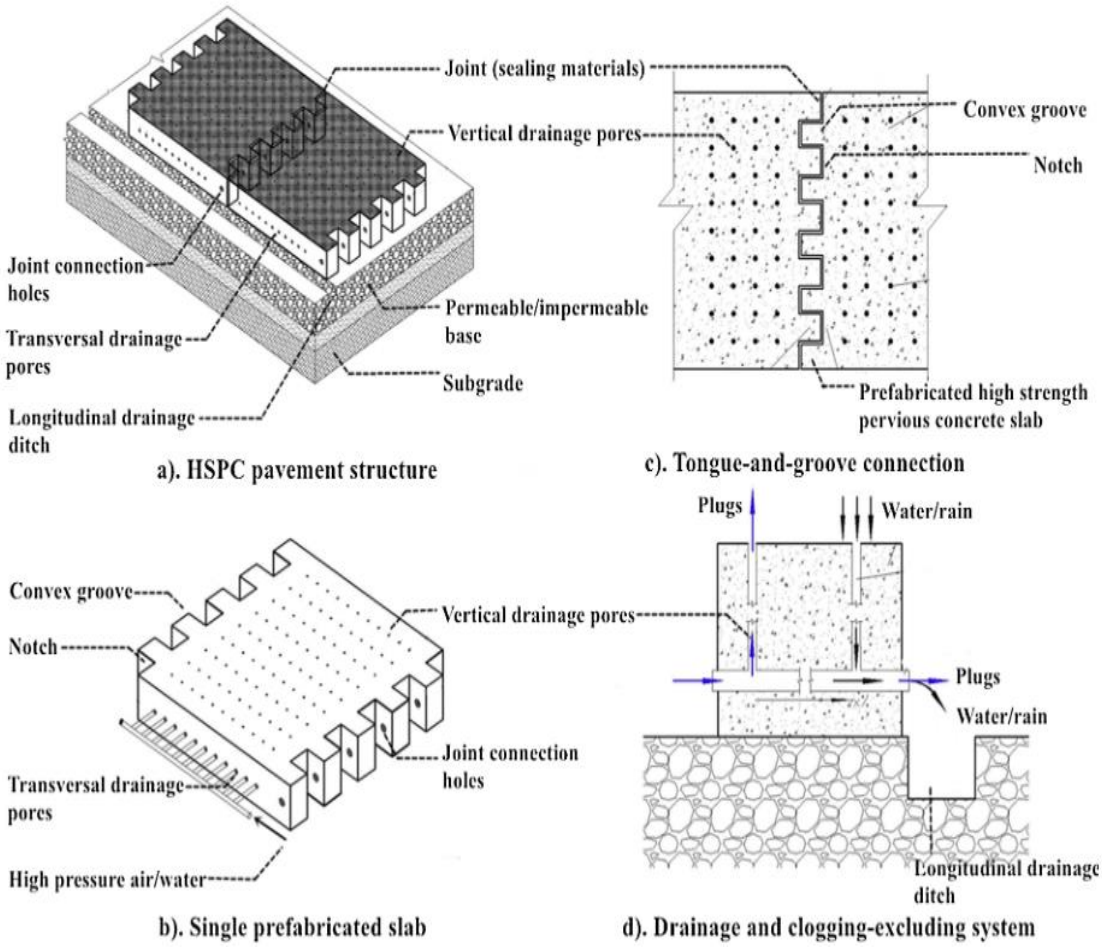

Figure 7 Precast Design (Li, 2017)

The Results: Optimum mix results reached 70 MPa under natural curing conditions and 80 MPa under constant curing conditions. This optimal mix is shown in Table 3. The tensile strength found reached 10 MPa with low strength reduction. Permeability increased with the addition of rods to create additional holes in the UHPC. The change in permeability was not significant to not warrant use of less rods. In addition, the use of additional holes did not significantly decrease the compressive strength; however, the compressive strength did decrease.

Table 3 Optimal Mix (Li, 2017)

Optimum mix proportion of HSPC.

P.O 52.5R	FA	SF	Sand	UEA	Superplasticizer	PP	Silica gel	SBR	Water
100%	11.83%	5.92%	46.75%	3.00%	1.36%	0.08%	0.70%	1.30%	28.44%

2.1.5 Fire Performance of Ultra-High Performance Concrete (MacDougal, B., et al. (2021))

Ultra-high performance concrete (UHPC) is a workable and dense concrete that is susceptible to explosive spalling when brought in contact with elevated temperatures. Explosive spalling is found when a fire is present and the delaminated surface of concrete peels away in an explosive manner that results in greater damage.

The Concepts: Factors used to create UHPC were analyzed to see the effectiveness of those factors in decreasing the likelihood of explosive spalling. Micro-steel fibers have the greatest impact on the strength of the specimen including maintaining structural integrity. The particle packing used to increase compressive strength in UHPC proved difficult as no void spaces were created. The stress from spalling was held by the particles themselves instead of within the voids found in traditional concrete.

The Results: The use of steel fibers did not decrease the likelihood of spalling, though replacing these fibers with polypropylene fibers proved to be beneficial. The polypropylene fibers melted when exposed to high temperatures and provided void spaces where internal stresses were released. Other

options were also considered, such as adding in larger aggregate to provide a greater matrix in which internal stresses could dissipate. The optimum use of fibers was found to be in between 1-3.5% of the mix. The compressive strength of specimens containing polypropylene fibers was less than the compressive strength of specimens containing steel fibers. A hybrid mix containing both fibers was deemed the optimal mix.

2.2 Literature on Traditional Pervious Concrete

2.2.1 Development of high-strength pervious concrete incorporated with high percentages of waste glass (Shen, 2020)

Due to an overabundance of waste glass in Hong Kong, Shep P., et al, study how to replace natural aggregate with waste glass (WG) aggregate to solve the lack of natural aggregates in the area. This study analyzes how using waste glass weakens traditional pervious concrete while increasing the risk of alkali silica reactions (ASR) and how to counteract these results.

The Concept: Waste glass particles being used as both an aggregate and a supplementary cementitious material (SCM) increase the effects of ASR. To counteract this reaction, silica fume is added as an additional SCM. Silica fume, combined with Portland cement, creates a high-performance concrete paste. Silica fume also increases the bonding between aggregates. Additional fibers also prove beneficial to prevent ASR due to mechanical confinement. The natural porous structure of pervious concrete will mitigate ASR due to the interconnecting voids. These combined elements of pervious concrete, silica fume, fibers, and a porous structure, will allow those in Hong Kong to replace natural aggregates with waste glass aggregates while maintaining strength and durability. Permeability was tested using an adjusted falling head as shown in Figure 8.

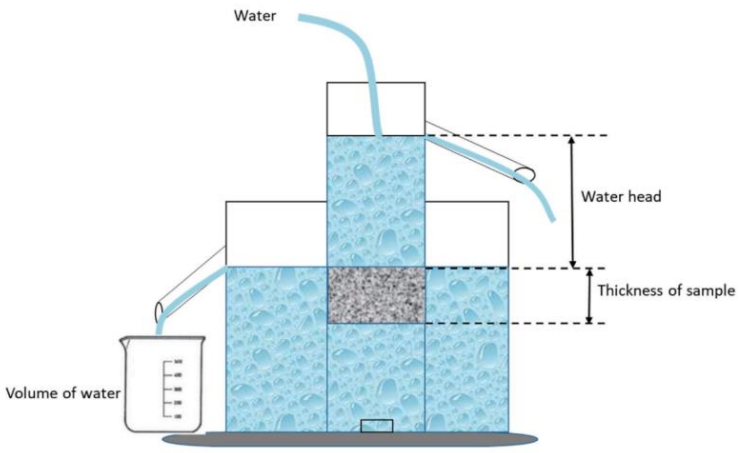

Figure 8 Permeability Apparatus (Shen, 2020)

The Results: Each test specimen had a compressive strength greater than 2,466 psi, which was the desired amount. The waste glass led to higher permeability with a lower density. This was attributed to the smooth surfaces of the waste glass aggregate allowing for less tortuosity within the specimens. The ASR expansion effects were mitigated, in part, by using SCMs and partly by the porous structure of the sample allowing for internal stresses and expansion to be transferred to void spaces.

2.2.2 An Integrated Study of Pervious Concrete Mixture Design for Wearing Course Applications (Schaefer, 2011)

Water content significantly impacts the compressive strength, permeability, and freeze-thaw durability in pervious concrete. The size of aggregate will also affect the permeability.

The Concepts: Typical water to cement ratios range between 0.27-0.4 and result in a strength between 800-3000 psi. Various aggregate types will also impact the strength of the concrete. Rounded aggregates have better results related to the binding between aggregates. Permeability is also an important factor when analyzing the strength of pervious concrete. This can be tested using a flexible sealing gum around the outside of the specimen with a rubber sleeve to remain confined and allow the water to flow through the sample.

The Results: The relationship between porosity and compressive strength shows that the greater the void spaces within the specimen, the less compressive strength will be possible. The addition of 5-7% sand was able to provide additional strength, though the void spaces between aggregates were decreased. The greater the water content, the greater the workability but the overall performance is reduced. The water to cement ratio was narrowed to between 0.27-0.33. The optimal mix had a mixture of slag and fly ash for supplementary cementitious materials and included 10% of fine aggregate or sand. The relationship between compressive strength and permeability is shown in Figure 9, while the values from this study are found in Table 4.

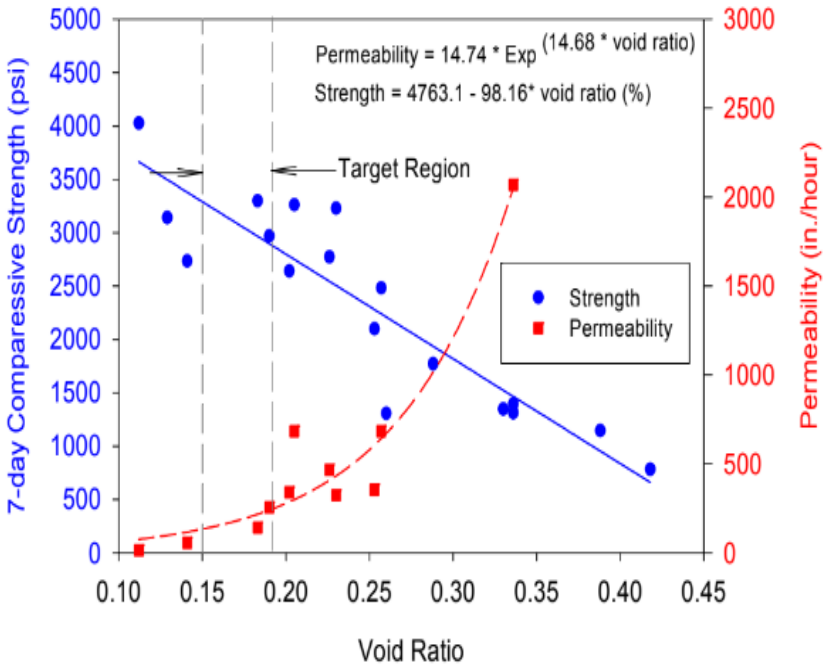

Figure 9 Compressive Strength and Permeability (Schaefer, 2011)

Table 4 Testing Results (Schaefer, 2011)

Mixture	Porosity (%)	Unit Weight kg/m^3 (lb/ft^3)	28-day Compressive Strength MPa (psi)	28-day Splitting Tensile Strength MPa (psi)	Permeability cm/hr (in./hr)
PG	27.0	1,920 (120)	16.1 (2,340)	1.95 (280)	3,492 (1,375)
PG-N1	23.0	1,980 (124)	23.0 (3,340)	2.30 (340)	1,116 (439)
PG-N2	20.7	1,990 (124)	24.4 (3,530)	2.85 (410)	720 (283)
PG-S1	21.2	2,000 (125)	23.0 (3,340)	2.30 (335)	216 (85)
PG-S2	15.3	2,070 (129)	23.8 (3,450)	2.40 (345)	72 (28)
LS	32.6	1,720 (108)	15.1 (2,190)	1.60 (230)	3,672 (1,446)
LS-N1	31.7	1,710 (107)	13.9 (2,020)	1.40 (205)	2,844 (1,120)
LS-N2	31.1	1,740 (109)	11.3 (1,650)	1.30 (185)	2,664 (1,049)
LS-S1	25.9	1,710 (107)	12.0 (1,740)	1.50 (215)	1,584 (624)
LS-S2	24.7	1,720 (107)	9.6 (1,390)	1.70 (245)	900 (354)

PG=pea gravel, LS=limestone, N=natural AEA, S=synthetic AEA

2.2.3 Effect of fly ash on the strength of porous concrete using recycled coarse aggregate to replace low-quality natural coarse aggregate (AIP Conference Proceedings (2017))

The aggregate present in pervious concrete comes from various sources depending on the area of manufacture. The use of recycled aggregates can prove beneficial and could replace low quality natural coarse aggregates. Recycled aggregates are known to have greater permeability than natural aggregates as well.

The Concepts: Fly ash improves durability in concrete as well as workability. Thus, a mixture of fly ash and cement creates a binder for a mix containing either natural coarse aggregate or recycled coarse aggregate. From previous studies, the water to cement ratio was 0.3 for every mixture tested.

The Results: The compressive strength of the pervious concrete increased with the density of the concrete, though the density of the porous concrete varied too greatly to make conclusive comparisons. An increase in strength was shown with the use of fly ash that was a result of the pozzolanic reaction within the fly ash to create a dense and impervious paste. The optimal mix for compressive strength

contained 25% fly ash as a replacement for cement and 75% of the total aggregate containing recycled aggregate. The optimal tensile strength, at 220.5 psi, was found to be in the same mix as the greatest compressive strength.

2.2.4 Developing High Strength Pervious Concrete Mixtures with Local Materials (Torres, A., 2020)

This study analyzed how additives were used to provide a strong permeable surface. These additives were analyzed alongside local materials such as aggregate. No polymers present in pervious concrete have been explored previously. Superplasticizer is another additive that has proved beneficial to pervious concrete mixes. The addition of an excessive amount of superplasticizer can be detrimental as the mortar will conglomerate at the bottom of the sample creating an impervious barrier.

The Concepts: A systematic approach was taken to determine an optimal mix, testing variables of aggregate shape and size, water to cement ratio, and silica fume replacement. Each variable was tested with everything else held constant, the optimal compressive strength was then used in testing of the next variable.

The Results: The first variable tested was size and shape of the aggregate; the smaller 6.35 mm rounded gravel was shown to be the strongest. This is because it allows tighter packing, and a stronger bond. Next, the water content was tested and a water to cement ratio of 0.28 performed the best. Lastly, silica fume replacement of cement was tested up to 30%, which also performed the best. The porosity and percolation rates were also taken and were acceptable for all mixtures, they ranged from 19.1% - 32.9% for porosity and 1.9mm/s - 5.8mm/s for percolation rate.

2.2.5 Development of High Quality Pervious Concrete Specifications for Maryland Conditions Summary (Amde, A. E., 2013)

This study set out to find advantages and disadvantages of certain admixtures to pervious concrete. The study was funded by the Maryland State Highway Administration (SHA) thus the main purpose of this was to develop a concrete which would be suitable for highways, specifically the for SHA projects.

The Concept: Different admixtures were tested to find advantages including cellulose fibers, a delayed set modifier, and a viscosity modifier. Samples with these admixtures were tested for density, porosity, compressive strength, split tensile strength, permeability, freeze-thaw durability, and abrasion resistance. ASTM C1688 was used to determine density and void content, ASTM C496 was used to determine tensile strength, ASTM C666 was used to determine freeze thaw durability, and ASTM C944 was used to determine the abrasion resistance.

The Results: Do you mean this: The use of Viscosity Modifier Admixture prevents the cement from flowing to the bottom of the mix, thus preventing formation of an impermeable layer. This is when the cement flows to the bottom and essentially makes an impermeable surface. The addition of a Viscosity Modifier Admixture didn't have much impact on the strength or durability of the concrete. Cellulose fibers proved to work well as a replacement to polypropylene fibers, they contribute to reduction in shrinkage and temperature cracking, and fiber balling. However, they are not resistant to alkaline or other fungi and algae attacks. Delayed Set Modifiers resulted in a more fluid mix, but needs to be used carefully or it can create an impervious layer at the bottom of concrete.

2.2.6 Multi-criteria optimum mixture design of porous concrete pavement surface layers (Elizondo-Martinez, 2022)

This study sets out to find an optimum mix for porous concrete on a widespread basis. Many porous mixtures are dependent on materials that are found in their local areas. This study allows for principles to be used across a wide variety of factors involved in mix design.

The concept: The use of aggregate within porous concrete is vital. The recommendation was to not include aggregate greater than 1/2“ as larger aggregates have greater difficulty adhering to the cementitious material and will weaken the overall strength on the concrete. Table 5 shows the mix designs tested. Variables included the aggregate size, water content, and the silica to cement ratio.

Table 5 Mix Design (Elizondo-Martinez, 2022)

Mixture code (a-b-c-d) *	AG (mm)	s/c	w/c	Cement (kg/m3)	VMA (%)
30-0-A-I	2–4	0.00	0.30	397.23	44.30
40-0-A-I	2–4	0.00	0.40	341.48	44.30
30-1-A-I	2–4	1.00	0.30	255.15	44.30
40-1-A-I	2–4	1.00	0.40	230.92	44.30
30-0-B-I	4–8	0.00	0.30	397.23	44.30
35-0-B-I	4–8	0.00	0.35	367.23	44.30
40-0-B-I	4–8	0.00	0.40	341.48	44.30
30-5-B-I	4–8	0.50	0.30	310.71	44.30
35-5-B-I	4–8	0.50	0.35	292.05	44.30
40-5-B-I	4–8	0.50	0.40	275.52	44.30
30-1-B-I	4–8	1.00	0.30	255.15	44.30
35-1-B-I	4–8	1.00	0.35	242.42	44.30
40-1-B-I	4–8	1.00	0.40	230.92	44.30
30-0-B-II	4–8	0.00	0.30	440.81	47.00
35-0-B-II	4–8	0.00	0.35	407.54	47.00
40-0-B-II	4–8	0.00	0.40	378.94	47.00
40-1-B-II	4–8	1.00	0.40	256.27	47.00
30-1-B-II	4–8	1.00	0.30	283.15	47.00
35-5-B-II	4–8	0.50	0.35	324.12	47.00
30-5-B-II	4–8	0.50	0.30	344.81	47.00
40-5-B-II	4–8	0.50	0.40	305.76	47.00
30-0-C-I	4–12	0.00	0.30	397.23	44.30
40-0-C-I	4–12	0.00	0.40	341.48	44.30
30-1-C-I	4–12	1.00	0.30	255.15	44.30
40-1-C-I	4–12	1.00	0.40	230.92	44.30
30-0-C-II	4–12	0.00	0.30	440.81	47.00
40-1-C-II	4–12	1.00	0.40	256.28	47.00
30-0-D-I	8–12	0.00	0.30	397.23	44.30
40-0-D-I	8–12	0.00	0.40	341.48	44.30
30-1-D-I	8–12	1.00	0.30	255.15	44.30
40-1-D-I	8–12	1.00	0.40	230.92	44.30

The Results: This study found that the smaller aggregates (0.08-0.16") did have a large percentage of void space, but less permeability. This is most likely due to the lack of voids being interconnected. Mix 30-5-B-II was seen to be the best since it had the greatest compressive strength while also having a permeability to control general storm situations. The best conditions found in the trends tested were that 4-8mm aggregates (0.16-0.31") had the best compressive strength while the voids located within were able to be connected. Table 6 shows the results of the tests completed, including the tensile and compressive strengths.

Table 6 Mix Design Results (Elizondo-Martinez, 2022)

Mixture	AV (%)	σ	IT (MPa)	σ	k (cm/s)	σ	CS (MPa)	σ	BPN dry	σ	BPN wet	σ	Stiffness Modulus (MPa)	σ
30-0-A-I	21.86	0.01	1.47	0.09	0.19	0.02	16.70	1.63	75.00	0.00	65.00	1.07	18256.50	374.00
40-0-A-I	21.82	0.01	1.43	0.10	0.40	0.03	16.70	1.13	70.00	0.93	61.00	4.64	17627.50	3027.00
30-1-A-I	23.60	0.01	1.20	0.16	0.22	0.06	9.17	1.42	69.00	1.00	61.00	5.74	15318.50	144.00
40-1-A-I	23.27	0.01	1.44	0.15	0.23	0.03	14.00	0.90	63.00	1.67	55.00	5.48	17435.50	292.00
30-0-B-I	22.58	0.01	1.37	0.12	0.54	0.07	12.45	2.73	73.00	2.07	63.00	3.74	17038.50	647.00
35-0-B-I	23.17	0.01	1.43	0.14	0.58	0.09	15.15	2.38	67.00	15.03	50.00	4.17	19199.00	278.00
40-0-B-I	20.35	0.01	1.39	0.19	0.43	0.07	15.60	2.56	73.00	1.12	66.00	0.79	19077.00	416.00
30-5-B-I	22.89	0.00	1.51	0.15	0.48	0.07	14.55	1.72	66.00	1.19	59.00	1.00	21360.50	726.00
35-5-B-I	22.68	0.00	1.74	0.06	0.70	0.17	15.85	1.73	72.00	1.63	62.00	5.00	21087.00	29.00
40-5-B-I	23.76	0.01	1.49	0.10	0.71	0.12	14.45	2.83	68.00	4.16	59.00	2.50	19183.00	1204.00
30-1-B-I	23.16	0.01	1.69	0.23	0.54	0.06	18.15	1.88	68.00	2.93	58.00	7.11	18762.00	799.00
35-1-B-I	23.73	0.01	1.28	0.22	0.57	0.04	13.40	1.27	70.00	2.83	64.00	0.92	17985.00	211.00
40-1-B-I	19.76	0.01	1.41	0.10	0.42	0.03	14.90	0.70	85.00	0.53	80.00	4.75	18662.00	1543.00
30-0-B-II	23.14	0.01	1.57	0.15	0.37	0.11	16.10	3.03	64.00	4.33	54.00	3.21	17846.00	899.00
35-0-B-II	23.09	0.01	1.54	0.11	0.50	0.12	16.50	3.93	68.00	4.12	55.00	11.50	19401.00	1315.00
40-0-B-II	25.00	0.01	1.63	0.26	0.48	0.14	15.75	1.96	57.00	1.66	53.00	1.89	21921.00	4531.00
40-1-B-II	22.15	0.01	1.44	0.09	0.56	0.03	14.00	2.91	70.00	0.98	62.00	3.26	19260.50	2404.00
30-1-B-II	24.53	0.01	1.13	0.10	0.51	0.25	8.01	0.52	61.00	6.15	57.00	4.03	16683.00	1097.00
35-5-B-II	20.92	0.00	1.65	0.11	0.20	0.11	18.27	4.91	75.00	4.47	65.00	5.51	19195.00	2727.00
30-5-B-II	22.07	0.01	1.89	0.06	0.23	0.05	18.80	3.66	73.00	1.36	58.00	2.25	17899.00	1523.00
40-5-B-II	24.33	0.01	1.83	0.10	0.42	0.03	15.10	0.90	65.00	5.45	59.00	6.96	18431.50	142.00
30-0-C-I	21.14	0.01	1.37	0.05	0.60	0.06	12.60	3.33	80.00	0.00	61.00	0.52	17198.00	726.00
40-0-C-I	22.42	0.01	1.19	0.16	0.88	0.16	8.80	0.65	71.00	0.52	57.00	4.30	14146.00	1506.00
30-1-C-I	23.14	0.01	1.30	0.11	0.67	0.19	10.90	1.20	68.00	5.00	58.00	2.48	15195.50	558.00
40-1-C-I	23.48	0.01	1.44	0.26	0.87	0.13	12.80	2.42	65.00	0.00	55.00	3.96	14712.50	1924.00
30-0-C-II	22.15	0.01	1.69	0.20	0.41	0.15	14.60	2.97	69.00	0.96	61.00	2.80	16564.50	299.00
40-1-C-II	21.15	0.01	1.49	0.11	0.52	0.18	14.70	3.07	86.00	0.55	80.00	6.57	18855.00	2697.00
30-0-D-I	24.34	0.00	1.38	0.28	1.00	0.27	11.85	1.76	60.00	5.92	55.00	5.85	16547.50	313.00
40-0-D-I	24.57	0.01	1.10	0.05	1.40	0.05	7.88	0.73	64.00	9.09	52.00	2.76	11154.50	661.00
30-1-D-I	24.31	0.02	1.10	0.12	0.67	0.01	8.35	0.86	65.00	2.73	55.00	3.62	20838.00	7531.00
40-1-D-I	25.10	0.02	0.92	0.08	1.90	0.02	5.14	0.59	65.00	5.25	59.00	0.76	13478.00	1227.00

Sand was also tested to determine the effect on the friction for roadways. The increase in sand led to greater friction as it increased the surface area of the specimen tested. The relationship between sand and voids contained was used to demonstrate how this is caused. Higher amounts of sand than 5% were found to lead to greater clogging on the surface and pooling water, which will decrease the friction. They determined .35 w/c as the permeability tended to be greater and some samples exhibited high compressive

strengths. Viscosity modifying admixtures were tested and they were determined to improve adhesion and friction between aggregates. This enabled larger percentages of mortar in the mixtures.

2.2.7 Mix Design for Pervious Recycled Aggregate Concrete (Sriravindrarajah, 2012)

Due to the location where pervious concrete is being mixed, different local materials are often used for aggregate. This comes with the material type that is commonly found and available in the area as well as the size and shape of the materials available. Recycled aggregate is often tested as it is directly correlated to a decrease in compressive strength and often a decrease in permeability as well, though recycled aggregate is often less expensive and more readily available making it a viable alternative if a mix design is successful in meeting criteria.

The Concept: This study set out to find how age, aggregate type, size, and shape affect the strength of the concrete and porosity. For aggregate type they used natural and recycled coarse aggregate at sizes of 20 and 13 mm in cylinders and cubes. For binder type they used Portland cement and ground granulated blast furnace slag. For age they tested the specimens at 7 and 28 days. In the study they performed a falling head permeability test and a destructive compression test.

Results: This study found that the variables tested have a slight impact on permeability and compressive strength, but ultimately the biggest impact was due to the porosity of the concrete. The shape

of the test specimen did not show to have an impact. Table 7 shows the results of the 28-day strength as well as the porosity of the samples tested.

2.2.8 Development of a sustainable pervious pavement material using recycled ceramic aggregate and bio-based polyurethane binder (Lu, 2019)

This study was conducted to develop permeable asphalt using crushed old ceramic as the aggregate and a bio-based polyurethane (PU) as the binder. Referred to as PU-bound Ceramics Recycled (Porous) Pavement or PCRP.

Table 7 Mix Design Results (Sriravindrarajah, 2012)

Mix	Age (days)	Porosity range (%)	28-Day strength f_{28} range (MPa)	Mean porosity (%)	Mean 28-day strength (MPa)	Strength ratio (f_{28}/f_7)
NA20	7	30.9–36.7	6.16–8.53	42.1	7.41	1.00
	28	33.3–36.1	6.69–7.79	34.3	7.41	1.00
NA13	7	25.5–29.3	11.1–13.1	27.7	11.8	1.00
	28	26.8–28.1	12.0–15.8	27.5	13.9	1.18
RA20	7	23.5–25.4	6.03–6.80	27.7	6.47	1.00
	28	24.6–28.8	4.48–6.96	27.5	6.06	0.94
RA13	7	13.8–16.1	6.42–12.1	14.4	11.1	1.00
	28	7.0–13.2	10.4–13.3	9.87	12.1	1.09
RA13S35	7	22.1–27.0	4.99–6.81	24.4	5.79	1.00
	28	22.8–28.4	5.09–7.00	25.5	6.19	1.07
RA13S70	7	13.7–16.0	8.55–10.8	15.0	10.0	1.00
	28	13.9–19.7	10.2–11.1	16.7	10.6	1.06

The Concept: The materials used for the ceramic was crushed toilet and bathroom demolition waste. This accounted for 70% of the total aggregate at sizes ranging from 2.0-5.6 mm and the other 30% was natural sand. Conventional permeable asphalt or PA with 8 mm maximum aggregate size was used as reference. A uniaxial compression test, uniaxial cyclic compression test, dynamic indirect tensile test, polishing test, falling head permeability test, and an acoustic test were performed on the samples. Table 8 shows the variables tested including grain size and materials used.

Results: A cost analysis was performed to determine that the PCRP was $144.5/ton more expensive than conventional permeable asphalt mainly because of the cost of the polyurethane binder. However, PCRP also had favorable benefits. From the uniaxial compression test, the PRCP performed better than the PA by twice as much from the uniaxial cyclic compression test. Furthermore, the PRCP

could withstand 10 times as much loadings as the conventional PA From the indirect tensile test its shown that the fatigue behavior is similar. From the polishing test the conventional PA seems to have much more loss in mass over time than PRCP. From the permeability test the PRCP has close to three times as much permeability with similar void content than the conventional PA. From the acoustic test the PRCP has a similar absorption coefficient than that of PA at 1000 Hz, but for PRCP the coefficient stays high over a larger frequency range. Meaning that the PRCP can absorb much more noise than that of conventional PA.

Table 8 Mix Design (Lu, 2019)

Mix design of PCRP and PA 8 mixture.

PCRP Materials	Grain size (mm)	Mass percentage (%)	Apparent density (g/cm^3)	PA8 Materials	Grain size (mm)	Mass percentage (%)	Apparent density (g/cm^3)
Sand	0–0.063	5.0	2.850	Limestone	0–0.063	5.0	2.820
	0.063–2	10.0	2.850	Diabase	0.063–2	15.0	2.820
Ceramic	0.063–2	10.0	2.434		2–5.6	37.0	2.820
	2–5.6	52.0	2.434		5.6–8	43.0	2.820
	5.6–8	23.0	2.434				
Polyurethane	2-component Polyurethane, 6.5 M-%		1.09	Bitumen	Polymer modified bitumen 40/100-65 A, 6.5 M-%		1.472
PCRP Mixtures	Air void content 28.5 vol.-%		2.34	PA Mixture	Air void content 26.2 vol.-%		2.541

2.2.9 Mix Design Development for Pervious Concrete in Cold Weather Climates (Kever, 2014)

Portland cement is a common component in pervious concrete mix design. This study sets out to find a mix that maintains porosity while increasing the freeze-thaw durability of the concrete itself.

The Concept: The typical mix of pervious concrete generally contains no sand or fine aggregate and a w/c ratio between 0.27-0.43. The compressive strength is then normally below 3000 psi which is the lower limit for structural concrete. This study mixed various admixtures, fine aggregates percentages, and supplementary cementitious materials to test for strength after 7 days. The best results were then tested for long term durability, freeze-thaw resistance, and permeability. Styrene butadiene rubber (SBR) latex was added to improve aggregate bonding. Those mixes that didn't include the SBR contained an air entraining agent or high-range water reducer.

The Results: Based on the void ratio and the strength of the specimens tested during the 7-day trial, mixes containing aggregate from ⅜" - No. 4 proved to have the greatest compressive strength. The study shows that adding 7% of sand increased strength from 57-84%. This also reduced voids by approximately 8% decreasing permeability. The relationship between permeability and void space is shown in Figure 10 The permeability decreased from an average of .5 in/s to .19 in/s. This is also shown in Figure 11. Test results showed that approximately 10% of latex was determined to be the appropriate percentage to add to the mix to improve workability and compressive strength. The point of failure was in the cement paste when larger aggregates were used. The compressive strength results are recorded in Figure 12.

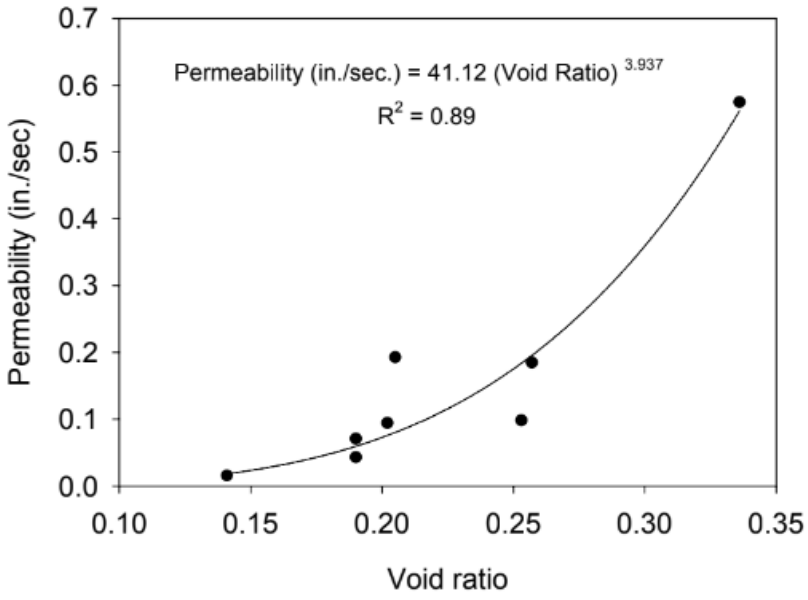

Figure 10 Permeability to Void Ratio (Kever, 2014)

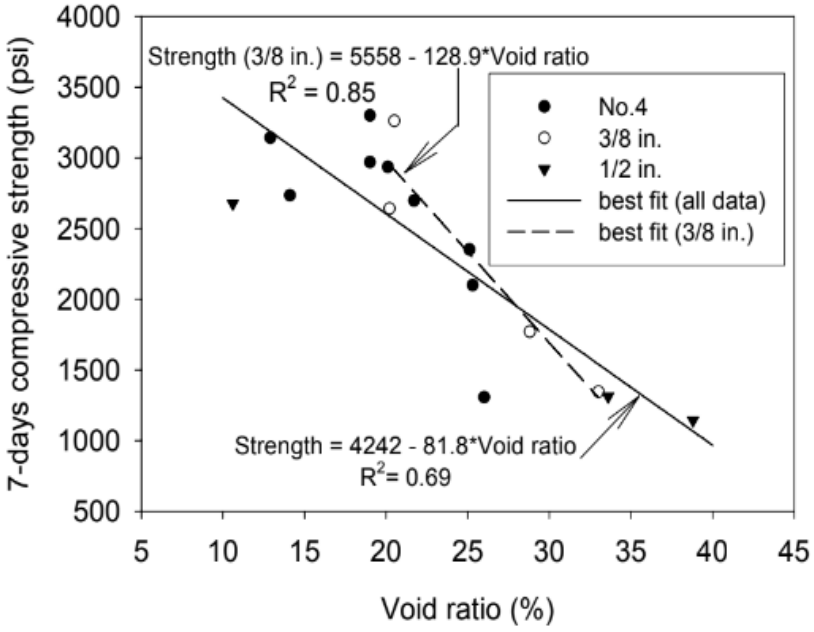

Figure 11 7-day Compressive Strength (Kever, 2014)

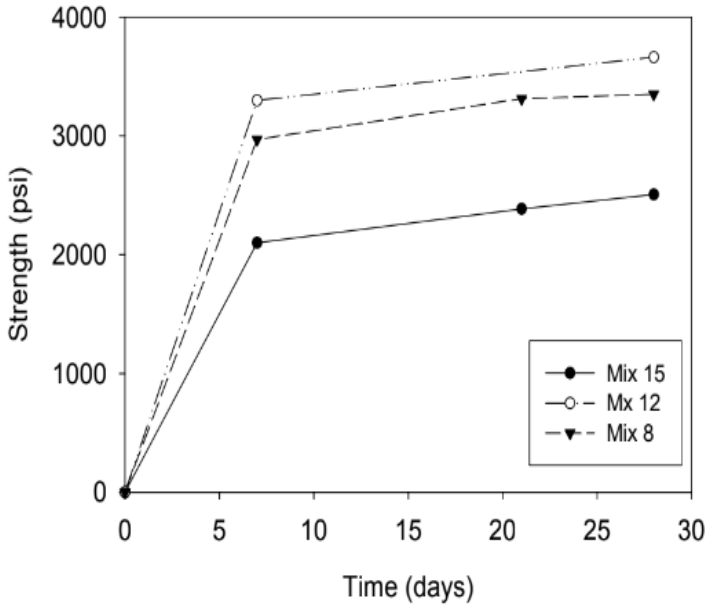

Figure 12 Compressive Strength Results (Kever, 2014)

Results showed that river gravel provided greater compressive strength as an aggregate than crushed limestone. The smaller aggregate was also seen to provide greater strength but a decreased void ratio. Sand improved compressive strength. Sand with latex showed no significant changes in specimen

results. The mixes tested all showed less than a 6% loss after 180 freeze-thaw cycles. The freeze-thaw results are displayed in Figure 13.

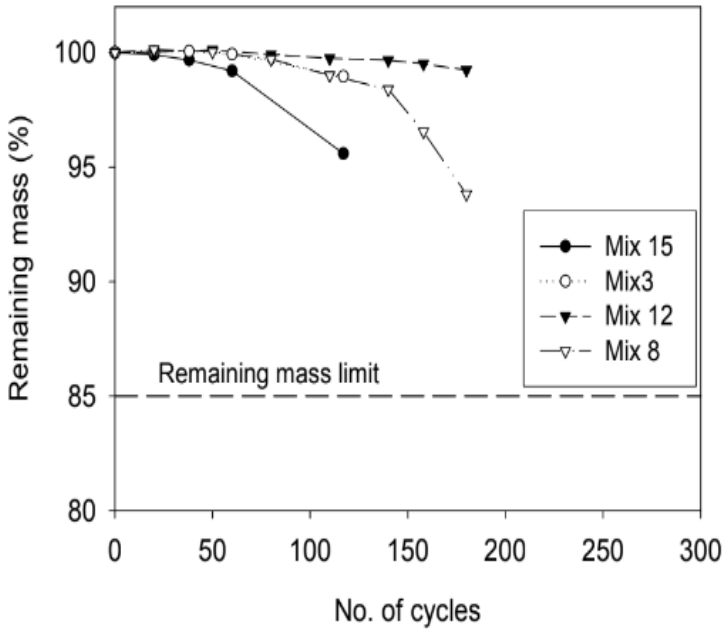

Figure 13 Freeze-thaw Cycles (Kever, 2014)

2.2.10 Compressive Strength of Light-Weight Concrete Material Made from Treated Wood Waste as a Coarse Aggregate (Alrubaie, 2023)

This study explores the use of wood waste in concrete. The benefits of using wood include affordability and sustainability, especially in construction.

The Concept: Previous studies were analyzed and found that if the wood replaced over 7.5% of the aggregate, the strength was decreased in a manner that resulted in the compressive strength being below the required limit. The max size for the coarse aggregate used was 10 mm, with the smallest being just below 4.75mm. The wood was treated by being coated with a cement paste and tile adhesive mix. This was left to dry for 16 days. Emulsifiers were included in some of the samples tested to slow down the loss of hydration during the curing process. The groups tested are shown in Table 9.

Table 9 Group Mixes (Alrubaie, 2023)

Group Numbering	Acronym/Specimens-Label/Group Name	Description
Group-1	NC-CTRL1	Control mix of normal concrete that contains natural coarse aggregate
Group-2	TW-CTRL2	Control mix of normal concrete that contains 100% replacement of natural coarse aggregate with untreated-raw wood shavings
Group-3	CBTW-NE	Cement-based treated-coated wood shavings without emulsifier
Group-4	CBTW-WE	Cement-based treated-coated wood shavings with emulsifier
Group-5	ABTW-NE	Adhesive-based treated-coated wood shavings without emulsifier
Group-6	ABTW-WE	Adhesive-based treated-coated wood shavings with emulsifier

The Results: The slump test had results that showed a slump of less than 45mm which is seen to have a low workability. The concrete made with wood waste had significantly less compressive strength as well. Compressive strength of the various groups is shown in Table 10.

Table 10 Compressive Strength Results (Alrubaie, 2023)

Group Name	Compressive Strength (MPa)					
	Cubes (Size 1)	CV (%)	Cubes (Size 2)	CV (%)	Cylinder (Size 3)	CV (%)
NC-CTRL1	39.63	3.31	39.54	2.52	39.5	3.18
TW-CTRL2	9.26	4.14	9.90	3.86	8.40	6.17
CBTW-NE	12.08	5.19	18.45	0.38	12.7	3.40
CBTW-WE	14.19	8.16	18.20	0.78	13.90	5.23
ABTW-NE	8.59	7.54	11.90	2.38	10.10	3.65
ABTW-WE	10.48	3.63	10.20	0.00	10.40	9.76

This study used a w/c ratio of 0.5, and the specimens containing the emulsifier did have greater slump, though it was still beneath 45mm. The uptake of water was tested, and the wood waste that was coated resulted in decreased water uptake compared to the uncoated wood. Water uptake can be related to the resultant permeability of the concrete; however, this study shows that the replacement of wood waste does not provide greater permeability with a resultant porous concrete. The concrete produced could not be used for the structural purposes it was intended for, but the results did fulfill ASTM requirements to be used in roadways.

3. Methods and Materials

This research took two different directions to develop high strength pervious concrete. The first approach was a more traditional one where the fine aggregate in the concrete was removed creating a porous structure which allowed water to flow through. Figure 14 and Figure 15 show the porous structure that the specimens contained. In this method six different mixes were made with variables being the aggregate size (¼ inch, ⅜ inch) and admixtures including high range water reducer (HRWR), silica fume replacement (20%, 30%, 40%), and polypropylene fibers (0 oz, 1.5 oz, 3 oz). The mix with the optimum percentage of silica fume replacement was used to test the addition of polypropylene fibers.

Figure 14 Traditional Pervious Concrete Cylinder

Figure 15 Traditional Pervious Concrete Cylinder with Fibers

The second approach was to create holes in UHPC using ⅛ inch steel rods. Here two mixes were created, one proprietary from Ductal and the other from a lab developed UHPC mix at Idaho State University as shown in Table 11. For both mixes, six cylindrical specimens were prepared to allow water to permeate. A typical pervious UHPC specimen is shown in Figure 16.

Table 11 Lab Developed UHPC Mix

Item	Amount (lb)	Percent passing FVR 1
Water	300	100
HRWR	65	100
Portland Cement	1300	99
Silica Fume	246	61
Fly Ash	371	33
Fine Aggregate	1557	12
Steel Fiber	263	0

Figure 16 Pervious UHPC Cylinder

This was done by inserting 5 ⅛ inch steel rods inside of the UHPC cylinders, as shown in Figure 17, allowing the concrete to set for 2 hours, then removing the rods. All of the mixes were allowed to initially set for 24 hours in 3 inch DIA. x 6 inch molds, removed, then cured for 28 days.

Figure 17 Method to Form Pervious UHPC

A falling head permeability test was also performed to determine the infiltration rate of the concrete. The apparatus used is shown in Figure 18. The optimum mix with each of the variables were determined using these tests. Standard ASTM Compressive strength tests were carried out on all the mixes with the exception of increased loading rate on the UHPC specimens. The increased loading rate is recommended by the modified ASTM compression strength test. Both tests were performed using the compressive strength test apparatus shown in Figure 19.

Figure 18 Falling Head Permeability Test Apparatus

Figure 19 Compressive Strength Test Apparatus

4. Results and Conclusions

Traditional Pervious Concrete

The compressive strength of the traditional pervious concrete mixtures gradually increased with the addition of silica fume and polypropylene fibers. Silica fume replacement increased by 10% from 20% up to 40%, showing improvement to compressive strength with more silica fume. These results are shown in Table 12.

Table 12 Traditional Pervious Concrete Results

Mix #	Silica Fume (%)	Polypropylene Fibers (oz)	Average Compressive Strength (psi)	Average Permeability Coefficient (in/s)
1	0.2	0	210	1.121
2	0.2	0	307	1.034
3	0.2	0	263	1.015
4	0.3	0	562	0.989
5	0.4	3	985	0.201
6	0.4	1.5	1,329	0.219

Data from Mix 1 and Mix 2 were compared to determine the size of aggregate to use, Mix 1 using ¼ inch aggregate and Mix 2 using ⅜ inch aggregate. The ⅜ inch mix had a higher compressive strength, contrary to literature, but because of these findings and availability the ⅜ inch aggregate was used for the rest of the study.

Polypropylene fibers were also tested adding 0 oz, 1.5 oz and 3 oz. The addition in moderation showed to help compressive strength, with the optimal for a 0.041 ft^3 batch being the addition of 1.5 oz of polypropylene fibers. It is important to note that the two batches using polypropylene fibers also included High Range Water Reducer (HRWR) in the amount of 0.35 lbs in order to achieve our intended

w/c ratio. The HRWR was added because the mixes continued to be too dry, and this was our solution to achieve a workable mix without adding excess water. HRWR needs to be used with a light hand though, or the cement in the mix will flow to the bottom of the cylinder and create an impervious surface. An example of this mix is shown in Figure 20.

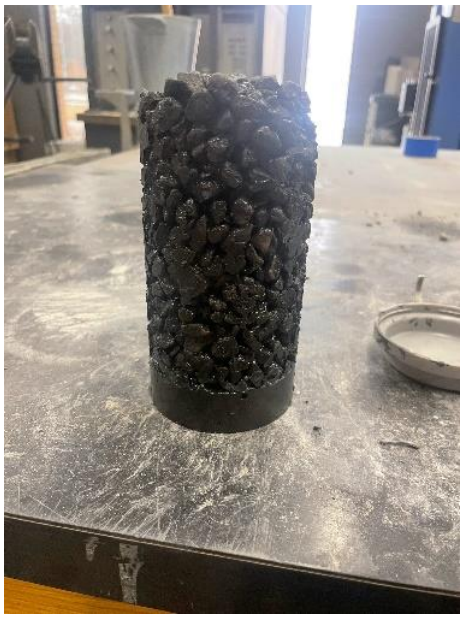

Figure 20 Solid Cement Layer

An interesting note to consider with the addition of fibers is their ability to hold the specimens together. After failure the specimens did not seem to be broken and held their structure instead of crumbling like the other mixes. Figure 21 shows the specimens that crumbled after failure, while Figure 22 shows a specimen that held its structure after failure. Even if loaded laterally the cylinder would hold together with deformation as shown in Figure 23. Although we had limited data it seemed that the samples with fibers would hold at least 50% of their strength after initial fracture unlike others which would hold almost no force.

Figure 21 Traditional Pervious Concrete Fracture

Figure 22 Traditional Pervious Concrete with Fibers Fracture

Figure 23 Traditional Pervious Concrete with Fibers Loaded Laterally

Overall mix 6 for the traditional pervious concrete was the optimal mix with a 40% silica fume replacement of cement and 1.5 oz of polypropylene fibers. The average compressive strength was 1,329 psi with an average permeability of 0.219 in/s.

UHPC Pervious Concrete

The compressive strength of the UHPC was much higher than traditional pervious concrete with the average compressive strength of the Lab Mix with Holes holding over 7 times the pressure that the strongest traditional pervious concrete mix could hold. The results for the UHPC are found in Table 13. The addition of holes into the UHPC cylinders on average only decreased the compressive strength by 12.7% showing that if needed more holes could be added to increase permeability while keeping adequate strength.

Table 13 UHPC Results

Mix	Average Compressive Strength (psi)	Average Permeability Coefficient (in/s)
Proprietary No Holes	16,415	N/A
Proprietary with Holes	14,154	0.344
Lab Mix No Holes	10,922	N/A
Lab Mix with Holes	9,652	0.219

The proprietary mix with holes held on average 4,500 psi more than the lab mix, however 9,600 psi for concrete is more than enough strength for most applications. The lab developed mix was also significantly less expensive because it is not patented and can be made with local materials.

UHPC however has the additive fly ash which is considered to be a hazardous chemical and its involvement in pervious concrete could prove to be a problem with introducing it into the groundwater

system. More research needs to be done to see the possible impacts, and if this could be removed and have sufficient strength.

Each of the pervious mixes resulted in a permeability greater than the standard pervious mixes utilized in the field today and all can withstand a 100-year storm event in most of the world. The resultant compressive strength for traditional pervious concrete was significantly decreased than that used in practice. The use of UHPC with steel rods inserted has proven to be most beneficial as the permeability results were all greater than the standard amount for stormwater in most of the world and has a compressive strength higher than almost all conventional concrete. A more practical way of implementing pervious UHPC in the field still needs to be studied.

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Idaho State University

High Strength Pervious Concrete

Samuel Brandeberry, Brenna Murri, Arya Ebrahimpour, & Bruce Savage ● Dept. of Civil and Environmental Engineering ● Idaho State University, Pocatello, Idaho

Abstract

Pervious concrete is a type of concrete that has a high porosity and allows water to flow through it easily. This helps reduce the amount of water that enters stormwater systems, regulating flooding, specifically in urban areas, and allows for greater traction. The permeability of the concrete allows for the stormwater to percolate through the concrete and return to the groundwater. Additionally, because concrete is normally placed over a gravel base, the pervious concrete and gravel act as a retention area, providing natural bio-remediation to the polluted runoff improving water quality. Pervious concrete also has the potential to be used in pumped storage systems to store water and energy, one of the applications of this study.

In this study, Ultra-High-Performance Concrete (UHPC) was studied to determine how to increase the compressive strength of pervious concrete while maintaining permeability. UHPC is a cementitious mixture that can hold up to 20,000 psi in compressive strength with additional requirements in durability and toughness. To test for the permeability of UHPC five drainage channels were constructed into a specimen and the change in compressive strength was recorded. Two variables that significantly influence the strength and durability of UHPC are supplementary cementitious materials (SCMs) and the addition of fibers.

These factors were analyzed and included in the testing of traditional pervious concrete. Silica fume is an SCM that strengthens the bond between aggregates and was proven to be beneficial to pervious concrete mixes. The silica fume was included in the mix at varying percentages to determine the greatest compressive strength using this SCM. Polypropylene fibers were then added to the optimal mix containing silica fume to determine the greatest compressive strength possible using a combination of these materials. The permeability of the concrete samples was measured using a modified falling head permeameter.

Objectives

- Research UHPC and determine factors that can be utilized to strengthen traditional pervious concrete.
- Obtain data on compressive strength and permeability of high strength pervious concrete.

Methods

- Seven traditional pervious and two UHPC mixes were mixed.
- As shown in Table 3, the traditional pervious concrete mix design variables included:
  - Silica Fume Replacement in place of Portland Cement (20%, 30%, and 40%), and
  - The presence of Polypropylene Fibers (0 oz, 1.5 oz, and 3oz).
- These mixes were allowed to cure for 28 days.
- Standard ASTM compressive strength tests were carried out alongside a falling head permeability test. The optimum mix containing silica fume was selected based on the results of these tests.
- Polypropylene fibers were then added to the optimal mix and the ASTM compressive strength and falling head permeability tests were conducted again.
- Results were then analyzed regarding the traditional pervious concrete mixes.
- The first UHPC mix used was a laboratory developed mix at Idaho State University .
- Five 1/8” rods were placed an inch apart through half of the samples. These rods were then removed two hours after they were placed.
- This process was repeated with a proprietary UHPC mix.
- Standard ASTM compressive strength were carried out for each mix. The falling head permeability test was performed on the specimens that contained the holes formed by the steel rods.

Figure 1
Traditional Pervious Concrete

Figure 2
Traditional Pervious Concrete with Fibers

Methods Continued

Figure 3
UHPC with Holes

Figure 4
Steel Rods Held In Place with Wooden Blocks

Item	Amount (lb)
Water	300
HRWR	65
Portland Cement	1300
Silica Fume	246
Fly Ash	371
Fine Aggregate	1557
Steel Fiber	263

Table 1. Mix proportions for lab developed UHPC (one cubic yard)

Percent passing FVR 1
100
100
99
61
33
12
0

Table 2. Gradation of Fine Aggregate

Figure 5
Falling Head Permeability Apparatus

Figure 6
Gilson Compression Testing Apparatus

Results

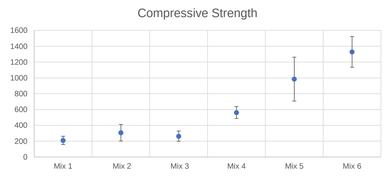

Figure 7. Compressive Strength (ASTM C39) of Traditional Pervious Concrete

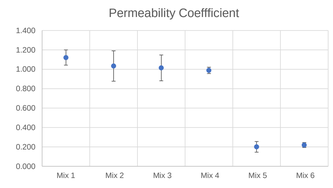

Figure 8. Permeability Coefficients of Traditional Pervious Concrete

Mix #	Silica Fume (%)	Polypropylene Fibers (ozs)	Average Compressive Strength (psi)	Average Permeability Coefficient (in/s)
1	0.2	0	210	1.121
2	0.2	0	307	1.034
3	0.2	0	263	1.015
4	0.3	0	562	0.989
5	0.4	3	985	0.201
6	0.4	1.5	1329	0.219

Table 3. Averages and Variables for Traditional Mixes 1-6

Results Continued

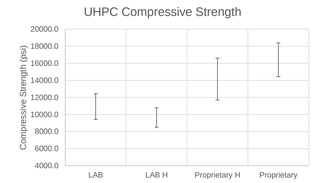

Figure 9. Compressive Strength of UHPC

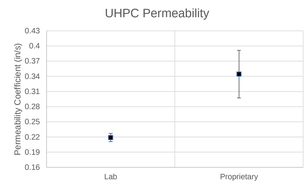

Figure 10. Permeability of UHPC

- Mix 6 for the traditional pervious concrete was the optimal mix with a 40% silica fume replacement of cement and 1.5 oz of polypropylene fibers. The average compressive strength was 1329 psi with an average permeability of 0.219 in/s.
- Each of the pervious mixes resulted in a permeability greater than the standard pervious mixes utilized in the field today, though the resultant compressive strength was significantly decreased.
- The Proprietary UHPC Mix had significantly higher values than the laboratory developed mix. Both mixes did have compressive strengths well above the minimum values required for most applications.
- UHPC permeability results were all greater than the standard amount for stormwater in most of the world. These results were all significantly less than the results of the traditional pervious concrete, but the compressive strength was far greater.
- Workability of the UHPC with the steel rods inserted is still being studied as it is the strongest pervious concrete and proves beneficial.

Significance of Study

- Use in roadways to reduce urban runoff, allowing storm water to clean and permeate into the aquifer.
- Can be used for energy storage, where pervious concrete is placed between towers of rubber tires underground. This can hold water at higher elevations acting as a battery.
- Pervious concretes with higher compressive strengths may also be used in other construction projects.
- UHPC that is pervious may be used in similar aspects as traditional pervious concrete, as well as in other capabilities due to the increase in compressive strength, durability, tensile strength, and workability. UHPC is still being studied to determine less expensive production costs to allow the use of UHPC across a broader range of projects.

Discussion/Conclusions

- The optimum traditional pervious concrete was found to contain 40% silica fume as a replacement for Portland cement.
- This study only included up to 40% silica fume, though an addition of silica fume could prove beneficial.
- The addition of silica fume strengthens the bonds present between aggregates. The silica fume does not have a directly negative impact on the permeability of traditional pervious concrete.
- The permeability of each of the traditional pervious concrete mixes was similar. Each permeability was significant enough to compensate for stormwater trends in most areas of the world.
- The addition of steel fibers in UHPC increases tensile strength and durability. Steel fibers tend to rust, so polypropylene fibers were tested to determine the effects on traditional pervious concrete.
- The addition of fibers in traditional pervious concrete was shown to be beneficial to adding compressive strength at lower quantities.
- The UHPC specimens containing holes formed by steel rods did not significantly decrease the compressive strength and drastically increased the permeability.
- Additional research should be performed to discover workable ways to apply pervious UHPC in the field.

Acknowledgements: Thanks to ISU Civil and Environmental Department for the use of facilities and materials. Thanks to Dr. Ebrahimpour, Dr. Savage, and Katie Hogarth for the support and guidance throughout this project.

Additional Testing Regarding High Strength Pervious Concrete Is Underway

Final Report: Office for Research – SBOE Undergraduate Research Funding

Date: November 16, 2023
PI: Anirban Chakraborty
Co-PI: Julia E. Martin
Project: Investigation of spore-forming anaerobic bacteria in untreated wastewater samples from Southeastern Idaho

Part 1

Description of Activities Undertaken: The research team comprised of three undergraduate research interns (URI) – Abigail Gallegos, Diana Rivas and Douglas Madlock, in the Department of Biological Sciences. The team investigated viable, spore-forming anaerobic bacteria in influent wastewater samples obtained from three wastewater treatment plants located in Pocatello, Blackfoot, and Soda Springs in the Southeastern Idaho. Each URI led the experimental activities using samples from one of the above locations and performed laboratory growth assays aimed to enrich. The URIs presented their findings in poster presentations at the Department of Biological Science's Biology Research Roundup in Spring 2023. The research activities accomplished the project goals outlined in the proposal and generated valuable preliminary data that we will aim to incorporate in future publications and external grant proposals.

The PI and the CO-PI trained the URIs on various microbiological and molecular biological tools such as anoxic cultivation techniques, microbial growth assessment and metabolite measurement using UV-VIS spectrophotometry, visualization of microbial cells using phase-contrast microscopy and genomic DNA extraction for gene-based community analysis. The URS conducted month-long incubation experiments to enrich anaerobic, spore-forming bacteria at two different temperatures and using two different liquid growth media. The experiments were subsampled at two-to-three-day intervals and microbial growth was assessed. Furthermore, accumulation of specific metabolites characteristic of anaerobic growth was measured in the experimental subsamples. Finally, genomic DNA from enrichment cultures from different time points was extracted for molecular analysis.

At the beginning of the project in Fall 2022, the PI and the Co-PI established a mentoring plan consisting of mutual expectations for the mentors and mentees. Mentoring activities consisted of regular meeting of the PI and the Co-PI with the URIs, laboratory safety training, hands-on training on laboratory techniques and data analysis, discussion on research articles and on scientific communication. The URIs also routinely interacted with other research personnel (graduate students and other undergraduate students) in the PI's and the Co-PI's labs. Furthermore, the URIs attended the Biological Sciences Seminar Series as well as other public research presentations such as graduate student proposals and thesis defenses. These activities engaged the students with the departmental research community.

The PIs and the URIs completed the CITI Responsible Conduct of Research training as a requirement of this project. In addition, all project personnel completed several biosafety training modules including General Biosafety and Bloodborne Pathogens. Throughout this project, the URIs also gained experience on several aspects of teamwork such clear communication and helping each other in accomplishing project goals, professional

cooperation and contributing towards a healthy and respectful environment in the workplace. The URIs also participated in lab cleaning endeavors.

How the Project Benefitted from the Funds: This grant supported three URIs and two microbiology faculties in the Department of Biological Sciences and resulted in valuable data collection that will contribute to future research projects and collaborations involving the PI's and the Co-PI's respective research groups.

The funds supported salaries for three URIs including two women one of whom belongs to a historically underrepresented group in STEM. This project was the first ever research experience for two of the URIs and this would not be possible without the financial support from the SBOE HERC funds. We also used a small portion of the funding for procuring reagents for molecular analyses.

The project has aided the research productivity of PI Chakraborty, an early career faculty member (Assistant Professor) in the Department of Biological Sciences and has allowed Chakraborty to collaborate for the first time with Co-PI Martin, another microbiology faculty in the department. The research activities led by the URIs produced a valuable preliminary dataset as part of a larger long-running research theme within the Chakraborty Lab on the ecophysiology of anaerobic, spore-forming bacteria. The findings from this project will culminate into published research products and they will help in preparing proposals for future research activities.

How the Research Goals of the Project were Furthered: PI Chakraborty has been studying anaerobic, spore-forming bacteria from marine environments for close to a decade. The SBOE HERC funding enabled our team, for the first time, to investigate a different habitat, the wastewater, as a potential source of similar microorganisms. This work would not have been possible without funding due to time and financial constraints for the undergraduate researchers and for the PIs. The funds primarily supported hourly wages for the URIs since no additional funds were available to support wages for these researchers to complete their research activities.

A major logistical challenge in overseeing this project was to find suitable times when all three URIs could be available to meet either for hands-on training on a lab technique or for research-related discussions with the PIs. This was primarily due to their different class schedules being full-time students and often they could only meet with the PIs after the regular working hours. Therefore, it took much longer than expected to get the URIs trained on necessary laboratory techniques, some of which takes repeated trials to master, before they were ready to begin the growth experiments. We had initially estimated that the students will be able to present the findings of the molecular assays used in the project in their posters, however, that was not possible due to the delay in obtaining the experimental subsamples from the growth experiments. While the URIs really liked conducting the molecular assays such as genomic DNA extraction, it was disappointing for them since they wanted to include those results as part of their poster presentations. Additionally, one of the two growth media used in the experiments did not yield expected results and was not successful in fueling bacterial growth in any of the temperatures tested. In the future, I will be more cognizant in designing student-led experiments by incorporating a more realistic timeframe for training undergraduate researchers during academic semesters.

Part 2: Student Reports

SBOE 2023 Undergraduate Intern - Report for ISU's Office for Research

Project: Investigation of spore-forming anaerobic bacteria in untreated wastewater samples from Southeastern Idaho

Faculty Lead & Mentor: Dr. Julia Martin and Dr. Anirban Chakraborty

Student Name: Diana Rivas

Date: 11/13/2023

1. **What did you learn from your internship experience?**

   - **I learned how to use a spectrophotometer, and why we need to use it to measure bacterial growth at different temperatures.**

2. **How did this research experience benefit you?**

   - **Having more lab skills will benefit me in applying for different research labs.**

3. **How has this research experience changed your future plans, if at all?**

   - **I acquire new skills and knowledge, which allow me to pursue different interests, develop problem-solving abilities, and challenge myself.**
   -

Spore-forming bacteria in influent wastewater collected from the Soda Springs Treatment Plant in Southeastern Idaho

Diana Rivas (rivadian@isu.edu), Julia E. Martin and Anirban Chakraborty
Department of Biological Sciences, Idaho State University, Pocatello, Idaho

Idaho State University

BACKGROUND

To thrive in hostile environments, some microorganisms are uniquely adapted to transform themselves into dormant structures, called endospores, as a survival strategy. Endospores are layered structures which are highly resistant to disinfection and sterilization methods and are essential to conserve the cell's genetic material under extreme stress (1). Several pathogenic bacteria responsible for foodborne diseases are also capable of forming spores.

Wastewater plant treatments are essential to humans and animals to remove bacteria, liquids, or metals, prevent environmental pollution, and ensure drinking water safety for humans and animal consumption (2). Endospores are also found in untreated urban wastewater which is nutrient-rich and harbors a microbial community that is highly diverse. Wastewater treatment plants often utilize anaerobic bacteria for degrading complex organic matter and to produce biogas. However, the diversity of endospore-forming anaerobic bacteria in untreated wastewater has yet to be investigated in detail.

The objective of this study was to enrich viable, spore-forming anaerobic bacteria at two different temperatures from untreated wastewater collected from the Soda Springs Wastewater Treatment Plant in southeastern Idaho.

CONCLUSION

- Endospore-forming bacteria were present in the untreated wastewater from the Soda Springs Wastewater Treatment Plant
- Microbial growth was observed at both temperatures tested
- The growth at 37°C was more pronounced than the growth at 50°C
- Visualization of endospores using phase-contrast microscopy confirmed their presence in the inoculation bottles

FUTURE WORK

DNA-based microbial community analysis will help identify the dominant community members in the enrichments.

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2.) Know your H20 (Water Research Center) "Get Informed Sulfate-Reducing Bacteria".

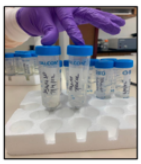
ACKNOWLEDGMENT

We thank Soda Springs Wastewater treatment plant for providing our samples. We thank Dr. Heather Ray for assistance with microscopy. Finally, we acknowledge funding from FY23

METHODS

Sample collection, Pasteurization, and Preparation of Tryptic Soy Broth (TSB) Medium

Collecting samples

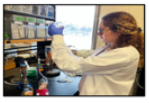


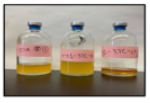
Pasteurization

Preparing TSB medium and Inoculation

- Diluted Water (DI water) was used to setting the water bath at 80°C for 1 hour (this step was important to performed to eliminated any present bacteria that were not endospores)
- 250 ml of wastewater was combined from smaller containers in a single sterile, 500 ml Duran bottle
- We labeled using a temporary label, using the name of the bottle sample
- 15 grams of Tryptic Soy Broth was added into 500 ml DI water
- We used 90% Nitrogen (N_2) and 10% Carbon dioxide (CO_2) gas mixture to exchange the headspace and immediately sealed the bottles with sterile rubber stoppers

Incubation at two temperatures (37°C and 50°C) and Subsampling procedure





- At each temperature, two replicate bottles were inoculated with wastewater and a third bottle was used as uninoculated control
- Bottles were incubated for 28 days, subsamples were collected at three- and four-day intervals
- Subsamples were collected using N2-flushed syringes and needles
- Within 10 days of incubation, inoculated bottles became turbid and had a strong odor, likely due to microbial growth and gas production

Monitoring bacterial growth using UV-VIS spectrophotometry

- Bacterial growth was measured in the collected subsamples by recording the optical density of the samples at 600 nm using UV-VIS spectrophotometry.

RESULTS

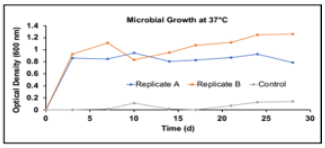


Figure 1: Growth of mesophilic bacteria at 37 °C in pasteurized incubation bottles.

Phase Contrast Microscopy

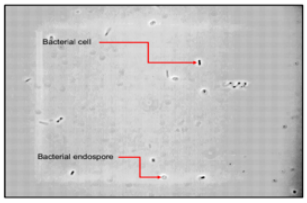


Figure 1A: Bacterial cells and endospores in a subsample collected from the incubation bottles.

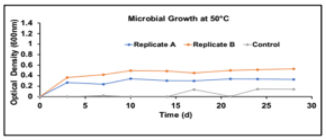


Figure 2: Growth of thermophilic bacteria at 50 °C in pasteurized incubation bottles.

SBOE 2023 Undergraduate Intern - Report for ISU's Office for Research

Project: Investigation of spore-forming anaerobic bacteria in untreated

wastewater samples from Southeastern Idaho

Faculty Lead & Mentor: Dr. Chakraborty and Dr. Martin

Student Name: Abigail Gallegos

Date: 11/11/23

1. **What did you learn from your internship experience?**
   - **I learned about how endospores can be incubated with specific gas. Use of gas tanks and needles to provide the samples with the desired gas environment was an incredible experience. I learned how to safely handle and dispose of needles as well as how to properly provide the sample bottles with new gas. I also learned how to use a Thermo Scientific Spectrophotometer, which I found very fascinating.**

2. **How did this research experience benefit you?**
   - **I found this research beneficial in expanding my skills in the lab. I became comfortable and confident handling the gas needle. I also became confident in using the spectrophotometer and recording the results it provided. This experience overall gave me more familiarity with new tools and helped with my adaptability in the lab.**

3. **How has this research experience changed your future plans, if at all?**
   - **This experience did not necessarily change my future plans for my career but did provide some insight into other possibilities. Presentation of the project did push me to try and expand on better visualization for the poster.**

Enrichment of Anaerobic, Endospore-forming Bacteria using Untreated Wastewater from Blackfoot, Southeast Idaho

Abigail Gallegos (abbygallegos@isu.edu), Julia Martin and Anirban Chakraborty
Department of Biological Sciences, Idaho State University, Pocatello, Idaho

Idaho State University

Introduction

Urban wastewater is typically a mixed fluid consisting of effluents from various sources such as residential sewage, industrial waste, and stormwater runoff. The untreated wastewater is nutrient-rich and harbors a microbial community that is highly diverse (1). Wastewater treatment plants often utilize anaerobic bacteria for degrading complex organic matter and to produce biogas (2). Some anaerobic bacteria, however, produce harmful, toxic gases such as hydrogen sulfide (3). Many of these harmful bacteria are also uniquely adapted to survive harsh environmental conditions by transforming active cells into endospores (4). Bacterial spores are dormant, layered structures that protect the cell's genetic material when environments are unsuitable for growth and are therefore more resilient to disinfection and sterilization methods (4 & 5). Several pathogenic bacteria responsible for foodborne diseases are also capable of forming spores (6). However, the diversity of endospore-forming anaerobic bacteria in untreated wastewater has yet to be investigated in detail. **The objective of this study was to enrich viable, spore-forming anaerobic bacteria at two different temperatures from untreated wastewater collected from the Blackfoot Wastewater Treatment Plant in southeastern Idaho.**

Conclusions

- Endospore-forming bacteria were present in the untreated wastewater from the Blackfoot Wastewater Treatment Plant
- Microbial growth was observed at both temperatures tested
- The growth at 37°C was more pronounced than the growth at 50°C
- Visualization of endospores using phase-contrast microscopy confirmed their presence in the inoculation bottles

Future Work

DNA-based microbial community analysis will help identify the dominant community members in the enrichments.

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Acknowledgements

We thank the Blackfoot Wastewater Treatment Plant for providing our samples. We thank Dr. Heather Ray for assistance with microscopy. Finally, we acknowledge funding from the FY23 SBOE HERC Undergraduate Research Funds at Idaho State University.

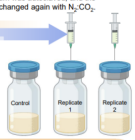
Methods

1 Collection of Samples
Untreated wastewater samples from the Blackfoot WTP were combined in a sterile Duran bottle to accumulate a volume of 200 ml. The combined sample was stored at 4°C.

2 Pasteurization
The wastewater sample was pasteurized using a water bath at 80°C for one hour. Subsequently, after cooling the headspace was exchanged with N_2 gas for one minute and immediately sealed with a rubber stopper.

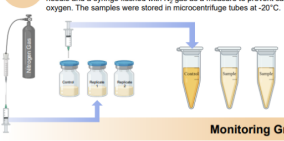
3 Medium Preparation: Selective for Fermentative Bacteria
Separately, anoxic Tryptic Soy Broth (TSB) was prepared. The media bottles were sealed with a blue butyl rubber stopper and crimp. The headspace was then exchanged with N_2:CO_2 gas. The medium was autoclaved, and the headspace was exchanged again with N_2:CO_2.

4 Inoculation
A set of three serum bottles with 40 mL of TSB was prepared for each incubation temperature. Two of the three bottles were inoculated with 10 mL of pasteurized wastewater. The third bottle served as an uninoculated control.



5 Incubation
One set of serum bottles was incubated at 37°C. The other set was incubated at 50°C.

6 Subsampling
Samples from the incubation bottles were collected at three and four-day intervals using a needle and a syringe flushed with N_2 gas as a measure to prevent sample exposure to oxygen. The samples were stored in microcentrifuge tubes at -20°C.



7 Monitoring Growth
Using a UV-VIS spectrophotometer set at 600 nm, the optical density of the subsamples was measured to determine microbial growth. After measuring all 28 days of subsamples, the data was plotted against time.

Results

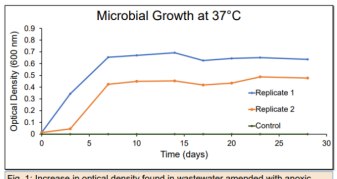


Fig. 1: Increase in optical density found in wastewater amended with anoxic TSB medium and incubated 37°C for 28 days.

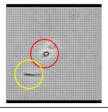


Fig. 1A: Phase contrast microscopic image (at 100x magnification) showing bacterial endospores (circled in red) and bacterial cells (circled in yellow).

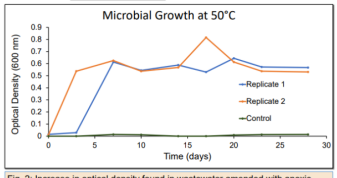


Fig. 2: Increase in optical density found in wastewater amended with anoxic TSB medium and incubated 50°C for 28 days.

Fig. 2A: Phase contrast microscopic image (at 100x magnification) showing bacterial cells (circled in yellow), less abundant than endospores.

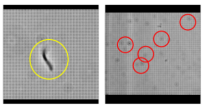


Fig. 2B: Phase contrast microscopic image (at 100x magnification) showing bacterial endospores (circled in red), more abundant than cells.

SBOE 2023 Undergraduate Intern - Report for ISU's Office for Research

Project: Investigation of spore-forming anaerobic bacteria in untreated wastewater samples from Southeastern Idaho

Faculty Lead & Mentor: Dr. Julia Martin and Dr. Anirban Chakraborty

Student Name: Douglas B. Madlock

Date: 11/15/2023

1. **What did you learn from your internship experience?**

Proper laboratory procedures such as extensive documentation of process and results.

2. **How did this research experience benefit you?**

Dr. Chakraborty's mentorship has given me the confidence to continue in a field that I found fascinating but was not sure I was bright enough to pursue. This experience has helped with my self-confidence.

3. **How has this research experience changed your future plans, if at all?**

I know for certain that I want to be in a field that values this type of research, such as ecology.

Investigating Anaerobic Endospore-Forming-Bacteria Within the Combined Influent Waste Streams of the Pocatello and Chubbuck Municipalities.

Douglas B, Madlock, Julia E. Martin, and Anirban Chakraborty
Department of Biological Sciences, Idaho State University, Pocatello, Idaho 83209 USA

Idaho State University

Abstract

The ability for an endospore to lie dormant, waiting for variables such as food, temperature, pH, and or the necessary anaerobic or aerobic conditions to become compatible with their metabolic demands, is what makes *Firmicutes*, so incredibly resilient. The focus of this study was to search for anaerobic spore-formers in the raw influent wastewater of South-eastern Idaho's Pocatello and Chubbuck city. Eight, twenty-four-hour composite samples, provided by Pocatello's Water Pollution Control (WPC) were combined and pasteurized at 80ºC to kill off any microbial life that may been present. The head space within the bottle containing the pasteurized wastewater was exchanged with a mixture of N_2 and CO_2 creating an anaerobic environment. Smaller flasks containing the growth media Tryptic soy broth (TSB) were given the same anaerobic treatment then inoculated with the pasteurized waste water. For twenty-eight days the inoculated samples were incubated at 37ºC and 50ºC. Samples were taken regularly. Microbial growth was detected and measured using spectrophotometry

Introduction

When exposed to suboptimal environmental factors, certain bacterium within the phylum *Firmicutes* have the ability to produce endospores. These formations develop at the end of bacilliform (rod-shaped) bacterium and contain the genetic material of the cell. Once fully formed, these spherical structures are capable of surviving for extended periods of time under extremely adverse conditions incompatible with the survival of the organism in it's vegetative form. The endospore lies dormant until environmental conditions are once more conducive to its metabolic needs. This unique adaptation has given *Firmicutes*, an evolutionary advantage. The obvious advantage associated with endospore formation is the increased probability of long term survival. In addition to the preservation of microbial DNA, recent research has shown that sporulation likely plays a role in another critical function; dispersion (Chakraborty et al., 2018). On multiple occasions, endospores belonging to thermophilic *Firmicutes* (thermospores) *have been* found in locations too cold to support their vegetative, spore-generating form (Isaksen *et al.*, 1994). Some academics have hypothesized that industries such as wastewater treatment facilities and anaerobic digesters may play a part in providing the thermophilic-mesophilic temperatures necessary for vegetative growth, and thus further dispersal of endospores

Conclusions

- There were endospores present in the samples being incubated.
- Samples incubated at both temperatures showed microbial growth.
- The samples incubated at 37ºC showed more robust growth than that of the 50ºC samples.
- The samples incubated at 37ºC generated noticeably more gas production the during first few days of fermentation of the tryptic soy broth media.

Future Work

- PCR and DNA analyses need to be done to ascertain what type of anaerobic bacteria were present in the samples.
- More media and temperature variables could be tested to discover the posable presence of other endospore forming bacterium.

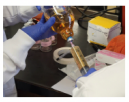
Acknowledgements

A special thanks goes out to the City of Pocatello's Water Pollution Control Department. We also acknowledge this projects finical support through the FY23 SBOE HERC Undergraduate Research Funds at Idaho State University. On a personal note, I would like to thank my wife Tara for her tremendous support.

Hypothesis and Questions

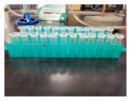
We hypothesized that there would be endospores present within the wastewater samples. The questions we had related to what species of *Firmicutes* they would be and what temperature range they would prefer.

Materials and Methods



Media and preparation.

Gas exchange and anoxic preparation.



Subsampling

Subsampling setup

Preservation of samples in cold storage.

References

Chakraborty, A., Ellefson, E., Li, C., Gittins, D., Brooks, J. M., Bernard, B. B., & Hubert, C. R. J. (2018). Thermophilic endospores associated with migrated thermogenic hydrocarbons in deep Gulf of Mexico marine sediments. The ISME Journal, 12(8), 1905–1908. https://doi.org/10.1038/s41396-018-0106-y

Isaksen, M. F., Bak, F., & JÃ¸rgensen, B. B. (1994). Thermophilic sulfate-reducing bacteria in cold marine sediment. FEMS Microbiology Ecology, 14(1), 1–8. https://doi.org/10.1111/j.1574-6941.1994.tb00084.x

Results

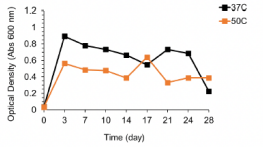
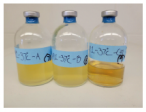
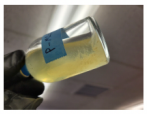


Fig. 1. Microbial growth chart showing 37°C and 50°C sampling over time.





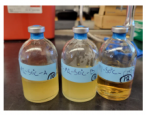


Fig. 2 Microbial growth/turbidity in incubated sample bottles.

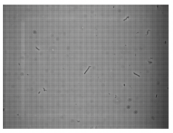


Fig. 3 endospores and bacteria at 37°C (left)

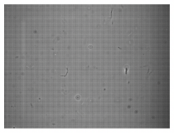


Fig. 4 endospores and bacteria at 50°C (right)

Part 3 – Report of Expenditures

Index for Expenditures: ABIO08

The three undergraduate internships occurred from November 01, 2022, to May 31, 2023 and the interns were compensated with hourly wages ($15.00/hour). The URIs worked according to a pre-set schedule of a maximum of 10 hours per week per intern in order for the wage expenditures to be dispersed evenly throughout the project period and for all three URIs to receive equal pay. Aside from the funds to support the URIs, a small portion of the funds was used to purchase a DNA extraction kit and PCR reagents for the molecular assays.

Original Budget:

1. Wages + Fringe (3.7%) = $7300
2. Materials and Supplies = $700

Total = $8000

Actual Expenditures:

1. Wages + Fringe = $7192.30
2. Materials and Supplies = $700

Total = $7892.30

Student Report

By

Abigail Card

For our undergraduate research project, my research partner Kailey Pease and I conducted a literature review of the different types of treatment research on stone tools, developed a project plan, cut and prepped the chert samples, tested for surface roughness and hardness changes, and presented our findings at the ISU Undergraduate Research Symposium. I also independently presented our research at the 2023 Idaho Conference on Undergraduate Research as one of the undergraduate lightning speakers. Overall, I feel like I have learned a significant amount from this experience. It has truly shaped my undergraduate experience as a whole. I was able to gain a better understanding of the more technical and methodological aspects of archaeological research in a laboratory setting. Sometimes, things just do not work out the way that you plan them to. Extenuating circumstances can prevent certain testing or data collection methods from happening. I feel that this experience has been a wonderful introduction to the type of work that I will be doing for my University Honors Program thesis research as well as for future research in my masters program. I was already considering pursuing a graduate degree, but this opportunity to experience the reality of researching is what truly convinced me to move forward with the idea. I deeply appreciate the opportunity to participate in both the ISU Undergraduate Research Symposium and the 2023 Idaho Conference on Undergraduate Research. They gave me the ability to network with and present to other members of our field. It has been a privilege to work with the anthropology faculty here at ISU. I would like to thank Dr. Charles Speer and Dr. John Dudgeon for their mentorship. I would also like to thank Kailey Pease for her willingness to put in the hard work and time that was necessary for this project. I am thankful for this experience and I hope that the anthropology department will continue to receive more grants in the future to provide other undergraduate students with this opportunity during their time at Idaho State University.

Student Report

By

Kailey Pease

For this undergraduate research project, myself and my classmate Abby Card conducted research on water treating chert samples within an Archaeological context. Throughout this research project, we conducted a literature review, prepared chert samples, performed several tests for comparing surface roughness and hardness of the chert when dry or wet, and presented the results at the spring 2023 ISU Undergraduate Research Symposium. Overall, this project was very interesting and beneficial to my education and experience at ISU. While my education is focused on forensic anthropology rather than archaeology, this project still allowed me to learn important research methods, be challenged, and to collaborate with others. This project was also very beneficial in regards to another research project I presented in the summer of 2023 at the Idaho National Laboratory's Intern Poster Session during my archaeology internship with the company. Abby and I's project has shown me how interesting research can be and helped me realize that I want research to be an important aspect of my future career in anthropology. I would like to express appreciation to several people who have been very helpful in the success of our project. This project would not have been possible to complete without the help of our supervisors Dr. Speer and Dr. Dudgeon, CAMAS research assistant Rebecca Hazard, and the ISU Anthropology Department. I would especially like to express appreciation for my research partner Abby Card who was very hardworking and helpful to me throughout this project. Overall, I am so thankful to have had the opportunity to conduct this research project and look forward to the rest of my ISU education and future career in Anthropology.

Did Ancient People Soak Rocks in Water to Make Better Stone Tools?

Abigail Card & Kailey Pease, Department of Anthropology, Idaho State University-Pocatello

Idaho State University
Department of Anthropology

Introduction

Chert is a cryptocrystalline silicate that was commonly used in the past for making stone tools. Chert is typically ideal for making stone tools (or flintknapping) because it fractures in a predictable manner, much like glass. Chert has been used for tool making for tens of thousands of years by multiple species of hominids (see Figure 1 below). Chert is variable in its color, hardness, and fracture toughness. Some cherts do not flake as well as others and that makes it difficult to thin the stone enough to make tools. It has been suggested by modern hobbyists making stone tools that soaking Edwards Plateau chert from Texas in water for one hundred forty-four hours can improve its mechanical properties. We have outlined an experiment to test this idea using:

- Leeb Rebound Hardness Test (LRHT)
  - Looking for a decrease in hardness
- Simultaneous Thermogravimetric Analysis (STA)
  - To see if any significant water is absorbed by the chert compared to the dry control specimens
- Profilometry
  - Looking for an improvement in surface roughness

Figure 1. Projectile point flint knapped by a modern-day hobbyist with Edwards Plateau chert.

Materials & Methods

We reduced a nodule of Edwards Plateau chert into 1cm thick slabs and then processed the slab into fifteen cubes roughly one cm³ in size. The cubes were cleaned with deionized water and allowed to dry under a fume hood.. The cubes were then divided into one group of ten blocks for water treatment and five blocks as a control group. The water treatment group was submerged for one hundred forty-four hours. After submersion, all fifteen samples were analyzed with:

- Leeb Rebound Hardness Test (LRHT)
  - Makes an impact on the object surface to discover the material's hardness (see Figures 2 & 7).
- Profilometry
  - To accurately measure this, we had to cleave our samples into two pieces to get a fresh surface (see Figure 8).
  - Drags a diamond tipped stylus across a material's surface to quantify its roughness (see Figure 9).

Simultaneous Thermogravimetric Analysis (STA) could not be conducted because soaked chert samples could not be effectively sieved as a slurry to accommodate STA.

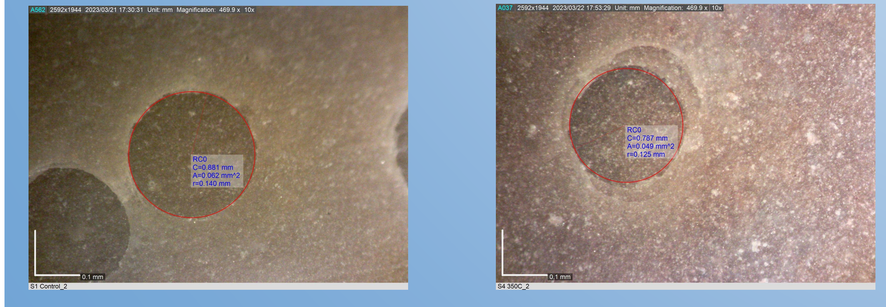


Figure 2. Leeb Round Hardness Test indentations on chert matrix.

Results

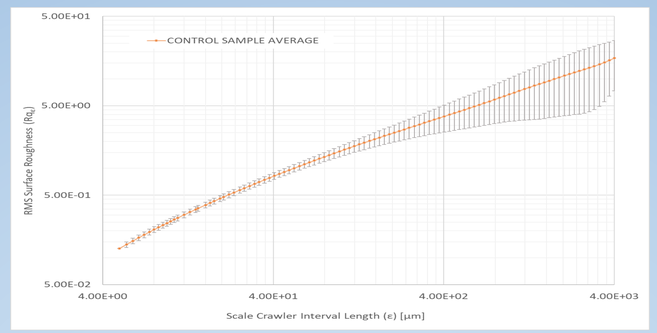


Figure 3. Surface Roughness Control Group

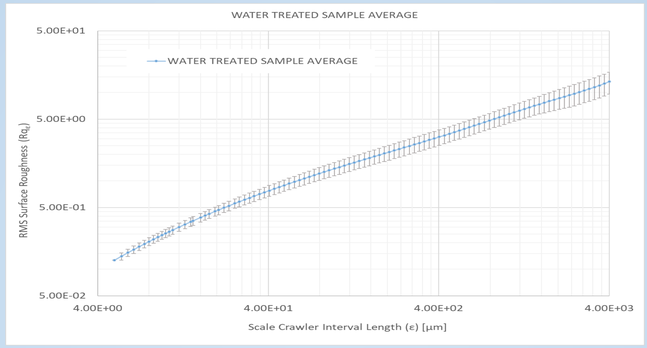


Figure 4. Surface Roughness Water Treated Samples

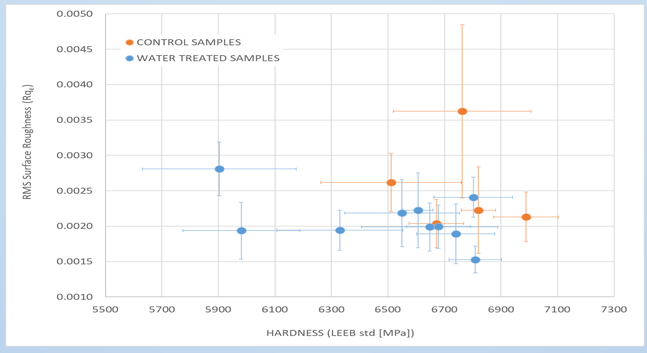


Figure 5. Surface Roughness Versus Hardness

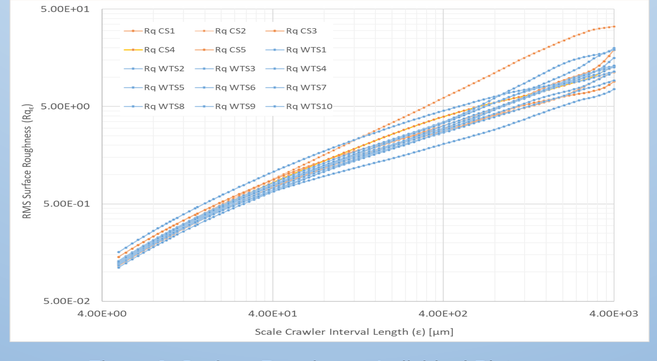


Figure 6. Surface Roughness Individual Plots

Figure 7. The LRHT apparatus being used on one of the samples.

Figure 8. This is the method in which the chert samples were cleaved for the profilometry.

Figure 9. The profilometer scratching the cleaved surface of a sample.

Conclusion

Overall, the profilometry testing only showed a slight variation between the control and water treated samples of Edwards Plateau chert (Figures 3 & 4). The LHRT was inconclusive and did not show any significant patterning. We saw no correlation between hardness and surface roughness (Figure 5). Nonetheless, the water treated samples did exhibit a minor decrease in surface roughness of the material (Figure 6). This finding is significant to the research question, as it confirms that water treatment can affect chert and thus influence the consistency and predictability of flintknapping with this material. Though the results are minor, this data signals that further research should be conducted to see if the results are anomalous or consistently show changes. The decrease in surface roughness may be significant to the advantage of water treating chert just as it is with heat treatment of rock in the past due to the increase in predictability of flaking the surface and more uniform removal of material.

Future Research Opportunities

- Completion of Simultaneous Thermogravimetric Analysis (STA)
- Additional testing of water treated samples in three groups:
  - Control
  - Consistently soaked
  - Soaked, then dried
- Laser ablation
- Soaking samples in water for varying lengths of time
- Testing larger sized samples in greater quantities
- Alternative hardness testing

Acknowledgements

We would like to thank all of the wonderful people that we have gotten to work with during the development of our project. Specifically, we would like to thank Dr. Charles A. Speer for guiding us through this challenging process. We would also like to thank Dr. John Dudgeon and Rebecca Hazard for helping us learn how to go through the processes of preparing, researching, and testing all of the materials involved with our research. Thank you all for your continuous support.

References

Clark, J. E. (1982). An Ethnographic Note on "Water Treatment of Flint". *Lithic Technology*, *11*(1), 2–3. https://doi.org/10.1080/01977261.1982.11760590

DeForest, D. S., & Lyman, R. L. (2022). Characteristics of lithic sound to assess a rock's predictability of flaking. *Lithic Technology*, *47*(3), 221–230. https://doi.org/10.1080/01977261.2022.2029284

Patterson, L. W., & Sollberger, J. B. (1979). Water Treatment of Flint. *Lithic Technology*, *8*(3), 50–51. https://doi.org/10.1080/01977261.1979.11754454

Whittaker, J. C. (2015). Fire-and-water knapping: Origins of a lithic folk tale. *Lithic Technology*, *40*(1), 40–51.https://doi.org/10.1179/2051618514y.0000000006

“In the pink”: high salt and light conditions stimulate retinoid production in Halobacterium

Austin Robison, Tamra Diehl, Travis Clizbe, Jeffrey Rosentreter and Caryn Evilia
Department of Chemistry, Idaho State University, 921 South 8th Ave Stop 8023, Pocatello, ID 83209

Introduction

The Great Salt Lake is almost a perfect monoculture for the archaeon *Halobacterium*. These organisms are capable of living in extreme salt (group 1 metals) and moderate trace metal concentrations. Our lab organism, *H. salinarum ssp. NRC-1*, is part of the GSL group and it can survive in both anaerobic (no O_2) and aerobic conditions. The organism grows heterotrophically in aerobic conditions and while under anaerobic conditions, it shows phototrophic growth (Falb et al. 2008). *H. salinarum* is a model organism for the transmembrane proteins called bacteriorhodopsin and halorhodopsin. These are transmembrane proteins that have a bound retinoid molecule which gives the organism a red/purple hue. They use energy from the sun to create a proton motive force which allows for the production of ATP. Retinoids are pigments that isomerize in sunlight, allowing protons into the cell when they swing one way or the other. *H. salinarum* is known to increase the production of retinoids via the mevalonate pathway under anaerobic conditions (Falb et al. 2008, see figure 1). For this poster, we are looking at *Halobacterium salinarum NRC-1’s* ability to increase retinoid production under different growth conditions. Growth conditions included both light and dark conditions in two types of media.

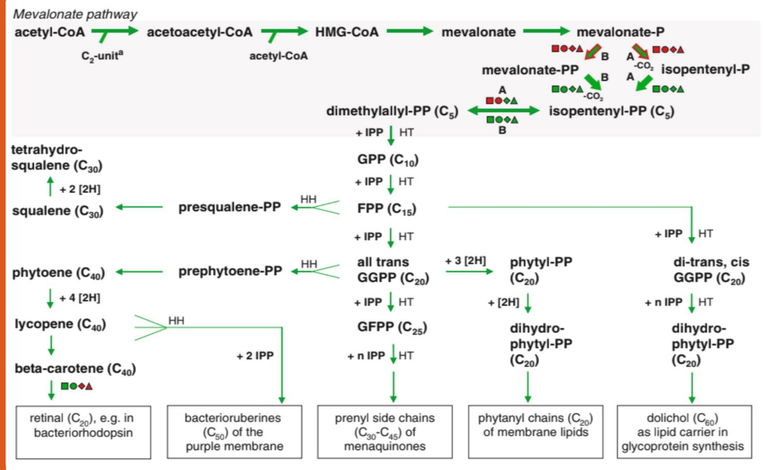


Figure 1 from reference 1. Mevalonate pathway showing how *H. salinarum* produces β-carotene and retinal for bacteriorhodopsin.

Methods

H. salinarum was grown in two different types of media. The first type of media was Complete Media+ (CM+), which includes peptone and 4.3 M NaCl, which is used to cultivate the organism in the lab normally. The second type of media, called “optimum media”, used was CM+ spiked with trace metals commonly present in the Great Salt Lake (see poster by T. Diehl, et al.). The concentration of metals added was the maximum amount that *H. salinarum* can tolerate and still grow. In each experiment, only one type of media was used, and the experimental variable tested on each type of media was the presence of sunlight or darkness. Artificial sunlight was produced by a plant growth lamp with a xenon bulb. 100 mL of media were inoculated with 2 mL of starter *H. salinarum* (grown in normal CM+). These cultures were then grown at 42 ℃ in sunlight, or darkness, for 8 hours a day, with their OD taken before and after the 8 hour growth period. After the 8 hour growth period, samples were grown in darkness overnight. At the end of the 5 day experiment, cells were stored in 50 mL tubes at room temperature until processed. Cells were processed for the detection of retinoids. Briefly, 5 mL of each culture was centrifuged into pellets and washed with a basal salt solution to remove excess liquid media. The cells were then resuspended in 50 µL of water before 100 µL of acetone was added. This lysed the cells and allowed the retinoids to solubilize into the acetone solution, leaving cell material behind. The acetone solubilized materials were diluted and the absorbance spectrum (300 -700 nm) was measured on a Genesys 10S UV-Vis Spectrophotometer and compared to a known retinoid, β-carotene.

Results

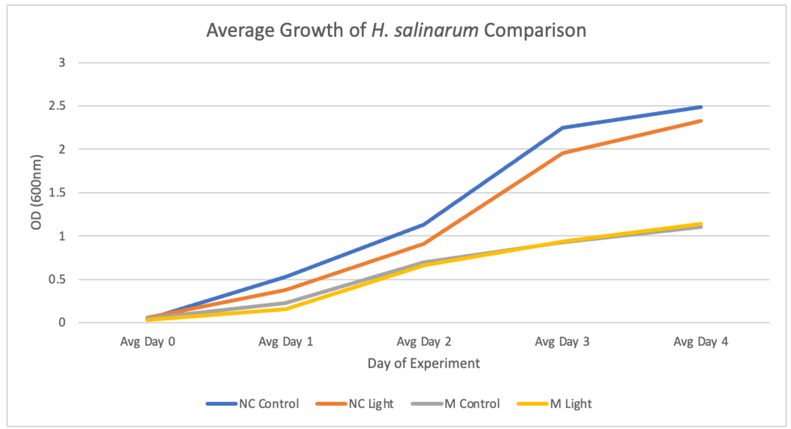


Figure 2. OD of samples taken with UV-Vis spectrophotometer set at 600 nm. Average was for each type of sample over the 5 day experiment. OD value used was after the 8 hour day light/dark experiment. This shows a significant difference between normal CM+ and maximum CM+, but no difference between light/dark conditions across media types.

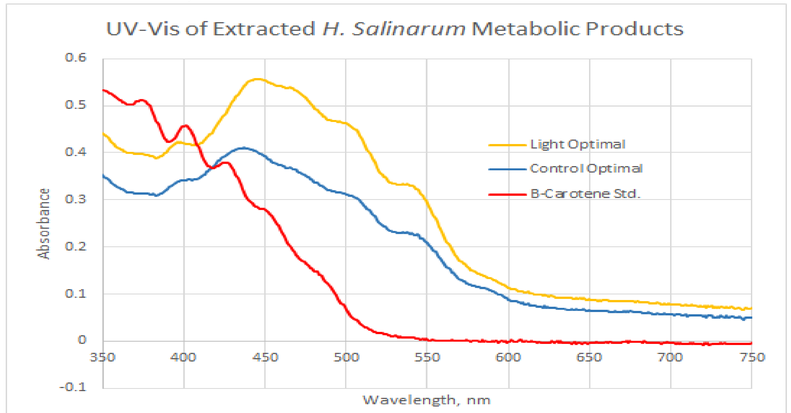


Figure 3. Initial UV-Vis of the extracted metabolic products from the halobacterium compared to a β-carotene standard in acetone. The λ_{max} for the β-carotene standard was significantly lower than the halobacterium’s products. This may suggest there are other retinoids causing the phenotypic change. Traditionally, β-carotene has a λ_{max} around 453 nm, and other carotenoids have absorbance maxes around 450 nm. The difference in β-carotene’s λ_{max} values may be investigated further.

Discussion/ Future Work

In aerobic conditions there was no noticeable difference in phenotype between cultures grown in light and dark conditions between the two types of media. The initial hypothesis for this experiment was made due to notable phenotypic characteristics between cultures grown in light and dark conditions. We can draw the conclusion that the lids used on samples in early experiments were creating enough of a seal for the samples to be growing in anaerobic conditions. There is a significant difference in phenotype between cultures grown in Maximum CM+ and normal CM+. Future work with the retinoid assays may help elucidate the cause of this difference in phenotype. Possible causes are increased production of retinoids, insufficient gas vesicle inflation/deflation, or some unknown factor. More future work with testing cultures in salt concentrations found within the Great Salt Lake may give us a different phenotypic and metabolic shift in the organism.

Results: Cultures grown in normal CM+ in both light and dark conditions had no visible phenotypic difference.This result was mirrored for cultures grown in maximum media with no noticeable phenotypic difference between cultures. These results showed that the presence of sunlight did not have a larger impact on retinoid production and it is likely more influenced by oxygen availability. However, there were notable differences between cultures grown in normal CM+ and maximum media. The first was that spent media from cultures grown in maximum media was a much darker orange color compared to that of cultures grown in normal CM+. The second was that cells grown in normal CM+ were able to form a pink pellicle at the top of the spent media when stored. Cells grown in maximum media would sink to the bottom of the spent media when stored and had a darker purple color. Processed cells resulted in a red-orange solution, similar to common retinoids (Figure 5). Cells grown under sunlight conditions resulted in a λ_{max} of 445 nm, while dark conditions resulted in a λ_{max} of 437 nm. β-carotene was measured to have a λ_{max} between 350-400 nm.

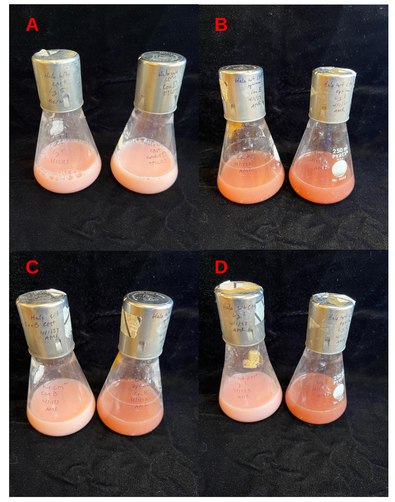


Figure 4. Comparison of phenotypes between all four types of samples, control CM+, light CM+, control maximum CM+. and light maximum CM+. A) Normal CM+ cultures grown in light and dark conditions. B) Maximum CM+ cultures grown in light and dark conditions. C) Control normal CM+ culture vs. Control maximum CM+ culture. D) Light normal CM+ vs. Light maximum CM+ culture. This shows significant phenotypic differences between maximum CM+ and normal CM+, but not between light/dark conditions.

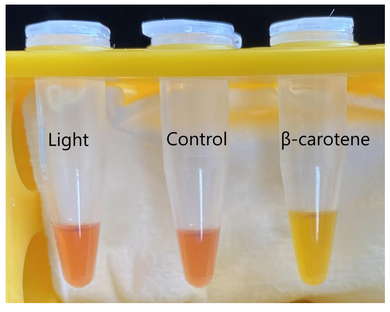


Figure 5. Solubilized retinoids in acetone from halobacterium grown in light or dark conditions compared to β-carotene. There is a significant difference in the β-carotene’s color compared to the halo-extracted solutions. This indicates there is little β-carotene, or other retinoids are causing a change in phenotype.

Acknowledgments

- This project was supported by a 2022-2023 STEM Undergraduate Research Grant from the Higher Education Research Council.
- Idaho State University Chemistry Department

References

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HERC report

A final lab/project award report will be due to ROC by July 15, 2023. This report will have three parts:

1. A description of the activities undertaken, how the lab/project benefited from the funds, how the research goals of the lab/project were furthered. Include your thoughts on the mentoring portion of the project. Did you complete the activities described in your proposal? What might you do differently next time?
2. Student reports as described below.
3. A report of expenditures.

Funds must be spent by June 1, 2023, with no extensions granted.

B. Responsibilities of the Student Participants

Students who receive these research funds are expected to participate in a poster presentation. Acceptable presentation opportunities include the ISU Undergraduate Research Symposium, the Idaho Conference on Undergraduate Research, or a discipline-specific symposium or conference. Virtual conferences are acceptable presentation forums.

Students will provide their lab/project lead researcher a report describing what they learned, how the research experience benefitted them, and whether the experience has changed their future plans. This student report should be submitted as an electronic file (jpg or pdf) and will include a copy of their poster.

1A. A description of the activities undertaken, how the lab/project benefited from the funds, how the research goals of the lab/project were furthered.

The purpose behind getting these funds was to support two undergraduates during their training in microbiological/ biochemistry methods in order to make progress on our lab's project to characterize the microbial population of the Great Salt Lake. To this end, both Austin and Tamra made great progress. They used previous data from our lab to design growth media for our model lab organism, *Halobacterium salinarum*, to determine optimal and extreme growth conditions. These experiments were designed around training them in microbiological methods, so that we could work with environmental samples from the Great Salt Lake. The specific techniques that were learned (in addition to general lab procedures and protocols in microbiology and

biochemistry) were microbial culturing of halophiles, how to collect environmental samples, and creating filters for microbial analysis. Outside the lab procedures, we have also talked about how much data is needed for publication, how scientists and how we will write a manuscript. Before the end of our funding, we generated an outline for our manuscript. Over the course of this summer, we (Tamra, Austin and I) will be writing a manuscript for publication on their data that they collected on our media project. Our goal is to submit it for publication by September 2023

In this way, my lab and this project greatly benefited from having the financial support for Tamra and Austin. Because neither of them had to seek employment elsewhere, they were able to spend more time in the lab which allowed them to keep trying different conditions to determine the maximum conditions our lab organism can tolerate. This furthered the goals of this project which we have been able to disseminate by giving scientific presentations and posters, as well as by writing up our results for publication in a scientific journal.

1B. Include your thoughts on the mentoring portion of the project. Did you complete the activities described in your proposal? What might you do differently next time?

We did all of the activities in our proposal. I met with Tamra and Austin every week- often more than once per week – to check in with them. This was very helpful because they were getting results that were unexpected. This required constant tweaking of the experimental conditions and redoing the experiments. Both Tamra and Austin did an amazing job adapting to the constant changes. Most students don't like to be told that they must do their experiments over and over again. By repeating experiments, we were assured that the scientific method was being followed and the results we generate were real. I know Tamra and Austin understood this and we discussed this during our meetings. The good news is that their hard work is paying off as we have plenty of data for a manuscript, which they are helping me to write.

Austin and Tamra worked very well as a team. They talked to each other regularly and switched off duties as their schedules were different. This allowed them to keep the experiments going and provided additional controls for our experiments. Because they took turns doing the culturing and media preparations, we could make sure that the results weren't because of just one person. I am also proud to say that while Tamra and Austin didn't always agree in the interpretation of our results, and this led to a few in-lab debates – they were good debates. In the end, they were both right. They came up with tests of their different interpretations and it satisfied both of their concerns. I have had students debate each other before, but they were on different projects so only one would be able to test their hypothesis. This, for me, was much more satisfying, pedagogically, and I think Austin and Tamra learned a lot in the process.

While this project progressed very well and I feel Austin and Tamra got a lot out of it, there are things I would do differently the next time around. Having a supported team of two undergraduates was a good way to go, but personalities sometimes clash. In general Austin and Tamra got along well, but they had different outlooks that seemed to cause them some strife. For example, Tamra didn't see the need to hang around the lab after experiments were done or in progress, but Austin did. In these afterhours hangouts, he was troubleshooting, and she had left.

After some time, we all talked and this led to some solutions: Tamra would touch base with Austin, even after all was complete for the day. They also talked by the Slack app and by texting, so our communication issue was worked out. The next time around, I think we should discuss some of these issues, especially communication, at the beginning of the project, rather than towards the end.

2. Student reports

HERC 2022-2023 final student reports - Evilia

"Students will provide their lab/project lead researcher a report describing what they learned, how the research experience benefitted them, and whether the experience has changed their future plans."

Tamra Diehl – HERC report

My research project was a fun and informative experience, and I would highly recommend other students to engage in research. This experience has allowed me to improve my ability to communicate complex concepts and information to others as well as apply critical thinking and problem solving to diverse situations. For example, while having a group meeting in lab, I was able to suggest making a minimal media to grow halophiles, to see how it responds to the addition of bicarbonate to the growth media. Even though the difference ended up being minimal I was still able to learn from the experience of hypothesizing and developing testing procedures.

This experience also provided me with multiple tangible benefits in several different areas. First, I gained invaluable experience in the process of research. My scientific techniques and methods improved due to the varied demands of my project, allowing me to practice and learn outside of the classroom. For example, my pipetting skills have greatly improved, and I am comfortable running a variety of instruments, including spectrophotometers. Additionally, my communication and collaboration skills were improved through opportunities to assist and train coworkers with different aspects of their experiments. While my research experience did not change my plans for the future, it did solidify my goals to attend graduate school to study biochemistry.

In terms of the science and my project, we were able to learn about many things about our halophiles. First, they are extremely tolerant to several different metals. For example, halobacteria can survive and grow in three molar concentration of lithium, which is 100,000 times the concentration of seawater. This was interesting because in the Great Salt Lake, the lithium concentration was only 57.6 µg/mL or 8.30 millimolar which is significantly lower. We were able to see how well halobacteria can live in such extreme environments by testing a variety of different metals. The other most notable thing we learned about halobacteria was that it can have a phenotypic change due to the addition of these metals and when introduced to artificial sunlight.

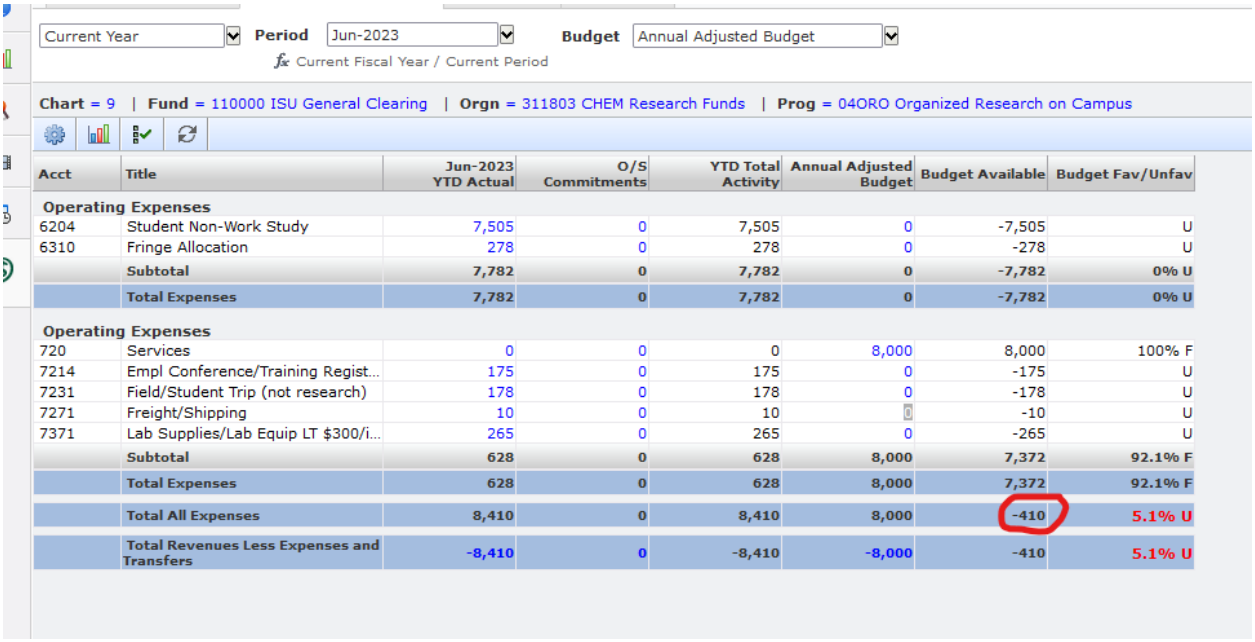
This research has allowed me to become a more well-rounded scientist and has given me the opportunity to study a truly fascinating organism. I really appreciate this opportunity and am grateful for the experience I have gained.

Austin Robison - HERC report

This experience taught me how important communication is while working on a project with multiple individuals. I really enjoyed being able to work as a team on separate parts of one question and be able to bring together all of our work to come up with an answer. It required effective communication between me and my lab mates to be able to have our experiments coincide with each other towards the same goal. Coordination of lab equipment was also a key to being effective as a group as well. I see this increased use of communication as a major benefit to my abilities as a researcher and am grateful that I was able to hone this skill. I also learned how important it is to look at a scientific question from every angle before drawing conclusions from your data. Being able to recognize factors that impacted your result will allow you to draw sound conclusions, which is the goal of any good researcher. My plans have not changed through this experience and I plan to continue my pursuit of education and educating others. It has increased my drive to continue learning about everything I can. This was very helpful in solidifying my plans for grad school. Through my project I have realized that I want to increase my knowledge in the field and then pursue a career in industry/academia that will allow me to help others. Whether that help takes the form of teaching or increasing understanding of the field, a masters degree will help increase my ability to do this. This funding allowed me to focus on my work without distractions and be able to increase my enjoyment in the field and support myself at the same time. Because of that I now think that I would love to do this for a career.

For the science part of my project, I learned a lot about *Halobacterium salinarum*, which is an organism commonly found in the Great Salt Lake. Halobacterium is a salt loving, metal tolerant organism that can grow with or without oxygen. This organism is a poly-extremophile, meaning that it can live in conditions far outside the conditions of mesophilic or “normal” organisms. In my project, I was looking at the effects of metal concentration and sunlight on the growth of Halobacterium. After testing many factors that influence halobacterial growth, the factor that influenced growth the most was metal concentration and not sunlight under oxygen-rich conditions. We also found that in conditions without oxygen there is a large phenotypic difference when the level of sunlight changes during growth, which had already been established in the literature. Overall, our results agreed with work previously done and furthered our understanding of growth conditions for *Halobacterium salinarum*.

3. Expenditures report



Current Year | Period Jun-2023 | Budget Annual Adjusted Budget

fx Current Fiscal Year / Current Period

Chart = 9 | Fund = 110000 ISU General Clearing | Orgn = 311803 CHEM Research Funds | Prog = 04ORO Organized Research on Campus

Acct	Title	Jun-2023 YTD Actual	O/S Commitments	YTD Total Activity	Annual Adjusted Budget	Budget Available	Budget Fav/Unfav
Operating Expenses							
6204	Student Non-Work Study	7,505	0	7,505	0	-7,505	U
6310	Fringe Allocation	278	0	278	0	-278	U
	Subtotal	**7,782**	**0**	**7,782**	**0**	**-7,782**	**0% U**
	Total Expenses	**7,782**	**0**	**7,782**	**0**	**-7,782**	**0% U**
Operating Expenses							
720	Services	0	0	0	8,000	8,000	100% F
7214	Empl Conference/Training Regist...	175	0	175	0	-175	U
7231	Field/Student Trip (not research)	178	0	178	0	-178	U
7271	Freight/Shipping	10	0	10	0	-10	U
7371	Lab Supplies/Lab Equip LT $300/i...	265	0	265	0	-265	U
	Subtotal	**628**	**0**	**628**	**8,000**	**7,372**	**92.1% F**
	Total Expenses	**628**	**0**	**628**	**8,000**	**7,372**	**92.1% F**
	Total All Expenses	**8,410**	**0**	**8,410**	**8,000**	**-410**	**5.1% U**
	Total Revenues Less Expenses and Transfers	**-8,410**	**0**	**-8,410**	**-8,000**	**-410**	**5.1% U**

1. Wages budget ($4,940). I spent $7,505.

Austin Robison and Tamra Diehl were paid $7,505 over the course of this proposal (November 2022 – May 26, 2023). This amounts to 577 hours of work over 23 weeks. While I had budgeted for less time, they were making good progress, so I sacrificed some of my travel and supply budget to pay them for additional work on the project. However, due to issues with getting status reports, I overspent by more than I anticipated.

2. Total fringe budget ($182.78). I spent $278.

Because they worked more hours, we spent more on the fringe. We spent $278.

3. Research travel budget ($1,983). I spent $353.

I had budgeted funds ($1,798) for both students to attend the American Chemical Society meeting in Indianapolis, IN. However, neither student was able to attend this meeting. Instead, both students did posters at the ISU undergraduate symposium (April 13, 2023) and I was able to pay for Austin's virtual registration ($175) for Brines Across the Solar System, which is a NASA sponsored meeting (in-person part was in Reno, NV on May 15-19, 2023).

Additional Research travel: ISU Van rental for collecting samples at the Great Salt Lake, UT: $178.

Because we will need to collect environmental samples as a culmination of this project, I rented an ISU van for us to go to the Great Salt Lake. Our trip was on May 11, 2023. The van rental plus fuel was $178.

4. Materials and supplies budget ($700). I spent $275.

I spent $275 on consumables for this project. While I could have spent more, I used the bulk of these funds to support Austin and Tamra instead.

Total: $8,410

Recreating *Halobacterium salinarium's* Native Environment for Optimal Lab Growth

Tamra Diehl, Austin Robison, Katelynn Miller, Talia Cahoon, Jeffrey Rosentreter and Caryn M. Evilia
Department of Chemistry, Idaho State University, 921 South 8th Ave Stop 8023, Pocatello, ID 83209

Abstract

Due to the Great Salt Lake, Utah's (GSL) hypersaline environment, it is easy to assume no organism could live in its depths. The lake has high concentrations of Group 1 and 2 ions, as well as transition metals, making the GSL toxic for most forms of life. However, to the extreme halophiles that live in the lake, these are the conditions that support their life. To better understand how they survive in this hypersaline environment, *H. salinarum* (Hs), a resident of the GSL and model halophilic archaeal organism, was grown in standard media, spiked with different concentrations of metals, based on our analysis of the GSL water. Cell growth was measured daily by measuring cell density at 600 nm. The results demonstrate that Hs grows better, in general, in the media spiked with individual metals and media containing all tested metals. Furthermore, the data showed that Hs grew better in media spiked with Group 1 ions (lithium, sodium, potassium, etc.) versus media with Group 2 ions (magnesium, calcium) or transition metals. To further understand how Hs grows in its environment the cells were also subjected to growth under simulated sunlight. The results show that the sunlight increases Hs growth rate, even in the presence of high concentrations of metal ions. This new information on how Hs grows in different metals and sunlight allows for a better understanding of how these metal-rich environments impact Hs and the limits to which life itself can be pushed.

Introduction

The Great Salt Lake (GSL) in Utah is a great example of an extremely saline environment that is populated by the extreme halophiles; mostly archaeal organisms that are frequently found in unusual and extreme environments. A GSL water analysis was done in our lab to evaluate the metal content of the lake. Our traditional media, CM+ (4.3 M NaCl, 81 mM $MgSO_4 \cdot 7H_2O$, 27 mM KCl, 6.3 µM $FeSO_4 \cdot 7H_2O$, 1.5 µM $ZnSO_4 \cdot 7H_2O$, 2.2 µM $MnSO_4$, 0.040 µM $CuSO_4 \cdot 5H_2O$), that is used to culture our lab's model organism, *Halobacterium salinarum* (Hs) has sub-micromolar concentration of metal, while the GSL water has milli- to molar concentrations of different metals. The CM+ media was developed over 40 years ago, and Halobacterium grows well in it[1]. This media, however, does not reflect the actual saline environment these organisms live in. In this era of metagenomics and microbial ecology, more research is being done to develop new medias that use knowledge of these environments and their associated microbiome to improve in-laboratory cell growth. From past work in our lab, the GSL was found to have high concentrations of group 1 and 2 metals as well as some transition metals (figure 2). To better understand how "wild" halobacterium survives in an environment with such an abundant number of metals, we grew our laboratory strain with different metals at concentrations similar to the GSL's metal content, as well as under simulated sunlight to better replicate its environment.

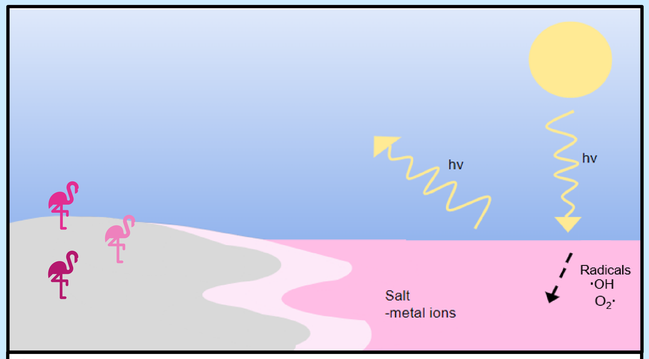


Figure 1: Depiction of the GSL and the chemistry to goes on in its waters.

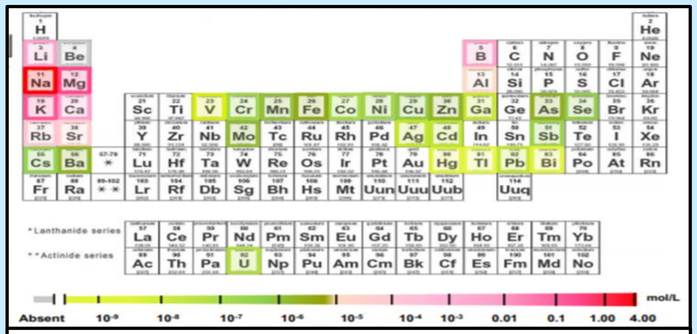


Figure 2: Metals of Great Salt Lake as determined by ICP-MS analysis of GSL water after native cells are removed. Only tested metals are highlighted.

Results

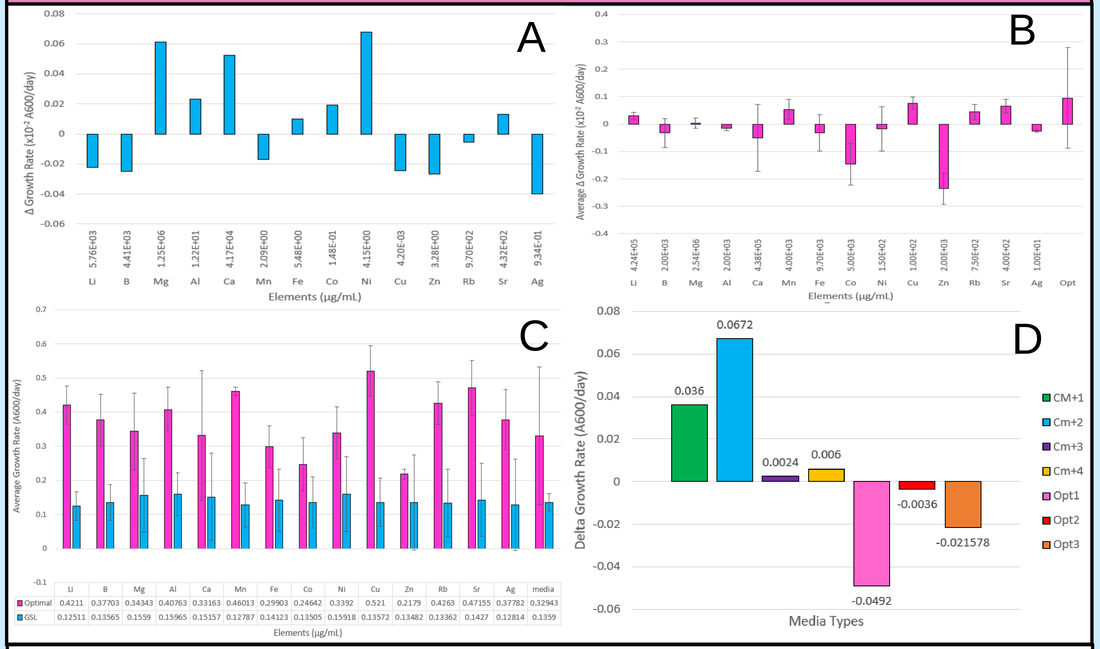


Figure 5: A) The change in Halobacterium growth compared with average negative controls of GSL concentrations of elements. At the GSL concentrations Ni, Mg, Al and Ca performed the best. The Ag did the worst. The GSL Media growth rate was worse than the controls' growth rate B) The change in Halobacterium growth compared with average negative controls of optimal concentrations of elements. For these cultures, most metals did reasonably well; however, some did worse than others, particularly Zn and Co. The optimal media growth rate exceeded the control growth rate. C) The optimal concentration growth rate (pink) vs GSL concentration growth rate (blue). All the optimal concentrations had better cell growth rates than that of the GSL concentrations. D) The change in Halobacterium growth compared with negative controls of sunlight treated CM+ media and optimal media growth rates. In general, growing Halobacterium under artificial sunlight increased their growth rate. However, in the case of optimal media, it does not. This could be due to lack a gas vesicles being produced by Halobacterium. The optimal concentration cells have a standard deviation error bars calculated by averages, and the GSL-based media has error bars created by the linest function in Excel.

Methods

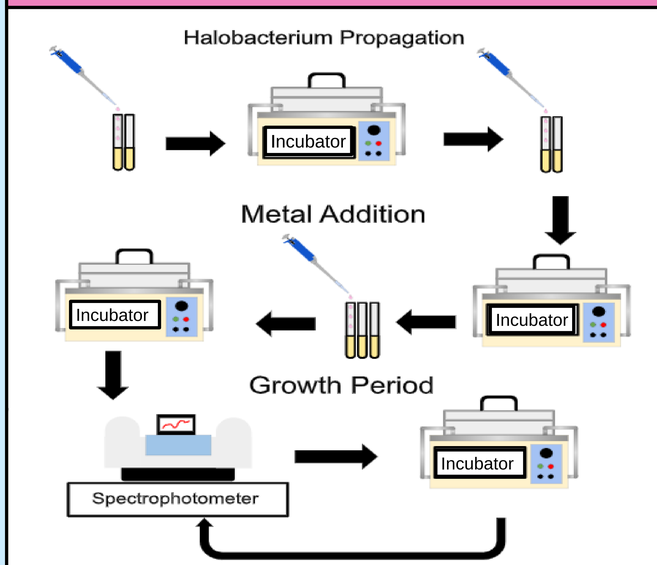


Figure 3: 100 uL of halobacterial culture was inoculated into 5 ml of CM+ Media and incubated at 42℃ at 220 RPM.Cultures were grown to exponential phase. After propagation, cultures were made with the different metals at varying concentrations. All the cultures were done in triplicate. Cell density was recorded at an absorbance of 600 nm. These values were recorded, and a growth curve was generated.

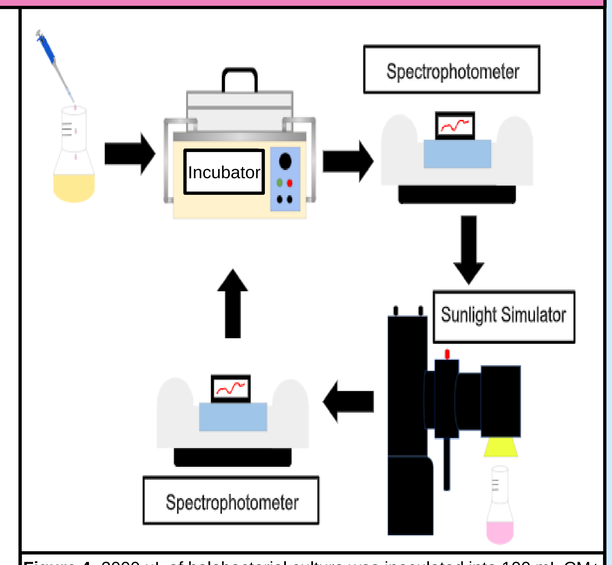


Figure 4: 2000 µL of halobacterial culture was inoculated into 100 mL CM+ or Optimal media and incubated for 4 days at 42.℃ at 220 RPM. For 2 hours each day the culture is incubated under artificial sunlight via a Sciencetech Inc., xenon lamp. The density is taken at an absorbance of 600 nm twice a day, before and after light treatment. From these data, a growth curve was created.

Conclusion

After testing group 1, 2 and transition metals, optimal concentrations for each were found by examining the average growth rate of the cultures. Not all metals were considered optimal. For example, silver is present in the GSL, but it did not increase the growth rate of Hs. While strontium consistently did better than the negative controls (traditional CM+ Media). The optimal concentrations of most metals were much higher than the concentrations in the GSL, except for Sr, Rb and B. To see if we could redesign the media, Hs cultures were grown at GSL concentrations and average growth rate can be seen in Figure 5. It shows that half of the metals performed above the control; Co, Fe, Ca, Al, Mg, Sr, with Ni doing the best. While the other half demonstrated a lower growth rate than the control; Cu, Zn, Li, B, Mn, Rb and Ag. However, they still grew relatively well at the GSL concentrations. A media was made by combining all the metals at the GSL concentrations, and the Hs growth rate did not out preform the control growth rate. To further explore how these metals might influence growth rate, we made a media at the experimentally determined optimal concentrations (figure 6). Most of the metals, performed better than the control; Li, B, Mg, Mn, Fe, Cu, Rb, Sr and Mn doing slightly better than the rest. The metals that did worse were Al, Ca, Co, Ni, Ag, and Zn. While we are not sure why most of the metals performed as they did, Ca might have performed worse due to the formation of a precipitate as the concentration increased. Metals that did not perform as well at the optimal concentration, generally did better at the GSL concentration, which was at a lower concentration. For the simulated sunlight testing, cultures grown in regular CM+ that underwent light treatment had a higher growth rate than those without sunlight. However, when our optimal media was used, the culture without sunlight had a higher growth rate (figure 8). This could be due to the fact the ones under the sunlight do not have gas vesicles thus making the optical density seem less. This can be seen in the color of the cultures. The next step is to repeat these experiments to replicate our results and fully understand how to optimally grow Hs.

Acknowledgments

- This project was supported by a 2022-2023 STEM Undergraduate Research Grant from the Higher Education Research Council. Department of Chemistry
- Office of Research
- Career Path Internship Program (CPI)
- Tyson Pattie, IAS Envirochem for Water Analysis

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Final Report: Office for Research - SBOE Undergraduate Research Funding

Date: July 10, 2023
PI: Josh Grinath
Project: Elucidating effects of nitrogen pollution on plant nutrient content in sagebrush steppe ecosystems

Part 1

***Description of Activities Undertaken*:** The research team completed three sub-projects with the overall theme of evaluating plant nutrient responses to nitrogen (N) pollution. Each sub-project was led by an undergraduate intern who presented their work as a poster at ISU's Undergraduate Research Symposium and Biology Research Roundup in Spring 2023. In the first sub-project, undergraduate Holly Forster analyzed the effects of long-term N pollution on the foliar carbon (C) and N chemistry of rabbitbrush, *Chrysothamnus viscidiflorus*. The second sub-project was led by undergraduate Kayla Hobbs, who assessed how legacy effects of previous long-term N pollution impacted the foliar chemistry of four plant species recovering from a wildfire (Hobbs won 'Best Undergraduate Poster' in the Biology Research Roundup). Lastly, undergraduate Madi Roth led the third sub-project evaluating spatial and temporal variation in the foliar C/N chemistry of six plant species occurring along Idaho roadsides. For each of the sub-projects, the undergraduate researchers prepared plant samples for chemical analysis using a standard protocol to grind foliar material into a fine powder, and then we sent the samples to ISU's Stable Isotope Laboratory for C/N analysis. Altogether, we accomplished the research goals outlined in the proposal, and we look forward to incorporating this work into future publications and grant proposals. This work will help to elucidate plant responses to N pollution and to inform the management of sagebrush steppe ecosystems.

In addition to the research activities described above, I mentored the undergraduate students to participate in the research community in my lab and in the Department of Biological Sciences. Prior to joining this research opportunity, I met with all three undergraduates and developed individualized 'mentoring compacts' that outlined mutual expectations for the mentor and mentee. These compacts were living documents subject to revision and served as a starting point for the mentoring relationships. The students also signed contracts describing technical details of the research positions and a commitment to participate in our Plant C/N Working Group. The undergraduate researchers met with the PI weekly during lab meetings and working group meetings, and the PI met with the undergraduates individually approximately every other week through the Spring 2023 semester. During the working group and individual meetings, we discussed primary literature on N pollution and associated plant responses, learned how to conduct and interpret statistical analyses, and workshopped posters presenting the results of their sub-projects. The lab meetings provided additional opportunities for the students to learn about the ecology of sagebrush steppe ecosystems, from soils and microbes to plants, insects, and birds. These meetings also engaged the students in scientific discourse with the PI, graduate students, and fellow undergraduates in the lab. Furthermore, the undergraduate researchers attended the Biological Sciences Seminar Series and other department events (e.g. graduate student proposals and defenses). These activities engaged the students with the research community across the Department of Biological Sciences, as well as with a variety of research topics spanning biology.

All three students completed CITI Responsible Conduct of Research training as a requirement of their internships. Throughout the research experiences, we stressed the importance of clear communication, professional cooperation, and showing respect to all in the workplace. The students learned how to maintain a clean and safe lab environment in which researchers support one another to accomplish shared goals. For instance, when one student completed their work early, they helped the other students to prepare the plant samples for C/N analyses for their sub-projects.

***How the Project Benefitted from the Funds*:** This grant supported 1) three undergraduate interns, 2) an early career faculty in the Department of Biological Sciences, and 3) the collection of data for three sub-projects that will contribute to larger research projects in the Grinath Lab.

The funds supported salaries for three undergraduate women (Holly Forster, Kayla Hobbs, Madi Roth) to participate in research. These students would not have been able to gain this research experience without financial support. Two of the interns graduated in May 2023 (Hobbs, Roth) and the third intern will graduate in December 2023 (Forster). The Undergraduate Research Funding was critical for developing the research and communication skills of the undergraduates, who each developed and presented a poster on their work. All three students received responsible conduct of research training through discussion in weekly lab/working group meetings, individual meetings, and the RCR CITI training modules. Other trainings included lab safety, mentor-mentee relationships, and data management. Two of the sub-projects are contributing to senior theses by Roth and Forster as part of their Biology coursework (BIOL 4493), which we intend to develop into manuscripts for publication in peer-reviewed journals. As the projects continue to develop, all three students will continue to have opportunities to participate in manuscript writing and research dissemination in the primary literature. These experiences helped to prepare the students for graduate school and biological careers.

This project has aided the research productivity of PI Grinath, an early career faculty member (Assistant Professor) in the Department of Biological Sciences. All three of the sub-projects described above are part of larger projects within the Grinath Lab, and their completion helped to move those projects forward. The first sub-project (Forster) will inform a study on the responses of rabbitbrush plants and their associated arthropods to thirteen years of N pollution. The second sub-project (Hobbs) will inform an experiment evaluating how legacies of N pollution impact plant recovery following wildfire. Lastly, the third sub-project (Roth) will inform a study on spatial and temporal variation in plant traits during roadside restoration. These projects will lead to multiple published research products, and they will help in preparing proposals for future research activities. Currently, I am preparing a CAREER proposal for submission to the U.S. National Science Foundation (NSF), and the results for the rabbitbrush study are aiding the development of this proposal.

***How the Research Goals of the Project were Furthered*:** The funding has enabled our team to test multiple hypotheses about plant responses to N pollution. While the sub-projects were united by a common theme of evaluating responses to N pollution, they also contributed to several larger projects in the Grinath Lab. This work would not have been possible without SBOE HERC funding due to time and financial constraints for the undergraduate researchers and for the

PI. The funds primarily supported hourly wages for the undergraduate students, and no additional funds were available to support wages for these students to complete their research tasks.

There were several challenges that the research team faced, which will inform future research activities. First, we learned that grass leaves are much more difficult to prepare for chemical analysis than wildflower and shrub leaves. Our original estimate for time required to grind plant samples into a fine powder for C/N analyses was based on analyses of the leaves of rabbitbrush, which is a shrub with leaves that are easy to grind. Grass leaves contain large quantities of grinding-resistant silica and require additional processing to chop leaves into small pieces prior to finally grinding into a powder. Therefore, plant grinding for two of the sub-projects (which included grass species) took longer than originally expected. The student working with rabbitbrush finished preparing their samples early, and then they aided the other students with preparing samples for their sub-projects. Related to this delay in preparing samples, the other main challenge was that the team did not receive plant C/N results from the Stable Isotope Laboratory until after the students presented their posters. To prepare results for the poster presentations, the students worked with PI Grinath to analyze additional results for each of the larger projects to which their sub-project contributed. This helped the students to put their research into the larger contexts of these projects, but was a bit disappointing to the students because they wanted to present the results of their labor. In the future, I will be better able to estimate the time required for these research tasks and will aim to complete sample preparation and analysis of plant C/N chemistry prior to disseminating these results in poster presentations.

The last challenge was that, initially, the students were mistakenly set up with Temporary Employee (TMP) positions instead of Student Non-Work Study (STU) positions. This was an issue because fringe benefits for STU positions are less than that for TMP positions and more of the budget was used to support fringe benefits than originally planned. This mistake was corrected after the first couple weeks of the internships, but it caused some confusion for the students in entering their hours and for the PI in planning the budget. Clearer instructions for setting up the student positions would help to alleviate this issue in the future.

Part 2 – Student Reports

SBOE 2023 Undergraduate Intern - Report for ISU's Office for Research

Project: Elucidating effects of nitrogen pollution on plant nutrient content in sagebrush steppe ecosystems
Faculty Lead & Mentor: Josh Grinath

Student Name: Holly Forster
Date: 04/30/2023

What did you learn from your internship experience?
I learned..

- The importance of the nitrogen cycle and how nitrogen deposition affects foliar chemistry.
- How crucial it is for biologists to network and talk to each other not only for advice and resources but as friends.
- How to present ongoing research to a scientific community and a non-scientific community.
- How to interpret statistical data.
- How to participate and engage better in group settings.
- More about research etiquette.
- How to collaborate in the lab with other individuals with different levels of education and degree focuses.
- How to collect data and to analyze it.
- How to grind plant material and how it is processed for data.
- How to work in a lab rather than just the field.

How did this research experience benefit you?
This experience benefitted me in numerous ways, but most importantly it built my confidence as a woman in STEM as well as a first-generation college student. I have acquired new tools that I know I am going to be able to apply in the future, whether that be here at ISU or future endeavors. I have had experience in the field, but never in the lab, so to me, this experience was important and pertinent to my degree to really determine if this is something I want to continue pursuing.

How has this research experience changed your future plans, if at all?
This experience has encouraged me to stay in this field and to not give up. I could only be so lucky to continue working with bright and passionate individuals such as Dr. Grinath or any of the lovely coworkers I had during the semester. I'm very thankful that I was given this opportunity.

Effects of Long-Term Nitrogen Deposition in a Plant-Arthropod Community

Holly R. Forster*, Joshua B. Grinath
Department of Biological Sciences, Idaho State University, Pocatello, Idaho

Introduction

- Humans have altered the nitrogen (N) cycle by increasing atmospheric nitrogen deposition, which has fertilization effects on recipient ecosystems.[1]
- While impacts on plants are well documented[2], animal responses to this N pollution are less clear, especially over the long time periods typical of chronic N deposition.[3-5]
- Stoichiometric theory predicts that herbivores will benefit from increased plant nutritional quality (higher foliar N, lower foliar C:N ratio) in N-enriched conditions.[6]
- We investigated effects of long-term N deposition on a plant-arthropod community using a N addition experiment in a sagebrush-rabbitbrush steppe ecosystem.[7,8]

Objective

- Here, we evaluated responses of rabbitbrush (biomass, foliar N and carbon) and its' insect herbivores to 13 years of N enrichment.

Plant-sucking treehoppers are the numerically dominant herbivore species on rabbitbrush and are protected by mutualist ants.

Methods

- We studied rabbitbrush (*Chrysothamnus viscidiflorus*) in 32 plots that either had ambient N deposition (2kg N/ha/yr) or had simulated rates of enriched N deposition (7kg N/ha/yr) from 2010 to 2022 in Almont, Colorado.
- 62 plants were evaluated for their foliar N and carbon (C) in year 3 of the experiment and have been resampled in the 13th year to evaluate whether foliar chemistry had changed.
- In 2022, we surveyed arthropod abundances on each plant, as well as chewing insect (beetles, caterpillars) damage to leaves.
- We estimated plant aboveground biomass by converting plant volume using an allometric curve.[9]
- Analyses of responses to N enrichment were conducted using general linear mixed models (GLMMs) in R v4.2.2.

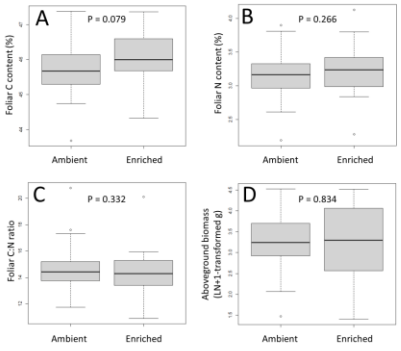

Figure 1. Plant responses to nitrogen enrichment. Data are shown as boxplots with P-values for the N-enrichment effect.

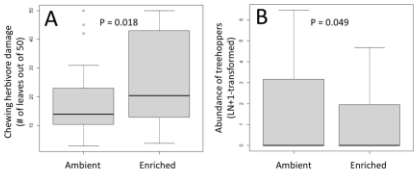

Figure 2. Herbivore responses to nitrogen enrichment. Data are shown as boxplots with P-values for the N-enrichment effect.

Results

- In the 3rd year, there were no significant differences in foliar C content, N content, and C:N ratio between ambient-N and enriched-N plots (Fig. 1A-C), though there was a tendency for C content to be higher in enriched conditions.
- In the 13th year, the plants did not differ in aboveground biomass (Fig. 1D).
- Total herbivore abundances did not differ between ambient-N and enriched-N conditions (P = 0.722).
- However, chewing herbivore damage to the plants was greater (Fig. 2A) and plant-sucking treehoppers were less abundant (Fig. 2B) in enriched-N plots.

Discussion

- Our results suggest that different herbivores (chewing and sucking) respond in different ways to nitrogen deposition.
- We are currently awaiting foliar chemistry results from 2022 and will evaluate whether changes in foliar C content, N content, and C:N ratio have occurred, and whether foliar chemistry is correlated with changes in herbivore abundances and damage to plants.
- Further work is also needed to evaluate predatory arthropod responses, such as ladybeetles and ants.
- Animal responses to long-term N deposition may need to be considered in addition to plant responses.

Predatory ladybeetle searching for insect prey on rabbitbrush flowers.

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Acknowledgements

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- Funding support was provided by a STEM Undergraduate Research Grant from Idaho State Board of Education through ISU's Office for Research, EPA STAR Fellowship FP-917309, fellowships (Snyder, Graduate) from the Rocky Mountain Biological Laboratory, and ISU's College of Science and Engineering and Office for Research to JBG.
- This work was conducted on the traditional lands of the Uncompahgre (Tabeguache) Band of the Ute people.

Idaho State University
*Contact: forsholl@isu.edu

SBOE 2023 Undergraduate Intern - Report for ISU's Office for Research

Project: Elucidating effects of nitrogen pollution on plant nutrient content in sagebrush steppe ecosystems
Faculty Lead & Mentor: Josh Grinath

Student Name: Kayla Hobbs
Date: May 16, 2023

What did you learn from your internship experience?

During this internship, I learned how to grind plant samples. I also learned how to improve my poster design and writing skills. We discussed primary literature, and learned how to apply it to our work. I now feel that I have a better understanding of creating and presenting posters, as well as nitrogen processes.

How did this research experience benefit you?
I believe that writing and presenting skills gained from this experience will benefit me most in the future. We spent a good amount of time editing and revising our posters, as well as giving mock presentations to fellow lab members, which I found very helpful. I also feel that doing student research projects has given me a small glimpse of what my future education may look like. I felt that lab meetings and discussions were very beneficial for my future understanding of applying literature, conducting research, and presenting research.

How has this research experience changed your future plans, if at all?

This experience has not necessarily changed my future plans. However, I do feel like skills I have gained through this experience will benefit me in my graduate studies.

Legacy effects of nitrogen addition on plant cover and chemistry during post-fire recovery

Kayla Hobbs*, Joshua B. Grinath, Department of Biological Sciences, Idaho State University, Pocatello, Idaho

Introduction

- Humans have dramatically altered the nitrogen (N) cycle, particularly by increasing atmospheric N deposition, resulting in changes in plant assemblages.[1-3]
- However, lasting effects of this N pollution after cessation require long-term study and are often unclear.[4-6]
- In recent years, wildfires have become more widespread throughout the Western US, causing a growing need to understand plant recovery post fire.[7-9]
- At present, it is unclear how legacy effects of N deposition impact plant assemblages recovering from wildfire.

Objective

- In this study, we evaluated how legacies of N deposition impact plant cover and chemistry in a sagebrush steppe ecosystem following wildfire.

Map of Barton Road Ecological Research Area

Methods

- This study was conducted at the Barton Ecological Research Area in Pocatello, Idaho.
- Elevated N deposition was simulated in 6 plots (plus 6 control plots) from 1997 to 2010. Treatments of N addition were randomly assigned one of three levels: 0, 6, and 12 kg N/ha/year (white, light-blue, & dark-blue plots in above map).
- In 2021, we measured plant species cover and collected the most abundant plant species for foliar chemistry analysis: A. Kochia (*Bassia scoparia*), B. Sego Lily (*Calochortus nuttallii*), C. Bluebunch Wheatgrass (*Pseudoroegneria spicata*), and D. Western Salsify (*Tragopogon dubius*). See images to right.
- Foliar samples were ground to fine powder and sent to ISU stable isotope lab for carbon and nitrogen analyses.
- We analyzed cover of these plant species in relation to N treatments and microhabitat variability created by shrubs using GLMMs in R v 4.2.2 for count data.

Idaho State University
*Contact: hobbkayl@isu.edu

Results

- N enrichment had a negative effect on the cover of Sego Lily, but not the other species.
- In three of the four species, cover was higher in intershrub areas than in areas in which shrubs formerly occurred.

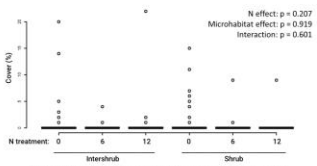


Figure 1. Kochia did not respond to N treatments nor microhabitats.

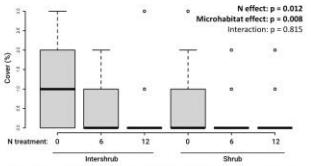
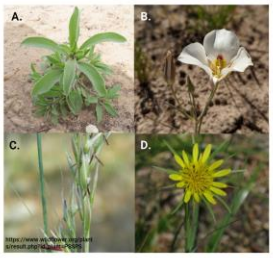


Figure 2. Sego Lily had lower cover with N addition and under former shrubs.



Study species at Barton Ecological Research Area

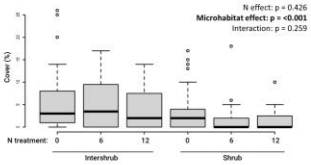


Figure 3. Bluebunch Wheatgrass had lower cover under former shrubs, but did not respond to N treatments.

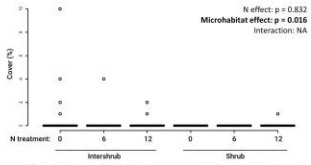


Figure 4. Western Salsify had lower cover under former shrubs, but did not respond to N treatments.

Discussion

- We are currently awaiting results for foliar chemistry.
- We anticipate that of the four study species, Sego Lily may have relatively lower foliar N content because it was the only species negatively affected by N addition.
- These legacy effects may deserve greater attention due to potential impacts on ecological trajectories, such as plant recovery after fire.

Acknowledgements

- We thank T Kerner, E Stewart, C Dirickson, M Roth, D Lugo Cordero, A Rasmussen, N Nunoo, A Robison, and S McArthur for research assistance.
- Funding support was provided by NSF DEB 2118125 and a STEM Undergraduate Research Grant from Idaho State Board of Education through ISU's Office for Research.
- This work was conducted within the boundaries of the original Fort Hall Reservation on the traditional lands of the Shoshone and Bannock peoples.

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SBOE 2023 Undergraduate Intern - Report for ISU's Office for Research

Project: Elucidating effects of nitrogen pollution on plant nutrient content in sagebrush steppe ecosystems
Faculty Lead & Mentor: Josh Grinath

Student Name: Madison Roth
Date: April 30, 2023

What did you learn from your internship experience?

I learned how to write a procedure, train colleagues, design/conduct an experiment, collect/analyze data, create/present a research poster, and investigate primary literature to write a thesis.

How did this research experience benefit you?

I've been thinking about a career in biological research for a long time, and this experience gave me the chance to try it out first-hand. I'm grateful to have had the opportunity to conduct a research project in my undergrad, as opposed to committing to a research project in graduate school never having had a real experience to show me if I would even enjoy it.

How has this research experience changed your future plans, if at all?

This research experience hasn't changed my future plans, but it has informed it. I feel more confident in moving forward with research opportunities to explore my interests in certain specialties. I also feel confident that if I do continue my education, I'll go into a master's program more knowledgeable and prepared than I would've if I hadn't had this experience.

Intraspecific Trait Variation Among Plants During Roadside Restoration

Madison Roth*, Erika Stewart, & Joshua B. Grinath
Department of Biological Sciences, Idaho State University, Pocatello, Idaho

Introduction

- The loss and degradation of habitats due to species invasion is a problem in ecosystems around the world[1,2].
- Identifying native species that can institute biotic resistance via limiting similarity is important for restoration[3-5].
- Trait-based models can aid in identifying native plants that occupy similar niches as and compete with invasive species[6-7].
- However, these models often use mean trait values for both invasive and target species, assuming intraspecific trait variation (ITV) is unimportant[7].
- ITV can cause complications in applying such models due to potential spatial and temporal variation[8].
- Understanding ITV in the context of location, time, and ontogeny is a key knowledge gap in restoration efforts.

Objective

- In this study, we evaluate ITV in the context of space, time, and the interaction of space and time during initial plant restoration.

Research sites: Dubois, Inkom, & Malad

Methods

- Established Roadside Revegetation Project (ITD) at three sites.
- In June and September 2022, we measured traits of common invasive and native species at each site.
- Species consisted of
  - Native forbs: common yarrow (*Achillea millefolium*), blue eyed mary (*Collinsia parviflora*), and annual sunflower (*Helianthus annuus*)
  - Invasive forbs: kochia (*Bassia scoparia*) and prickly lettuce (*Lactuca serriola*)
  - Invasive grasses: crested wheatgrass (*Agropyron cristatum*) and smooth brome (*Bromus inermis*)
- Height was measured in the field. Height is associated with competitive ability. Specific Leaf Area (SLA) was found later in lab by dividing one-sided leaf area by leaf's dry mass. SLA is representative of growth strategy.
- Data were analyzed with GLS and GLMM and in R v4.2.2.

Idaho State University
*Contact: rothmadi@isu.edu

Results

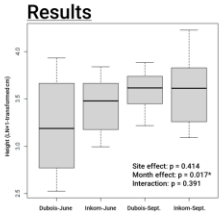

Figure 1. Height of crested wheatgrass.

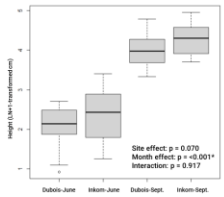

Figure 2. Height of kochia.

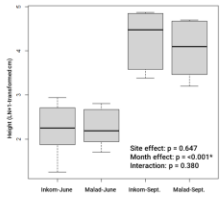

Figure 3. Height of annual sunflower.

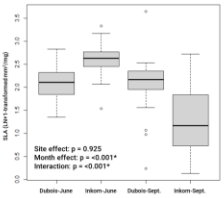

Figure 4. SLA of crested wheatgrass.

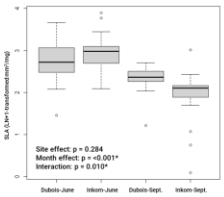

Figure 5. SLA of kochia.

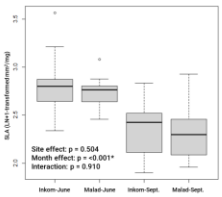

Figure 6. SLA of annual sunflower.

Discussion

- General trend for height to increase over time
  - Only month was significant
- SLA decrease from June to September
  - More conservative resource use as plants age
  - Strong effect of month; significant interaction or site effect in some cases
  - May need to evaluate based on individual species
- Our results suggest that it may be important to account for ITV in restoration

Madison Roth and Erika Stewart at Inkom field site.

Acknowledgements

- We thank K Reinhardt and K Turner for contributing equipment and supplies.
- We thank E Stewart, T Harris, C Kay, E Christen, R Bloshom, K Hobbs, H Forster, H Clawson, M Leonard, C Forshee, and D Lugo Cordero for research assistance.
- Funding support was provided by the Idaho Transportation Department and an Undergraduate Research Grant from the Idaho State Board of Education (SBOE) through ISU's Office for Research.
- This work was conducted on the traditional lands of the Cayuse, Umatilla, Walla Walla, Shoshone-Bannock, Ute, and Eastern Shoshone people.

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Part 3 – Report of Expenditures

Index for Expenditures: ABIO07

The three undergraduate internships occurred from January 9 to May 5, 2023, and the interns were compensated with hourly wages ($13.00/hour). Students worked according to a pre-set schedule in order for wage expenditures to be dispersed evenly through the semester and for all three interns to receive equal pay. The interns worked several hours more than originally budgeted, resulting in slightly higher wage expenditures than planned (see below). In addition, the students were initially set up with TMP positions, and then were set up with STU positions for the majority of their internships. This resulted in higher fringe expenditures than originally planned because TMP positions are assessed a higher fringe rate (10.5%) compared to STU positions (3.7%). After accounting for the above, the remainder of the budget supported foliar C/N analyses conducted at ISU's Stable Isotope Laboratory. This included the analysis of 49 samples at a rate of $9.50 per sample.

Original Budget:

1. Wages = $13.00/hour x 180.5 hours/student x 3 students = $7,039.50
2. Fringe = 3.7% x $7,039.50 = $260.50
3. Research travel = $0
4. Materials and supplies = $700.00

Total = $8,000

Actual Expenditures:

1. Wages = $7,182.50
2. Fringe = $353.25
3. Research travel = $0
4. Materials and supplies = $465.50

Total = $8,001.25

Final Report on the "Genome Annotation and Analysis of Novel Bacteria" project at ISU and funded by a HERC funding grant to Professor Peter Sheridan, Department of Biological Sciences.

November 17, 2023

Executive Summary: Using the funds generously provided by the HERC grant, I was able to partially sequence the genomes of 10 novel Bacteria and train 2 graduate students in the processes of genome sequence clean-up, assembly, and annotation. The 2 graduate students were then able to write comprehensive reports on the genome annotation of one of the Bacteria. Although due to the incompleteness of the genome sequence they were not able to produce publishable manuscripts, the students were trained in a variety of sequence manipulation and annotation techniques. Both graduate students are now employed in the biotechnology careers and are using the skills gained during this project. As we were unable to comprehensively sequence the Bacterial genomes, I did not incorporate undergraduates in the genome assembly and annotation efforts due to the fact that they would not have the required background to understand partial genome analyses (which were quite difficult for even the graduate students to attempt, despite their greater biochemical and microbiological knowledge bases). In order to give a large cohort of students a meaningful research experience, I trained over 6 undergraduates in a project to isolate novel bacteriophage (bacterial viruses) from a variety of samples. I have attached PDF files to this report containing feedback from the students regarding their research experiences.

1. **A description of the activities undertaken, how the lab/project benefited from the funds, how the research goals of the lab/project were furthered.**

The original intent of the HERC funds were to submit DNA isolated from 10 novel Bacteria (isolated from Antarctic samples and Grand Teton National Park samples) to the ISU Molecular Research Core Facility for genomic DNA sequencing on their Illumina MiSeq instrument. We used approximately $6000 in HERC funds to have two sequencing chips run. The first chip gave results for some of the samples and the low quality results of some of the genome sequences led to us re-submitting some samples for sequencing on the second chip. I had high confidence that we would be able to achieve complete or nearly complete genome data due to the redundancy of our sequencing efforts. Standard sequencing protocol is to sequence a genome at 5X -15X coverage (i.e., if your target genome is 1 million basepairs long you need to sequence between 5 million to 15 million bases to get total coverage). The sequencing chip used by the MRCF would provide approximately 1 million reads of about 400 basepairs of sequence (or 400 million basepairs) for each of the 10 genomes (see information in the attached MRCF quote ***P.Sheridan (10) NEB Ultra DNA 500cycle 09-12-22***). Bacterial genome sizes vary, but are usually in the 3-5 million basepair range although some are as large as 10 million basepairs. We had identified our novel Bacteria using 16S gene sequencing so we knew an approximate size of their genomes from that of close relatives that had been sequenced. Even if all 10 novel Bacteria had genomes of 10 million basepairs, we would be sequencing at 40X coverage (400 million/10 million), which is well above the standard. Actual results produced by the MRCF were well below this. I have repeatedly submitted genome sequencing projects to the ISU MRCF and have always been underwhelmed by the results. At this point, I will be submitting any future genome sequencing to outside companies that specialize in this.

Nevertheless, I recruited two graduate students (Jake Shields and Katelynn Miller) to work with me on the genomic sequencing and annotation of the novel isolates. They worked with me to grow up large scale cultures of the Bacteria and isolate genomic DNA. We then submitted this for sequencing at the MRCF. I picked one of the novel Bacteria to assemble and annotate with the students based on the resulting data files. We proceeded with the annotation knowing that we were only able to produce large, but partial, contigs (contiguous sequences) from the data results provided by the MRCF. We used the Galaxy

software platform (https://usegalaxy.org/) to clean-up, filter and join the sequences and to assemble them into contiguous sequences. For assembly, we used the Unicycler, IDBA-UD, Shovill, and SPAdes programs on Galaxy. We submitted the large contigs to the RAST Rapid Annotation using Subsystem Technology platform (https://rast.nmpdr.org/) along with the sequenced genome of a closely related Bacterium as a "guide" genome for annotation. I had the students interpret the resulting annotation results to determine the biochemical and metabolic capabilities of the novel Bacterium (as best they could for a partial genome) with respect to the closely related organism. I had them see if the novel Bacterium (closely related to ***Flavobacterium plurextorum***) had the genes for complete metabolic pathways for glycolysis, the citric acid cycle, the pentose phosphate pathway, the electron transport system, the F_0F_1 ATP Synthase, lipid synthesis and breakdown, DNA replication, RNA replication, and translation. I also had the students look for any unusual secondary metabolic pathways (i.e., metal ion resistance, radiation resistance mechanisms, antibiotic resistance genes, etc). The students wrote comprehensive analyses of their annotations of the novel *Flavobacterium plurextorum* isolate (files submitted with this report as: ***JShields Genome Annotation Report, KMiller Genome Annotation Report, KMiller RAST Pathway Images,*** and ***KMiller Pathway Tables for Report***). Had we been able to get sufficient genome coverage from the MRCF, these analyses would have been combined into a single manuscript and submitted for publication.

The undergraduates needed to have an intensive bench-based research experience, so I decided to try to enrich for and isolate novel bacteriophage from a variety of environmental samples. Zoo Pocatello graciously provided me with a variety of fecal samples from bison, grizzly bear, elk, mule deer, and pronghorn antelope. We used these samples to enrich for bacteriophage capable of lysing *Escherichia coli* strain O157:H7. The motive for this research was to train the students in the safe usage of pathogenic bacteria and to learn how to work with viruses. The Department of Biological Sciences has recently gotten rid of the virology lab that was in the Microbiology B.S. degree curriculum, so students really had little chance to work with viruses in a research lab setting. We were quite successful in obtaining bacteriophage capable of lysing *E. coli* O157:H7 from the grizzly bear fecal samples and are continuing the characterization of these bacteriophage. I am in discussion with some of the undergraduate students about turning the determination of the host range specificity of the bacteriophage and their potential as disinfection agents in M.S. in Microbiology graduate projects.

Although the genome sequencing portion of the work was not as successful as hoped, I still got useful partial data that may be incorporated into grant applications to finish the genomic sequencing of these novel Bacterial isolates. This sequencing would NOT be done in the ISU MRCF. The bacteriophage portion of the research was extremely successful, and I have 5 of the undergraduates still working with me 1 year later. Three are considering graduate school at ISU.

2. Student reports.

I asked that undergraduates to write brief summaries of their experiences working with me on the bacteriophage project. Due to their hectic schedules, I was able to get 3 reports back from the students and they are submitted with this report as: ***Austin Robison Report, Braelyn Krosschell Report,*** and ***Phage Report_Nestler_Jayden***). As you can see from the reports, working with me directly in my laboratory has had an extremely positive effect on these students. As a matter of fact, Austin Robison decided to apply to graduate school at ISU and is currently an M.S. in Microbiology student in my lab. His project has nothing to do with bacteriophage, but actually uses some of the partial genomic data we were able to generated from another one of the novel Bacterial isolates and he is currently cloning the gene for and expressing an enzyme for characterization. Braelynn and Jayden are both considering

applying to graduate school at ISU to work with me on either bacteriophage projects or perhaps enzymes from the novel Bacterial isolates. In summary, the research experience for the students has benefitted both them and myself.

3. A report of expenditures.

The attached Excel spreadsheet (***2023.11 ABIO06 Total Expenditures for FY23***) gives a summary of the expenditures of the awarded funds. Most was spent on the less than stellar sequencing conducted by the ISU MRCF (about $6000), with approximately $4000 spent on lab supplies (kits, media, consumables) and about $800 spent on student salaries over the Summer to grow the novel Bacteria and isolate genomic DNA. Of the $10,235 awarded, $10,064.14 was spent, which means we underspent the awarded funds by $170.84.

I learned about the interactions between bacteriophages and their target host species. In our work, we isolated novel bacteriophages from a variety of samples with the goal of testing their host range specificity, meaning how many and which bacteria they could successfully infect. I also learned that bacteriophages are becoming an increasingly researched topic as they could be the answer to a decrease of antibiotic effectiveness. During this opportunity I both honed old skills and learned new ones such as media preparation, serial dilutions, mass organization and labeling, observation of plaque formation, and both bacteria and virus inoculation techniques.

This research was beneficial to me because it allowed me to understand a topic of research within microbiology that I had only ever had a lecture-based class on. Being able to go into a laboratory setting where the professor is there to help teach you advanced techniques with hands on experiences solidified my understanding of these topics. Not only that but it allowed me to see how other research laboratory's function. During my time doing this research I was taught from Dr. Sheridan himself, rather than another undergraduate or graduate student teaching me techniques like I had experienced in other labs. This experience solidified my future plans of graduate school as it showed me yet again how fascinating microbiology is and the resource it is for solving modern problems.

Braelyn Krosschell

Being in Dr. Sheridan's lab has taught me about the research process overall, as well as what it takes to be a researcher. I have learned about the steps that it takes to ensure that the research and data are valid, such as documenting the process and maintaining an aseptic environment as to not contaminate the biological samples. I have also observed how a lab is run and what materials are used. I have observed and had hands-on experience with new techniques that I did not previously know of or have exposure to. Dr. Sheridan is very knowledgeable and can eloquently explain new concepts to me in a way that is both interesting and easy to understand. He often asks us questions and ensures that we comprehend each small component of the overall big picture. Due to this, I am constantly learning new things and absorbing new, valuable information.

My experiences in this lab have also greatly benefited me. One example of this is how I feel much more prepared when attending a lecture or lab for class credit. In lecture, when a professor is explaining research techniques and methods, it is helpful to have this experience under my belt. I can follow along and gain a deeper insight into the lecture material much easier than if I didn’t have experience in a research lab. In the classroom labs, I feel confident and well prepared when conducting experiments. I am able to perform laboratory tasks with ease and certainty. Another way that I have benefited from my experience in this lab is when applying to graduate school. I feel that I can articulate myself well and demonstrate that I have a deep understanding of a laboratory setting when asked during the application process. This experience not only peaks the interest of those who look at my application for graduate school, but will also allow me to showcase my abilities when asked and when introduced to a new lab environment.

This experience may not have changed my future plans, however, it has made me feel confident in my decision to change my future plans prior to working in this lab with Dr. Sheridan. Shortly before joining this research lab, I made the decision to apply to the master’s program and get a master’s degree before continuing onto dental school. I had wondered if I made the right choice up until I gained valuable experience in this lab. Because of all the things I have observed and learned, I now feel that I made the correct decision. I have enjoyed my experiences being a part of a research lab and am glad to have this amazing opportunity. I greatly look forward to getting a master’s degree and continuing to gain knowledge as I progress forward.

Genomic Assembly and Annotation of a novel Antarctic isolate related to *Flavobacterium plurextorum*

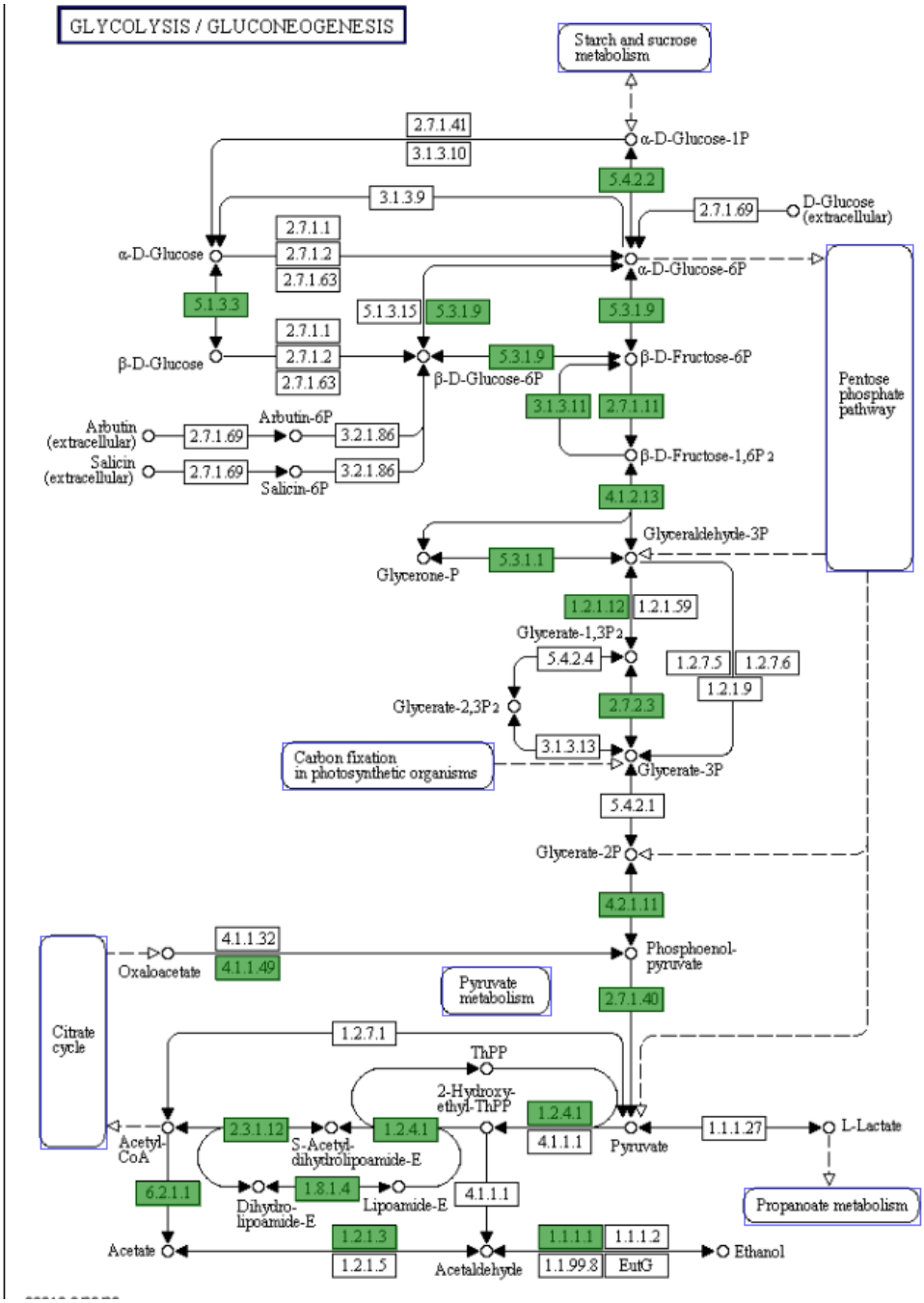
Important Note: In the instance any major metabolic or other enzymatic pathways do not appear to be present in the novel isolate (107), it is inferred this is due to the production of contiguous sequences, since a full genome was not able to created / identified.

1. Energy Metabolism: The vast majority of enzymatic pathways for glycolysis / gluconeogenesis had the same conservation between the contiguous sequences of novel isolate 107 and that of the whole genome for the closely related genome of *Flavobacterium plurectorum*. Table one visualizes the overarching similarities between the contigs and the reference genome. Figure one shows the metabolic map describing this relationship as well. The major differences occur between pyruvate metabolism and starch / sucrose metabolism of the novel isolate 107 contigs and reference genome of *Flavobacterium plurectorum*, where 29.7% of genes for pyruvate metabolism and 25.4% starch and sucrose metabolism are from the reference genome, and 31.2 % and 26.8% make up the pyruvate and starch / sucrose metabolism respectively for novel isolate 107. Novel isolate 107 has a Sucrose-6-phosphate hydrolase not found in *Flavobacterium plurectorum*, which likely accounts for the positive difference in distinct ECs for starch and sucrose metabolism. It also contains Alpha-N-acetylglucosaminidase, a Predicted transcriptional regulator of N-Acetylglucosamine utilization (GntR family), Alpha-glucosidase, D-mannonate oxidoreductase, and a Hypothetical glycoside hydrolase, family 43, similar to arabinosidase that *Flavobacterium plurectorum* does not have as well.

Table 1: Shows an image detailing the conservation percentage of each KEGG Map division for glycolysis / gluconeogenesis.

KEGG map	Distinct ECs	Flavobacterium plurectorum	Flavobacterium Unicycler107	Flavobacterium shovill107
Carbon fixation in photosynthetic organisms	25	14 (56.0 %)	14 (56.0 %)	14 (56.0 %)
Citrate cycle (TCA cycle)	22	13 (59.1 %)	13 (59.1 %)	13 (59.1 %)
Glycolysis / Gluconeogenesis	41	18 (43.9 %)	18 (43.9 %)	18 (43.9 %)
Pentose phosphate pathway	37	17 (45.9 %)	18 (48.6 %)	18 (48.6 %)
Propanoate metabolism	47	9 (19.1 %)	9 (19.1 %)	9 (19.1 %)
Pyruvate metabolism	64	19 (29.7 %)	20 (31.2 %)	20 (31.2 %)
Starch and sucrose metabolism	71	18 (25.4 %)	19 (26.8 %)	19 (26.8 %)

Figure 2: Demonstrates the flowchart / enzymatic pathways for glycolysis / gluconeogensis.



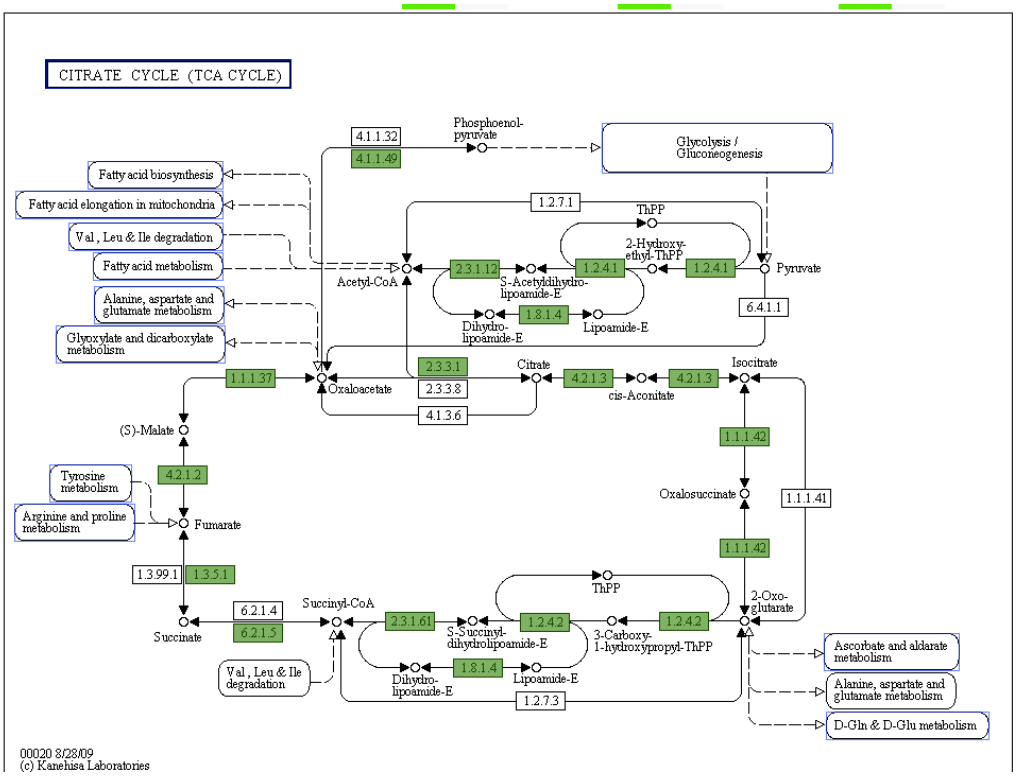
There is a high level of conservation between *Flavobacterium plurectorum* and novel isolate regarding the Citrate / TCA Cycle as well. The two major differences is that the reference genome has a higher percentage of Ascorbate and aldarate metabolism at 18.2% compared to 15.9% for the same metabolism found in the novel isolate contigs, the other being a higher percentage of glyoxylate and dicarboxylate metabolism in the novel isolate 107 contigs (20.7% versus 19.0 %) found in *Flavobacterium plurectorum*. There is also a lower percentage of genes relating to Tyrosine metabolism in the novel isolate 107 contigs at 14.3% compared to the 17.5% of metabolic genes related to Tyrosine metabolism in the Citrate / TCA cycle of *F. plurectorum.* Novel isolate 107 lacks Endo-alpha-mannosidase, low-specificity D-threonine

aldolase, NAD-specific glutamate dehydrogenase, Glutaminase, Arginine/ornithine antiporter ArcD, Ornithine cyclodeaminase, Aromatic-L-amino-acid decarboxylase, 1-pyrroline-4-hydroxy-2-carboxylate deaminase, 4-hydroxyproline epimerase, Proline iminopeptidase, and Cytosine deaminase.

Table 2: Shows an image detailing the conservation percentage of each KEGG Map division for Citrate / TCA Cycle.

KEGG map	Distinct ECs	Flavobacterium plurectorum	Flavobacterium Unicycler107	Flavobacterium shovill107
Alanine, aspartate and glutamate metabolism	43	20 (46.5 %)	18 (41.9 %)	18 (41.9 %)
Arginine and proline metabolism	97	26 (26.8 %)	18 (18.6 %)	18 (18.6 %)
Ascorbate and aldarate metabolism	44	8 (18.2 %)	7 (15.9 %)	7 (15.9 %)
Citrate cycle (TCA cycle)	22	13 (59.1 %)	13 (59.1 %)	13 (59.1 %)
D-Glutamine and D-glutamate metabolism	13	4 (30.8 %)	3 (23.1 %)	3 (23.1 %)
Fatty acid biosynthesis	21	11 (52.4 %)	11 (52.4 %)	11 (52.4 %)
Fatty acid elongation in mitochondria	8	3 (37.5 %)	3 (37.5 %)	3 (37.5 %)
Fatty acid metabolism	29	8 (27.6 %)	8 (27.6 %)	8 (27.6 %)
Glycolysis / Gluconeogenesis	41	18 (43.9 %)	18 (43.9 %)	18 (43.9 %)
Glyoxylate and dicarboxylate metabolism	58	11 (19.0 %)	12 (20.7 %)	12 (20.7 %)
Tyrosine metabolism	63	11 (17.5 %)	9 (14.3 %)	9 (14.3 %)
Valine, leucine and isoleucine degradation	34	17 (50.0 %)	17 (50.0 %)	17 (50.0 %)

Figure 2: Demonstrates the flowchart / enzymatic pathways for the Citrate Cycle / TCA Cycle.



Novel isolate 107 and *Flavobacterium plurectorum* also share Phosphoribosylanthranilate isomerase, 3-hydroxyanthranilate 3,4-dioxygenase, Kynureninase, Kynurenine 3-monooxygenase, NAD kinase, NAD synthetase, Nicotinate-nucleotide adenylyltransferase, Quinolinate phosphoribosyltransferase

[decarboxylating], Ribosyl nicotinamide transporter (PnuC-like), Tryptophan 2,3-dioxygenase, 3,4-dihydroxy-2-butanone 4-phosphate synthase, 5-amino-6-(5-phosphoribosylamino)uracil reductase, 6,7-dimethyl-8-ribityllumazine synthase, Diaminohydroxyphosphoribosylaminopyrimidine deaminase, FMN adenylyltransferase,GTP cyclohydrolase II, Riboflavin kinase, Riboflavin synthase eubacterial/eukaryotic, 3,4-dihydroxy-2-butanone 4-phosphate synthase, FMN adenylyltransferase, Riboflavin kinase, and Riboflavin synthase eubacterial/eukaryotic. Novel isolate 107 is lacking Nicotinamide-nucleotide adenylyltransferase (NadR family), Ribosylnicotinamide kinase, Cytochrome c-type biogenesis protein DsbD, protein-disulfide reductase, Putative cytochrome C-type biogenesis protein, Type cbb3 cytochrome oxidase biogenesis protein CcoG, involved in Cu oxidation, Type cbb3 cytochrome oxidase biogenesis protein CcoI, Type cbb3 cytochrome oxidase biogenesis protein CcoS (involved in heme b insertion), Heme A synthase, cytochrome oxidase biogenesis protein Cox15-CtaA, Quinone oxidoreductase, Cytochrome c551/c552, Cytochrome c552, Ferredoxin, Ferredoxin, 2Fe-2S,
NADH ubiquinone oxidoreductase chains A through N, ATP synthase F0 sector subunit a, ATP synthase F0 sector subunit b, ATP synthase F0 sector subunit c, ATP synthase alpha chain, ATP synthase beta chain, ATP synthase delta chain, ATP synthase epsilon chain, ATP synthase gamma chain, and ATP synthase protein I.

2. The Central Dogma: Genes relating to the central dogma, such as DNA replication and maintenance, as well as transcription factors, RNA synthesis and polymerases, as well as tRNA factors for protein production appear to be equally present between novel isolate 107 and *Flacobacterium plurectorum*, the reference genome. Both organisms have DNA polymerase III epsilon subunit, Predicted signal-transduction protein containing cAMP-binding and CBS domains, Ribonuclease HI, DNA recombination and repair protein RecO, DNA-directed RNA polymerase omega subunit, GTP pyrophosphokinase ((p)ppGpp synthetase II), GTP-binding protein Era, Ribonuclease III, Signal peptidase I, MoxR-like ATPase in aerotolerance operon, Transcriptional regulator (PadR family), Ribosome-binding factor A, Translation initiation factor 2, GTP-binding protein Obg, LSU ribosomal protein L21p, LSU ribosomal protein L27p, 16S rRNA (guanine(966)-N(2))-methyltransferase, FIG032012: hypothetical protein, Alanyl-tRNA synthetase, FIG032842: Transcriptional regulator, Peptidase, family M23, DNA recombination and repair protein RecF, TPR domain protein, DNA polymerase III epsilon subunit, Ribonuclease HI, 16S rRNA (guanine(966)-N(2))-methyltransferase, Phosphopantetheine adenylyltransferase, 16S rRNA (guanine(966)-N(2))-methyltransferase, Phosphopantetheine adenylyltransferase, Methionine aminopeptidase , SSU ribosomal protein S2p (SAe), Translation elongation factor Ts, RNA polymerase sigma-70 factor, Short form Mg-chelase associated protein with vWA domain, Magnesium chelatase, subunit ChlI, Metal-dependent hydrolase YbeY (involved in rRNA and/or ribosome maturation and assembly), DNA gyrase subunit A, DNA gyrase subunit B, Chromosomal replication initiator protein Dna, DNA gyrase subunit A, DNA gyrase subunit B, DNA polymerase III beta subunit, DNA recombination and repair protein RecF, Ribosome-associated heat shock protein implicated in the recycling of the 50S subunit (S4 paralog), Zn-ribbon-containing, possibly RNA-binding protein and truncated derivatives, 4-hydroxythreonine-4-phosphate dehydrogenase, SSU rRNA (adenine(1518)-N(6)/adenine(1519)-N(6))-dimethyltransferase, DNA recombination and repair protein RecO, GTP-binding protein Era, Glycyl-tRNA synthetase, Metal-dependent hydrolase YbeY, involved in rRNA and/or ribosome maturation and assembly, Phosphate starvation-inducible protein PhoH, predicted ATPase, Low molecular weight protein tyrosine phosphatase, Ribosome-binding factor A, Transcription termination protein NusA, Translation initiation factor 2, Exodeoxyribonuclease VII large subunit, Inosine-5'-monophosphate dehydrogenase, Ribosome recycling factor, SSU ribosomal protein S2p (SAe),Translation elongation factor Ts, DEDDh 3'-5' exonuclease domain of the epsilon subunit of DNA polymerase

III, Error-prone repair homolog of DNA polymerase III alpha subunit, DNA topoisomerase I, DNA topoisomerase III, DNA gyrase subunit A, DNA gyrase subunit B, DNA polymerase III subunits gamma and tau, DNA topoisomerase III, Recombination protein RecR, DNA-binding protein HU-beta, Integration host factor alpha/beta, Type I restriction-modification system (restriction subunit R), Peptide chain release factor 2, programmed frameshift-containing SSU ribosomal protein S10p (S20e), SSU ribosomal protein S11p (S14e), SSU ribosomal protein S12p (S23e), SSU ribosomal protein S13p (S18e), SSU ribosomal protein S14p (S29e), SSU ribosomal protein S14p (S29e) (zinc-independent), SSU ribosomal protein S15p (S13e), SSU ribosomal protein S16p, SSU ribosomal protein S17p (S11e), SSU ribosomal protein S18p, SSU ribosomal protein S18p (zinc-independent), SSU ribosomal protein S19p (S15e), SSU ribosomal protein S1p, SSU ribosomal protein S20p, SSU ribosomal protein S21p, SSU ribosomal protein S2p (SAe), SSU ribosomal protein S3p (S3e), SSU ribosomal protein S4p (S9e), SSU ribosomal protein S5p (S2e), SSU ribosomal protein S6p, SSU ribosomal protein S7p (S5e), SSU ribosomal protein S8p (S15Ae), SSU ribosomal protein S9p (S16e), Translation elongation factor G, Translation elongation factor LepA, Translation elongation factor P, Translation elongation factor Ts, Translation elongation factor Tu, Methionyl-tRNA formyltransferase, Ribosome-binding factor A, Translation initiation factor 1, Translation initiation factor 2, Translation initiation factor 3, Translation initiation factor SUI1-related protein, Methionine aminopeptidase , Peptide chain release factor 1, Peptide chain release factor 2, Peptide chain release factor 3, Peptide deformylase, Peptidyl-tRNA hydrolase, Ribosome recycling factor, tmRNA-binding protein SmpB, 5S rRNA, LSU rRNA, SSU rRNA, Alanyl-tRNA synthetase , Arginyl-tRNA synthetase , Asparaginyl-tRNA synthetase, Aspartyl-tRNA synthetase, Cysteinyl-tRNA synthetase, Glutaminyl-tRNA synthetase, Glutamyl-tRNA synthetase, Glycyl-tRNA synthetase, Histidyl-tRNA synthetase, Isoleucyl-tRNA synthetase, Leucyl-tRNA synthetase, Lysyl-tRNA synthetase (class II), Methionyl-tRNA synthetase, Phenylalanyl-tRNA synthetase alpha chain, Phenylalanyl-tRNA synthetase beta chain, Prolyl-tRNA synthetase (archaeal/eukaryal type), Seryl-tRNA synthetase, Threonyl-tRNA synthetase, Tryptophanyl-tRNA synthetase, Tyrosyl-tRNA synthetase, Valyl-tRNA synthetase, Membrane alanine aminopeptidase NXaa-Pro aminopeptidase, Alpha-aspartyl dipeptidase Peptidase E, D-alanyl-D-alanine carboxypeptidase, Muramoyltetrapeptide carboxypeptidase, Aminopeptidase C, Dipeptidyl carboxypeptidase Dcp, Leucyl/phenylalanyl-tRNA--protein transferase, DNA repair protein RadA, Prolyl endopeptidase, FKBP-type peptidyl-prolyl cis-trans isomerase FkpA precursor, Cytochrome c-type biogenesis protein DsbD, protein-disulfide reductase, Chaperone protein DnaJ, Chaperone protein DnaK, Chaperone protein HtpG, DnaJ-class molecular chaperone CbpA, Heat shock protein GrpE, Deoxyhypusine synthase, Translation elongation factor P, Protein-L-isoaspartate O-methyltransferase, Lipoprotein signal peptidase, Signal peptidase I, 16S rRNA (guanine(966)-N(2))-methyltransferase, SSU rRNA (adenine(1518)-N(6)/adenine(1519)-N(6))-dimethyltransferase, tRNA (5-methylaminomethyl, 2-thiouridylate)-methyltransferase, tRNA (cytidine(34)-2'-O)-methyltransferase, tRNA (guanosine(18)-2'-O)-methyltransferase, Exoribonuclease RNase R, Ribonuclease III, Ribonuclease HI, Ribonuclease HII, Cysteine desulfurase, tRNA (5-methylaminomethyl-2-thiouridylate)-methyltransferase, Ribonuclease P protein component, Ribonuclease Z, tRNA dimethylallyltransferase, tRNA(Ile)-lysidine synthetase, DNA-directed RNA polymerase alpha subunit, DNA-directed RNA polymerase beta subunit, DNA-directed RNA polymerase beta' subunit, DNA-directed RNA polymerase omega subunit, Predicted transcriptional regulator of sulfate adenylyltransferase (Rrf2 family), Predicted transcriptional regulator of sulfate transport (Rrf2 family), Rrf2 family transcriptional regulator (group III), Regulator of nucleoside diphosphate kinase, Transcription accessory protein (S1 RNA-binding domain), Transcription antitermination protein NusG, Transcription elongation factor GreA,Transcription

termination factor Rho, Transcription termination protein NusA, Transcription termination protein NusB, Transcription-repair coupling factor, Transcriptional activator RfaH, RNA polymerase sigma factor RpoD, RNA polymerase sigma-54 factor RpoN, and RNA polymerase sigma-70 factor. Novel isolate 107 also contains Metallo-beta-lactamase family protein, RNA-specific and RNA polymerase sigma factor RpoE not found in *Flavobacterium plurectorum.* Novel isolate 107 also lacks, LSU ribosomal protein L36p, Peptide chain release factor homolog, Aspartyl-tRNA(Asn) amidotransferase subunit A, Glutamyl-tRNA(Gln) amidotransferase subunit A, 4-keto-6-deoxy-N-Acetyl-D-hexosaminyl-(Lipid carrier) aminotransferase, Alpha-1,4-N-acetylgalactosamine transferase PglH, Glycosyltransferase PglI, RNA-2',3'-PO4:RNA-5'-OH ligase, Rrf2 family transcriptional regulator and Retron-type RNA-directed DNA polymerase. DNA-binding protein in cluster with Type I restriction-modification system and Type I restriction-modification system and DNA-methyltransferase subunit M are also found exclusively in novel isolate 107 but not the reference genome. DNA topoisomerase III (Bacteroidales-type) and Type III restriction-modification system methylation subunit are found in the reference genome but not in novel isolate 107.

3. Carbon Sources: There are a wide range of genes pertaining to carbon source utilization and metabolism in both the *Flacobacterium plurectorum* as well as in novel isolate 107. Genes found in novel isolate 107 not found in the reference genome include Alpha-N-acetylglucosaminidase, Predicted transcriptional regulator of N-Acetylglucosamine utilization (GntR family), Sucrose-6-phosphate hydrolase, Alpha-glucosidase, D-mannonate oxidoreductase, and a Hypothetical glycoside hydrolase (family 43, similar to arabinosidase). *Flacobacterium plurectorum* has an Endo-alpha-mannosidase gene not found in isolate 107 as well. Other genes conserved between the two organisms relating to carbon source utilization / metabolism include Glucosamine-6-phosphate deaminase, N-acetyl glucosamine transporter (NagP), N-acetylglucosamine related transporter (NagX), N-acetylglucosamine-6-phosphate deacetylase, Predicted N-acetyl-glucosamine kinase 2 (ROK family), 2-oxoglutarate dehydrogenase E1 component, Branched-chain alpha-keto acid dehydrogenase, E1 component (alpha subunit), Branched-chain alpha-keto acid dehydrogenase, E1 component (beta subunit), Dihydrolipoamide acetyltransferase component of pyruvate dehydrogenase complex, Dihydrolipoamide acyltransferase component of branched-chain alpha-keto acid dehydrogenase complex, Dihydrolipoamide dehydrogenase of branched-chain alpha-keto acid dehydrogenase, Dihydrolipoamide succinyltransferase component (E2) of 2-oxoglutarate dehydrogenase complex, Pyruvate dehydrogenase E1 component alpha subunit, Pyruvate dehydrogenase E1 component beta subunit, Phosphoglycolate phosphatase, Aconitate hydratase, Aconitate hydratase 2, Citrate synthase (si), Isocitrate lyase, Malate dehydrogenase, Malate synthase, Aldehyde dehydrogenase, Aldehyde dehydrogenase B, Methylglyoxal synthase, 6-phosphogluconate dehydrogenase, decarboxylating 6-phosphogluconolactonase, Glucose-6-phosphate 1-dehydrogenase, Ribose-phosphate pyrophosphokinase, Ribulose-phosphate 3-epimerase, Transaldolase, Transketolase (C-terminal section), Transketolase (N-terminal section), Alanine dehydrogenase, Alanine racemase, Branched-chain amino acid aminotransferase, L-serine dehydratase (alpha subunit), L-serine dehydratase (beta subunit), NADP-dependent malic enzyme, Phosphoenolpyruvate carboxykinase [ATP], Phosphoenolpyruvate carboxylase, Pyruvate kinase, Acetate kinase, Aldehyde dehydrogenase, Dihydrolipoamide acetyltransferase component of pyruvate dehydrogenase complex, NAD-dependent protein deacetylase of SIR2 family, Phosphate acetyltransferase, Pyruvate dehydrogenase E1 component alpha subunit, Pyruvate dehydrogenase E1 component beta subunit, Transketolase, Aldose 1-epimerase, Galactokinase, Galactose-1-phosphate uridylyltransferase, UDP-glucose 4-epimerase, Acetolactate synthase large subunit, Acetolactate synthase small subunit, 3-hydroxybutyryl-CoA dehydrogenase, Acetyl-CoA acetyltransferase, Electron transfer flavoprotein (alpha subunit), Electron transfer

flavoprotein (beta subunit), 3-hydroxybutyryl-CoA dehydrogenase, Alcohol dehydrogenase, Enoyl-CoA hydratase, NADH-dependent butanol dehydrogenase A, Acetate kinase, D-lactate dehydrogenase, Phosphate acetyltransferase, Ribokinase, Deoxyribose-phosphate aldolase, Purine nucleoside phosphorylase, Putative deoxyribonuclease YjjV, Ribokinase, L-arabinose isomerase, L-ribulose-5-phosphate 4-epimerase, Possible GPH family transporter (for arabinosides), Protein AraJ precursor, Ribulokinase, Alpha-1,2-mannosidase, Beta-mannosidase, Mannose-6-phosphate isomerase, Phosphomannomutase, D-xylose proton-symporter XylE, Xylanase, Xylose isomerase, Xylulose kinase, 5,10-methylenetetrahydrofolate reductase, 5-formyltetrahydrofolate cyclo-ligase, Formyltetrahydrofolate deformylase, Methenyltetrahydrofolate cyclohydrolase, Methylenetetrahydrofolate dehydrogenase (NADP+), Predicted L-lactate dehydrogenase (Fe-S oxidoreductase subunit YkgE), Predicted L-lactate dehydrogenase (Iron-sulfur cluster-binding subunit YkgF), Predicted L-lactate dehydrogenase (hypothetical protein subunit SO1518), 1,4-alpha-glucan (glycogen) branching enzyme (GH-13-type), Alpha-glucosidase, family 31 of glycosyl hydrolases (COG1501), Glucose-1-phosphate adenylyltransferase, Glycogen synthase, ADP-glucose transglucosylase, Glycerol kinase, Glycerol uptake facilitator protein, Glycerol-3-phosphate dehydrogenase, Glycerol-3-phosphate dehydrogenase [NAD(P)+], and Glycerophosphoryl diester phosphodiesterase.

4 Amino Acid Metabolism: The two organisms (both novel isolate 107 and *Flavobacterium plurectorum*) share a bulk of genes in common regarding amino acid metabolism. They include Alanine racemase, Branched-chain amino acid aminotransferase, Cysteine desulfurase, 2-amino-3-ketobutyrate coenzyme A ligase, Serine hydroxymethyltransferase, 2-amino-3-ketobutyrate coenzyme A ligase, Aminomethyltransferase (glycine cleavage system T protein), Cystathionine beta-synthase, Cystathionine gamma-lyase, D-3-phosphoglycerate dehydrogenase, Glycine cleavage system H protein, Glycine dehydrogenase [decarboxylating] (glycine cleavage system P protein), L-serine dehydratase, alpha subunit, L-serine dehydratase, beta subunit, Phosphoserine aminotransferase, Phosphoserine phosphatase, Serine hydroxymethyltransferase, Seryl-tRNA synthetase, Aminomethyltransferase (glycine cleavage system T protein), Dihydrolipoamide dehydrogenase, Glycine cleavage system H protein, Glycine dehydrogenase [decarboxylating] (glycine cleavage system P protein), D-3-phosphoglycerate dehydrogenase, Phosphoserine aminotransferase, Phosphoserine phosphatase, Serine hydroxymethyltransferase, 4-hydroxyphenylpyruvate dioxygenase, 5-carboxymethyl-2-oxo-hex-3- ene-1,7-dioate decarboxylase, Aromatic amino acid transport protein AroP, Phenylalanine-4-hydroxylase, Tryptophan 2,3-dioxygenase, Aminodeoxychorismate lyase, Anthranilate phosphoribosyltransferase, Anthranilate synthase, amidotransferase component, Anthranilate synthase, aminase component, Indole-3-glycerol phosphate synthase, Isochorismate synthase, Para-aminobenzoate synthase, amidotransferase component, Para-aminobenzoate synthase, aminase component, Phosphoribosylanthranilate isomerase, Phosphoribosylformimino-5-aminoimidazole carboxamide ribotide isomerase, Tryptophan synthase alpha chain, Tryptophan synthase beta chain, 2-keto-3-deoxy-D-arabino-heptulosonate-7-phosphate synthase I beta, 3-dehydroquinate dehydratase II, 3-dehydroquinate synthase, Chorismate synthase, Shikimate 5-dehydrogenase I alpha, Shikimate kinase I, Biosynthetic Aromatic amino acid aminotransferase alpha Chorismate mutase I, Prephenate and/or arogenate dehydrogenase (unknown specificity), Prephenate dehydratase, Aminodeoxychorismate lyase, Anthranilate phosphoribosyltransferas, Anthranilate synthase, amidotransferase component, Anthranilate synthase, aminase component, Indole-3-glycerol phosphate synthase, Para-aminobenzoate synthase, amidotransferase component, Para-aminobenzoate synthase, aminase component, Phosphoribosylanthranilate isomerase, Tryptophan synthase alpha chain, Tryptophan synthase beta chain, (R)-citramalate synthase, 2-isopropylmalate synthase, 3-isopropylmalate dehydratase large subunit, 3-isopropylmalate dehydratase small subunit, 3-isopropylmalate dehydrogenase,

Acetolactate synthase large subunit, Acetolactate synthase small subunit, Branched-chain amino acid aminotransferase, Dihydroxy-acid dehydratase, Threonine dehydratase biosynthetic, 3-ketoacyl-CoA thiolase, Branched-chain alpha-keto acid dehydrogenase, E1 component, alpha subunit, Branched-chain alpha-keto acid dehydrogenase, E1 component, beta subunit, Branched-chain amino acid aminotransferase, Dihydrolipoamide acyltransferase component of branched-chain alpha-keto acid dehydrogenase complex, Dihydrolipoamide dehydrogenase of branched-chain alpha-keto acid dehydrogenase, Enoyl-CoA hydratase, 2-isopropylmalate synthase, 3-isopropylmalate dehydratase large subunit, 3-isopropylmalate dehydratase small subunit, 3-isopropylmalate dehydrogenase, Branched-chain amino acid aminotransferase, Branched-chain alpha-keto acid dehydrogenase, E1 component, alpha subunit, Branched-chain alpha-keto acid dehydrogenase, E1 component, beta subunit, Branched-chain amino acid aminotransferase, Dihydrolipoamide acyltransferase component of branched-chain alpha-keto acid dehydrogenase complex, Dihydrolipoamide dehydrogenase, Dihydrolipoamide dehydrogenase of branched-chain alpha-keto acid dehydrogenase, Hydroxymethylglutaryl-CoA lyase, Hydroxymethylglutaryl-CoA reductase, Hydroxymethylglutaryl-CoA synthase, Methylcrotonyl-CoA carboxylase carboxyl transferase subunit, Methylglutaconyl-CoA hydratase, Succinyl-CoA:3-ketoacid-coenzyme A transferase subunit A, Succinyl-CoA:3-ketoacid-coenzyme A transferase subunit B, Branched-chain alpha-keto acid dehydrogenase, E1 component, alpha subunit, Branched-chain alpha-keto acid dehydrogenase, E1 component (beta subunit), Branched-chain amino acid aminotransferase, Dihydrolipoamide acyltransferase component of branched-chain alpha-keto acid dehydrogenase complex, Dihydrolipoamide dehydrogenase of branched-chain alpha-keto acid dehydrogenase, Enoyl-CoA hydratase, NADP-specific glutamate dehydrogenase, Asparagine synthetase [glutamine-hydrolyzing], Aspartate aminotransferase, Aspartate ammonia-lyase, Ferredoxin-dependent glutamate synthase, Glutamate racemase, Glutamate synthase [NADPH] large chain, Glutamate synthase [NADPH] small chain, Glutamine synthetase type II (eukaryotic), Glutamine synthetase type III (GlnN), L-asparaginase I (cytoplasmic), NADP-specific glutamate dehydrogenase, Glutamine synthetase type II (eukaryotic), Glutamine synthetase type III (GlnN), Histidinol dehydrogenase, Histidinol-phosphatase, Histidinol-phosphate aminotransferase, Imidazoleglycerol-phosphate dehydratase, Phosphoribosyl-AMP cyclohydrolase, Phosphoribosyl-ATP pyrophosphatase, Phosphoribosylformimino-5-aminoimidazole carboxamide ribotide isomerase, Formiminoglutamase, Histidine ammonia-lyase, Imidazolonepropionase, Urocanate hydratase, Cystathionine beta-synthase, Cystathionine gamma-lyase, Cysteine synthase, Serine acetyltransferase, Sulfate adenylyltransferase subunit 1, Sulfate adenylyltransferase subunit 2, Sulfate permease, 2,3,4,5-tetrahydropyridine-2,6-dicarboxylate N-succinyltransferase, 4-hydroxy-tetrahydrodipicolinate reductase, 4-hydroxy-tetrahydrodipicolinate synthase, Aspartate-semialdehyde dehydrogenase, Aspartokinase, Diaminopimelate decarboxylase, Diaminopimelate epimerase, 2,3,4,5-tetrahydropyridine-2,6-dicarboxylate N-succinyltransferase, 4-hydroxy-tetrahydrodipicolinate reductase, 4-hydroxy-tetrahydrodipicolinate synthase, Aspartate-semialdehyde dehydrogenase, Aspartokinase, Diaminopimelate decarboxylase, Diaminopimelate epimerase, Lysine ketoglutarate reductase, Saccharopine dehydrogenase, 5,10-methylenetetrahydrofolate reductase, 5-methyltetrahydropteroyltriglutamate--homocysteine methyltransferase, Adenosylhomocysteinase, Cystathionine beta-synthase, Cystathionine gamma-lyase, Cysteine synthase, Homoserine O-acetyltransferase, Homoserine dehydrogenase, Homoserine kinase, Methionine ABC transporter ATP-binding protein, Methionine ABC transporter permease protein, Methionine ABC transporter substrate-binding protein, O-acetylhomoserine sulfhydrylase, O-succinylhomoserine sulfhydrylase, S-adenosylmethionine synthetase, Serine acetyltransferase, Aspartate aminotransferase, Aspartate-semialdehyde dehydrogenase, Aspartokinase, Homoserine dehydrogenase, Homoserine kinase, Threonine synthase, L-allo-threonine aldolase, Threonine dehydrogenase and related Zn-dependent dehydrogenases,

Delta-1-pyrroline-5-carboxylate dehydrogenase, Gamma-glutamyl phosphate reductase, Glutamate 5-kinase, NADP-specific glutamate dehydrogenase, Pyrroline-5-carboxylate reductase, 1-pyrroline-4-hydroxy-2-carboxylate deaminase, 4-hydroxyproline epimerase, Proline iminopeptidase, Cytosine deaminase, Chitinase, Glucosamine-6-phosphate deaminase, N-acetyl glucosamine transporter (NagP), N-acetylglucosamine related transporter (NagX), N-acetylglucosamine-6-phosphate deacetylase, Predicted N-acetyl-glucosamine kinase 2 (ROK family), Alpha-N-acetylglucosaminidase, and a Predicted transcriptional regulator of N-Acetylglucosamine utilization (GntR family). Genes not found in novel isolate 107 but found in the reference genome include those for a Arginine/ornithine antiporter ArcD, Ornithine cyclodeaminase, Aromatic-L-amino-acid decarboxylase, NAD-specific glutamate dehydrogenase, Glutaminase, low-specificity D-threonine aldolase, 1-pyrroline-4-hydroxy-2-carboxylate deaminase, 4-hydroxyproline epimerase, Proline iminopeptidase, and Cytosine deaminase. Genes found in novel isolate 107 not found in *Flavobacterium plurectorum* include Isochorismatase, Aspartate racemase, L-asparaginase, Alpha-N-acetylglucosaminidase, and Predicted transcriptional regulator of N-Acetylglucosamine utilization, GntR family

5 Lipid Metabolism: There appears to be maximum overlap between the genome of novel isolate 107 and the reference genome (*Flacobacterium plurectorum*) relating to fatty acids, lipids, and isoprenoids such as 3-hydroxyacyl-[acyl-carrier-protein] dehydratase (FabZ form), 3-oxoacyl-[acyl-carrier-protein] synthase (KASI), Acetyl-coenzyme A carboxyl transferase alpha chain, Acetyl-coenzyme A carboxyl transferase beta chain, Acyl carrier protein, Acyl carrier protein phosphodiesterase, Biotin carboxyl carrier protein of acetyl-CoA carboxylase, Biotin carboxylase of acetyl-CoA carboxylase, Malonyl CoA-acyl carrier protein transacylase, 3-ketoacyl-CoA thiolase, Enoyl-CoA hydratase, Long-chain-fatty-acid--CoA ligase, 1-deoxy-D-xylulose 5-phosphate synthase, Acetyl-CoA acetyltransferase, Diphosphomevalonate decarboxylase, Hydroxymethylglutaryl-CoA reductase, Hydroxymethylglutaryl-CoA synthase, Mevalonate kinase, Phosphomevalonate kinase, Undecaprenyl diphosphate synthase, Geranylgeranyl diphosphate synthase, Hexaprenyl diphosphate synthase (farnesyl-diphosphate specific), Undecaprenyl diphosphate synthase, Diphosphomevalonate decarboxylase, Hydroxymethylglutaryl-CoA reductase, Hydroxymethylglutaryl-CoA synthase, Mevalonate kinase, Phosphomevalonate kinase, and Beta-carotene hydroxylase.

6 Cell Division: Genes commonly associated with cell division seem to be equally distributed between the reference genome *Flacobacterium plurectorum* and novel isolate 107. Genes associated with cell division, such as Cell division protein FtsI [Peptidoglycan synthetase], Intramembrane protease RasP/YluC (implicated in cell division based on FtsL cleavage), Undecaprenyl diphosphate synthase, Rod shape-determining protein MreB, Rod shape-determining protein MreC, Rod shape-determining protein MreD, Rod shape-determining protein RodA, Septum formation protein Maf, Septum site-determining protein MinD, and Septum site-determining protein MinD are all present. Other genes, including Murein Hydrolases, which aid in sputum cleavage and separation are present in both organisms as well. DNA polymerase III epsilon subunit (a major constituent for bacterial cell division is also present), as is Predicted signal-transduction protein containing cAMP-binding and CBS domains and Ribonuclease HI are present each in *Flacobacterium plurectorum* and novel isolate 107.

7 DNA Repair: Novel isolate 107 appears to be missing DNA-cytosine methyltransferase, Endonuclease V, Exodeoxyribonuclease VII small subunit, and Very-short-patch mismatch repair endonuclease (G-T specific) in reference to *Flavobacterium plurectorum*. Novel isolate 107 does contain Phosphoglycolate phosphatase, Excinuclease ABC subunit A, Excinuclease ABC subunit A paralog in greater Bacteroides group, Excinuclease ABC subunit B, Excinuclease ABC subunit C, A/G-specific adenine glycosylase, ADA regulatory protein, DNA polymerase IV, DNA recombination protein RmuC, DNA repair protein

RadADNA repair protein RecN, Exodeoxyribonuclease III, Exodeoxyribonuclease VII large subunit, Methylated-DNA--protein-cysteine methyltransferase, RecA protein, Single-stranded DNA-binding protein, DNA mismatch repair protein MutL, DNA mismatch repair protein MutS,MutS-related protein family 1, Recombination inhibitory protein MutS2, ATP-dependent DNA helicase RecQ, ATP-dependent DNA helicase RecS (RecQ family), DNA recombination and repair protein RecF, DNA recombination and repair protein RecO, RecA protein, Recombination protein RecR, Single-stranded DNA-binding protein, Deoxyribodipyrimidine photolyase, DNA mismatch repair protein MutS, RecA protein, Regulatory protein RecX, RecA protein, and Regulatory protein RecX. These are some of the most prominent components of bacterial DNA repair enzymatic pathways and processes, which the new isolate has conserved within its genome.

8 Carbon Fixation: Novel isolate 107 and the reference genome, *Flavobacterium plurectorum*, have multiple components that are conserved within each organism relating to the Calvin–Benson–Bassham Cycle, which include NAD-dependent glyceraldehyde-3-phosphate dehydrogenase, L-ribulose-5-phosphate 4-epimerase, Ribulose-phosphate 3-epimerase, D-3-phosphoglycerate dehydrogenase, and Alpha-ribazole-5'-phosphate phosphatase. Both organisms also share a substantial portion of genes related to the Reverse TCA cycle, which includes Acetate kinase, Aldehyde dehydrogenase, Dihydrolipoamide acetyltransferase component of pyruvate dehydrogenase complex, NAD-dependent protein deacetylase of SIR2 family, Phosphate acetyltransferase, Pyruvate dehydrogenase E1 component alpha subunit, Pyruvate dehydrogenase E1 component beta subunit, Isocitrate lyase, Isocitrate dehydrogenase [NADP], Citrate synthase (si), Lysine ketoglutarate reductase, Succinyl-CoA:3-ketoacid-coenzyme A transferase subunit A, Succinyl-CoA:3-ketoacid-coenzyme A transferase subunit B, 2,3,4,5-tetrahydropyridine-2,6-dicarboxylate N-succinyltransferase, Dihydrolipoamide succinyltransferase component (E2) of 2-oxoglutarate dehydrogenase complex, O-succinylbenzoate synthase, Adenylosuccinate lyase, Adenylosuccinate synthetase, Malate dehydrogenase, Malate synthase, Acetyl-CoA acetyltransferase, acetyl-CoA carboxylase, and Biotin carboxylase of acetyl-CoA carboxylase. In terms of the Hydropropionate pathway, novel isolate 107 and *Flavobacterium plurectorum* share genes such as Acetyl-CoA acetyltransferase, acetyl-CoA carboxylase, Biotin carboxylase of acetyl-CoA carboxylase, Malonyl CoA-acyl carrier protein transacylase, Succinyl-CoA:3-ketoacid-coenzyme A transferase subunit A, Succinyl-CoA:3-ketoacid-coenzyme A transferase subunit B, Appears to be lacking genes relating to Malonyl semialdehyde, 3-Hydroxypropionate, Acrylyl-CoA, Propionyl-CoA, Succinyl-CoA, and Malyl-CoA. For methanogenesis, or one carbon metabolism, both organisms contain 5,10-methylenetetrahydrofolate reductase, 5-formyltetrahydrofolate cyclo-ligase, Formyltetrahydrofolate deformylase, Methenyltetrahydrofolate cyclohydrolase, and Methylenetetrahydrofolate dehydrogenase (NADP+).

9 Photosynthesis: No photosynthetic genes have been identified, besides those for the breakdown of photosynthetic materials. Beta-carotenoid hydroxylase, has been identified in both novel isolate 107 as well is in the reference organism. NAD is typically associated with respiration, as are genes regarding its synthesis, and NADP is often associated with photosynthetic pathways. Both novel isolate 107 and the reference genome *Flavobacterium plurectorum* contain Phosphoribosylanthranilate isomerase, 3-hydroxyanthranilate 3,4-dioxygenase, Kynureninase, Kynurenine 3-monooxygenase, NAD kinase, NAD synthetase, Nicotinate-nucleotide adenylyltransferase, Quinolinate phosphoribosyltransferase [decarboxylating], Ribosyl nicotinamide transporter (PnuC-like), and Tryptophan 2,3-dioxygenase. Novel isolate 107 differs from the genome of *Flavobacterium plurectorum* since it does not contain the genes Nicotinamide-nucleotide adenylyltransferase (NadR family) or Ribosylnicotinamide kinase.

10 Oxygen Utilization: Bacteria part of the Flavobacterium genus are either aerobic or facultatively aerobic in nature. Both novel isolate 107 and reference organism *Flavobacterium plurectorum* shared oxygen utilization genes, which include Superoxide dismutase [Cu-Zn] precursor, Superoxide dismutase, Alkyl hydroperoxide reductase subunit C-like protein
Ferric uptake regulation protein FUR, and Transcriptional regulator (Crp/Fnr family). Some of the aforementioned proteins deal with anaerobic conditions, but these could be artifacts of previous enzymatic pathways or conserved for other related functions, or act as emergency mechanisms should oxygen quality become reduced.

11 Solute Concentration: Both novel isolate 107 and reference organism *Flavobacterium plurectorum* have Aquaporin Z and Glycerol uptake facilitator protein in terms of osmotic stress and osmotic regulation. Novel isolate also contains Outer membrane protein A precursor which is not found in the reference organism genome. Novel isolate 107 also lacks Glycine betaine ABC transport system (ATP-binding protein OpuAA) and Glycine betaine ABC transport system (permease protein OpuAB) which are both found in the genome for *Flavobacterium plurectorum*.

12 Temperature: Novel isolate 107 and the reference organism (*Flavobacterium plurectorum)* both contain Heat shock protein GrpE and Ribosome-associated heat shock protein implicated in the recycling of the 50S subunit (S4 paralog) which suggests that they are capable of mitigating against spikes in heat.

13 Metals: Novel isolate 107 shares similar metal focused genes with *Flavobacterium plurectorum*. These include, Cysteine desulfurase, Ferredoxin, 2Fe-2S, Iron-sulfur cluster assembly ATPase protein SufC, Iron-sulfur cluster assembly protein SufB, Iron-sulfur cluster assembly protein SufD, PaaD-like protein (DUF59) involved in Fe-S cluster assembly, and a probable iron binding protein from the HesB_IscA_SufA family. Iron sulfur clusters are often associated with pathways of photosynthesis, but these may be conserved systems that perform different roles for novel isolate 107 and *Flavobacterium plurectorum*, such as functioning as intermediates for electron transport in cellular respiratory pathways. Novel isolate 107 does not contain Azurin like *Flavobacterium plurectorum* does, which is responsible for redox reactions of copper-containing proteins. Novel isolate 107 contains Beta-galactosidase and Neuraminidase NanP related to sulfur metabolism not found in *Flavobacterium plurectorum*.

14 Resistance to Pollutants: Genes relating to a prokaryotic organism's stress response can be linked to pollutant resistance / tolerance in environments, since pollutants are sources of environmental stress on a cellular system. Novel isolate 107 and reference organism *Flavobacterium plurectorum* have many genes in common, such as Organic solvent tolerance protein precursor, DedA protein, Aquaporin Z, Glycerol uptake facilitator protein, Glutathione peroxidase, Alkyl hydroperoxide reductase subunit C-like protein, Ferric uptake regulation protein FUR, Superoxide dismutase ([Cu-Zn] precursor), Superoxide dismutase ([Mn]), Transcriptional regulator (Crp/Fnr family), Alkyl hydroperoxide reductase subunit (C-like protein), Rubredoxin, Intramembrane protease RasP/YluC (implicated in cell division based on FtsL cleavage), Outer membrane protein H precursor, NG,NG-dimethylarginine dimethylaminohydrolase 1, and Ornithine aminotransferase. Novel isolate 107 does not have Glycine betaine ABC transport system (ATP-binding protein OpuAA), Putative N-acetylgalactosaminyl-diphosphoundecaprenol glucuronosyltransferase, and Glycine betaine ABC transport system (permease protein OpuAB) found in *Flavobacterium plurectorum*. Novel isolate also contains Outer membrane protein A precursor and Lactoylglutathione lyase not found in the reference organism *Flavobacterium plurectorum*.

15 Radiation: The RecA protein has been identified in novel isolate 107 as well as in the reference genome for *Flavobacterium plurectorum*. This would suggest that novel isolate 107 likely has the ability to protect its genome from UV exposure, as is common with the RecA proteins of many prokaryotic

organisms. Novel isolate 107 does not appear to have any other genes specifically relating to radiation tolerance / resistance. Please refer to DNA repair for further understanding of the enzymatic properties relating to that process. MutL and MutS systems have been identified for both novel isolate 107 as well as with *Flavobacterium plurectorum*, the reference organism, but no Lex genes were found in either organism. MutL and MutS complexes are responsible for mismatch repair, so it is inferred that they would likely be important in terms of protection / remediation of radiation damage.

16 Other Abilities: Compared to conventional *Flavobacterium* species, many of which are considered opportunistic pathogens with high levels of antibiotic resistance, including the reference organism of *Flavobacterium plurectorum*, novel isolate 107 does not confer many antibiotic resistance genes. This is potentially influenced by the isolation of novel isolate 107 as a dermal sample from amphibian skin in Grand Teton National Park rather than being isolated from soil or aquiculture samples specifically. Genes not found in the contiguous sequences for novel isolate 107 found in the reference organism *Flavobacterium plurectorum* include Beta-lactamase, Antibiotic biosynthesis monooxygenase, Cation efflux system protein CusA, Cobalt-zinc-cadmium resistance protein CzcA, Cu(I)-responsive transcriptional regulator, Copper homeostasis protein CutF precursor, and FAD-dependent NAD(P)-disulphide oxidoreductase. Novel isolate 107 also lacks a large quantity of transposon proteins, such as Conjugative transposon protein TraA, TraB, TraD, TraG, TraI, TraJ, TraK, TraM, TraO and TraQ compared to *Flavobacterium plurectorum*. Novel isolate 107 also lacks Nitrite reductase accessory protein NirV, Nitrous oxide reductase maturation protein NosD, Nitrous oxide reductase maturation protein NosF (ATPase), Nitrous oxide reductase maturation transmembrane protein NosY, and Nitrous-oxide reductase which are all found in *Flavobacterium plurectorum*.

Genomic Annotation and Comparison of *Flavobacterium plurextorum* and Two Assemblies of a Similar Novel Isolate

Katelynn Miller

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Dr. Peter Sheridan

Prokaryotic Genome Annotation – Biology 6670

Energy Metabolism

First, it is important to determine whether the novel isolate has functioning energy metabolism pathways. Table 1 in the supplementary information was used to conclude on whether there was a functioning pathway. First, as can be seen in table 1, all necessary enzymes for Glycolysis and Gluconeogenesis. All the enzymes for the Pentose Phosphate Pathway are also present. However, the enzymes 2-dehydro-3-deoxygluconokinase (EC 2.7.1.45) and 2-dehydro-3-deoxyphosphogluconate aldolase (EC 4.1.2.14) did not match that of *Flavobacterium plurextorum* as well. This is most likely because they are potentially different organisms. The Pyruvate Dehydrogenase complex is mostly accounted for, minus the seemingly absent dihydrolipoyl dehydrogenase complex. Other than this complex, it was determined that the Pyruvate Dehydrogenase complex was likely present and operational, and that the absence of the gene sequence was due to the genome being incomplete. The novel isolate also had an operational Citric Acid Cycle. There also seemed to be an operational Reductive Citric Acid Cycle (Reductive CAC) which is of interest due to the implications that the organism can fix CO_2. It was also concluded from table 1 and the supplementary file entitled "Contig Comparison", the organism also has a complete Electron transport system and ATP synthase complex. Table 1 shows that there are enzymes for the synthesis of the NAD/NADP/NMN and FAD/FMN electron transporters. Lastly, genes necessary for photosynthesis were determined to be absent. Many of the enzymes necessary for photosynthesis were present. However, it was determined that many of these enzymes came from other biochemical pathways such as Glycolysis and the Pentose Phosphate Pathway. Also, the gene sequence encoding for the enzyme RuBisCo were not found, meaning that photosynthesis was likely impossible for this organism. From this analysis, it was determined that the novel isolate contained all the energy metabolic pathways needed for life (except for photosynthesis). It was also determined that the energy metabolism done by the novel isolate very closely matched that of the comparison organism *F. plurextorum.* This conclusion came to the percent identity match contained in the supplementary "Contig Comparison" document.

The Central Dogma

To determine the functionality of the Central Dogma pathways, Table 2 was used. From this table, it was determined that the organism had a functioning purine and pyrimidine biosynthesis pathways. Also, all components for DNA replication were present, including RNA Polymerases I, III, IV, DNA primase, DNA gyrase, DNA topoisomerase, and DNA ligase. There were also several proteins for DNA excision and repair. Genes for RNA synthesis and degradation were also present. This included all of the necessary subunits of RNA polymerase as well as ribonucleases for RNA degradation. All components necessary for transcription

and translation, including all ribosomal proteins and many transcription factors, were present. Lastly, amino acyl tRNA synthetases for all common 20 amino acids were present. There were no tRNA synthetases for non-canonical amino acids. While analyzing the central dogma pathways, two enzymes of interest were found. The first of these was the "Ribosome-associated heat shock protein implicated in the recycling of the 50S subunit (S4 paralog)." This enzyme was present in both the isolate and in *F. plurextorum* and was interesting because it is associated with stress response to heat shock. The other enzyme of interest was the RNA polymerase sigma factor RpoE because it was only found in the isolate genome. This enzyme is also associated with heat shock and cold shock resistance. An organism without this enzyme will not be heat shock resistant. Thus, RpoE may give the isolate an advantage in higher temperature environments that *F. plurextorum* does not have.

Carbon Sources

To figure out what these organisms use as carbon sources, Table 3 was used. However, it was first determined that one source of carbon for both organisms was CO_2 which is fixed by the Reductive CAC cycle. The organism also has all enzymes required for the Glyoxylate cycle. Other carbon sources for both the isolate and *F. plurextorum* was starch, chitin, N-acetylglucosamine, and protein breakdown. Sugars that the organism then used in many of its pathways included Lactose, Galactose, Sucrose, D-Ribose, L-arabinose, Mannose, and Xylose. Carbon from environmental proteins is possible due to the presence of proteases and peptidases. This was based off the fact that Flavobacteria are sometimes proteolytic. Also, starch and chitin breakdown was apparent due to the presence of amylase and chitinase. Thus, it was concluded that some carbon comes from CO_2 fixation but that most of it comes from the breakdown of large biomolecules such as starch, chitin, and proteins.

Amino Acid Metabolism

Table 4 was used to make conclusions on the presence or absence of amino acid synthesis/degradation. From table 4, it was determined that both the novel isolate and *F. plurextorum* contained metabolic processes for all 20 common amino acids. However, some amino acids only had degradation pathways where other amino acids only had synthetic pathways. Synthetic enzymes for Valine, Arginine, and Isoleucine could not be found. This could partially be due to the incomplete genome used in analysis. Valine, Arginine, and Isoleucine may also be present without designated synthetic enzymes because the organism seems to be proteolytic. This means that the amino acids may come from the breakdown of other proteins. It is also important to mention that the only genes regarding Arginine are degradation

enzymes and enzymes that methylate Arginine. The remaining Amino Acids seemed to have designated synthesis, and general degradation pathways. Thus, it can be concluded that both the novel isolate and *F. plurextorum* utilizes all twenty common amino acids. However, it is important to note that there were three enzymes contained by the novel isolate but were not found in *F. plurextorum*. These enzymes are Aspartate racemase (EC 5.1.1.13) (aspartate biosynthesis), L-asparaginase (EC 3.5.1.1) (asparagine biosynthesis), and Isochorismatase (EC 3.3.2.1) (tryptophan biosynthesis from chorismate). It is unclear whether these enzymes provide the isolate any advantages over *F. plurextorum*.

Lipid Metabolism

Table 5 lists all the enzymes associated with Lipid Metabolism that were found. First, it was determined that all enzymes needed for lipid biosynthesis and degradation are present. There was not a specific enzyme called Fatty Acid Synthase present. It was found that both organisms undergo the bacterial FAS II fatty acid synthesis pathway. This pathway involves FabB, FabF, FabH, FabG, and FabI as well as many of the enzymes present under the "Fatty Acid Biosynthesis" header in Table 5. The necessary components for Acetyl CoA Carboxylase (Biotin carboxylase of acetyl-CoA carboxylase (EC 6.3.4.14) and Biotin carboxyl carrier) were present. All enzymes in the pathway for Geranyl and Farnesyl synthesis were also found and put in Table 5. Lastly, there was a functional Hydroxymethylglutaryl-CoA reductase (EC 1.1.1.34) enzyme. With all of these enzymes present in both the isolate and *F. plurextorum*, it was determined that these organisms have functioning Lipid Metabolism pathways.

Cell Division

Both the isolate and *F. plurextorum* have multiple Fts proteins to aid in cell division. Also present was Mre genes which code for a rod-shaped bacterium as well as RodA, MinD, and Maf which are associated with cell division. There was one protein of interest which was the "intramembrane protease RasP/YluC, implicated in cell division based on FtsL cleavage". This enzyme's gene sequence was determined from an isolate near hydrothermal vents. Also, this enzyme seems to function both as a cell division enzyme as well as a stress response protein. This enzyme may work as a stress response protein by cleaving anti-sigma factors. A full list of cell division proteins present can be found in Table 6 in the document entitled "Tables for Pathways" document.

DNA Repair

The isolate has many of the required DNA repair systems including DNA polymerase IV, Mismatch repair (Mut) systems, RecA (and other Rec systems), base/nucleotide excision repair, and the photolyase Deoxyribodipyrimidine photolyase (EC 4.1.99.3). There are not any enzymes or proteins that look unusual for either the isolate or for *F. plurextorum*. Table 7 contains a full list of all the DNA repair systems that were present. Therefore, it can be concluded that there is an operational DNA repair system in place.

Carbon Fixation

Looking again at Table 1, it can be seen that the organism has the Reverse TCA cycle (Reductive CAC) for carbon fixation. This can be concluded by the fact that the enzyme Alanine dehydrogenase (EC 1.4.1.1) does not appear to be present in another common energy pathway except for the Reductive CAC cycle. Because the organism had many of the other necessary enzymes, it was concluded that the isolate does carbon fixation by the reductive CAC cycle. However, the isolate does not appear to have any of the common enzymes for the CCB cycle, Methanogenesis, or the Hydroxy propionate pathway. This was determined by the absence of RuBisCo, methyl-coenzyme M reductase (for methanogenesis), Acetyl-CoA carboxylase (for the Hydroxy propionate pathway), and propionyl-CoA carboxylase (also for Hydroxy propionate pathway). The lack of these essential enzymes was used as an indicator of whether the pathways were present or not.

Photosynthesis

Table 1 contains the EC numbers for all the enzymes originally thought to be a part of photosynthesis. However, after analyzing the identities of these enzymes, it was determined that the organism does not have the ability to do photosynthesis. This is evidenced by the complete lack of photosystems I and II, accessory pigments, and RuBisCo. Although many of the enzymes required for the Calvin-Benson Basham cycle were present, it was determined that many of these enzymes were instead apart of other biochemical pathways such as Glycolysis and the Pentose Phosphate Pathway. Also, because RuBisCo was not found, it was determined that photosynthesis (the CBB cycle) would be impossible. Thus, it was concluded that the isolate nor *F. plurextorum* cannot do photosynthesis.

Oxygen Utilization

By looking at both table 1 and table 8, it was determined that both the isolate and *F. plurextorum* are facultative anaerobes. Both organisms contain the citric acid cycle and other aerobic pathways. However, as evidenced in Table 8, the organism has the anaerobic enzyme "flavodoxin reductases (ferredoxin-NADPH reductases) family 1." Also, there is a fermentation pathway for lactate, meaning that the organism has the capability of doing anaerobic fermentation in the absence of oxygen. Lastly, both organisms contain the enzyme superoxide dismutase. However, only the isolate has the gene sequence for Catalase-peroxidase KatG (EC 1.11.1.21) which aids in the breakdown of hydrogen peroxide in the cell. Therefore, both organisms were said to have both aerobic and anaerobic capabilities.

Solute Concentration

Table 9 summarizes the osmoregulatory proteins found in the organism. These proteins included OsmC abd Ohr family proteins, Aquaporin Z, and proteins for the uptake of osmolytes. It is important to note that the "glycine betaine ABC transport system, ATP-binding protein OpuAA (EC 3.6.3.32)" was only present in the genome for *F. plurextorum*. However, this may just be because the isolate has an incomplete genome. Glycine betaine is a common osmolyte for the adjustment of the concentration of nitrogen compounds. Proteins associated with potassium homeostasis were observed. However, no proteins for pH stress were recognized.

Temperature

After looking through the "Contig Comparison," "Plurextorum vs Shovil – functional analysis," and "Plurextorum vs Unicycler - functional analysis" supplementary documents, it was determined that there was some evidence that the organism has genes to deal with temperature extremes. Table 10 has a summary of all heat and cold response enzymes found. The enzymes of interest with a presence in both organisms were the GrpE heat shock protein, GroES chaperone, and GroEL chaperones. The GrpE prevents the buildup of unfolded proteins under high temperatures where the chaperones aid in refolding of the proteins. A gene for a cold shock protein was detected in both organisms. An enzyme that was only present in the isolate was the RNA polymerase sigma factor RpoE enzyme. This enzyme helps with both heat and cold responses, meaning that it may provide an advantage to the isolate that *F. plurextorum* does not have. A comparative experiment may need to be run to determine whether this enzyme causes for an advantage in the isolate.

Metals

Both organisms use a variety of metals for electron transport and catalysis. They also have detoxification and metal regulation pathways present. Table 11 summarizes the enzymes having to do with metals. First, it is important to note that Iron is used for many different applications. The most common applications are for Iron-sulfur clusters, ferredoxin, and ferrochelatase which incorporates iron into a porphyrin ring. Other metals such as magnesium and copper are also seen incorporated into a porphyrin for electron transport. Azurin, which utilizes copper and functions as electron transport, was also present. Lastly, there were enzymes for the regulation and removal of Hg, Cr, Co, Cu, and Cd. There were some of the metal resistance genes that were only present in *F. plurextorum.* However, it is likely that these were absent due to the isolate genomes being incomplete.

Resistance to Pollutants

Table 11 shows the genes associated with pollutants and antibiotics. Both organisms were found to have antibiotic resistance. This was evidenced by the presence of β-lactamase, and a fluoroquinolone resistant DNA gyrase. Both organisms also have genes to detoxify from the presence of nucleoside triphosphate pyrophosphatases which are used in enzymatic household cleaners. This enzyme works to hydrolyze the pyrophosphate into its component monophosphates resulting in a halt in protein synthesis.

Radiation

After looking through the "Contig Comparison," "Plurextorum vs Shovil – functional analysis," and "Plurextorum vs Unicycler - functional analysis" supplementary documents, it was determined that there was no evidence supporting radiation resistance. The only "radiation resistance" that could be noted was from the enzyme Deoxyribodipyrimidine photolyase (EC 4.1.99.3) which aids in the repair of DNA damage from UV radiation.

Other Abilities

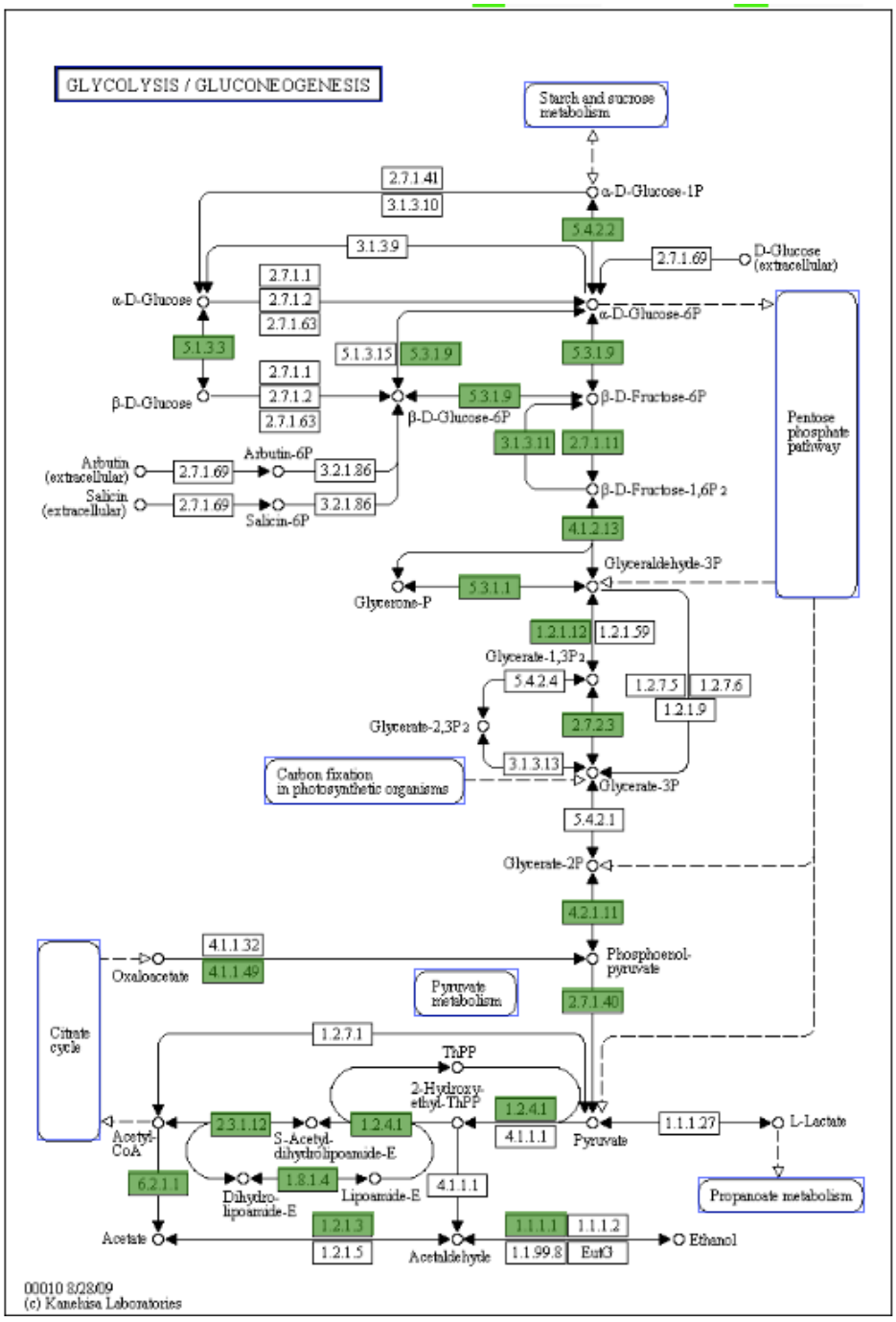
Table 12 was used to conclude what other abilities that the isolate and *F. plurextorum* contain. It was seen that both organisms have some enzymes associated with sulfur metabolism. However, only Arylsulfatase (EC 3.1.6.1) seemed to have a function related to the sulfur cycle. This enzyme works to break down biomolecules containing sulfur and converting it to a sulfate. The other enzymes seem to pertain to the

Fe-S clusters and the breakdown of reactive oxygen species. From Table 12, it was also seen that neither organism is capable of nitrogen fixation due to the absence of *nif* genes proteins. Only *F. plurextorum* had all of the necessary enzymes for denitrification. However, the isolate did have a nitrite reductase enzyme which would allow it to convert NO_2^- to NO. Both organisms are also capable of ammonification, which is the conversion of nitrogen containing compounds and converting it into NH_3 or NH_4^+. Neither *F. plurextorum* nor the isolate seemed to be capable of nitrification. Both organisms also can do phosphate metabolism. Most of the enzymes found for phosphate metabolism have to do with the breakdown of polyphosphates from biomolecules. There were also several enzymes for the transport of inorganic phosphate. There were no specific enzymes observed for the maintenance of pH level.

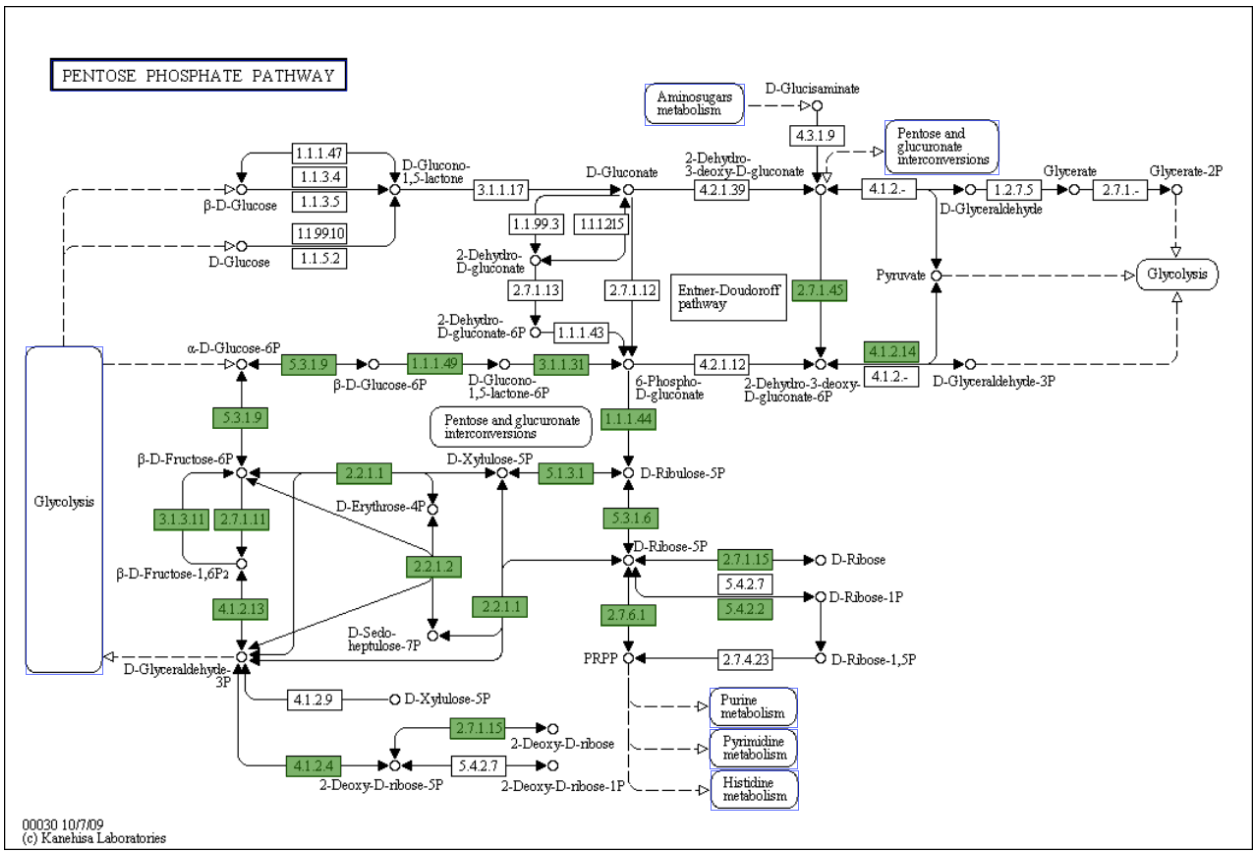
Other special abilities contained by one or both organisms are listed in table 12. Only the isolate contained a protein entitled “Phage capsid proteins” which is the protein capsid of an unknown bacteriophage. However, this did not provide insight into the organism’s abilities. There were other transposon proteins only found in the *F. plurextorum* genome. There did not appear to be genes for RISC, Dicer, or CRISPR. However, it was found that *F. plure*xtorum may have a capability to form biofilms as evidenced by the presence of a “minor curlin subunit CsgB” enzyme. This enzyme may be found on a more complete genome for the isolate. Both organisms were found to have antibiotic resistance. This was evidenced by the presence of β-lactamase, and a fluoroquinolone resistant DNA gyrase.

Glycolysis/Gluconeogenesis

KEGG map	Distinct ECs	Flavobacterium plurectorum	Unknown sp. 107shovil	Unknown sp. 107unicycler
Carbon fixation in photosynthetic organisms	25	14 (56.0 %)	14 (56.0 %)	14 (56.0 %)
Citrate cycle (TCA cycle)	22	13 (59.1 %)	13 (59.1 %)	13 (59.1 %)
Glycolysis / Gluconeogenesis	41	18 (43.9 %)	18 (43.9 %)	18 (43.9 %)
Pentose phosphate pathway	37	17 (45.9 %)	18 (48.6 %)	18 (48.6 %)
Propanoate metabolism	47	9 (19.1 %)	9 (19.1 %)	9 (19.1 %)
Pyruvate metabolism	64	19 (29.7 %)	20 (31.2 %)	20 (31.2 %)
Starch and sucrose metabolism	71	18 (25.4 %)	19 (26.8 %)	19 (26.8 %)



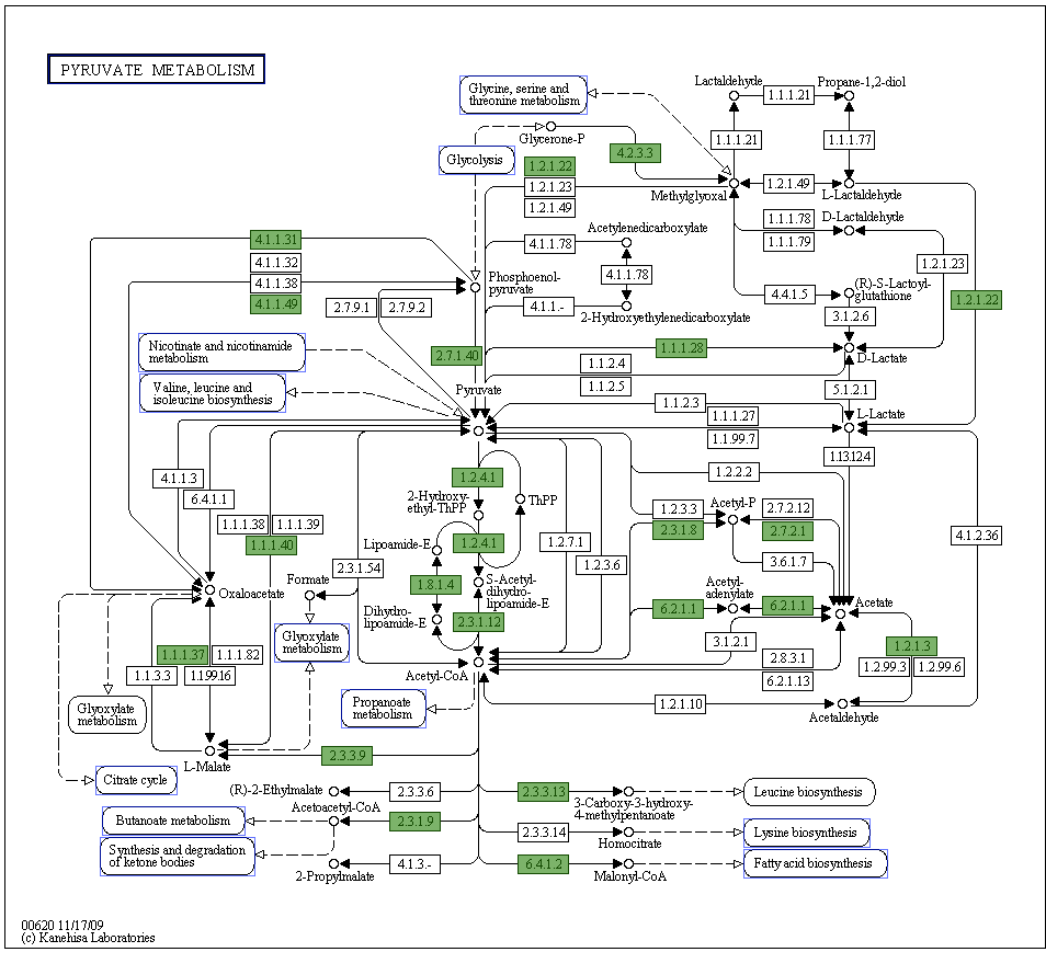
Pentose Phosphate Pathway



KEGG map	Distinct ECs	Flavobacterium plurectorum	Unknown sp. 107shovil	Unknown sp. 107unicycler	Unknown sp. 107unicycler
	0	0	0	0	0
Glycolysis / Gluconeogenesis	41	18 (43.9 %)	18 (43.9 %)	18 (43.9 %)	18 (43.9 %)
Histidine metabolism	37	16 (43.2 %)	15 (40.5 %)	15 (40.5 %)	15 (40.5 %)
Pentose and glucuronate interconversions	56	22 (39.3 %)	22 (39.3 %)	22 (39.3 %)	22 (39.3 %)
Pentose phosphate pathway	37	17 (45.9 %)	18 (48.6 %)	18 (48.6 %)	18 (48.6 %)
Purine metabolism	104	42 (40.4 %)	39 (37.5 %)	39 (37.5 %)	39 (37.5 %)
Pyrimidine metabolism	64	26 (40.6 %)	24 (37.5 %)	24 (37.5 %)	24 (37.5 %)

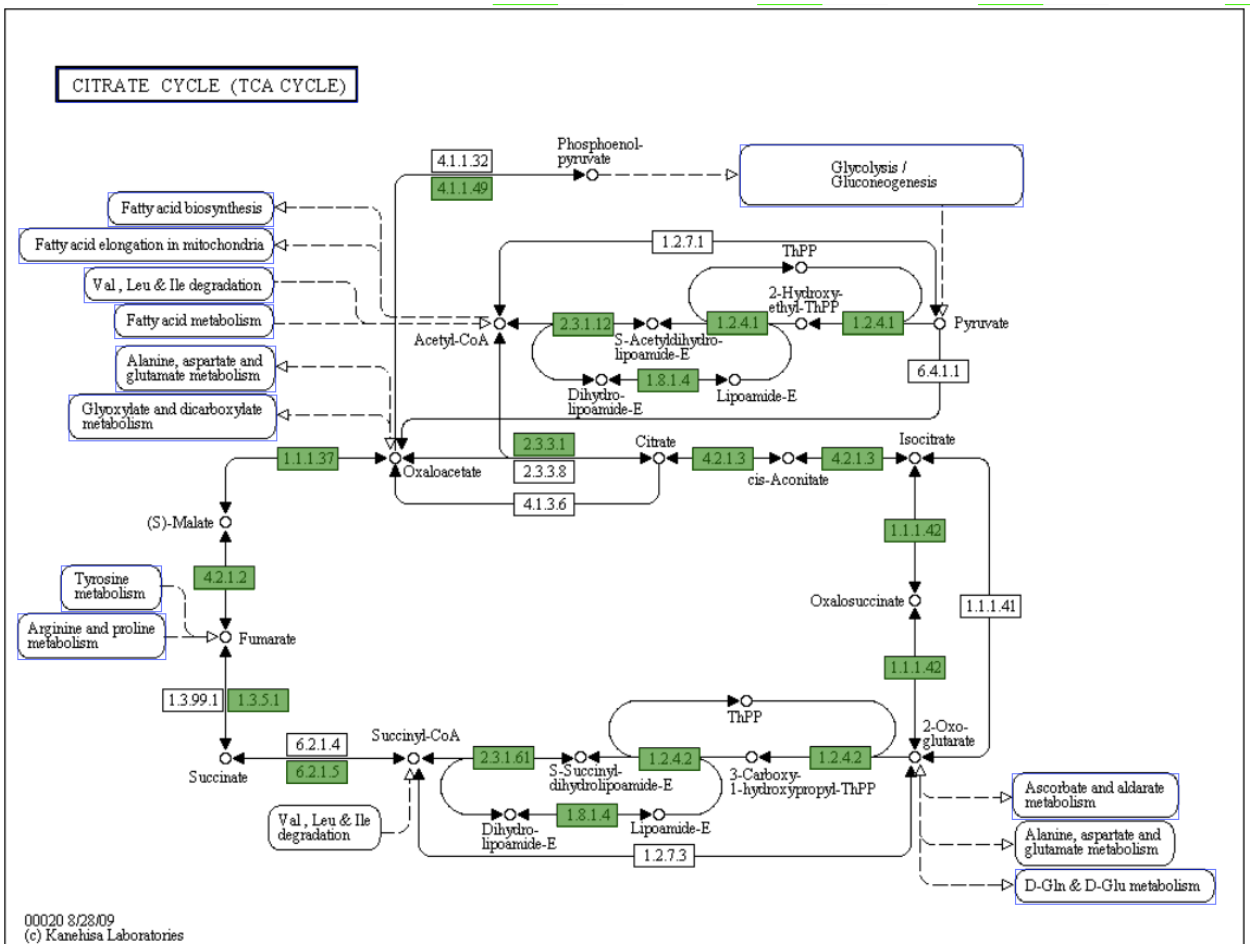
Pyruvate Metabolism

KEGG map	Distinct ECs	Flavobacterium plurectorum	Unknown sp. 107shovil	Unknown sp. 107unicycler
Butanoate metabolism	52	12 (23.1 %)	12 (23.1 %)	12 (23.1 %)
Citrate cycle (TCA cycle)	22	13 (59.1 %)	13 (59.1 %)	13 (59.1 %)
Fatty acid biosynthesis	21	11 (52.4 %)	11 (52.4 %)	11 (52.4 %)
Glycine, serine and threonine metabolism	57	21 (36.8 %)	21 (36.8 %)	21 (36.8 %)
Glycolysis / Gluconeogenesis	41	18 (43.9 %)	18 (43.9 %)	18 (43.9 %)
Glyoxylate and dicarboxylate metabolism	58	11 (19.0 %)	12 (20.7 %)	12 (20.7 %)
Lysine biosynthesis	31	13 (41.9 %)	13 (41.9 %)	13 (41.9 %)
Nicotinate and nicotinamide metabolism	47	15 (31.9 %)	12 (25.5 %)	12 (25.5 %)
Propanoate metabolism	47	9 (19.1 %)	9 (19.1 %)	9 (19.1 %)
Pyruvate metabolism	64	19 (29.7 %)	20 (31.2 %)	20 (31.2 %)
Synthesis and degradation of ketone bodies	6	4 (66.7 %)	4 (66.7 %)	4 (66.7 %)
Valine, leucine and isoleucine biosynthesis	18	14 (77.8 %)	14 (77.8 %)	14 (77.8 %)



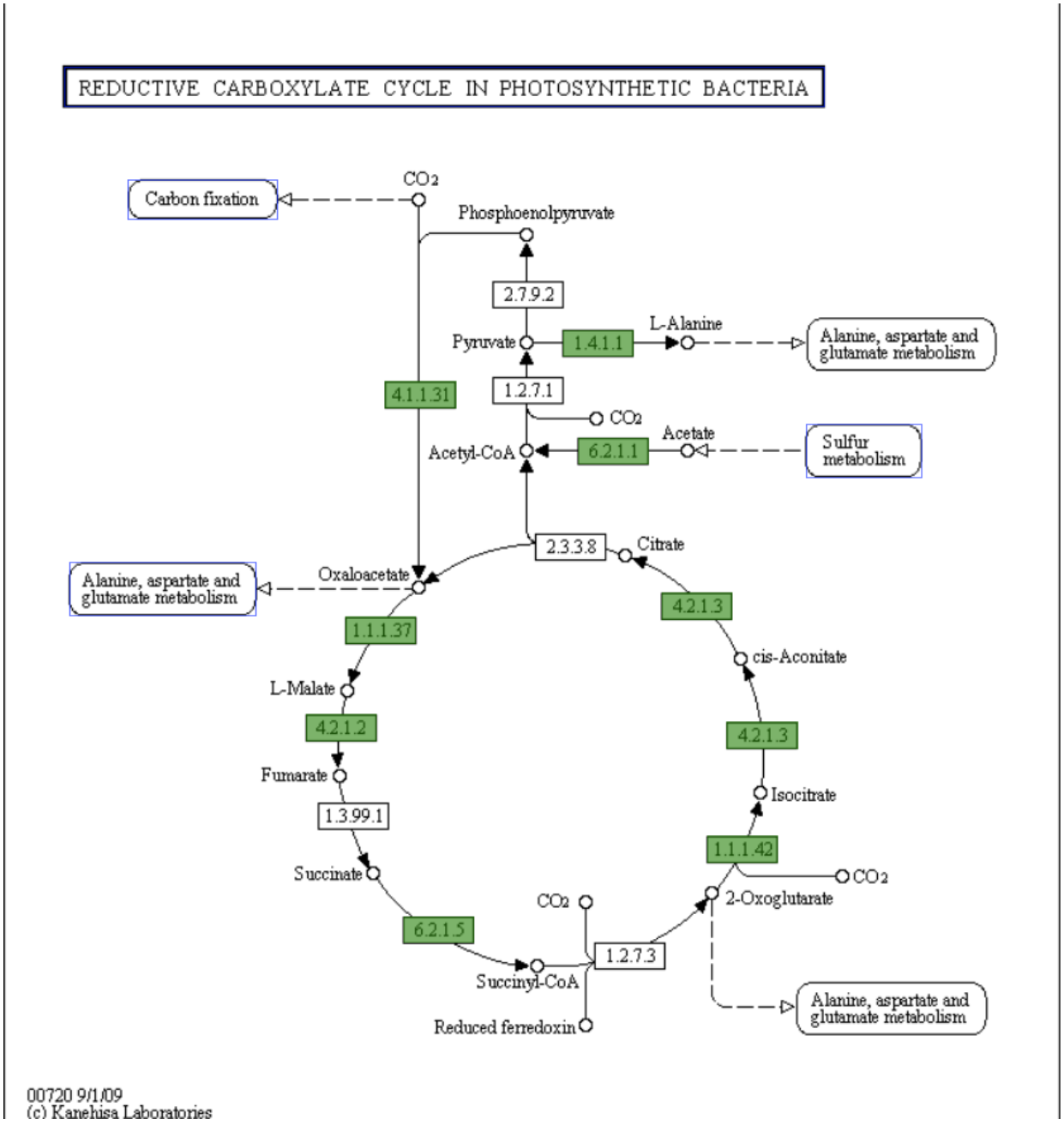
The Citric Acid Cycle

KEGG map	Distinct ECs	Flavobacterium plurectorum	Unknown sp. 107shovil	Unknown sp. 107unicycler	Unknown sp. 107unicycler
Alanine, aspartate and glutamate metabolism	43	20 (46.5 %)	18 (41.9 %)	18 (41.9 %)	18 (41.9 %)
Arginine and proline metabolism	97	26 (26.8 %)	18 (18.6 %)	18 (18.6 %)	18 (18.6 %)
Ascorbate and aldarate metabolism	44	8 (18.2 %)	7 (15.9 %)	7 (15.9 %)	7 (15.9 %)
Citrate cycle (TCA cycle)	22	13 (59.1 %)	13 (59.1 %)	13 (59.1 %)	13 (59.1 %)
D-Glutamine and D-glutamate metabolism	13	4 (30.8 %)	3 (23.1 %)	3 (23.1 %)	3 (23.1 %)
Fatty acid biosynthesis	21	11 (52.4 %)	11 (52.4 %)	11 (52.4 %)	11 (52.4 %)
Fatty acid elongation in mitochondria	8	3 (37.5 %)	3 (37.5 %)	3 (37.5 %)	3 (37.5 %)
Fatty acid metabolism	29	8 (27.6 %)	8 (27.6 %)	8 (27.6 %)	8 (27.6 %)
Glycolysis / Gluconeogenesis	41	18 (43.9 %)	18 (43.9 %)	18 (43.9 %)	18 (43.9 %)
Glyoxylate and dicarboxylate metabolism	58	11 (19.0 %)	12 (20.7 %)	12 (20.7 %)	12 (20.7 %)
Tyrosine metabolism	63	11 (17.5 %)	9 (14.3 %)	9 (14.3 %)	9 (14.3 %)
Valine, leucine and isoleucine degradation	34	17 (50.0 %)	17 (50.0 %)	17 (50.0 %)	17 (50.0 %)



Reductive CAC in Photosynthetic Bacteria (only one present)

KEGG map	Distinct ECs	Flavobacterium plurectorum	Unknown sp. 107shovil	Unknown sp. 107unicycler	Unknown sp. 107unicycler
Alanine, aspartate and glutamate metabolism	43	20 (46.5 %)	18 (41.9 %)	18 (41.9 %)	18 (41.9 %)
Carbon fixation in photosynthetic organisms	25	14 (56.0 %)	14 (56.0 %)	14 (56.0 %)	14 (56.0 %)
Reductive carboxylate cycle (CO2 fixation)	13	8 (61.5 %)	8 (61.5 %)	8 (61.5 %)	8 (61.5 %)
Sulfur metabolism	30	6 (20.0 %)	6 (20.0 %)	6 (20.0 %)	6 (20.0 %)

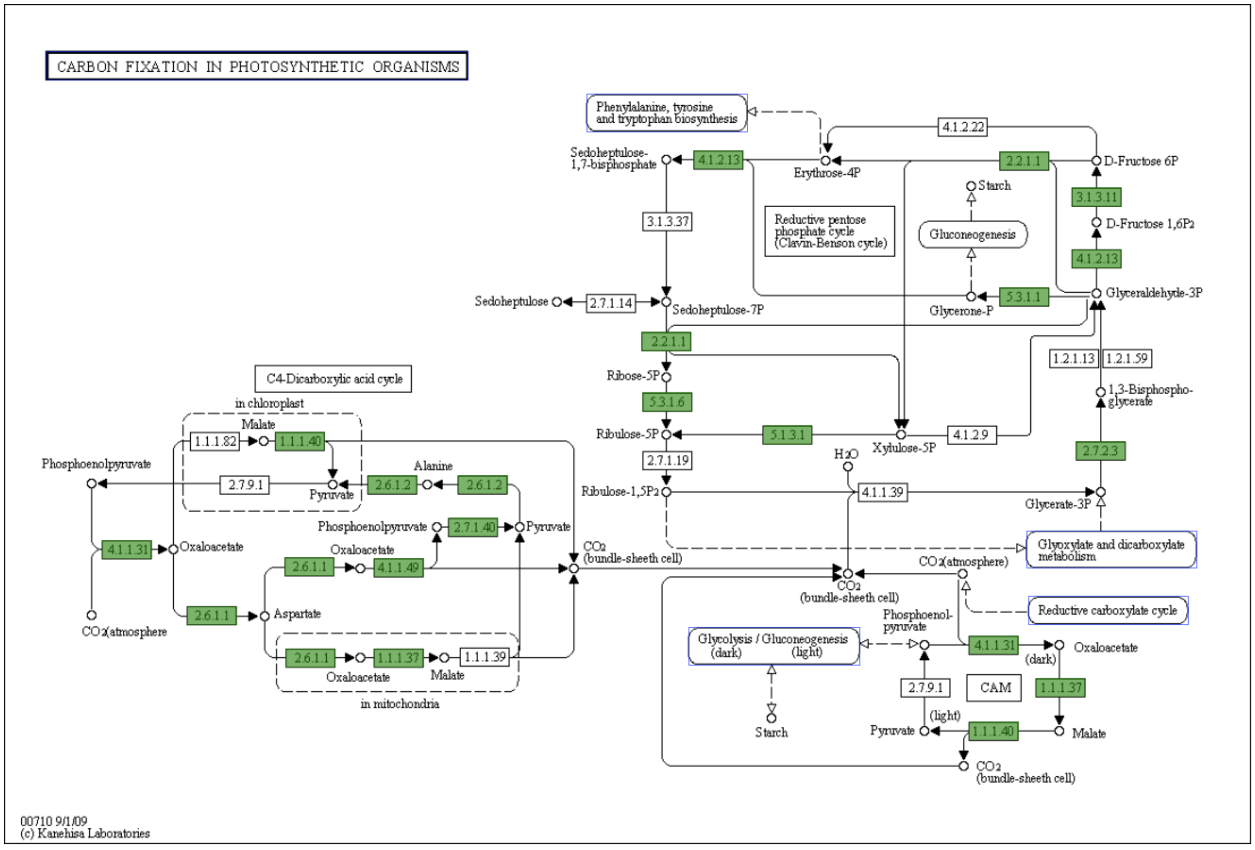


Reductive CAC (CO_2 fixation)

See above

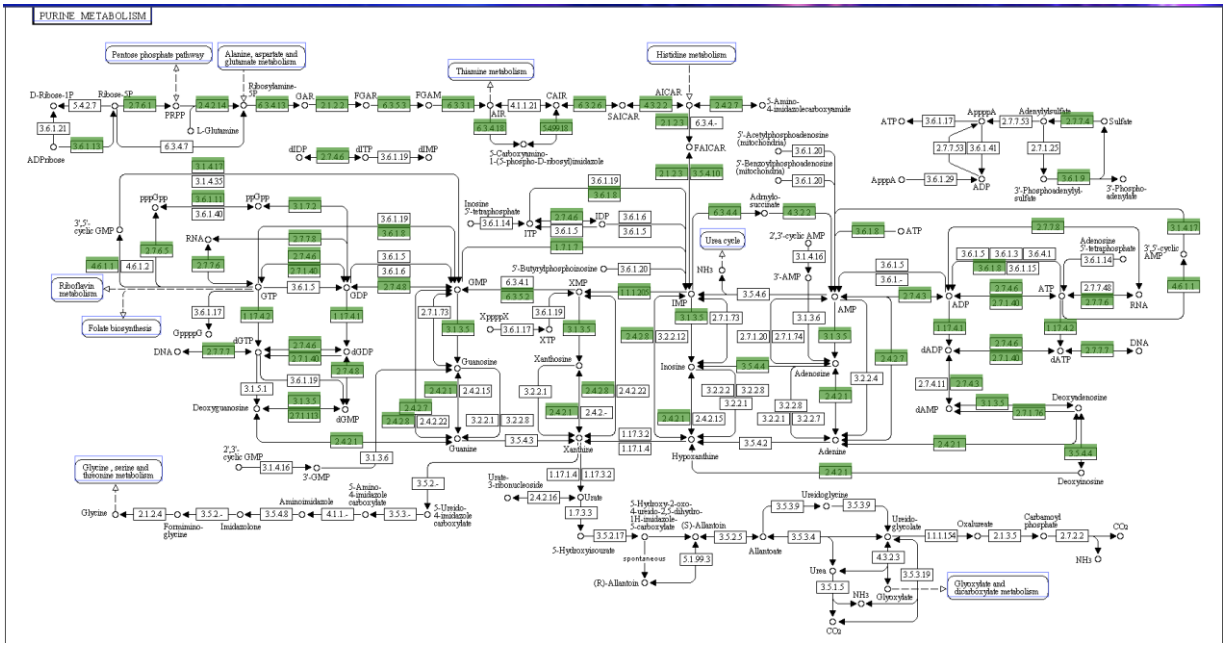
Carbon fixation in photosynthetic organisms

KEGG map	Distinct ECs	Flavobacterium plurectorum	Unknown sp. 107shovil	Unknown sp. 107unicycler	Unknown sp. 107unicycler
Carbon fixation in photosynthetic organisms	25	14 (56.0 %)	14 (56.0 %)	14 (56.0 %)	14 (56.0 %)
Glycolysis / Gluconeogenesis	41	18 (43.9 %)	18 (43.9 %)	18 (43.9 %)	18 (43.9 %)
Glyoxylate and dicarboxylate metabolism	58	11 (19.0 %)	12 (20.7 %)	12 (20.7 %)	12 (20.7 %)
Phenylalanine, tyrosine and tryptophan biosynthesis	31	20 (64.5 %)	20 (64.5 %)	20 (64.5 %)	20 (64.5 %)
Reductive carboxylate cycle (CO2 fixation)	13	8 (61.5 %)	8 (61.5 %)	8 (61.5 %)	8 (61.5 %)



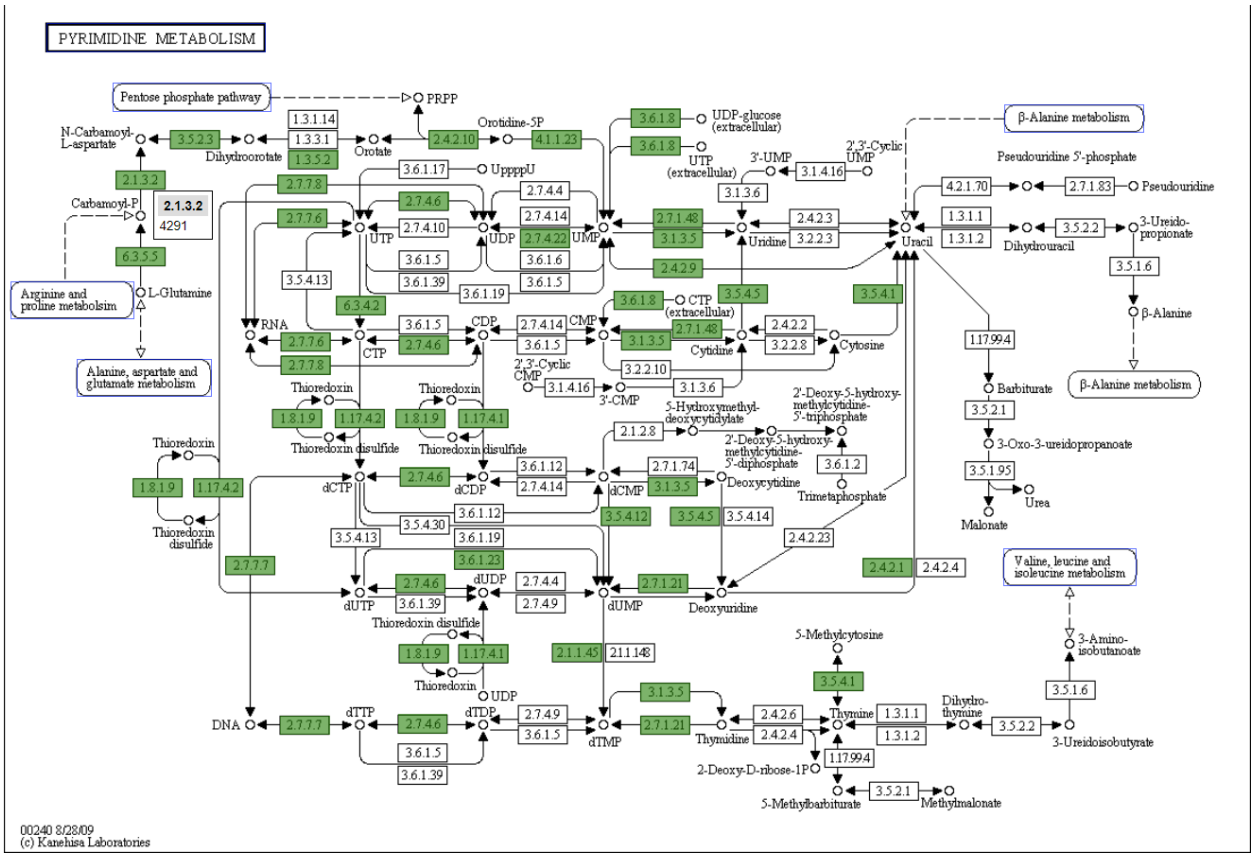
Purine Metabolism

KEGG map	Distinct ECs	Flavobacterium plurectorum	Unknown sp. 107shovil	Unknown sp. 107unicycler	Unknown sp. 107unicycler
	0	0	0	0	0
Alanine, aspartate and glutamate metabolism	43	20 (46.5 %)	18 (41.9 %)	18 (41.9 %)	18 (41.9 %)
Folate biosynthesis	25	13 (52.0 %)	13 (52.0 %)	13 (52.0 %)	13 (52.0 %)
Glycine, serine and threonine metabolism	57	21 (36.8 %)	21 (36.8 %)	21 (36.8 %)	21 (36.8 %)
Glyoxylate and dicarboxylate metabolism	58	11 (19.0 %)	12 (20.7 %)	12 (20.7 %)	12 (20.7 %)
Histidine metabolism	37	16 (43.2 %)	15 (40.5 %)	15 (40.5 %)	15 (40.5 %)
Pentose phosphate pathway	37	17 (45.9 %)	18 (48.6 %)	18 (48.6 %)	18 (48.6 %)
Purine metabolism	104	42 (40.4 %)	39 (37.5 %)	39 (37.5 %)	39 (37.5 %)
Riboflavin metabolism	16	10 (62.5 %)	9 (56.2 %)	9 (56.2 %)	9 (56.2 %)
Thiamine metabolism	16	6 (37.5 %)	5 (31.2 %)	5 (31.2 %)	5 (31.2 %)



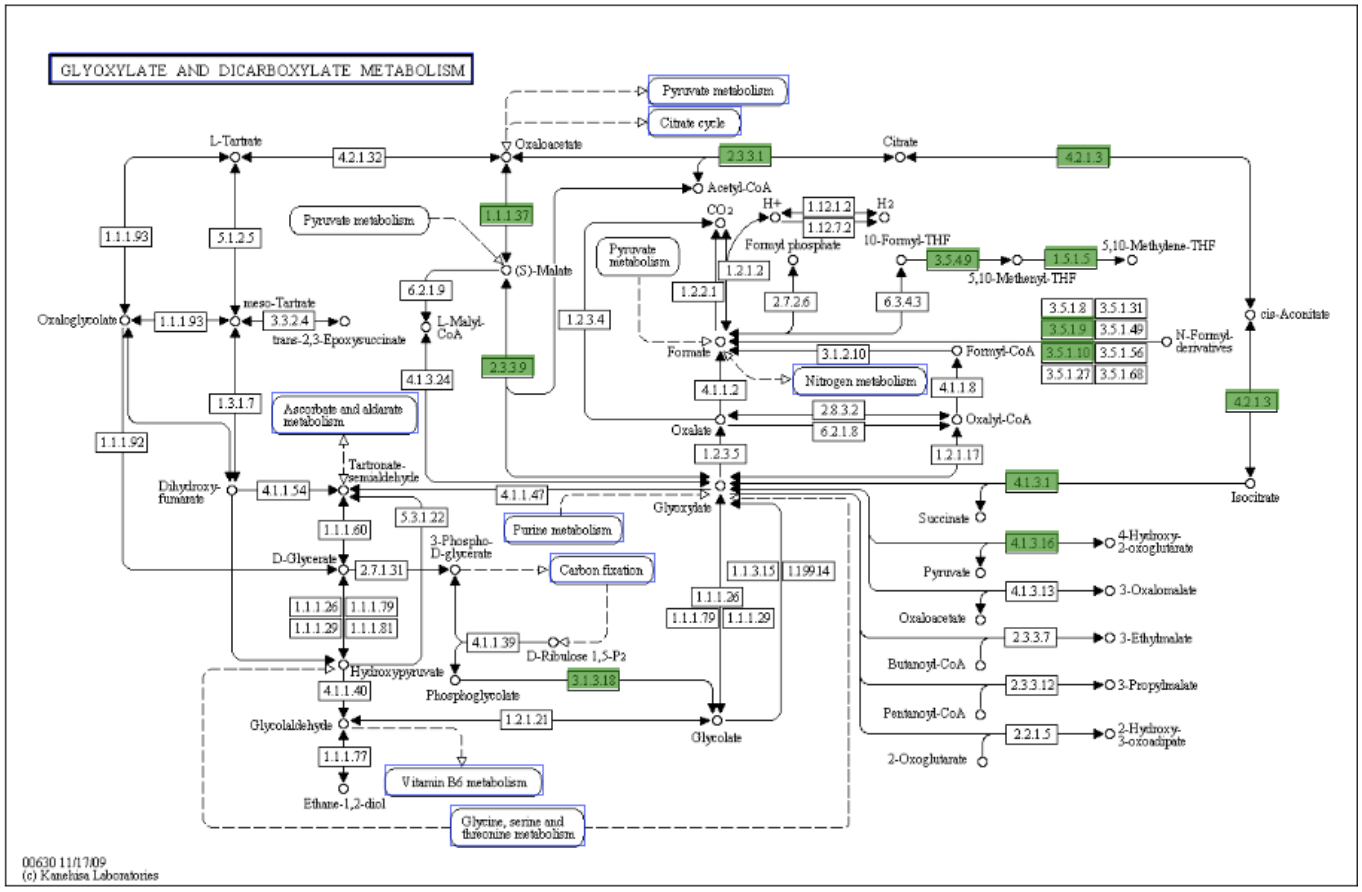
Pyrimidine Metabolism

KEGG map	Distinct ECs	Flavobacterium plurectorum	Unknown sp. 107shovil	Unknown sp. 107unicycler	Unknown sp. 107unicycler
Alanine, aspartate and glutamate metabolism	43	20 (46.5 %)	18 (41.9 %)	18 (41.9 %)	18 (41.9 %)
Arginine and proline metabolism	97	26 (26.8 %)	18 (18.6 %)	18 (18.6 %)	18 (18.6 %)
Pentose phosphate pathway	37	17 (45.9 %)	18 (48.6 %)	18 (48.6 %)	18 (48.6 %)
Pyrimidine metabolism	64	26 (40.6 %)	24 (37.5 %)	24 (37.5 %)	24 (37.5 %)
Valine, leucine and isoleucine degradation	34	17 (50.0 %)	17 (50.0 %)	17 (50.0 %)	17 (50.0 %)
beta-Alanine metabolism	32	4 (12.5 %)	4 (12.5 %)	4 (12.5 %)	4 (12.5 %)



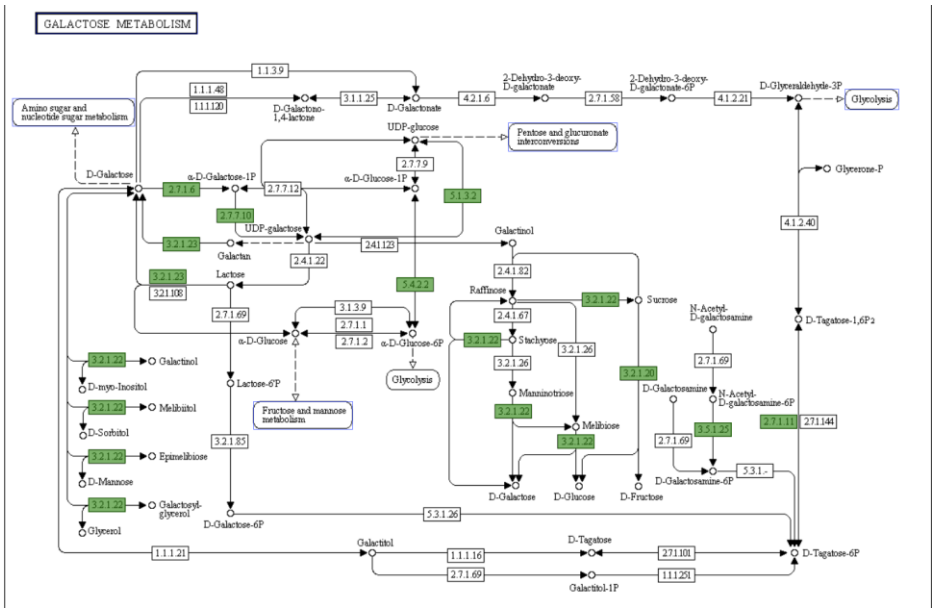
Glyoxylate and Dicarboxylate metabolism

KEGG map	Distinct ECs	Flavobacterium plurectorum	Unknown sp. 107shovil	Unknown sp. 107unicycler	Unknown sp. 107unicycler
Ascorbate and aldarate metabolism	44	8 (18.2 %)	7 (15.9 %)	7 (15.9 %)	7 (15.9 %)
Carbon fixation in photosynthetic organisms	25	14 (56.0 %)	14 (56.0 %)	14 (56.0 %)	14 (56.0 %)
Citrate cycle (TCA cycle)	22	13 (59.1 %)	13 (59.1 %)	13 (59.1 %)	13 (59.1 %)
Glycine, serine and threonine metabolism	57	21 (36.8 %)	21 (36.8 %)	21 (36.8 %)	21 (36.8 %)
Glyoxylate and dicarboxylate metabolism	58	11 (19.0 %)	12 (20.7 %)	12 (20.7 %)	12 (20.7 %)
Nitrogen metabolism	57	18 (31.6 %)	14 (24.6 %)	14 (24.6 %)	14 (24.6 %)
Purine metabolism	104	42 (40.4 %)	39 (37.5 %)	39 (37.5 %)	39 (37.5 %)
Pyruvate metabolism	64	19 (29.7 %)	20 (31.2 %)	20 (31.2 %)	20 (31.2 %)
Vitamin B6 metabolism	26	5 (19.2 %)	5 (19.2 %)	5 (19.2 %)	5 (19.2 %)



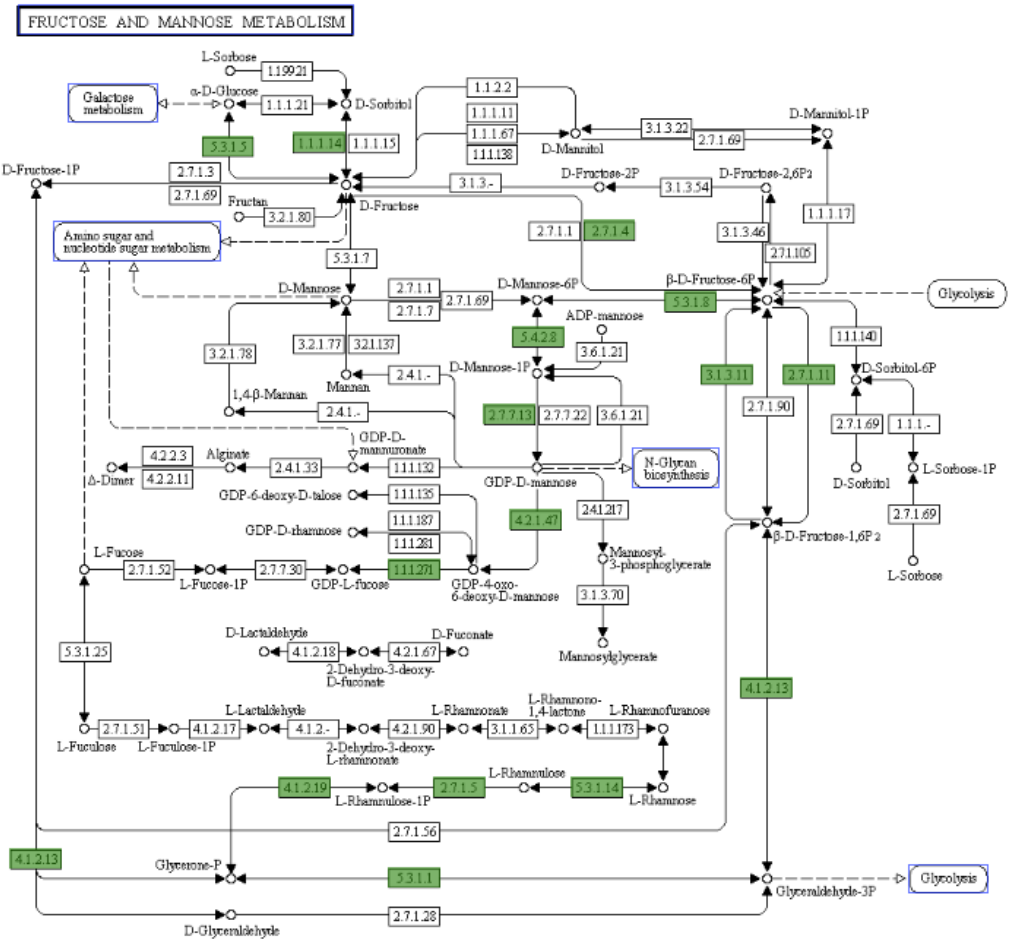
Galactose Metabolism

KEGG map	Distinct ECs	Flavobacterium plurectorum	Unknown sp. 107shovil	Unknown sp. 107unicycler
Amino sugar and nucleotide sugar metabolism	94	30 (31.9 %)	29 (30.9 %)	29 (30.9 %)
Fructose and mannose metabolism	65	18 (27.7 %)	17 (26.2 %)	17 (26.2 %)
Galactose metabolism	37	10 (27.0 %)	11 (29.7 %)	11 (29.7 %)
Glycolysis / Gluconeogenesis	41	18 (43.9 %)	18 (43.9 %)	18 (43.9 %)
Pentose and glucuronate interconversions	56	22 (39.3 %)	22 (39.3 %)	22 (39.3 %)



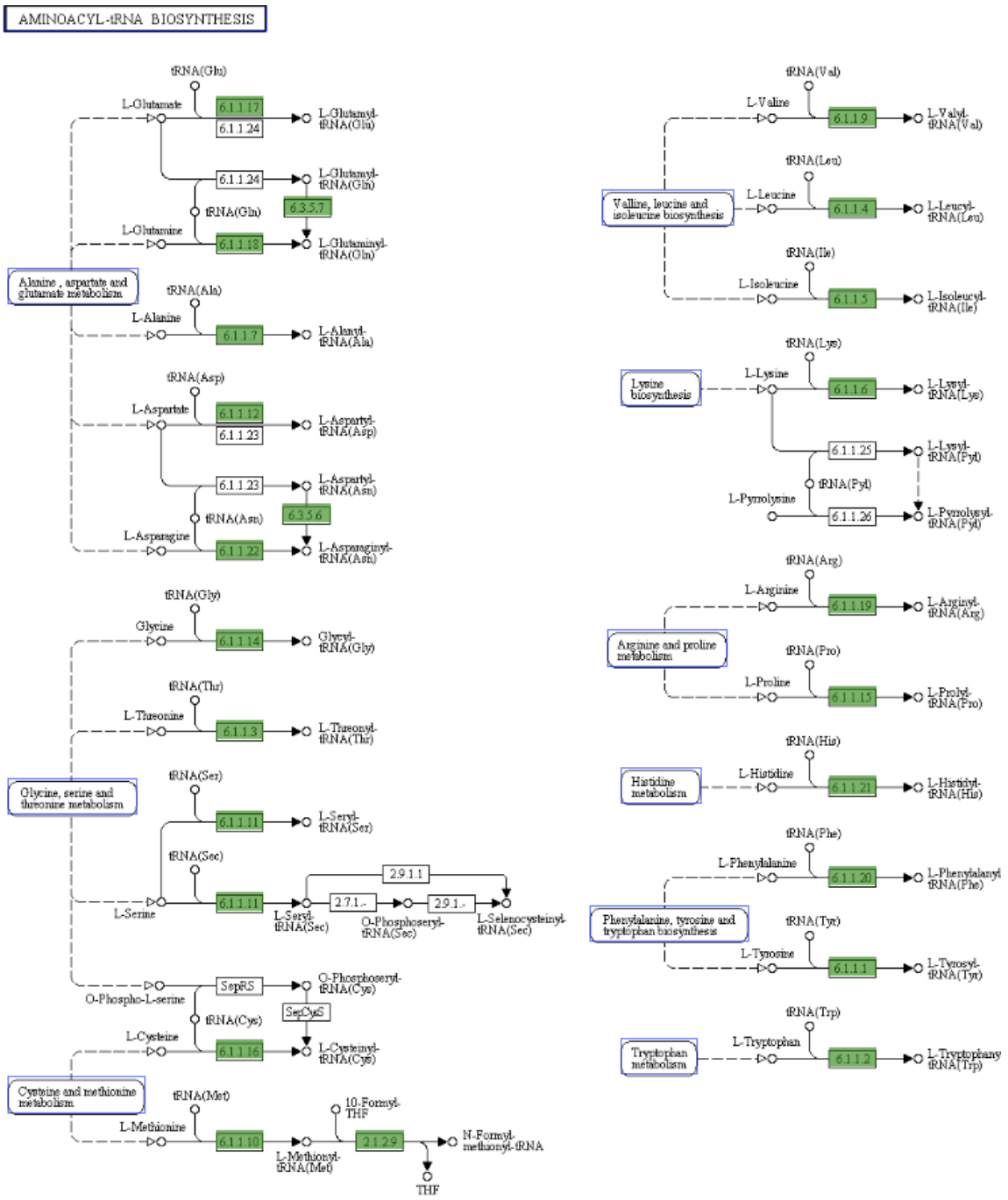
Fructose and Mannose Metabolism

KEGG map	Distinct ECs	Flavobacterium plurectorum	Unknown sp. 107shovil	Unknown sp. 107unicycler	Unknown sp. 107unicycler
Amino sugar and nucleotide sugar metabolism	94	30 (31.9 %)	29 (30.9 %)	29 (30.9 %)	29 (30.9 %)
Fructose and mannose metabolism	65	18 (27.7 %)	17 (26.2 %)	17 (26.2 %)	17 (26.2 %)
Galactose metabolism	37	10 (27.0 %)	11 (29.7 %)	11 (29.7 %)	11 (29.7 %)
Glycolysis / Gluconeogenesis	41	18 (43.9 %)	18 (43.9 %)	18 (43.9 %)	18 (43.9 %)
N-Glycan biosynthesis	29	1 (3.4 %)	1 (3.4 %)	1 (3.4 %)	1 (3.4 %)



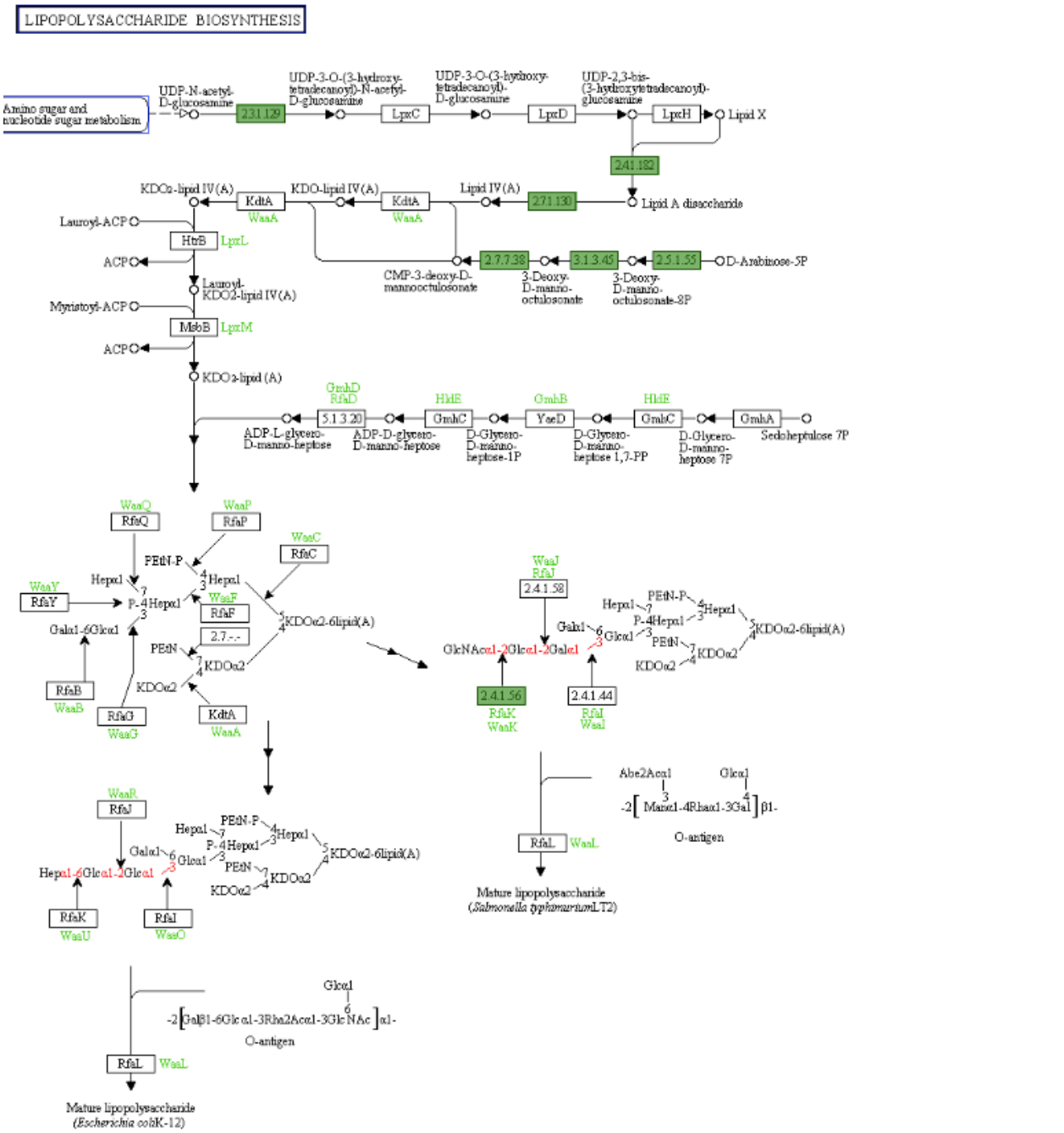
Aminoacyl tRNA biosynthesis

KEGG map	Distinct ECs	Flavobacterium plurectorum	Unknown sp. 107shovil	Unknown sp. 107unicycler	Unknown sp. 107unicycler
Alanine, aspartate and glutamate metabolism	43	20 (46.5 %)	18 (41.9 %)	18 (41.9 %)	18 (41.9 %)
Aminoacyl-tRNA biosynthesis	31	23 (74.2 %)	21 (67.7 %)	21 (67.7 %)	21 (67.7 %)
Arginine and proline metabolism	97	26 (26.8 %)	18 (18.6 %)	18 (18.6 %)	18 (18.6 %)
Cysteine and methionine metabolism	64	20 (31.2 %)	17 (26.6 %)	17 (26.6 %)	17 (26.6 %)
Glycine, serine and threonine metabolism	57	21 (36.8 %)	21 (36.8 %)	21 (36.8 %)	21 (36.8 %)
Histidine metabolism	37	16 (43.2 %)	15 (40.5 %)	15 (40.5 %)	15 (40.5 %)
Lysine biosynthesis	31	13 (41.9 %)	13 (41.9 %)	13 (41.9 %)	13 (41.9 %)
Phenylalanine, tyrosine and tryptophan biosynthesis	31	20 (64.5 %)	20 (64.5 %)	20 (64.5 %)	20 (64.5 %)
Tryptophan metabolism	67	15 (22.4 %)	13 (19.4 %)	13 (19.4 %)	13 (19.4 %)
Valine, leucine and isoleucine biosynthesis	18	14 (77.8 %)	14 (77.8 %)	14 (77.8 %)	14 (77.8 %)



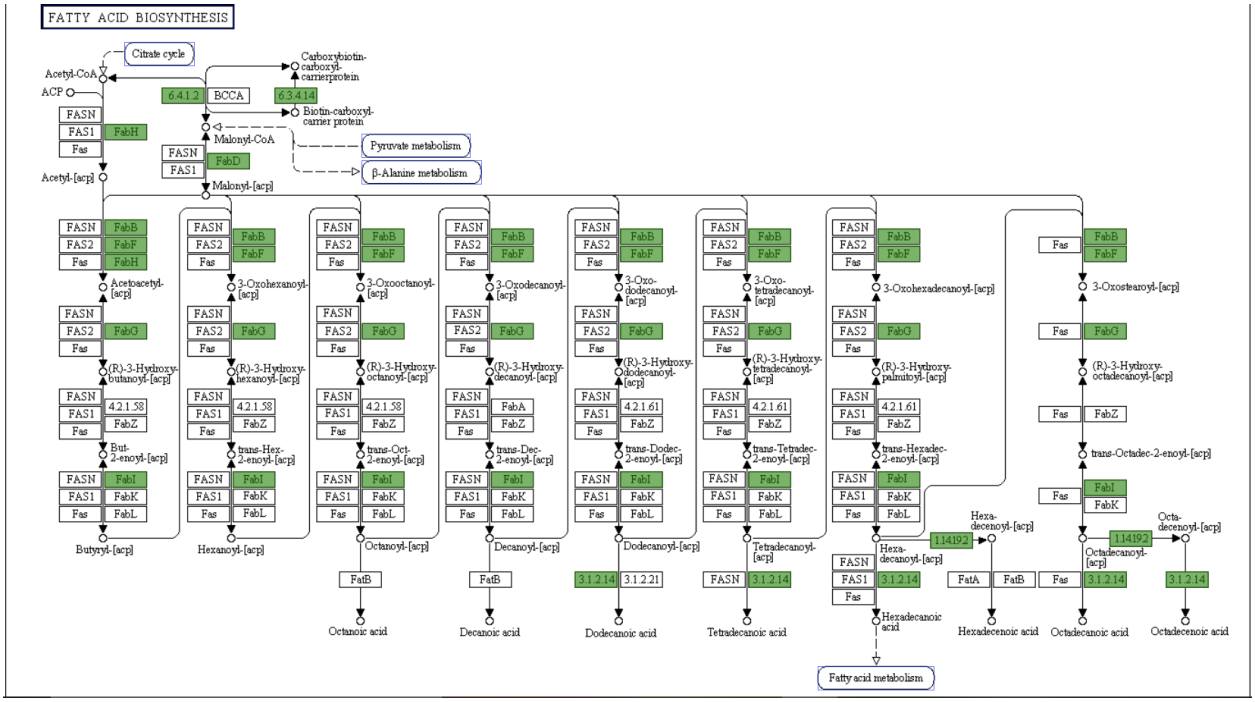
Lipopolysaccharide Biosynthesis

KEGG map	Distinct ECs	Flavobacterium plurectorum	Unknown sp. 107shovil	Unknown sp. 107unicycler	Unknown sp. 107unicycler
Amino sugar and nucleotide sugar metabolism	94	30 (31.9 %)	29 (30.9 %)	29 (30.9 %)	29 (30.9 %)
Lipopolysaccharide biosynthesis	22	14 (63.6 %)	10 (45.5 %)	10 (45.5 %)	10 (45.5 %)

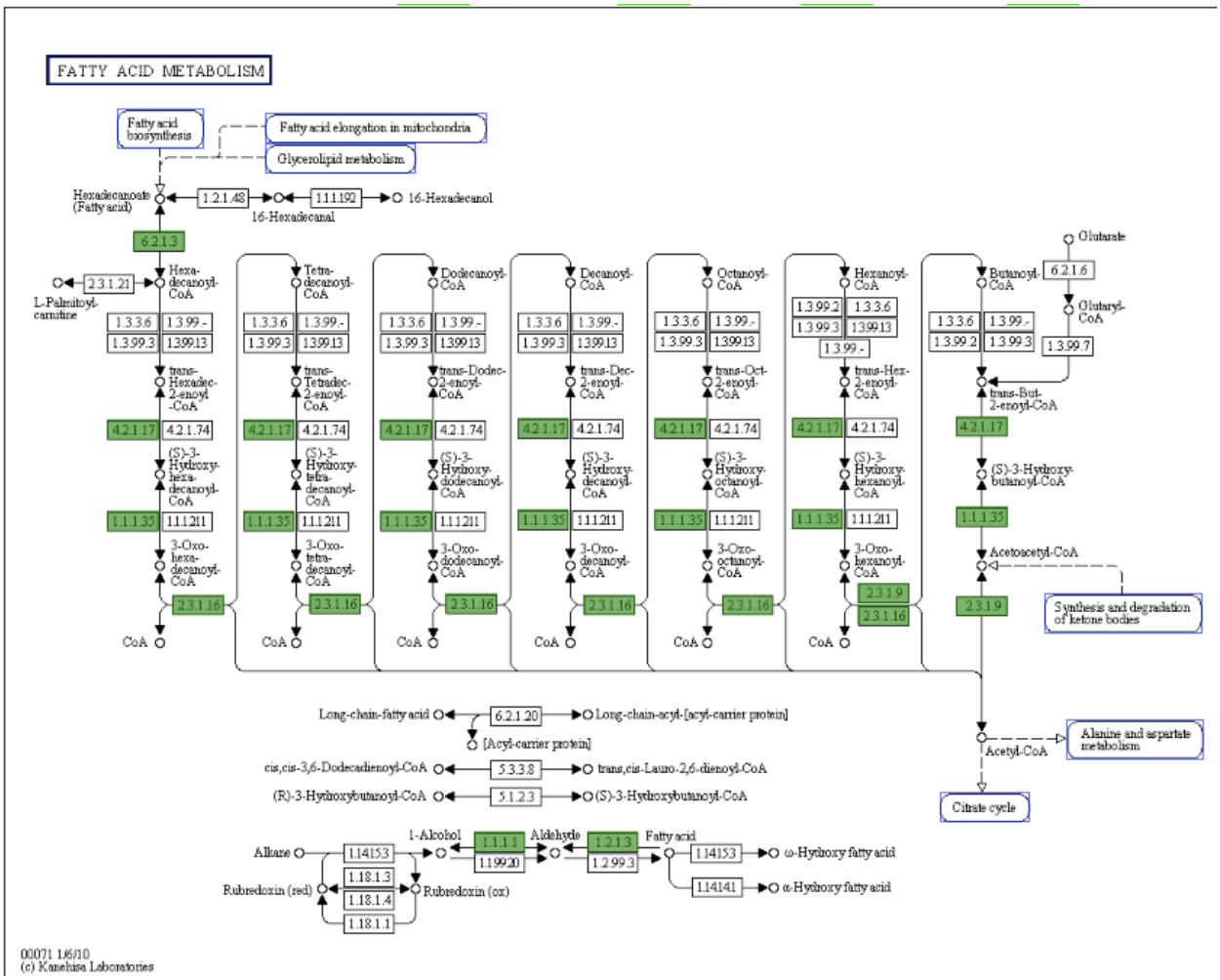


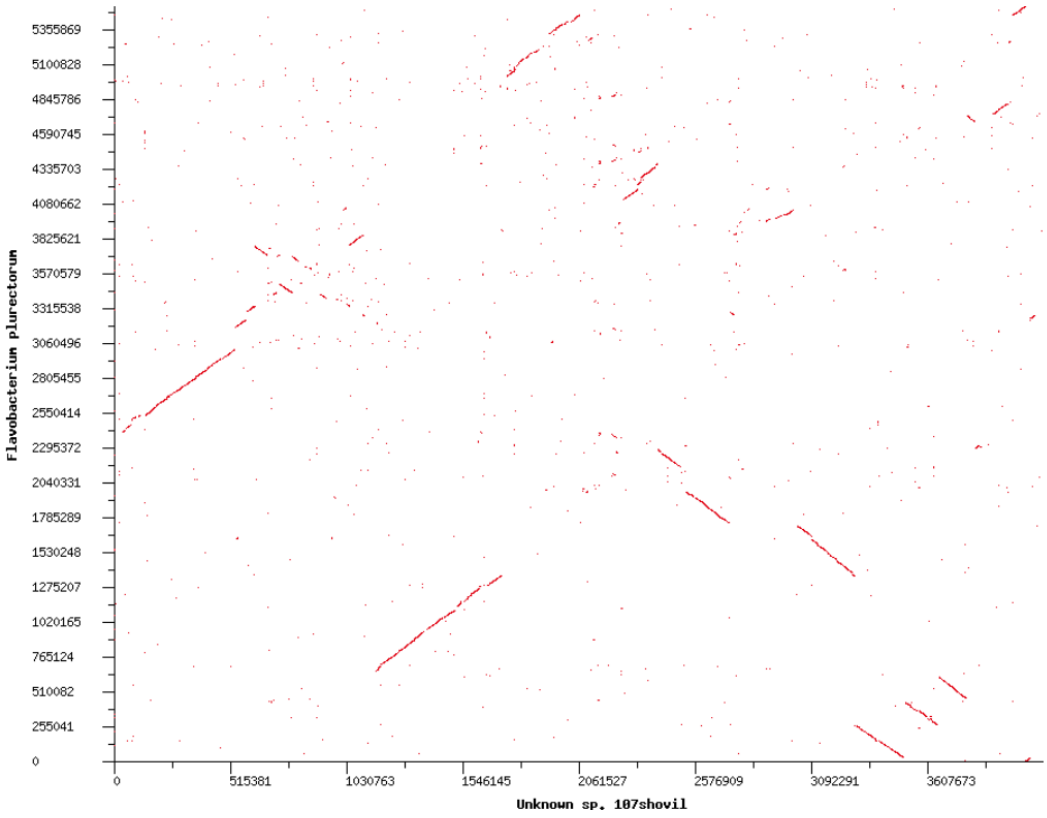
Fatty Acid Biosynthesis

KEGG map	Distinct ECs	Flavobacterium plurectorum	Unknown sp. 107shovil	Unknown sp. 107unicycler	Unknown sp. 107unicycler
Citrate cycle (TCA cycle)	22	13 (59.1 %)	13 (59.1 %)	13 (59.1 %)	13 (59.1 %)
Fatty acid biosynthesis	21	11 (52.4 %)	11 (52.4 %)	11 (52.4 %)	11 (52.4 %)
Fatty acid metabolism	29	8 (27.6 %)	8 (27.6 %)	8 (27.6 %)	8 (27.6 %)
Pyruvate metabolism	64	19 (29.7 %)	20 (31.2 %)	20 (31.2 %)	20 (31.2 %)
beta-Alanine metabolism	32	4 (12.5 %)	4 (12.5 %)	4 (12.5 %)	4 (12.5 %)



Fatty Acid Metabolism

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2550414
2295372
2040331
1785289
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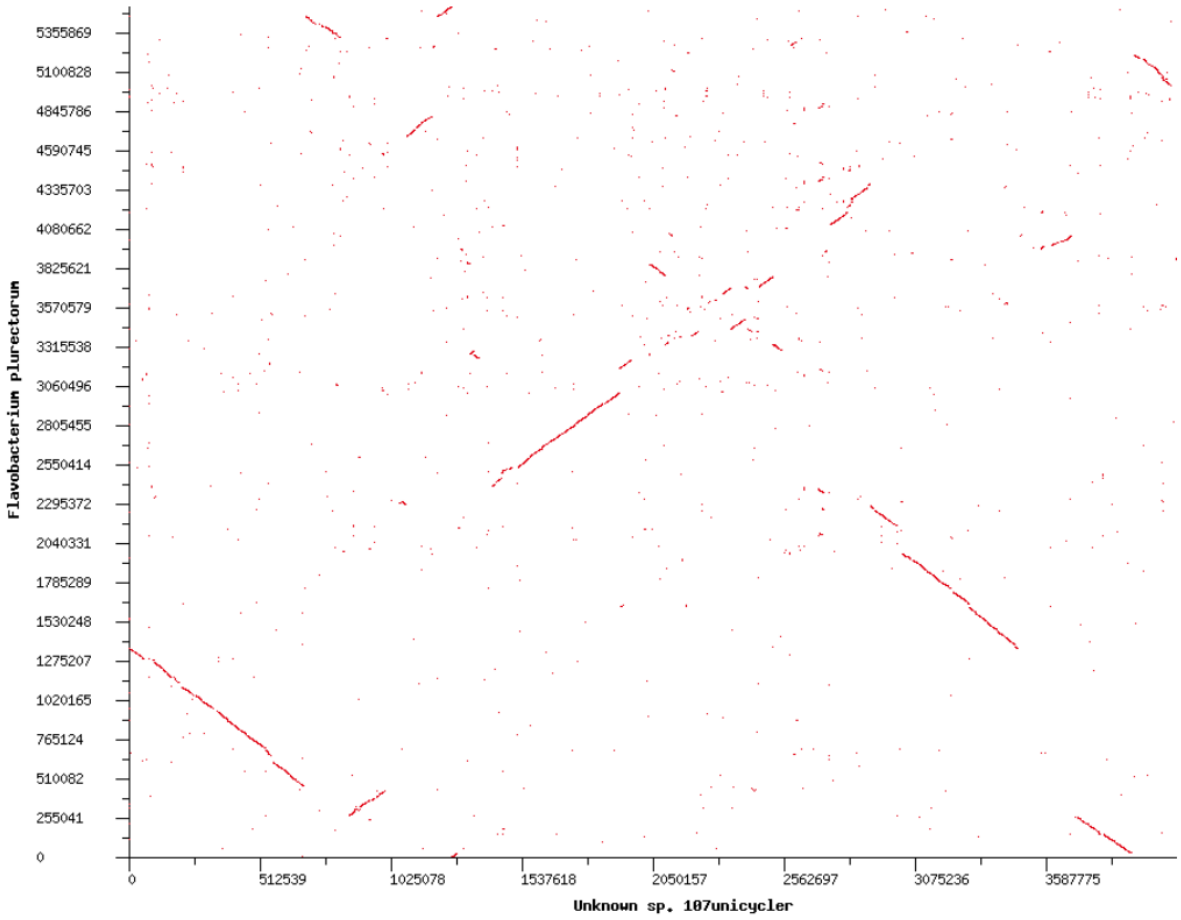
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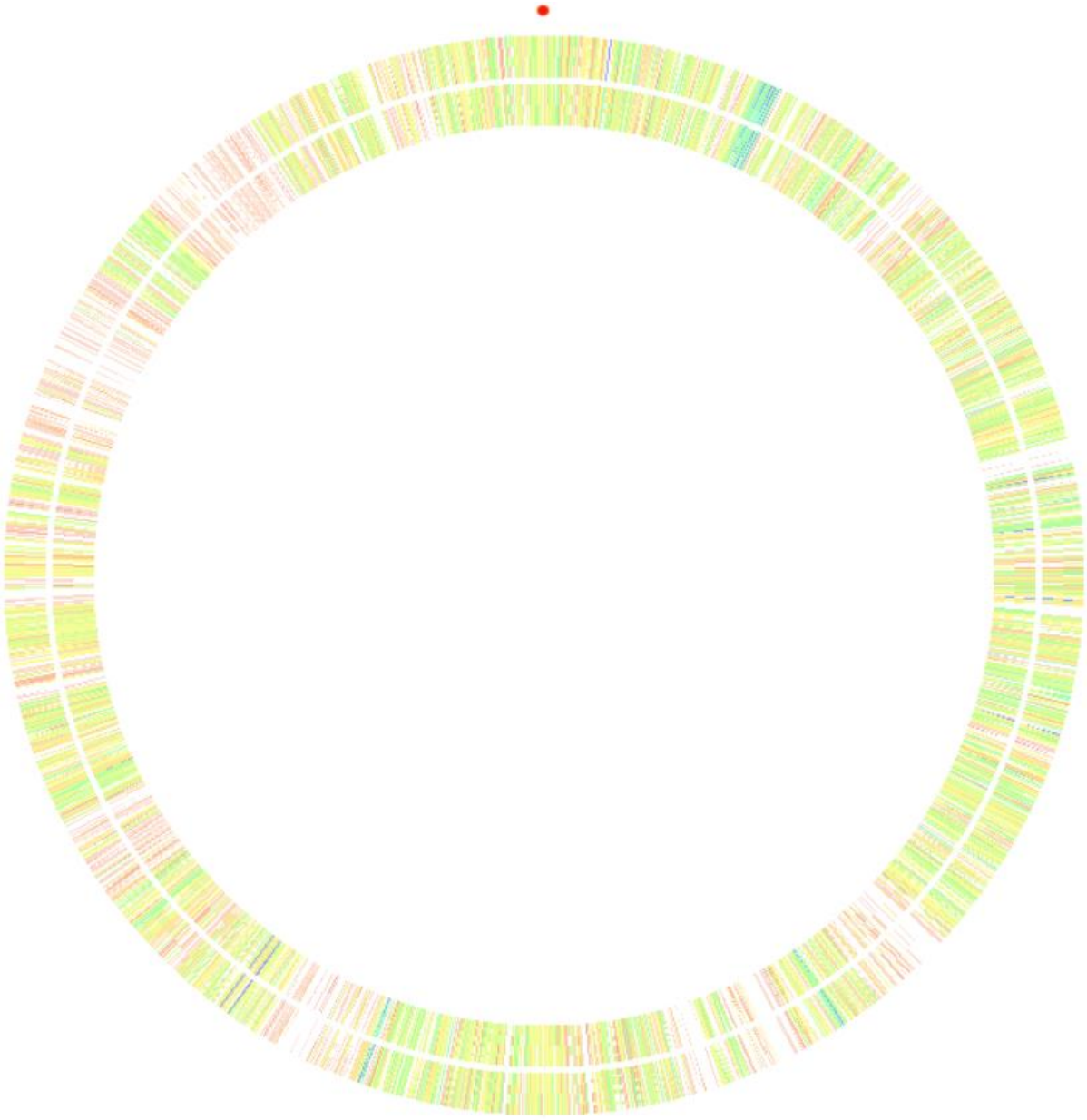

Jayden Nestler

Dr. Sheridan

Bacteriophage Research

In the laboratory, I have acquired and honed a diverse set of skills, ranging from fundamental microbiology techniques like aseptic practice to more intricate procedures such as DNA isolations. Upon initially joining the lab, I was hesitant in executing even the basic techniques. However, over time, I not only developed a heightened confidence in my skills but also gained a profound understanding of the underlying reasons for our methodologies.

My involvement in this lab marked several firsts, including my initial experience with a dilution series, recognition of phage, overlays, agar preparation, centrifuge operation, autoclave usage, etc. These experiences have contributed significantly to my deepened comprehension of microbiology, fostered by the questions I've been able to pose during lab sessions.

Beyond the enrichment of my knowledge, my engagement in the lab has positively influenced my career goals. It has heightened my awareness of opportunities on campus, leading to my role as an undergraduate teaching assistant this Fall semester. Additionally, I intend to leverage this research experience when applying to medical schools and potentially enhancing my job resumes.

Furthermore, my time in the lab has sparked contemplation about pursuing a master’s degree in microbiology, a decision that requires further consideration. I didn’t expect to enjoy the idea and process of research as much as I have and am truly thankful for the experience I have had here at Idaho State University.

Applicant	Salary Requested	Supplies Requested	Travel Requested	Total Requested	Poster Size	Salary Received	Supplies Received	Travel Received	Total Received	Salary Dispersed	MAX 500	MAX 2800
Anika Busz	2550	1600	190	4340	6X25X15	2250	500		2750	2750		2750
Beknazar Tursyngazy	1500	0	0	1500	10X10X15	1500			1500			1500
Caden Freeman	5500	0	0	5500	0	0	0	0	0	0		0
Carly Helbling	1500	0	0	1500	10X10X15	1500			1500			1500
Cornelius Sia	2193	1590	202.5	3985.5	3X28X15	1260	500		1760	1760		1760
Dong Le	5500	0	0	5500	10X28X15	4200			4200			2800
Kenneth Wareham	0	3994.96	0	3994.96	0	0	0	0	0	0		0
Kylie Wilson	1377	400	2650	4427	3X27X15	1215	400	100	1715	1715		1715
Madilyn Sorenson	3360	0	0	3360	8X28X15	3360			3360	3360		2800
McKenzie Bowey	1536	121	0	1657	10X10X15	1500	121		1621	1621		1621
Riley Ziegler	1500	0	0	1500	10X10X15	1500			1500			1500
Sara Muehlhausen	2100	0	251.64	2351.64	5X28X15	2100		251.64	2351.64	2351.64		2352
Shastine Huddelston	2550	600	1850	5000	6X25X15	2250	500		2750	2750		2750
Adyson Clabby	360	630	0	990	4X6X15	360	630	0	990	990		990
Hannah Broyles	360	630	0	990	4X6X15	360	630	0	990	990		990
Ashley Bachman	180	78.5	19.44	277.94	3X6X10	180	0	78.5	258.5	258.5		258.5
Josh Chapman	180	78.5	19.44	277.94	3X6X10	0	0	0	0			0
Dale Takalo	180	78.5	19.44	277.94	3X6X10	0	0	0	0			0
TOTAL		9644.46	5144.14	46596.1					27246.14	18287.64		25286
		5649.5										
								32895.64				

Grand Totals		
Dispersed Supplies	Dispersed Salary	Dispersed Fringe/Overtime
2657.31	30161.57	961.07

STRATEGIC INITIATIVE
Undergraduate Research Funding for STEM Majors at the University of Idaho
FINAL PROJECT REPORT

Submitted to:
Higher Education Research Council
Idaho State Board of Education
P.O. Box 83720
Boise, Idaho 83720-0037

Submitted by:
University of Idaho Office of Undergraduate Research
875 Perimeter Drive
Moscow, ID 83844
October 31, 2023

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4.0 Project Summary Report……Destinee Ditton (Biol. Eng.)
5.0 Project Summary Report……William Auten (Chem./Phys)
6.0 Project Summary Report……Peter Wieber (Biol Eng.)
7.0 Project Summary Report……Jennie Tafoya (Comp Sci)
8.0 Project Summary Report……Juwon Elelu (Elec Eng.)
9.0 Project Summary Report……Katherine Ryssel (AVFS)
10.0 Project Summary Report……Alyssa Livingston (Wildlife)
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15.0 OUR Supported Summer Project……Amara Bailey (Crim. Just.)
16.0 OUR Supported Summer Project……Hunter Rouse (Mov. Sci.)

Appendix 1: Copies of ICUR Posters for SBoE supported SURF Students

Appendix 2: Copies of Posters for OUR supported Summer Students

Executive Summary

Undergraduate research is recognized as a high-impact educational practice that increases the rates of student retention and engagement. At the University of Idaho, it is practiced throughout all units on campus, and it is centrally placed in the institution's strategic plan. The Office of Undergraduate Research (OUR) is taking the lead in enabling research opportunities for undergraduates at UI as it manages various competitive student grant programs that directly support student research.

During AY 2022-23, generous funding from the State Board of Education (SBoE) permitted UI to continue its Summer Undergraduate Research Fellowship (SURF) Program. This intensive 10-week summer research experience actively engages undergraduates in faculty-mentored, independent research. Over the course of the program, students are mentored toward increased independence on their projects. Each student is provided with a $5,000 stipend in the form of a fellowship which allows them to devote full time effort to their projects. Each student is also provided with $1,000 to help offset materials and supplies and other project-related expenses. Selection of student participants is a competitive process in which students submit research proposals to the Office of Undergraduate Research and the Director utilizes faculty affiliates in each college to review the proposals and provide selections. The Director then makes sure that projects all well-represented across colleges. It is important to note that not all projects this cycle required a supply budget. This allowed for us to fund additional students with SBoE funds. For FY 2022-23, the SBoE funding supported **12 SURF** awards. All these students supported by SBoE funds attended and presented the results of their projects at the 2023 Virtual Idaho Conference on Undergraduate Research in July of 2023. These students will also be required to present their results at the UI Undergraduate Research Symposium on April 22, 2024.

Additionally, due to partnerships with programs such as Idaho INBRE as well as various departments on campus, the OUR was able to support **an additional 4 Summer Student projects** that, while outside of STEM disciplined, provided excellent research experiences to these undergraduates. These students were also required to present at the virtual ICUR 2023 and summaries of their projects and a few of their posters are also provided in this report.

End of project feedback from students and their mentors was overwhelmingly positive. Significantly, none of the undergraduate research projects described here would have been possible without the support provided by the State Board of Education. We sincerely thank the Higher Education Research Council and the Idaho State Board of Education for making these experiences possible for our students.

Sincerely,

Kristopher V. Waynant
Director, Office of Undergraduate Research
Associate Professor, Chemistry
kwaynant@uidaho.edu

Final Project Report: Office of Undergraduate Research (OUR) Undergraduate Research Grant – SURF 2023

Fellowship Recipient: **Dillon West**
Faculty Mentor: *Nathan Schiele, Biological Engineering*
Project Title: *Investigating the Effects of TGF-βR2 Inhibition in Mesenchymal Stem Cells*

Abstract: Tendons transfer forces from muscle to bones and are vital in joint movement and injury prevention. However, they have poor self-regeneration capabilities and current rehabilitations are unable to restore damaged tendons to their prior strength. Tissue engineering using mesenchymal stem cells (MSCs) is widely being investigated as a potential means of functional tendon replacement or repair. A current obstacle in this field is the lack of thorough understanding of how to direct MSCs differentiation into specialized tendon cells and control functional tendon formation. The cytokine TGF-β is known to play a key role in this, though its specific mechanisms and signal propagation require further investigation. This research will examine the effects of inhibiting TGF-β type-II receptor to create a better understanding of its signaling pathways within the cell and its role in the production of functional tendon markers. The outcomes of this research will enhance the field of tendon tissue engineering by exposing potential pathways responsible for functional tendon marker creation, allowing for more informed manipulation of MSCs in future studies and regenerative therapies.

Objectives: Obj. 1: Inhibit TGF-βR2 via the chemical Morin and identify impacts on LOX and downstream signaling. **Obj. 2**: Inhibit TGF-βR2 via RNA interference and identify impacts on LOX and downstream signaling.

Results: Morin Inhibition: Initial experiments utilizing morin as a chemical inhibitor required a few iterations as high concentrations of DMSO resulted in cytotoxic effects on the cell cultures (Fig.1A). The first solution of morin in DMSO at 50 μM prepared resulted in a concentration of about 10% DMSO in cell media, which had cytotoxic effects on the cells. The second attempt of preparing a suitable solution resulted in a 2% concentration of DMSO in media, however cytotoxicity was still present. The third attempt allowed a 0.5% concentration and had negligible effects on the cells. However, treatment and morin control groups showed little to no difference in cell morphology, which indicated ineffective inhibition. Western blot analysis further proved morin as an ineffective choice for chemical inhibition of TGF-βR2.

RNA Interference Inhibition: Fluorescent control indicated only the 10 nM concentrations of the constructs had successful transfection into the cells, which led to the 0.1 and 1 nM concentration groups being disregarded. The siRNA construct S1 showed the most effective inhibition based on cell morphology, and its LOX protein band was lighter compared to the negative control construct when evaluated with a western blot, which indicates that TGF-βR2 does play a role in the production of LOX.

Discussion & Future Direction: Morin appears to be an ineffectual choice for inhibition of TGF-βR2 based on the experiments conducted here and the limited literature supporting it. Once the DMSO cytotoxicity was no longer an obstruction, qualitative analysis indicated no substantial difference between morin-treated cell groups and its controls. RNA interference, on the other hand, was able to effectively inhibit TGF-βR2, which negatively impacted LOX levels. This indicates that TGF-βR2 may be crucial in the production of LOX. However, this experiment so far is only n=1, and therefore needs to have further technical replicates ran to validate the initial findings. In the future, the protocol for siRNA inhibition will be ironed out, and the experiments will be repeated to ensure consistency of outcomes.

Summary of Budget Expenditures:

- The student was awarded a $5,000 stipend to conduct this research for 40h/ week over 10 weeks. Spent $538 on supplies.

Acknowledgement: This student's poster is included in Appendix 1

Final Project Report: Office of Undergraduate Research (OUR) Undergraduate Research Grant – SURF 2023

Fellowship Recipient: **Lacey Hunt**
Faculty Mentor: *John Shovic, Electrical Engineering*
Project Title: *Precision Agriculture Adoption and Integration Case Study*

Abstract: Remote sensing systems for precision agriculture allow for technology and automation to improve the profitability and sustainability of modern farms. The adoption of these systems in the United States has been slow, due to the high cost and difficulty using them. The University of Idaho, in collaboration with Laurel Grove Wine Farm in Winchester, Virginia, has been in the process of developing a remote sensing system designed to be low-cost and flexible in its agricultural applications. This new system lacks deterministic testing results for (1) reliability, (2) overall cost, and (3) usability by farmers. This research project aims to test the system's performance in a new application domain: a heritage apple orchard at Sandpoint Organic Agriculture Center. This proposal outlines the tasks related to testing the performance, cost, and user-interaction of the remote sensing system to determine its viability in furthering the usage of precision agriculture in the United States.

Objective: Assembly and Installation of SCARECRO
The researcher installed a fully functioning instance of the SCARECRO system into SOAC consisting of two WeatherRack stations, two Datagators, two Gateways (one for use in the orchard, the other stored locally for testing purposes), and one Middle Agent. A new database instance was also established, as well as physical building of hardware supports in the orchard. An explanation of SCARECRO's operational architecture is necessary for later exception and fault troubleshooting explanations. The WeatherRacks collect environmental data such as temperature, humidity, rainfall, wind speed and direction, and sunlight. These sensor readings are sent to the Gateway via a wired connection, Bluetooth, or 433MHz radio waves depending on the type of sensor. The Datagators collect readings from sensors that are located farther from the Gateway (in this case, soil moisture sensors) and transmit this data to the Gateway via MQTT through a local Wi-Fi Hotspot. The Gateway is responsible for eliminating duplicate messages, keeping track of sensor connections, and sending data to the Middle Agent. The Gateway sends data to the Middle Agent, a cloud computer which handles all data transmission between the Gateway and the database, via MQTT through a Wi-Fi connection to AirVandal Gold. The database stores all collected data for the SOAC installation, which can be retrieved via database queries for display on a dashboard website or used in AI research applications. All components are solar-powered, so South-facing solar supports were also built into each component stand.

Conclusions: This case study demonstrated successful implementation of the SCARECRO system into an entirely new application domain. This system, even after unprecedented obstacles, proved this specific data collection method to be more cost-effective and robust than its commercially available competitors. Currently, despite this system being not quite ready for widespread deployment, is on the right track to be a viable option for a wide variety of agricultural settings looking to incorporate important precision agriculture methods into their work. To further develop the SCARECRO system towards widespread availability, more work must be completed. Some future projects that would aid in this process include other test sites, incorporation of the SOAC horticulturist sensor suggestions, research into the cause of the periodic disconnection from the network, and further troubleshooting of Datagators on site. A new test site (piloted with the locally assembled test Gateway) would allow further conclusions and improvements to be made regarding the implementation of this system in a different agricultural application.

Summary of Budget Expenditures:

- The student was awarded a $5,000 stipend to conduct this research for 40h/ week over 10 weeks. A series of electrical equipment and data sensors were also purchased for this project totalling $854.

Acknowledgement: Poster can be found in Appendix 1

Final Project Report: Office of Undergraduate Research (OUR) Undergraduate Research Grant – SURF 2023

Fellowship Recipient: **Daniel Blanchette**
Faculty Mentor: *Diana Mitchell, Biological Sciences*
Project Title: *Segmentation analyses to identify and quantify microglia in 3D image stacks*

Abstract: Using time-lapse confocal microscopy to record and observe microglia behavior in living zebrafish embryos, the Mitchell lab investigates the molecular basis of dynamic migration and phagocytic behavior of microglia in the central nervous system. Microglial cells regulate brain development, maintain neuronal networks, and repair neural injuries. Timelapse imaging provides crucial insight into the behavior of these cells. Other methods, such as manual cell counting, are subject to human bias and are tedious, repetitive, and time-consuming. The Long computer science lab utilizes Python and open-source modules to develop an automated pipeline as a programmatic solution. These methods aim to expedite and optimize the lab's manual processes. This research project seeks to segment microglia when applied to 3D time series image stacks. Computer segmentation of microglia imaging relies on pixel values to generate bitmasks. Microglia segmentation is challenging because the cell's irregular shape and size can be obscured, resulting in omitted pixel intensity values. Two programs were developed to test the viability of Otsu, multi-Otsu, and Yen automatic thresholding[2]. Both methods separate the raw image into two layers: the foreground and background. Numerical data is generated via histograms to predict optimal threshold values for each algorithm. Prototype implementations of these programs demonstrate viability for microglia counting. However, misclassification of microglia occurs when the predicted pixel threshold is outside the histogram's range. Further refinement of these programs is crucial as they will be foundational for future object classification methods and microglia tracking, optimizing the lab's data processing capabilities and time.

Objectives and Results: The prototype program takes an entire directory tree (folders and subfolders) from the researcher's computer after they adjust the path for their image data. Users also designate an output folder path(to the desktop or otherwise) for storing the results. The thresholding methods of the program are applied to each image in the video frame subfolders. For debugging and lab conformation, a .csv file is generated with data for each frame, z stack position, cell counts, what branched value was used for the threshold, and the threshold value. To help with misclassification, other algorithms can be used to separate the objects. Canny edge detection may be a viable way to distinguish cells close to one another. The overall goal is to ensure separation in all frames of the z-stack to render microglia in 3D space accurately. However, misclassification is not a deal breaker for the lab as their metrics include margins of error for the traditional method of manual counting. While the program being off by one on the cell count may not impact data collection. However, cases where the program counts are greater than or equal to ten cells, may risk skewing the results to the detriment of the lab. One performed better than the other for these programs(Otsu and Yen). Key findings suggest that while both suffered from object misclassification, Otsu and Multi-Otsu were better at setting thresholds to include pixel values closely related. On the other hand, the Multi-Otsu and Yen program performed better when there were high differences between pixel intensity values. Based on the preliminary data, Multi-Otsu and Otsu for the branching logic was the better choice. As segmentation is the foundation for all tracking methods to follow, it is paramount to continue to refine the current program and iterate upon it until a viable cell count is produced. The next step is to classify these 3D objects' shapes for the microglia and upload them to a database. This step will be daunting due to the permutations of known microglia shapes and others that require further observational research via recordings. Once these pieces are in place, tracking methods utilize machine learning and Artificial Intelligence(A.I.) to predict better what composes microglia from the rest of an image.

Summary of Budget Expenditures:

- The student was awarded a $5,000 stipend to conduct this research for 40h/ week over 10 weeks.

Acknowledgement: This student's poster can be found in Appendix 1

Final Project Report: Office of Undergraduate Research (OUR) Undergraduate Research Grant – SURF 2023

Fellowship Recipient: **Destinee Ditton**
Faculty Mentor: *Nathan Schiele, Biological Engineering*
Project Title: *Visualization of Tendon Organization of Rat Tails and Hindlimbs in 3D Using Micro-CT*

Abstract: Tendons are connective, collagenous tissues that transmit mechanical forces to allow for body movement, but tendons injure easily and have poor healing capabilities. New treatment methods are needed, requiring a better understanding of multiscale structure-function relationships through comprehensive imaging. Micro-computed tomography (CT) is an imaging modality that produces three-dimensional (3D), high-resolution images, but is limited to high density objects as the x-rays render low-density soft tissues transparent. To address this issue, we explored a contrast-enhanced technique using a serial dehydration in ethanol and employing a chemical stain, specifically phosphotungstic acid (PTA), to image tendon using 3D micro-CT imaging. Utilizing this new contrast enhancing method, 3D images from tissues initially were analyzed and processed to identify and trace tendon fascicles and analyze the anatomical organization of immature (postnatal day 21) rat tails and hind limbs. From this analysis, we found that tail tendon fascicles appeared to cross between fascicle bundles, whereas it was previously assumed that the fascicle bundles maintain specific tracks within the rat tail tendons. Based on these initial findings, the objective of this study was to visualize the tendons in the tails and hind limbs of both younger and older, sexually mature rats to further validate our imaging technique and evaluate fascicle organization.

Results: The dehydrated and PTA-stained P21 and P50 tails and hindlimbs have clearly visible tendons and other soft tissues, providing additional evidence that this staining and imaging technique is applicable to younger and older (sexually mature P50) rats. Even with their much larger size and increased tissue density with age, PTA staining appears to be effective and penetrated the tissues and enhanced soft tissue contrast. Tendon fascicle organization was examined in both P21 and P50 tails. When viewing the P21 tails and moving from a more proximal to distal location, individual tendon sub-fascicles appear to move from one fascicle bundle to a neighboring fascicle bundle. However, the P50 tails appear to have tendon fascicles that divide into smaller subfascicles, moving from a more proximal to distal location. Tendon insertions in P50 tissue appear to follow a specific pattern of outer fascicle bundles moving to insert at the proximal side of the tail vertebra. Overall, validation of this imaging technique in both young and mature rats has allowed for tracking changes in tendon organization and structure with development. Coupling this contrast-enhancing technique with micro-CT scanning enables clear visualization of tendon and its organization and insertion sites, which advances future studies to determine tendon structure and organization in situ. Ultimately, better understanding of tendon structure-function relationships, including how they transmit mechanical forces, will improve treatment methods for restoring tendon function after an injury.

Summary of Budget Expenditures:

- The student was awarded a $5,000 stipend to conduct this research for 40h/ week over 10 weeks.

Acknowledgement: This student's poster can be found in Appendix 1

Final Project Report: Office of Undergraduate Research (OUR) Undergraduate Research Grant – SURF 2023

Fellowship Recipient: **William Auten**
Faculty Mentor: *Kristopher Waynant, Chemistry*
Project Title: *Design, synthesis, and redesign of therapeutic peptides using SPPS, native chemical ligation, and AutoDock Crankpep*

Abstract: The use of molecular modeling is quickly becoming an essential tool for the experimentalist. In this project, the molecular docking software AutoDock CrankPep (ADCP) will be utilized to analyze a variety of parameters on peptides to determine which parameters are the largest contributors in producing active compounds when synthesized experimentally and give higher accuracy to the computational results. Our hypothesis is that ADCP parameters (whose exactness we are trying to figure out) can be manipulated through inspiration from wet lab data to give scores more like real world values. This will then lead to faster, more efficient methods for the discovery of peptide-based drug/biologically active compounds.

Objectives: Protein-peptide interactions are among the most important interactions in living organisms. Peptides are essentially keys, or activators, that unlock specified functions of proteins. Many of these peptides are hormones. Proteins take on a variety of functions in cells, from structure to transport, from activating cell growth to causing cell death. For this project we will focus on SUMO1 (small ubiquitin-like modifier 1). SUMO1 is a post-translational modifier and is interesting due to its potential in fighting cancerous cell growth. SUMO1 is a well-studied protein and has known peptidic ligands. These peptides are of interest due to their potential therapeutic use. The benefit of a natural peptide as a drug is that peptide production could be induced through genetic therapies. Peptides are notoriously poor drugs when administered orally as most of our digestive system works to destroy peptides before they can enter the lumen. By identifying new natural peptides that bind to SUMO1 and inhibit cell growth, the project can then become a feedback loop that builds from the modeling and learns from the binding experiments to build a better peptide drug. Modeling is a very useful tool that can be used to reduce the amount of work for experimenters. AutoDock CrankPep has been praised for its efficiency and its ability to dock peptides with more residues than other docking methods. ADCP is a *de novo* method. This means that the conformation of the peptide is determined while docking (2). ADCP manages to be less computationally taxing and runs simulations faster than other *de novo* methods.

Conclusions: While this project is still ongoing, there are several advancements that were made over the summer, including gaining access and familiarity with the operation and maintenance of an Isothermal titration calorimeter (ITC), as well as an automated solid-phase peptide synthesizer. Several peptides were synthesized using the automated synthesizer, they were purified with high performance liquid chromatograph (HPLC) and characterized using electrospray ionization mass spectrometry (ESI-MS). Additionally, to create long peptides for this project I continued to advance my skills in a peptide to peptide linking strategy called native chemical ligation (NCL). In NCL, no protecting group is needed and simply requires a cysteine residue somewhere in the sequence. Progress was made and the synthesis of target molecules (connected peptides) was confirmed using mass spectrometry.

Summary of Budget Expenditures:

- The student was awarded a $5,000 stipend to conduct this research for 40h/ week over 10 weeks.

Acknowledgement: This student's poster can be found in Appendix 1

Final Project Report: Office of Undergraduate Research (OUR) Undergraduate Research Grant – SURF 2023

Fellowship Recipient: **Peter Wieber**
Faculty Mentor: *Nathan Schiele, Biological Engineering*
Project Title: *Development of a Bioreactor to Mechanically Stimulate and Evaluate Cell Self-assembled Neotendons*

Abstract: Tendon injuries are common but current repair methods are inadequate. Even with surgical repair, scar tissue and incomplete tendon healing result in prolonged weakness which presents a risk for re-rupture. Thus, new regenerative treatment methods are required. To develop new treatments, mesenchymal stem cells (MSCs) have been explored in tissue engineering strategies to form tendon replacements. Much of the current research is focused on recapitulating adult tendon structure and function using biomaterial scaffolds, but tissue engineering approaches aimed at modeling embryonic tissue development may lead to a new understanding of tissue formation. Our lab has developed a tissue engineering method to guide MSCs to form neotendons through directed cell self-assembly, which appear to mimic the early highly cellular stages of embryonic tendon formation. However, maturation of these neotendons may be limited without the dynamic mechanical stimulation associated with *in vivo* muscle contraction. Applying mechanical stimulation is a unique challenge due to the delicate nature and small size of the neotendons. Thus, our objective was to develop a bioreactor system to mechanically stimulate the neotendons and assess how that stimulation alters cell morphology.

Results: From the cytotoxicity assay, day 1 of treatment with the VeroClearTM(VC) resin extract media saw slightly more rounded cells in the media. However, by day 3 the differences between treatment and control diminished. Cell density appeared to decrease by a small margin when treated with the resin extract, but the resin would be classified as only slight cytotoxicity as described in ISO 10993-5:2009. Therefore, we deemed the VeroClearTM(VC) as an acceptable material and used it to print the main body of the bioreactor chamber (Fig 1C). The bioreactor design meets the design criteria, connects to our prior system [1] and can apply dynamic mechanical loading to neotendons. Additionally, despite their small size (~6 mm long) and fragile nature, the neotendons withstood the process of mounting, gripping, and applying 1% tensile strain. Staining demonstrated that 24 hours after a loading cycle, cells in the neotendon maintained a cohesive structure. No differences were detected between loaded and static controls, and future work will explore higher loading magnitudes and longer timepoints. There are a few suggestions for future work as well including increasing the time of pre-culture or treating the neotendons with a tenogenic factor such as TGF-β2 before applying loading. Lastly, some warping of the bioreactor occurred with multiple ethanol sterilization cycles suggesting that an alternative method (e.g., autoclaving) should be explored to increase the lifespan of the 3D resin-printed parts. In conclusion, we developed and tested a bioreactor system that can successfully apply mechanical stimuli to a cell-self assembled neotendon. Using this system, we can better understand how mechanical tensile loading impacts the early stages of tendon tissue formation *in vitro*.

Summary of Budget Expenditures:

- The student was awarded a $5,000 stipend to conduct this research for 40h/ week over 10 weeks.

Acknowledgement: This student's poster can be found in Appendix 1

Final Project Report: Office of Undergraduate Research (OUR) Undergraduate Research Grant – SURF 2023

Fellowship Recipient: **Jennie Tafoya**
Faculty Mentor: *Robert Rinker, Electrical Engineering*
Project Title: *Tower of Lights Wireless Edition*

Abstract: Small, compact, and powerful, hardware Arduinos are microcontrollers that enable a user to more easily interact with the software utilized in many everyday applications. The unique functionality that the Arduino possesses is the ability to run a multitude of actions and processes synchronously, opening opportunity to perform a variety of processes otherwise difficult to handle on one controller. With the way that the microcontroller's interface is built, it allows those working on the Arduino to work closely with embedded systems. In my project, I plan to further study and exercise the processes that the Arduino can handle, expanding the capability to mass wireless functionality for the purpose of ease of reliable entertainment display in our Vandal Homecoming's Tower of Lights light show. Between the integrated development environment and multi-functional controller, the Arduino enables fluid study between hardware and software components. This summer, I plan to work closely with Dr. Rinker to improve my knowledge and solidify the bridge between the hardware and software world to create a product that envelopes user friendliness with wireless functionality.

Objectives: To expand TowerLights show from Fall 2022 with a completely wireless setup for Fall2023. The Tower of Lights operates by using mechanisms called "light bars". These are LEDs attached by aluminum wire to a microcontroller, all taped onto a wooden beam with a notch running down the middle for wire to run through. There are forty beams made for all forty rooms of the south-facing windows of the Theophilus Tower, between the 2nd and 11th floors. The wireless setup for the TowerLights show involves using Zigbee's Xbee Pro wireless transmitter, modeling the set up utilized for the Vandal Marching Band's LED glasses performances. Rather than using the connections made in the network closet on each floor from a plug-in to the wall, the idea for wireless is to provide portability. By attaching its power source to the beam, the LED circuit can be used in virtually any location.

Conclusions: With my project, I am happy to exclaim that I created a working prototype for the wireless edition of the Tower of Lights. To do this, I had to re-design the circuit involved between the power source, the microcontroller, and the LEDs. With the wired circuit set up, the power was drawn from a bigger power source. With the wireless setup, the power supply was limited to a nine-volt battery, which hindered the emission of light from the LEDs. The green and blue component of the LEDs required a minimum of 3.2 volts to light up each LED. With three LEDs in series, 9 volts simply wasn't enough. To counteract this problem, I studied and analyzed the distribution of power throughout the circuit set-up and concluded that a parallel circuit would deliver enough power without having to make any major changes to the circuit board that the microcontroller sits on. However, with three LEDs, the parallel circuit was lop-sided and may have involved extra resistance to distribute the luminous intensity evenly. By adding another LED, the parallel circuit balanced out. Once the circuit was designed, I soldered it together, taped, and tested it extensively.

Summary of Budget Expenditures:

- The student was awarded a $5,000 stipend to conduct this research for 40h/ week over 10 weeks. Supplies were purchased at $955.

Acknowledgement: This student's poster can be found in Appendix 1

Final Project Report: Office of Undergraduate Research (OUR) Undergraduate Research Grant – SURF 2023

Fellowship Recipient: **Juwon Elelu**
Faculty Mentor: *Herbert Hess, Electrical Engineering*
Project Title: *Reaped electromagnetic energy*

Abstract: Radio Frequency (RF) can be said to be a collective term for electromagnetic energy. This form of energy is derived from electromagnetic radiation which travels through a space between transmission antenna and receiving antenna. The receiving antenna only captured a small amount of RF energy. The purpose of this research is to design and build a system that can harvest the unused RF energy and convert it to useful electricity. We are surrounded by lots of devices that use RF energy in our day-to-day activities. Such devices include mobile phones, remote controls, microwaves, Wi-Fi, radio transmission towers etc. Most of these devices make use of batteries as a source of energy or as backup energy. These batteries are changed from time to time. The used batteries are disposed of in such a way that they cause environmental pollution. So, the need for alternative sources of energy for powering these devices cannot be overemphasized.

Objectives: Reaped electromagnetic harvester was designed to collecting unused RF radiation from its surroundings and convert AC to DC power. The project consisted of the following segments:
• Transmission antenna: The antenna responsible for collecting the radio frequencies. A patch antenna was decided for this project because they are small and flat allowing them to fit easily with circuit boards. The antenna collects energy at radio frequencies of 2.4GHz and uses the microstrip feedline as a feeding method. FR4 epoxy was used as the dielectric substrate for the patch antenna.
• AC to DC converter: Schottky diodes are responsible for collecting the AC current from the reaped RF energy at the antenna and converting into the DC current responsible for powering the device.
• Microcontroller: The microcontroller is responsible for collecting the DC current produced by the converter and performing the given task. The task given was to sense the amount of power passing through into a capacitor and once it had reached a certain amount it would stop the flow of current with the aid of a transistor, until power was needed to be stored again termed: switch mode control.

Project Accomplishments: Reaped electromagnetic harvester was designed to achieve the goal of collecting unused RF radiation from its surroundings and converting it to DC power. I designed and simulated my antenna with the aid of HFSS software to determine which material would be most suitable to make the antenna. From there I proceeded to search for a Schottky diode suitable to convert AC to DC, then I proceeded to make my PCB to allow me to test the parts for DC using an oscilloscope. Results showed that we were getting DC as an output which was a success, but this also led to the discovery that the diode could filter output, thereby acting as a capacitor. It was unexpected but it played in our favor and saved us resources. I used an oscilloscope to determine whether we were successfully getting DC from our circuitry and the outcome was a success. As for the microcontroller I was able to program it to control external hardware which sets the basis for future work. There is room for improvement for both the device and me. I hope to finish the original program after better understanding the MSP430, from there I can combine all units of the device to make it whole and functional. From there I hope to include a sensor into the device to create room for more experiments. And as time goes by future researchers can try new things as well.

Summary of Budget Expenditures: $6,000

- The student was awarded a $5,000 stipend to conduct this research for 40h/ week over 10 weeks. Unfortunately, as Juwon is not an American citizen, his $5,000 stipend was taxed accordingly (30%) and he only received $3,500.
- The student purchased consumables such as PCB boards, transistors, diodes, etc.
- The student printed a poster for $100.

Acknowledgement: This student's poster can be found in Appendix 1

Final Project Report: Office of Undergraduate Research (OUR) Undergraduate Research Grant – SURF 2023

Fellowship Recipient: **Katherine Ryssel**
Faculty Mentor: *James Van Leuven, Animal Veterinary and Food Sciences*
Project Title: *Usage of P. Larvae tailocins to treat American Foulbrood disease in honeybees*

Abstract: Tailocins are antibacterial proteins produced by some bacteria to kill closely related bacterial strains. In nature, this benefits the microbe by offering a way for them to control the bacterial composition of their environments. However, in a lab setting, researchers can use these tailocins to treat against unwanted bacteria. The purpose of this research project is to test whether a tailocin treatment is a viable option in protecting honeybees against the deadly American Foulbrood and European Foulbrood diseases, which are caused by the bacterial species *Paenibacillus larvae* and *Melissococcus plutonius*, respectively. To test this, the proposed research will involve three major parts over the course of the 10-week period. Collection and purification of tailocins from honeybee pathogens will occur over the first two weeks, in vitro analysis of tailocins against strains of P. larvae and M. plutonius will be completed by the fifth week, and in vivo treatment of infected bees by tailocins will be explored for the final 5 weeks. This work addresses the urgent need to develop novel antibacterials and reduce our dependence on traditional antibiotics.

Project Accomplishments: Of the seven *P. Larvae* strains which were tested, five showed tailocin-associated activity. Of those five, two had consistent and replicable results. Possible tailocin activity is considered when a sample creates a zone of inhibition on a bacterial lawn. This can be easily distinguished from the plaques created by a prophage. When diluted, a prophage sample would create multiple smaller plaques on the lawn. A bacteriocin (such as a tailocin) would not create individual plaques, and instead, diluted samples show a faded zone of inhibition resulting from a less efficient killing of bacteria in the area. This kind of activity was seen from strain 368W against 5 of the 7 strains. One of the strains it did not show activity against was itself, which was expected as producing strains are resistant to their products. Strain 25747 showed inhibitory activity against two strains, including one of the strains that 368W was ineffective against. 25747 also showed prophage activity against strain 2605. Additionally, other strains showed activity under certain conditions. Strains Y-3650 and 16425 both showed very light activity against 368W when lawns had very low bacterial concentrations. Strain 3670 showed activity against 4 or 5 other strains in two tests, but such activity has not yet been consistently replicable. Three samples were taken in for TEM imaging. Only two of these samples were clear enough to take pictures. Sample 368W had structures which somewhat resembled F-type tailocins but could be a virus. No tailocin-like structures were found in sample 3670, although some interesting structures were seen. Although samples 368W and 3670 were clear enough to take images, they were still very thick. In the future, a better method of isolation must be found prior to imaging. It may be important to find an imaging facility which has the capability to run a glow discharge on the copper grids. Glow discharge may prevent the clumping of certain charged molecules and therefore allow clearer images to be taken.

Summary of Budget Expenditures:

- The student was awarded a $5,000 stipend to conduct this research for 40h/ week over 10 weeks. Katherine purchased $1000 in supplies.

Acknowledgement: This student's poster can be found in Appendix 1

Final Project Report: Office of Undergraduate Research (OUR) Undergraduate Research Grant – SURF 2023

Fellowship Recipient: Alyssa Livingston
Faculty Mentor: *Eva Strand / Courtney Conway, Natural Resources*
Project Title: *Northern Idaho Ground Squirrel Hypothesis Testing*

Abstract: Using ARCGIS and aerial imaging, I will compare changes in abundance of Northern Idaho Ground Squirrel populations to changes in forest canopy coverage over the past 50 years. I will also overlay these data to spatial footprints of past forest fires within areas that Northern Idaho Ground Squirrels inhabit. These comparisons will allow me to test the prevailing hypothesis for the population declines of this rare species: by testing the prediction that forest fire suppression has allowed tree growth and encroachment into the squirrel's habitat. This hypothesis predicts that the areas with the most pronounced population declines of Northern Idaho Ground Squirrels will have the most pronounced forest encroachment among colonies of Northern Idaho Ground Squirrels.

Project Accomplishments: Two main analyses were run on ArcGIS Pro: zonal statistics of change in tree cover over the past 40 years within the historical range of the Northern Idaho Ground Squirrel and within the squirrels' colony areas only. Results of the first test show that there has been an increase in tree cover in the historical range over the past 40 years. The effect size shows a 50% increase in tree cover through the entirety of the historical range. The tree cover in the historical range changes from 24% to 32% from 1986 to 2022 respectively, meaning that tree cover has increased in the historical range by roughly 8%. Results of the second test show that there has also been an increase in tree cover in the squirrels' colonies over the past 40 years. The effect size again shows a 50% increase in tree cover within extinct and extant colonies. The inhabited range of extant and extinct colonies shows tree cover changing from 7% to 9% from 1986 to 2022 respectively, meaning tree cover percentage has increased roughly 2% in the inhabited range in this time. The fire suppression hypothesis is supported based on two predictions. Forest canopy cover has significantly increased over the last 40 years in both the historical range of the Northern Idaho Ground Squirrel and in the explicit colonies within their range. Canopy cover within the historical range (15% cover) was higher than canopy cover within the actual colonies (5% cover). Experts on this rare species believe that these squirrels need areas with <15% canopy cover. The hypothesis is supported based on our results.

Future Research: I will be continuing this research as my thesis project for my degree. In the future I will be performing the same zonal analysis test on the colony range but split into two groups: extant and extinct. We would like to see if there is a correlation in extinct population areas and higher tree cover percentages. We would then like to do the same thing but use extant (stable or increasing) vs extinct + extant (decreasing). The population data that we have on this species is limited and spotty due to the nature of the squirrel and its hibernation patterns allowing only a small window for field data collection. We would still like to run a linear regression on the data we do have with our tree cover data to see if there is a correlation. We also hope to work with Idaho Fish and Game to get population data that is more conducive to our research to directly compare our data. Through my future research I plan to use more aerial imaging to determine more historic tree cover changes for extinct populations to determine whether there is a correlation. Most populations that are labeled as extinct were noted to be as such in the early 1980's, so I will be looking at aerial images from extinct colony areas and transporting them into ArcGIS Pro to get the zonal statistics and tree cover data for them for times further back than the Rangeland Analysis Platform can go (1986). We would finally like to get canopy cover data in corridors between colonies to see if there is ability for dispersal anymore or not.

Summary of Budget Expenditures:

- The student was awarded a $5,000 stipend to conduct this research for 40h/ week over 10 weeks.
- $150 was spent on travel to Field Sites, $75 was spent on creating a poster.

Acknowledgement: This student's poster can be found in Appendix 1

Final Project Report: Office of Undergraduate Research (OUR) Undergraduate Research Grant – SURF 2023

Fellowship Recipient: **Mason Kilker**
Faculty Mentor: *Sebastian Stoian, Chemistry*
Project Title: *Synthesis and Structural Characterization of Zinc Complexes with N, S donor ligands.*

Abstract: Zinc complexes, which are diamagnetic with no unpaired electrons, are sought after for their unique chemical and biological applications as enzyme analogues or bioinspired catalysts, being relevant to several different areas in pathophysiology and bioinorganic chemistry. These potential applications require an understanding of the structural factors that lead to the desired properties of these compounds. The main goal of this proposal is to prepare a novel series of zinc complexes and to elucidate their coordination modes and structures both in solution, by NMR, and in solid state by *x*-ray crystallography. These complexes will incorporate a tetradentate ligand with N,S donor atoms, either S,S′-**b**is(2- **p**yridylmethyl)-1,2-**t**hio**e**thane (**bpte**) or S,S′-**b**is(2-**p**yridylmethyl)-1,3-**t**hio**p**ropane (**bptp**), and two additional anionic co-ligands NCX-, where X= O; S; Se; and BH3. Because zinc complexes with **bpte** and **bptp** are virtually unexplored, this work will provide access to a large selection of zinc compounds with several diverse structures and will contribute to a greater understanding of steric factors at play in zinc complexation.

Project Accomplishments: We have synthesized and structurally characterized three new complexes, Zn(bpte)(NCS3)2, $[Zn(bpte)(EtOH)_2](ClO4)_2$, and $Cu(bpte)_2$. The solid-state structures of these compounds were elucidated using X-ray crystallography. In addition, a previously synthesized complex, $Zn(bpte)(NCBH_3)_2$, was examined using Nuclear Magnetic Resonance (NMR) spectroscopy. Finally, we have optimized the synthetic protocol used to obtain $Zn(bpte)(NCBH_3)_2$. The bpte and bptp ligands were successfully synthesized using procedures adapted from published methods. Their structures and sample purities were assessed using nuclear magnetic resonance (NMR) spectroscopy. However, we have only explored the coordination chemistry of bpte. $[Zn(bpte)(NCS)_2]$. A new complex, $[Zn(bpte)(NCS)_2]$, was synthesized. The structure of this compound was elucidated through X-ray crystallography. The complex was obtained as clear block crystals and exhibits a slightly distorted octahedral geometry. N-Zn-S angles are approximately 76 degrees (76.4°, 76.7°), and axial N atoms exhibit an angle of 167.7°. The experimental structure is shown in Figure 1 together with the model included in the proposal.

Over the summer of 2023, I was fortunate enough to take part in one workshop and one conference. I attended the Whitworth X-Ray Crystallography Workshop at their Spokane campus, where some basics of X-ray crystallography were covered. Additionally, I was able to present at ICUR in conjunction with my fellow undergraduate researchers.

Summary of Budget Expenditures:

- The student was awarded a $5,000 stipend to conduct this research for 40h/ week over 10 weeks.
- Spent $703 on solvents, reagents, and characterization.
- Workshop Registration was $225.

Acknowledgement: This student's poster can be found in Appendix 1

Final Project Report: Office of Undergraduate Research (OUR) Undergraduate Research Grant – SURF 2023

Fellowship Recipient: **Zaiden Espe**
Faculty Mentor: *Frank Gao, Mathematics and Statistical Science*
Project Title: *Optimizing the Nelder-Mead method via Genetic Programming*

Abstract: This project aims to discover related methods and optimizations to the Nelder-Mead method. The Nelder-Mead method is an algorithm used to solve the unconstrained minimization problem, or function optimization problem that transforms a geometric object throughout the function space. To explore the limits of the Nelder-Mead method, genetic programming will be used. Genetic programming is the most robust approach because it will allow me to search a large space of modifications to the Nelder-Mead algorithm. The research will focus on adjusting the scalar parameters and reflections of the Nelder-Mead transformations. The result will be an algorithm based on the Nelder-Mead method. The expected outcome will exceed the standard Nelder-Mead method and variations.

Objectives: To test the frequency of selection of various reflection vectors in a copy of the comparison Nelder-Mead algorithm. The reflection vectors were called the "rank", "inverse gradient", "slope", "evaluation", "mirror", and "top rank" reflections. Each of these vectors would be calculated at each iteration. Then the resulting vector was used as the centroid is used in the standard Nelder-Mead method to calculate the reflection. The rank vector was calculated using a weighted average of the n-best points in the n-dimensional simplex, with better ranked points having a linearly higher weight than worse points dependent on their rank. The inverse gradient vector was calculated by multiplying the inverse of the matrix generated by subtracting the worst vector from each vector in the simplex with the vector generated by subtracting the evaluation of the worst vector from the evaluation of the other vectors. This final vector gives an estimate of the gradient at the worst point that becomes more accurate as the simplex shrinks. The slope reflection is calculated by finding the slope from the worst point to each other point in the simplex, and then multiplying the new slope vector by the matrix formed by the difference of each vector and the worst vector. The evaluation reflection was calculated by using a weighted average of the n-best points in the simplex. The weights were determined by taking the square root of the difference between the function evaluation of the point and the function evaluation of the worst point. The mirror reflection was calculated by orthogonally projecting the worst vector through the space determined by the n-best vectors. The top rank reflection was formed by taking the rank average, but only with the top n/2-best vectors. Each reflection was tested as the replacement for the centroid vector in the standard Nelder-Mead method. The reflections were also tested in various combinations with each other, and all together, each being evaluated by the algorithm and then the best performing reflection chosen as the reflection. The algorithm was tested with n+k points, k being two or larger. The standard Nelder-Mead algorithm uses n+1 points. For values of k, the algorithm would reflect k-points, using the n-best points to determine the reflection. The value of two for k was tested most extensively. The tests compared how which reflections were chosen for each reflected vector by rank and how the reflections were manipulated via expansion, contraction, or standard reflection.

Results: The most successful algorithm used the standard reflection and mirror reflection with a simplex containing n+2 points. The worst point was always reflected using a mirror reflection except every ten iterations the standard reflection was used, and the second worst point was always reflected using a standard reflection.

Summary of Budget Expenditures:

- The student was awarded a $5,000 stipend to conduct this research for 40h/ week over 10 weeks.

Acknowledgement: Poster can be found in Appendix 1

Final Project Report: Office of Undergraduate Research (OUR) Undergraduate Research Grant – Summer OUR Students' 2023

Fellowship Recipient: **Kendall Mitton**
Faculty Mentor: *Bert Baumgaertner*
Project Title: *Anxiety and the Effectiveness of Fact-Checking*

Abstract: As levels of misinformation rise in the United States, so does the threat to efficient and effective policymaking. Most Americans are misinformed about a variety of topics and actively think and behave against the recommendations and empirical findings of experts. That said, the lack of fact-checking misinformation and failure to accept corrective information has fostered a variety of different problems within our borders (e.g., Qanon/PizzaGate). Anxiety may be a factor in this phenomenon, but it has been largely overlooked in previous research. Building off existing scholarship surrounding these variables, I will conduct an online survey experiment to test the relationship between anxiety and the effectiveness of fact-checking misinformation. The results of this survey will help further our broader understanding of the effect anxiety has on our behavior, as well as when fact-checking misinformation is effective. If society can identify when and how to effectively provide fact-checks, we may be able to minimize the threat misinformation poses to our Democracy.

Objectives: Many scholars have already conducted experiments on the manipulation of information exposure. Most notable for my research is the work of Albertson & Gadarian (2015) and Nyhan & Reifler (2018). Albertson & Gadarian (2015) identify several effects anxiety can have on the information we seek out and the information we are provided with. Furthermore, Nyhan & Reifler (2018) identify ways in which fact-checking effectively works to correct misinformation and misperceptions. While the findings of both these studies provide important knowledge on information exposure, there is a gap in this research that should be further explored. Moreover, the gap I want to bridge is between the types of information/opinions individuals maintain and how or when individuals assimilate new information. Strictly speaking, what effect does anxiety have on the effectiveness of fact-checking misinformation? It is important to fill this gap in our knowledge so that social and political experts will be in a better position to address issues related to misinformation.

Results: To properly identify the relationship between anxiety and misinformation fact-checks on Covid-19 vaccine opinions, I conducted an interaction data analysis. Using an interaction analysis, I was able to look at the interaction of my treatment and control groups for both independent variables on my dependent variable. Put simply, I was able to examine the four following groups: Control = {anxiety control/fact-check control}, Anxiety Dummy = {anxiety treatment/fact-check control}, Fact-Check Dummy = {anxiety control/fact-check treatment}, and the Interaction = {anxiety treatment/fact-check treatment}. Given my research was not focused on the interaction of two control groups, the following results will summarize the interaction of an Anxiety Dummy, a Fact-Check Dummy, and an Interaction. Regarding the Anxiety Dummy variable (i.e., the variable examining respondents in the anxiety treatment/fact-check control group), I found that anxiety has a significant but negative effect on a respondent's individual perceptions about the Covid-19 vaccine. As one can see in the first row of the table, a 1-point increase in the respondent's level of anxiety leads to a .35-point decrease in that individual's perception towards the Covid-19 vaccine. In short, as a respondent's anxiety level increases, the more negative their thoughts about the vaccine will be. Moving forward, I did not find any significant effect of the Fact-Check Dummy variable (i.e., the variable examining respondents in the anxiety control/fact-check treatment group) on individual perceptions about the Covid-19 vaccine. Similarly, I did not find any significant effect of the Interaction variable (i.e., the variable examining respondents in the anxiety treatment/fact-check treatment group) on individual perceptions about the Covid-19 vaccine.

Summary of Budget Expenditures: The student was awarded a $5,000 stipend to conduct this research for 40h/ week over 10 weeks.
Acknowledgement: This student's poster can be found in Appendix 2.

Final Project Report: Office of Undergraduate Research (OUR) Undergraduate Research Grant – Summer OUR Students' 2023

Fellowship Recipient: **Alexandro Aguilar**
Faculty Mentor: *Roger McVey*
Project Title:

Abstract: The purpose of this project is to research, perform, and analyze the piano music of Manuel Maria Ponce and study the influence of Mexican folk music on it, while exploring my own Mexican heritage. My goal is to highlight Ponce as a composer of an underrepresented background by performing his music at two different concerts, one of which I will oversee planning and organizing. The music of Mexican composers such as Ponce, deserves to be in the standard repertoire of classical piano as his artistic merit could be compared to that of other European composers such as Frederic Chopin or Maurice Ravel. It is important to highlight music from people of color and help expand the scope of music as a studied form of art if the study of classical piano were to stay relevant in modern day. I will do this by conducting research study on Ponce's life, influences, and music. I will be showcasing the compositions of Manuel Ponce while bringing awareness to the music of composers from non-euro-centric backgrounds.

Project Accomplishments: From reading on Manuel Ponce's life, analyzing his works for solo piano, and researching the music of Mexico, I found that the traditional folk genres of Mexico had a heavy influence on the compositional style of Manuel Ponce. The Jarabe, Cuban Contradanzas, Sons and Huapangos, and Corridos, all have heavy correlation from their musical motifs to those found in the compositions of Manuel Ponce. Ponce drew inspiration from the rhythmic motifs of these folk genres. There is a musical idea called a "Sesquialtera" that is found in both the music and dance of Mexico. The Sesquialtera is the flexibility between ternary and binary based rhythmic ideas. Manuel Ponce uses the Sesquialtera in an obvious manner in his works Scherzino Mexican and the B sections of the Cuatro Danzas Mexicanas, giving his works a dance topic derived from the rhythmic motifs. Ponce draws melodic inspiration from the traditional corridos that came from the Mexican Revolution which occurred during his early years as a composer. Ponce draws inspiration from the parallel third voicings of corrido melodies and the motific descending diatonic thirds that resolve phrases. He uses this in his Scherzino Mexicano and Romanza De Amor.

I plan to present my work done this Summer in the form of a lecture recital at the Lionel Hampton School of Music in September during Latinx Heritage Month. I will present the music SURF Grant Proposal of Mexico and the life and compositions of Manuel Ponce in the form of a lecture followed by a performance of the works I worked on by Ponce. I also plan on auditioning/applying to present the same work at the Music Teachers National Association National Conference in March of next year. I plan on continuing to research these topics while also learning and performing the works of Manuel Ponce for other events such as my junior and senior performance recitals.

Summary of Budget Expenditures:

- The student was awarded a $5,000 stipend to conduct this research for 40h/ week over 10 weeks.

Acknowledgement:

- This student's poster can be found in Appendix 2
- This student's poster won a 3-minute presentation competition held at UI on the eve of ICUR 2023.

Final Project Report: Office of Undergraduate Research (OUR) Undergraduate Research Grant – Summer OUR Students' 2023

Fellowship Recipient: **Amara Bailey**
Faculty Mentor: *Dr. Omi Hodwitz*
Project Title: *Missing and Murdered Indigenous Women, Girls, and Two-Spirit (MMIWG2) database*

Abstract: The United States and Canada have histories littered with abuse against Indigenous populations. The systemic racism which previously justified genocide and displacement of these communities is upheld today and felt throughout Indigenous communities. The devaluing of Indigenous lives is felt most notably by the epidemic of Missing and Murdered Indigenous Women, Girls, and Two-Spirit individuals (MMIWG2). Underlying this issue is an information deficit surrounding the thousands of cases that exist across Indigenous communities. The MMIWG2 database aims to resolve this problem by being an exhaustive culmination of already existing data from community-led efforts. The MMIWG2 database research involves the collection of MMIWG2 cases, and subsequent authentication of everyone's case.

Project Accomplishments: This summer, approximately 500 cases of MMIWG2 in the United States were coded. Of those 500, only 407 were confirmed and authenticated. The data collected thus is representative of approximately 10% of the collected potential cases. The use of this data to understand the MMIWG2 epidemic would be irresponsible and paint an incomplete picture of the phenomenon. However, the data currently available is valuable in understanding who MMIWG2 are, the demographics of their offenders, as well as a basic understanding of the effectiveness of law enforcement in closing MMIWG2 cases. Of the total confirmed cases, 392 have known ages. Of these, 94 MMIWG2 were under 18 at the time of their victimization. Overwhelmingly, MMIWG2 identify as female. 405 confirmed cases have known genders, of which, 269 are female, 134 are male, 1 is non-binary, and 1 is two-spirit. Only 87 cases have identified at least one offender. Of these, 75 offenders are male and 3 were younger than 18 when they offended. The response by law enforcement in each case is incredibly variable. The role of tribal police is determined by the occurrence of an incident on tribal land; of the confirmed cases, 72, less than 20%, of incidents occurred on reservation. In terms of case resolution generally, there were only 364 cases with known outcomes. 54.7% of these are resolved, meaning an individual or their remains have been located. The remaining 45.3% of cases are still missing a body. Only 21.2% of total confirmed cases had both a known offender and a recovered body.

The data reveal a disturbing trend; many MMIWG2 cases are and remain unsolved. The significant failure to close these cases may be indicative of the ineffectiveness of law enforcement or poor reporting systems for MMIWG2. In many of the unconfirmed cases, no record of the individual existed. In almost all the confirmed cases, Facebook groups and other community-based reporting systems were heavily relied upon, as many individuals were not reflected in state-wide or federal databases. The continuation of investigation into this phenomenon is vital to understanding and eventually preventing the epidemic of MMIWG2. As the number of cases confirmed and coded increases, the data becomes more valuable and versatile. The data collected this summer only verify the intense need for continued research into an issue with almost no study or literature.

Summary of Budget Expenditures:

- The student was awarded a $5,000 stipend to conduct this research for 40h/ week over 10 weeks.

Acknowledgement: This student's poster can be found in Appendix 2

Final Project Report: Office of Undergraduate Research (OUR) Undergraduate Research Grant – Summer OUR Students' 2023

Fellowship Recipient: **Hunter Rouse**
Faculty Mentor: *Joshua Bailey*
Project Title: *Does Functional Power Threshold test differ between bikes*

Abstract: Advancements in technology have continued to push the limits on how cyclists optimize training programs based on intensity. Power measures provide instantaneous feedback reflective of each pedal stroke versus heart rate measures which possess a delayed response. A Functional Threshold Power (FTP) test to establish the average power output during a maximal effort ride is an effective tool to create intensity zones for training.1 FTP tests are traditionally performed outdoors. However, with poor weather or limited routes, they can be performed indoors on stationary trainers. The Wahoo Kickr stationary cycle was designed to resemble a true road cycling experience while staying indoors. Prior to utilizing the Kickr as a tool for completing an FTP test, potential differences between the cyclist road bike and the Kickr need to be established. Therefore, the purpose of the study is to investigate if an individual's performance during an FTP test is affected by the type of stationary bike. Cyclists will perform a 20-minute maximal effort FTP test on their personal bike and one on the Kickr stationary bike. It is hypothesized cyclist will have higher average power output when performing the FTP test on their own bike.

Summary of Budget Expenditures:

- The student was awarded a $5,000 stipend to conduct this research for 40h/ week over 10 weeks.

Acknowledgement:

- This student was selected to give a 45-minute Paired Research Presentation with his mentor at the ICUR 2023 and did not present a poster.

Appendix 1

Determining the role of the TGFβ Type II Receptor on lysyl oxidase production

University of Idaho
Dillon B. West, Colin R. Marchus, and Nathan R. Schiele
Department of Chemical & Biological Engineering, University of Idaho, Moscow, ID
IdahoINBRE

Abstract

Tendons transfer forces from muscle to bone and are vital to movement. Unfortunately, tendons are injured frequently and have poor self-healing capability. Current therapies are unable to restore damaged tendons to their prior strength. Tissue engineering using mesenchymal stem cells (MSCs) is being investigated in strategies to develop functional tendon replacements or repairs. A current challenge is the limited information on the regulators of MSC differentiation into specialized tendon cells (tenogenesis) and control of functional tendon formation. Prior work showed that the transforming growth factor beta (TGFβ) family of cytokines are critical in regulating tenogenesis and the production of lysyl oxidase (LOX), an enzyme that mediates collagen crosslinking and functional tendon formation. TGFβ may activate the TGFβ Type II Receptor (TGFβRII), a transmembrane protein that recruits and phosphorylates TGFβRI when bound by a TGFβ ligand However, how TGF-βRII signaling controls the TGFβ response in MSCs to regulate LOX production is unclear. The objective of this study was to determine how inhibition of TGFβRII impacts LOX levels in MSCs. We are exploring inhibiting TGF-βRII using both a chemical agent as well as siRNA and evaluating the impacts on MSCs and LOX levels. The outcomes of these studies will show how TGFβ signaling through TGFβRII in MSCs regulates LOX levels, which can be used to direct functional tendon tissue formation and future regenerative therapies.

Background

- Tendons are connective tissues that absorb and transmit forces to allow body movement that injure easily and heal poorly
- The cytokine TGFβ is believed to be responsible for the expression of functional tendon markers such as lysyl oxidase (LOX)
- LOX is an enzyme that mediates the crosslinking of collagen in tendons
- There is a limited understanding of how the signaling pathways between TGFβ Type I and Type II Receptors may differ

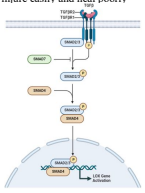
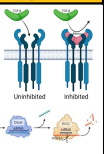


Figure 1: The TGF-β signaling pathway starts with the dimerization of TGFβR1 & RII upon ligand binding. SMAD 2/3 are then activated & phosphorylated before recruiting SMAD 4, transducing into the nucleus, & enhancing LOX expression (BioRender)

Objective: ***Identify how TGFβ Type II Receptor impacts lysyl oxidase production***

Experimental Design

- The role of TGFβRII can be investigated via inhibition methods
- Morin was found in literature to be a potential chemical inhibitor of TGFβRII
  - However, there was little support and TGFβRII may have the ability to auto-phosphorylate
- RNA interference utilizing siRNA (short interference RNA) was selected as a secondary method to disrupt TGFβRII levels



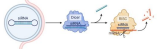
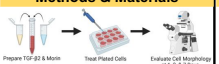


Figure 2: Competitive chemical inhibition blocks ligand binding & thus cell signaling, while siRNA degrades the mRNA that produces the receptor (BioRender)

Experiment 1: TGFβ Type II Receptor Chemical Inhibition

Methods & Materials



- Murine MSCs were plated in 10% FBS
- After 24 hours, media changed to 1% FBS
- After 48 hours, treatments include:
  - Morin & TGFβ2, morin vehicle control (DMSO, VC) and TGFβ2, morin and TGFβ2 VC (H_2O), & morin VC and TGFβ2 VC.
  - Morin was at 0.5, 5, & 50 μM and TGFβ2 at 50 ng/mL.
- Cells were imaged, collected at 1, 3, 7 days

Morin may not impact LOX

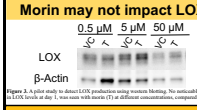


Figure 3: A pilot study to detect LOX production using western blotting. No noticeable change in LOX levels at day 1, was seen with morin (T) at different concentrations, compared to VCs.

Trial 1

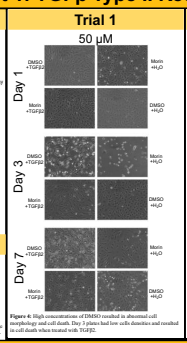


Figure 4: High concentrations of DMSO resulted in abnormal cell morphology and cell death. Day 3 plates had few cells densities and resulted in cell death when treated with TGFβ2.

Trial 2

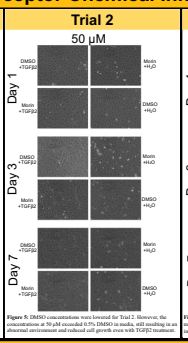


Figure 5: DMSO concentrations were lowered for Trial 2. However, the concentrations at 50 μM exceeded 0.5% DMSO in media, still resulting in an abnormal environment and reduced cell growth even with TGFβ2 treatment.

Trial 3

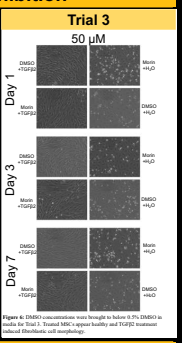
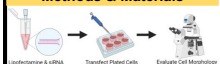


Figure 6: DMSO concentrations were brought to below 0.5% DMSO in media for Trial 3. Treated MSCs appear healthy and TGFβ2 treatment induced fibroblastic cell morphology.

Experiment 2: TGFβ Type II Receptor siRNA Inhibition

Methods & Materials



- Murine MSCs were plated in 10% FBS
- After 24 hours, the cells are washed, and media changed to 1% FBS
- After 48 hours, a solution of lipofectamine and siRNA was prepared and pipetted into plated cells for transfection
  - 0.1, 1, and 10 nM were tested for each construct and control
- 48 hours after transfection, the cells were treated with 50 ng/mL of TGFβ2
  - Cells were imaged and collected after 24 and 48 hours

Fluorescent Control

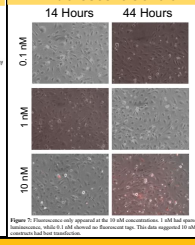


Figure 7: Fluorescence only appeared at the 10 nM concentrations. 1 nM had sparse luminescence, while 0.1 nM showed no fluorescent tags. This data suggested 10 nM constructs had best transfection.

TGFβ2 Treatment

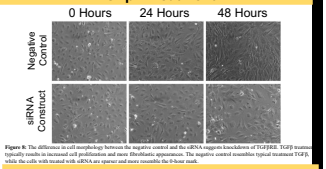


Figure 8: The difference in cell morphology between the negative control and the siRNA suggests knockdown of TGFβRII. TGFβ treated typically results in increased cell proliferation and more fibroblastic appearances. The negative control resembles typical treatment TGFβ, while the cells with treated with siRNA are sparser and more resemble the 0-hour mark.

LOX levels with siRNA and TGFβ2 treatment

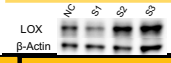


Figure 9: A pilot study to detect LOX production using western blotting. Cells were collected after 48 hours of TGF2 treatment following siRNA transfection with a negative control (NC), and with three different unique siRNA constructs (S1, S2, S3). TGFβRII knockdown may impact LOX levels, but this will need additional study.

Discussion & Future Directions

The observable cell morphology differences between morin and its vehicle control are negligible. The cell morphology differences between the siRNA construct and its negative control suggest a more thorough inhibition of TGFβRII. In the future, additional timepoints and siRNA knockdowns will be analyzed to quantify the levels of SMAD activation and LOX protein levels to better understand the role of TGFβRII.

Acknowledgements

This project was supported by the Office of Undergraduate Research, the Summer Undergraduate Research Fellowship program, NSF Grant # 2145004, and the INBRE Program, NIH Grant No. P20 GM103408 (National Institute of General Medical Science).

Precision Agriculture Adoption and Integration Case Study

SCARECRO
Lacey Hunt, Dr. John Shovic, Mary Everett, Garrett Wells, Walter Neils
Department of Computer Science, University of Idaho
University of Idaho

Introduction

- Precision agriculture describes a variety of emerging technological systems and tools for use in crop and livestock farming
  - Improve profitability for farmers [1]
  - Potentially reduce negative climatic impacts of farming [2]
- Remote sensing is a tool that has not been widely adopted, despite availability of these systems [3]
  - This is due to high cost and lack of usability
- Sensor Collection And Remote Environment Care Reasoning Operation (SCARECRO) system
  - Modular, extensible, open-source system that uses low-cost hardware to resolve cost and usability issues
  - Consists of a gateway, middle agent, weredog, and sensors
  - Send data collected by sensors to database to be stored, displayed, and used in AI models
  - Already implemented in Laurel Grove Wine Farm in Winchester, VA
- This project aims to test this system's performance in a new application domain: a heritage apple orchard at Sandpoint Organic Agriculture Center (SOAC)
  - Observe performance, compare cost, and evaluate usability

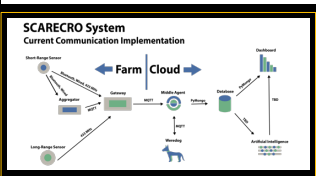


Figure 1: SCARECRO communication diagram

Methods

- Performance
  - Perform routine system maintenance and determine uptime
  - Write automated tools in Python to find system faults
- Cost
  - Calculate labor and component implementation cost
  - Compare to other similar remote sensing systems
- Usability
  - Integrate dashboard to display relevant data
  - Regularly survey farmer regarding system functionality

Figure 2: Left to right: Datagator, Gateway, WeatherRack Station

Progress

- Assembly and installation of all system components is complete (Figure 2)
  - Gateway to eliminate duplicate messages, keep track of sensor connections, and send data to the database
  - Aggregator (Datagator) to collect and transmit readings from sensors located further away from the gateway
  - WeatherRack (both WR2 and WR3 models used) to collect weather data
  - Middle agent to handle data transmission to gateway and/or database on cloud computer
- Integration of a dashboard to view collected data from database (Figure 3)
- System usage and usability surveys
  - Conducted virtually over a 10-week period (will start late summer)
  - Used to discover the usability of the system and dashboard as well as ask for suggestions to improve the system in the future
- Began cost analysis of current structure and comparison to similar systems

Figure 3: SOAC Dashboard

Results

- Performance
  - System assembly and implementation was successful
  - Consistent data coming in
  - Occasional continuous network connectivity issues
- Preliminary research showed financial advantage to using SCARECRO as compared to other similar systems
- Initial discussions with horticulturalists at SOAC proved this system's usefulness and room for input

Future Work

- Conduct and analyze continued farmer surveys
- Implement SOAC horticulturalist suggestions
  - Light canopy sensors to quantify benefits of pruning
  - Degree day modeling for pest control
- Installation of additional local test unit (Harbor Center)
  - Help test reliability in a new setting
- Troubleshoot connection issues in gateway

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[2] P. A. C. T. Force. (2021, November 10) Task Force for Reviewing the Connectivity and Technology Needs of Precision Agriculture in the United States." Available: https://www.fcc.gov/sites/default/files/precision-ag-report-11102021.pdf

[3] Lowenberg-DeBoer, J. and Erickson, B. (2019, July 1). Setting the Record Straight on Precision Agriculture Adoption. Available: https://acsess.onlinelibrary.wiley.com/doi/full/10.2134/agronj2018.12.0779

Acknowledgements

Thank you to Mary Everett, for her role as project lead and SCARECRO architect; Garrett Wells, for his design of the Datagator; Walter Neils, for his direction as the Dashboard lead of the Laurel Grove site; and Kyle Nagy, for his contribution as the SOAC Operations Manager and subject of human research. This project was funded thanks to an Office of Undergraduate Research SURF grant in the summer of 2023.

Learn more about me, my research project, and keep up with my future projects here:

Segmentation analyses to identify and quantify microglia in 3D image stacks

[1]University of Idaho, [2]Lewis-Clark State College
[3]Department of Computer Science, [4]Department of Biological Sciences
Dan Blanchette[1], Dr. Samuel Seth Long[2,3], Dr. Diana Mitchell[1, 4]

ABSTRACT

Using time-lapse confocal microscopy to record and observe microglia behavior in living zebrafish embryos, the Mitchell lab investigates the molecular basis of dynamic migration and phagocytic behavior of microglia in the central nervous system. Microglial cells regulate brain development, maintain neuronal networks, and repair neural injuries. Timelapse imaging provides crucial insight into the behavior of these cells. Other methods, such as manual cell counting, are subject to human bias and are tedious, repetitive, and time-consuming. The Long computer science lab utilizes Python and open-source modules to develop an automated pipeline as a programmatic solution. These methods aim to expedite and optimize the lab's manual processes. This research project seeks to segment microglia when applied to 3D time series image stacks. Computer segmentation of microglia imaging relies on pixel values to generate bitmasks. Microglia segmentation is challenging because the cell's irregular shape and size can be obscured, resulting in omitted pixel intensity values. Two programs were developed to test the viability of Otsu, multi-Otsu, and Yen automatic thresholding[2]. Both methods separate the raw image into two layers: the foreground and background. Numerical data is generated via histograms to predict optimal threshold values for each algorithm. Prototype implementations of these programs demonstrate viability for microglia counting. However, misclassification of microglia occurs when the predicted pixel threshold is outside the histogram's range. Further refinement of these programs is crucial as they will be foundational for future object classification methods and microglia tracking, optimizing the lab's data processing capabilities and time.

INTRODUCTION

- Microglial cells regulate brain development, maintain neuronal networks, and repair neural injuries.
- Bit masking is the method of isolating specific color value combinations (objects of interest) from the rest of a digital image.
- Previous versions of this program were applied to 2D images with a set threshold value. The aim of this iteration is to adapt dynamic thresholding methods to 3D image stacks.

METHODS

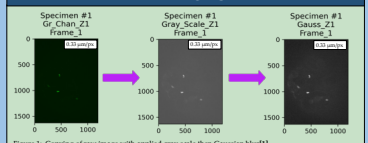

Figure 1: Copying of raw image with applied gray scale then Gaussian blur[1].
(NOTE: all images were recorded at 20x magnification)

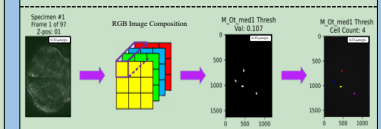

Figure 2: Multi-Otsu and Yen's automatic thresholding algorithms for image segmentation.

RESULTS

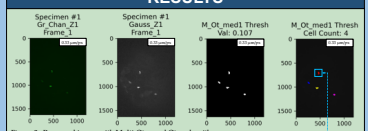

Figure 3: Processed image with Multi-Otsu and Otsu algorithm.

Multi-Otsu and Otsu Automatic Thresholding Results

Frame	ID	Z-pos	Cell Count	Thresh Method	Threshold Value
1	1	4	M_Ot_med1 Thresh	0.107	
1	2	6	Fixed Thresh	0.11	
1	3	8	M_Ot_med1 Thresh	0.116	
1	4	9	M_Ot_med1 Thresh	0.107	
1	5	8	Fixed Thresh	0.11	
1	6	9	Fixed Thresh	0.11	
1	7	7	Fixed Thresh	0.11	
1	8	14	Fixed Thresh	0.11	
1	9	14	Fixed Thresh	0.11	
1	10	15	Fixed Thresh	0.11	
1	11	15	Fixed Thresh	0.11	
1	12	13	Adj_Max_Thresh	0.11	
1	13	18	mod_Max_Thresh	0.092	
1	14	8	Adj_Max_Thresh	0.11	
1	15	7	Adj_Max_Thresh	0.11	
1	16	-7	Adj_Max_Thresh	0.11	
1	17	15	mod_Max_Thresh	0.094	
1	18	24	mod_Max_Thresh	0.09	
1	19	7	mod_Max_Thresh	0.109	

Table 1: Multi-Otsu and Otsu results.

Figure 4: Mis-classified object

RESULTS (CONT.)

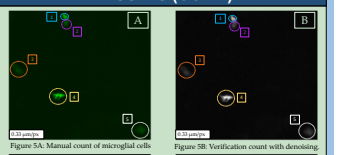

Figure 5A: Manual count of microglial cells
Figure 5B: Verification count with denoising.
Figure 5C: Program pixel intensity bitmask
Figure 5D: Program color fill and count

CONCLUSIONS / FUTURE WORK

- The programs provide comparisons between image data sets.
- Further research and experimentation is required to improve results.
- Future object classification and tracking methods will be applied via machine learning or A.I. algorithms.

ACKNOLWEDGEMENTS

- The Mitchell lab for their assistance with the biological science and terminology related to this project.
- Jordan Reed for her insights on testing multiple thresholding methods to enhance program performance.
- This project was made possible by SURF/INBRE.

The project described was supported by an Institutional Development Award (IDeA) from the National Institute of General Medical Sciences of the National Institutes of Health under Grant #P20GM103408

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Visualization of tendon organization and fascicle crossover in 3D using micro-CT

Destinee M. Ditton[1], Colin R. Marchus[1], Michele R. Brumley[2], and Nathan R. Schiele[1]
[1]Department of Chemical & Biological Engineering, University of Idaho, Moscow, ID, [2]Department of Psychology, Idaho State University, Pocatello, ID

Abstract

Micro-computed tomography (CT) is an x-ray-based imaging modality that produces three-dimensional (3D), high-resolution images of whole-mount tissues, but is limited to dense tissues, such as bone. The x-rays readily pass through tendons, rendering them transparent. Contrast-enhancing chemical stains have been explored, but their use to improve contrast in tendon for micro-CT imaging had not been systematically evaluated. To address this, our previous investigation showed that phosphotungstic acid (PTA) staining increased x-ray absorption of tendon to enhance tissue contrast and obtain 3D micro-CT images of rat tendons within the tail and hindlimb. Further, we demonstrated that tissue hydration state significantly impacts soft tissue contrast. Utilizing this new contrast enhancing method, 3D images from tissues were analyzed and processed to identify and trace tendon fascicles and analyze the anatomical organization of the tail and hind limb. From this analysis, we found that tail tendon fascicles appeared to cross between fascicle bundles, whereas it was assumed that the fascicle bundles maintain specific tracks within the tendon. Based on these initial findings, we extended our study and investigated the tails and hind limbs of younger and older, sexually mature rats to evaluate tendon fascicle crossover as a function of age. Ultimately, contrast-enhanced 3D micro-CT imaging will lead to better understanding of tendon structure, and relationships between the bone and soft tissues.

Background

- Tendons are connective tissues that absorb and transmit forces to allow body movement that injure easily and heal poorly
- Need to understand structure-function relationships with comprehensive imaging
- Soft tissues are difficult to visualize *in situ*
  - Using a micro-CT scanner allows 3D visualization of tissue, but requires high density materials
  - Phosphotungstic acid (PTA) stains collagenous tissues for observation with micro-CT
- Identified most effective contrast-enhancing technique for micro-CT imaging of tendon

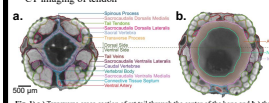


Fig. 1) a.) Transverse cross-section of rat tail through the center of the bone and **b.)** through the intervertebral disc showing anatomical structures.

Objective: ***Validate a contrast-enhancing imaging technique for a range of ages and evaluate structural changes in the tendon with development***

Methods and Materials

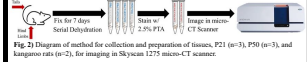


Fig. 2) Diagram of method for collection and preparation of tissues, P21 (n=3), P50 (n=3), and kangaroo rats (n=2), for imaging in Skyscan 1275 micro-CT scanner.

- P21 rats stained for 10 days and imaged at 70 kV and 59-63 µA
- P50 rats stained for 11 days and imaged at 70 kV and 40-61 µA
- Kangaroo rats stained for 1 ½ months and imaged at 60-70 kV and 57-86 µA

Imaging technique allows for comparison of skeletal development

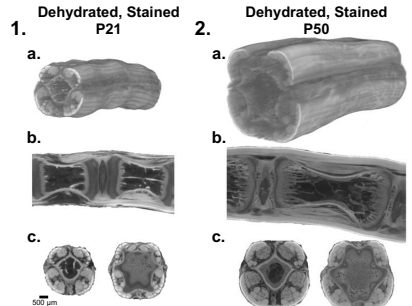


Fig. 3) 1-2. a.) Three dimensional images of rat tail midsection. **1-2. b.)** Images of sagittal tail cross-sections through the center. **1-2. c.)** Images of transverse tail cross-sections through the center of the bone (left) and the start of the end plate (right). **3-4. a.)** Three dimensional images of rat hindlimbs. **3-4. b.)** Sagittal cross-section of hindlimb.

Tendon fascicle crossover seen in younger and older, sexually mature rats

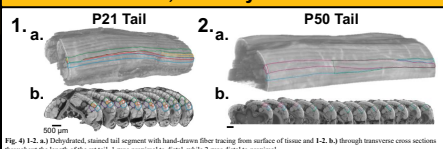


Fig. 4) 1-2. a.) Dehydrated, stained tail segment with hand-drawn fiber tracing from surface of tissue and **1-2. b.)** through transverse cross sections throughout the length of the rat tail. 1 runs proximal to distal, while 2 runs distal to proximal.

Tendon insertion pattern visible in tails

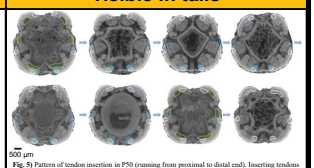


Fig. 5) Pattern of tendon insertion in P50 (running from proximal to distal end). Inserting tendons are outlined in blue, insertion sites in green, and the next set of inserting tendons in white.

Discussion & Conclusion

- Bone calcification and tissue growth seen in age comparison
- Tendon crossover seen in both P21 and P50, however, yet to see tendon fascicles joining different bundles in P50
- Within tail, tendons insert into bone in a specific pattern
- New procedural findings, including stain stability and skin removal impact on stain penetrance

Further Applications

- Implications of method development includes:
  - Fascicle/fiber tracing across length of sample
  - Examination of tendon development across age groups
  - Analysis of tendons in different species/genotypes
- Examination of other animals/rat species anatomy
  - Analysis of kangaroo rat musculoskeletal system and tendon organization/attachment

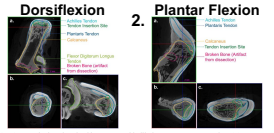


Fig. 6) 1-2. a.) Dehydrated, stained kangaroo rat hindlimb transverse cross-section, **1-2. b.)** frontal cross-section, and **1-2. c.)** sagittal cross-section displaying anatomical structures.

Acknowledgements

This project was supported by the M.J. Murdock Charitable Trust (micro-CT scanner), the University of Idaho Office of Undergraduate Research – S.U.R.F and an Institutional Development Award (IDeA) from the National Institute of General Medical Sciences of the National Institutes of Health under Grant #P20GM103408.

Design, synthesis, and redesign of therapeutic peptides using SPPS, native chemical ligation, and AutoDock Crankpep

William Auten[1,2], Matt Womelduff[2], Kristopher Waynant[1], F. Marty Ytreberg[2], Darren A. Thompson[1,3]

[1]Dept. of Chemistry, University of Idaho, [2]Dept. Of Physics, University of Idaho, [3]Peptidaho Research Consortium

Abstract

The use of molecular modeling is quickly becoming an essential tool for the experimentalist. In this project, the molecular docking software AutoDock CrankPep (ADCP) was utilized to analyze a variety of parameters on peptide sequences to determine which are the largest contributors in producing active compounds when synthesized experimentally and which provide the most accuracy to the computational results. Our hypothesis is that ADCP parameters (whose exactness we are trying to figure out,) can be manipulated through inspiration from wet lab data to give scores more similar to real world values. This will then lead to faster, more efficient methods for the discovery of peptide-based drugs / biologically active compounds.

Introduction

Two Projects (Figure 1).

- **Project 1**: Linking peptides utilizing native chemical ligation and a novel peptide linker.
  - Resulting dipeptide has two C-termini.
- **Project 2**: Devise peptide modeling method for ADCP.
  - Current ADCP runs produce data that strays from *in situ* data.

Figure 1a. (Project 1) A peptide linker (purple) linking two peptides (blue and red).

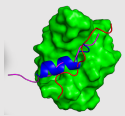


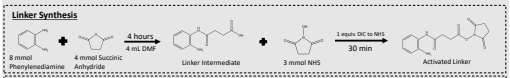
Figure 1b. (Project 2) SUMO1 (green) docked with the DAXX peptide, among other peptides.

Acknowledgments

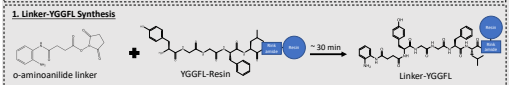
Thank you to Lee Deobald and the Mass Spec Core Facility for help with analysis.
The project described was supported by an Institutional Development Award (IDeA) from the National Institute of General Medical Sciences of the National Institutes of Health under Grant #P20GM103408.

Project 1 Methods – Linker Synthesis and Native Chemical Ligation

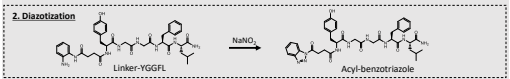
Linker Synthesis



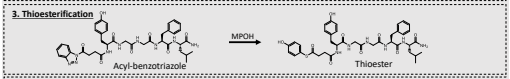
1. Linker-YGGFL Synthesis



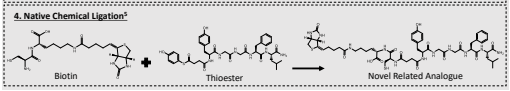
2. Diazotization



3. Thioesterification



4. Native Chemical Ligation[5]



Project 2 Methods – SUMO1, AutoDock CrankPep, and Peptide Docking

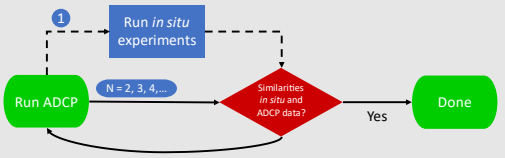


Figure 2. A general scheme of the project. "N" = number of runs.

Project 1 Results

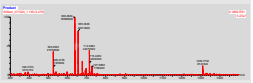


Figure 3. An example mass spectrum from the linker synthesis.

Project 2 Results

Sequence	50 Reps Δe^6 MC Steps	100 Reps Δe^6 MC Steps	200 Reps Δe^6 MC Steps	500 Reps Δe^6 MC Steps
DAXX[1.0]-SUMO1	-13.9	-14.4	-15.0	-14.0
DAXX[0.9]-SUMO1	-14.0	-14.4	-14.8	-14.9
DAXX[0.8]-SUMO1	-13.9	-15.0	-14.8	-14.8
DAXX[0.7]-SUMO1	-14.0	-14.9	-15.0	-14.9
DAXX[0.6]-SUMO1	-13.9	-13.6	-15.0	-14.9
DAXX[0.5]-SUMO1	-13.9	-13.9	-14.9	-13.9
DAXX[0.4]-SUMO1	-13.9	-13.9	-14.9	-13.9
DAXX[0.3]-SUMO1	-13.9	-13.6	-14.8	-14.9
DAXX[0.2]-SUMO1	-13.9	-13.9	-14.8	-14.9
DAXX[0.1]-SUMO1	-13.9	-13.9	-14.8	-14.9
DAXX-SUMO1	-13.9	-13.9	-14.8	-14.9
DAXX-SUMO1	-13.9	-13.9	-14.8	-14.9

Figure 4. Comparison of several ADCP runs. The header of each column describes tested parameters of the run, these being the number of replicates and the number of Monte Carlo steps. The green highlights in the "Sequence" column represents residue mutations of the wildtype (DAXX), represented in the first row. The yellow and red highlights accentuate the highest and lowest affinity of each set of parameters/column respectively.

Discussion

Current Work:

- Currently generating *in silico* affinities using ADCP
- Currently collecting chromatograms and mass spectra for the peptide linker project

Future Work:

- Will use SPPS to synthesize peptides in ADCP work, then ITC to generate experimental binding affinities
- Finish collecting characterization data
- Finish collecting docking affinities *in situ* and *in silico*
- Compare *in silico* and *in situ* docking affinities and run different parameters to possibly determine which parameters allow for more accurate binding predictions

Work Cited

(1) *Targeting SUMO Signaling to Wreathe Cancer*. Jessie S. Knoonen 1 and Alfred C.O. Vertegaal.

(2) Cistrone, P. A.; Bird, M. J.; Flood, D. T.; Silvestri, A. P.; Hirtzen, J. C. J.; Thompson, D. A.; Dawson, P. E. Native Chemical Ligation of Peptides and Proteins. *Curr. Protoc. Chem. Biol.* **2019**, *11* (1), e61. https://doi.org/10.1002/cpch.61.

Development of a bioreactor to mechanically stimulate cell self-assembled neotendons

Peter J. Wieber, Colin R. Marchus, and Nathan R. Schiele

Department of Chemical & Biological Engineering, University of Idaho, Moscow, ID

Abstract

Tendon injuries are common but current repair methods are inadequate. Even with surgical repair, scar tissue and incomplete tendon healing result in prolonged weakness which presents a risk for re-rupture. Thus, new regenerative treatment methods are required. To develop new treatments, mesenchymal stem cells (MSCs) have been explored in tissue engineering strategies to form tendon replacements. Our lab has developed a tissue engineering method to guide MSCs to form neotendons through directed cell self-assembly, which appear to mimic the early highly cellular stages of embryonic tendon formation. However, neotendon maturation in culture may be limited without the dynamic mechanical stimulation associated with *in vivo* muscle contraction. Applying mechanical stimulation is a unique challenge due to the neotendons' delicate nature and small size. To address this issue, a new bioreactor system was developed using Solidworks modeling software. The bioreactor was designed to be watertight and incorporate a novel loading mechanism that secures and applies tensile loads to the neotendon, while remaining compatible with an existing motor and controller. Before resin 3D printing the bioreactor, resins were tested for cytotoxicity, and minimal changes in cell viability were observed. Using this new bioreactor design, neotendons were dynamically stretched (1% strain at 0.1 Hz for 4 hrs) and the cell morphology was qualitatively evaluated, compared to static controls. Outcomes of this study will advance tendon tissue engineering strategies by improving our understanding of how mechanical loading impacts tendon formation.

Background

- Tendons are essential for the transfer of forces from muscle to bone
- Current treatments are ineffective often due to scar formation
- Much of the current stem cell research works to mimic adult tissue structures
- Mimicking embryonic tissue may be more clinically relevant when it comes to tissue regeneration and repair
- Mechanical stimulation has been shown to induce tenogenesis in MSCs
- Scaffold-free 3D cell culture has proved difficult to mechanically stimulate

Objective:

To develop a bioreactor system to mechanically stimulate 3D scaffold-free cell self-assembled neotendons and to assess how said stimulation alters cell morphology

Methods and Materials

Cytotoxicity Assay

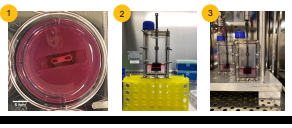
- Resin samples were designed using Solidworks 3D modeling software and were 3D-printed on a Stratasys J850 printer
- Potential volatile organic compounds and cytotoxic residues were extracted by incubating resin samples in cell culture media for 1, 2, and 3 days
- Cells were grown with resin extract media in a 12-well plate for 1 days
- Cytotoxicity was qualitatively assessed following ISO 10993-5:2009

Bioreactor Design Methods

- Components were designed using SolidWorks 3D modeling software
- Bioreactor was 3D-printed with VeroClear™ (VC) Resin on a Stratasys J850
- Accessory components were 3D-printed with PLA plastic on an Ender 3 printer

Mechanical Stimulation Methods

1. Neotendon were grown at a seeding density of 3 million cells per construct
2. After 48 hours of preculture, neotendons were loaded into bioreactor chamber
3. Neotendons were cyclically loaded with 1% strain at 0.1 Hz for 4 hours



Design Criteria and Implementation

Soft requirements

- Accessories fit in a 50 mL centrifuge tube for easy storage and sterilization (1-5, 7, 9)
- Maintain alignment for future mechanical property test applications (1-3, 5-7)
- Minimize media usage (8, 9)
- Minimize cell trauma (1, 3, 5-7)
- Simplify loading procedure (1-9)
- Reduce undesired mobility (1-9)
- Reduce alterations to the existing neotendon architecture (3, 6, 7)
- Improve reproducibility (1-9)
- Easy to adapt/modular design (1-5, 7-9)

Hard requirements

- Non-cytotoxic (1-9)
- Watertight (6)
- Compatible with existing motor and controller (1-9)
- Able to be disinfected (1-9)
- Secure neotendon without slipping or breaking (3, 4, 6-9)
- Allow for gas diffusion (6)

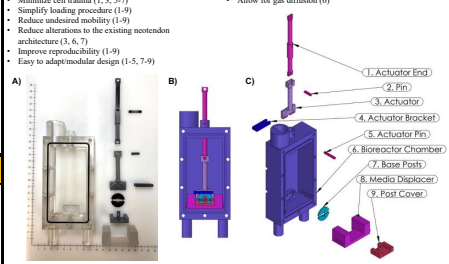


Figure 1: Real images and digital render of the bioreactor assembly. If a part meets a criteria, the part number is listed under said criteria. **A)** Exploded view (Ruler increments = 1 cm). **B)** Front view render. **C)** Exploded view render with labels.

Minimal Cytotoxicity from VeroClear™ Resin

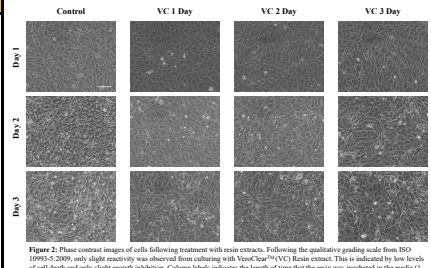


Figure 2: Phase contrast images of cells following treatment with resin extracts. Following the qualitative grading scale from ISO 10993-5:2009, only slight reactivity was observed from culturing with VeroClear™ (VC) Resin extract. This is indicated by low levels of cell death and only slight growth inhibition. Column labels indicates the length of time that the resin was incubated in the media (1, 2, and 3 days respectively) while row labels indicate the length of the treatment with the extract. Scale bar = 200 µm.

Proof of Concept

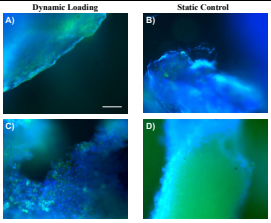


Figure 3: Representative fluorescent images of neotendons. **A, C)** Neotendon post mechanical stimulation. **B, D)** Static control neotendon. While cell nuclei are present, and actin is being produced, it is difficult to comment on cell morphology. Blue = DAPI stained cell nuclei. Green = Phalloidin stained actin cytoskeleton. Scale bar = 200 µm

Discussion

- VC Resin was non-cytotoxic and did not leak
- Components successfully integrate with the motor and controller
- Ethanol sterilization led to bioreactor deterioration
- Bioreactor is capable of providing mechanical stimulation to the neotendons
- Loading and collecting process avoids breaking the neotendon
- **Design is feasible for future mechanical studies**

Conclusion and Outlook

- Resolve neotendon disintegration
  - Longer preculture
  - Treat with TGF-β2
- Address durability issues
  - Sterilize by autoclave, UV
  - Explore alternate materials
- Improve imaging process to reduce blurring and improve qualitative analysis
  - Remove neotendon from uneven agarose
  - Spinning disk confocal microscope to address the 3D nature of the neotendons
- Western blot for quantification of protein

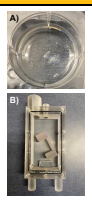
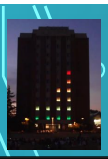


Figure 4: Characteristic problems seen over the course of the experiments. **A)** Breakdown of the neotendon after fixation in 10% formalin. **B)** Flaking on the periphery of the bioreactor.

Acknowledgements

The project described was supported by an Institutional Development Award (IDeA) from the National Institute of General Medical Sciences of the National Institutes of Health under Grant #P20GM103408, NSF Grant #2145004, and the Office of Undergraduate Research. The contents of the project are solely the responsibility of the authors and do not necessarily represent the official views of NIH.



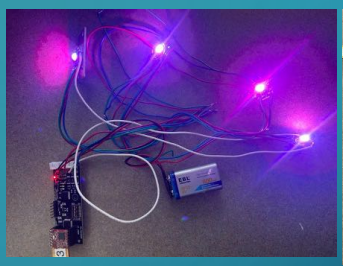
WIRELESS TOWER OF LIGHTS

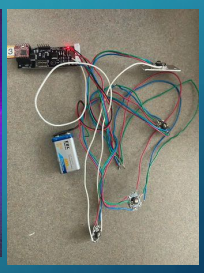
An undergraduate research presentation for the Idaho Conference of Undergraduate Research, conducted at University of Idaho

THE SITUATION

Every year, the University of Idaho hosts a lights show in the windows of the eleven-floor Theophilus Tower after the Homecoming serpentine march. Forty rooms are equipped with LED lights situated on wooden beams. All of these beams are connected into the wall through wire, which routes down with more wire to a networking closet in the basement, where more wire is connected to a large microcontroller, or the "brains" of the operation. *This is too much wire.*

The microcontroller communicates with all of the rooms to light up the LEDs, changing according to code written in C++, which is connected to a laptop via a lengthy wire out to the field where the music and lights display is broadcasted.





THE PROBLEM

This is a lot of wire to deal with. Not only does it make it difficult to set-up, all connections need to be ensured, and there is a small loss of energy through the wires to the top-level floors. To make the set-up for the Tower of Lights show easier, I collaborated with Dr. Rinker to create a wireless set-up for the Tower of Lights. To do this, we needed to think through two different problems: power utilization and wireless communication. Now that the power wasn't being drawn from a wired set-up, we needed to think how the LEDs could supply their own energy. For power, we re-designed our LED circuit to accommodate a common nine-volt battery. For communication, we utilized a wireless transmitter device that connects into the laptop and forty wireless transceivers attached to a small microcontroller, one for each room.

THE RESULTS

By switching to wireless technology using transceivers, we were able to address the communication challenges and overcome the issue of efficiency through wireless technology. We re-formatted the communication by placing hand-held microcontrollers on each beam and adding a transceiver to each. The mother of all transceivers that communicates to all is a transmitter that is connected via USB into a laptop using the Linux operating system. By re-designing the LED circuits, we were able to provide power to each LED beam and also add an extra LED to each beam. Setting two sets of two LEDs in parallel, or side-by-side, rather than in series, or a line-up, made the power running through the circuit more efficient without noticeably reducing luminous intensity.

Reaped Electromagnetic Energy

DEPARTMENT OF ELECTRICAL AND COMPUTER ENGINEERING,
UNIVERSITY OF IDAHO

Juwon Elelu

University of Idaho

University of Idaho

Abstract

Radio Frequency (RF) can be said to be a collective term for electromagnetic energy. This form of energy is derived from electromagnetic radiation which travels through space between a transmission antenna and receiving antenna. The receiving antenna only captured a small amount of RF energy.

The purpose of this research is to design and build a system that can harvest ubiquitous unused RF energy and convert it to useful electricity. The device was composed of several units. First was the antenna responsible for collecting the Electromagnetic energy from the environment as AC current. In order for the device to power a load the current has to be in DC, and so an AC to DC converter or rectifier was used. This formed the second unit of the device. The last unit of the device, the microcontroller served as the load that was programmed to store a certain amount of energy in a capacitor by switch mode control. These units were designed individually, assembled as a circuit, then tested to get results.

Introduction

We are surrounded by lots of devices that use RF energy in our day-to-day activities. Such devices include mobile phones, remote controls, microwaves, Wi-Fi, radio transmission towers etc. Most of these devices make use of batteries as a source of energy or as backup energy. These batteries are changed from time to time. The used batteries are disposed of in such a way that they cause environmental pollution. So, the need for alternative sources of energy for powering these devices cannot be overemphasized.

Figure 1: Battery pollution https://gsiwaste.com/battery-recycling-is-important-for-environmental-health/

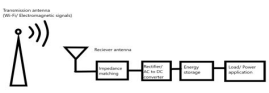
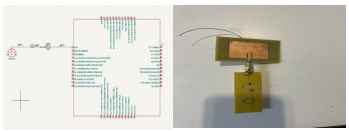


Figure 2: Electromagnetic energy harvesting system

Results

- Both Antenna and circuit board were designed and produced in hopes of collecting frequencies of 2.4GHz which is used in Wi-Fi.



Figures 3 & 4: Circuit board schematic and its physical form

- An oscilloscope was used to check the antenna and rectifier for signs of DC current being produced. Results show that they succeeded in performing their respective tasks. But in addition to this it was discovered that the diode also filters the output which was an unexpected behavior but useful. Useful in the sense that it could also act as a capacitor, allowing us to no longer need an actual capacitor and thereby saving resources

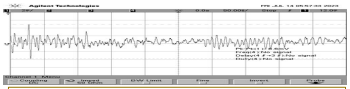


Figure 5: Result from reading of Antenna

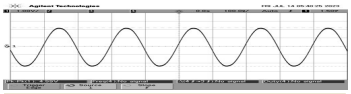
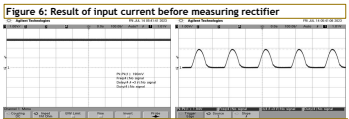


Figure 6: Result of input current before measuring rectifier



Figures 7 & 8: Result of output when measuring rectifier but with presence of filtration [6]; and result of output without presence of filtration

- The last unit, the microcontroller we picked, was an MSP430FR2476. According to the datasheet, this microcontroller was designed for a nominal power of 600uW which was acceptable for our purpose. It also had potential for switch mode control. Research was done to understand the microcontroller and how to control the pins, so a simple LED blink program was made as a start, serving as proof our original program is achievable.

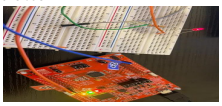


Figure 9: External LED blink program using MSP430FR2476 microcontroller

Conclusions and Future Directions

In summary of what has been accomplished so far. I designed and simulated my antenna with the aid of HFSS software to determine which material would be most suitable to make the antenna. From there I proceeded to search for a Schottky diode suitable to convert AC to DC, then I proceeded to making my pcb to allow me to test the parts for DC using an oscilloscope. Results showed that we were getting DC as an output which was a success, but this also led to the discovery that the diode could filter output, thereby acting as a capacitor. It was unexpected but it played in our favor and saved us resources. I used an oscilloscope to determine whether we were successfully getting DC from our circuitry and the outcome was a success. As for the microcontroller I was able to program it to control an external hardware which sets the basis for future work.

There are rooms for improvement for both the device and myself. I hope to finish the original program after better understanding the MSP430, from there I can combine all units of the device to make it whole and functional. From there I hope to include a sensor into the device to create room for more experiments. And as time goes future researchers can try new things as well.

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Acknowledgements

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- This award was funded by an OUR Semester (or SURF) award 2023

Learn more about me and my research project at the following website:

Tailocin treatment of American Foulbrood Disease in honeybees

Department of Biological Sciences | University of Idaho
Katherine Ryssel, James Van Leuven, Tracey Peters

University of Idaho

ABSTRACT

Tailocins are antibacterial proteins produced by some bacteria in order to kill closely related bacterial strains. In nature, this benefits the microbe by offering a way for them to control the bacterial composition of their environments. However, in a lab setting, researchers can use these tailocins to treat against unwanted bacteria. The purpose of this research project is to test whether a tailocin treatment is a viable option in protecting honeybees against the deadly American Foulbrood disease, which is caused by the bacterial species *Paenibacillus larvae*. To test this, the proposed research will involve three major parts: Collection and purification of tailocins from honeybee pathogens, in vitro analysis of tailocins against strains of *P. larvae*, and *in vivo* treatment of infected bees by tailocins. This work addresses the urgent need to develop novel antibacterials and reduce our dependence on traditional antibiotics. Currently, research remains in the *in vitro* stage of testing.

METHODS

- 7 strains of *P. Larvae* were labeled A-E.
- Samples were grown into day cultures.
- Day cultures were subjected to stressful conditions to induce bacteriocin production.
- Samples were filtered to isolate the any tailocin-like particles
- Samples were spotted onto lawns of the original bacterial strains.
- Lawns were examined for inhibitory activity.

RESULTS

Five of 7 strains showed activity, but only 2 gave replicable results which resembled the inhibition of growth associated with tailocins. Strain B showed activity against four of the seven strains. One of the strains it did not show activity against was itself, which was expected as producing strains are resistant to their products. Strain D showed inhibitory activity against two strains, including one of the strains that B was ineffective against. D also showed prophage activity against strain C. Additionally, strains A and E both showed very light activity against B when lawns had very low bacterial concentrations. Strain G showed activity against 4 other strains in one test, but the results were never able to be replicated.

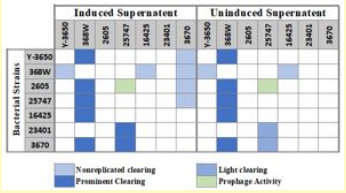
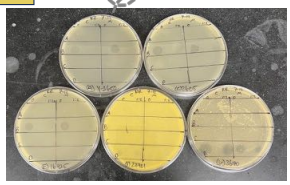


Figure 1. This matrix shows the results of spot testing supernatants against bacterial lawns. The left half of the figure represents induced samples, while the right half represents uninduced controls.



FUTURE WORK

- Activity from samples must be confirmed at tailocin activity by TEM imaging.
- DNA sequences will be obtained and used to locate gene clusters responsible for tailocin production.
- Gene clusters will be used to clone tailocin proteins and create samples of a higher concentration.
- *In vivo* experiments: Infection of honeybees with *P. Larvae* and treatment with active tailocins.

The hope is that these tests will prove useful in the development of a possible commercial treatment of *P. Larvae* infections in hives.

No Fire on the Mountain: Has fire suppression caused population declines of an imperiled ground squirrel?

A Test of the Fire Suppression Hypothesis

Ecology and Conservation Biology
University of Idaho iivi8992@vandals.uidaho.edu
Alyssa Livingston
Courtney J. Conway
Eva Strand

Abstract

The Northern Idaho Ground Squirrel (*Urocitellus brunneus*) is listed as threatened under the Endangered Species Act. The prevailing hypothesis for the species decline is encroachment of trees into its habitat due to fire suppression. However, this hypothesis has not been rigorously tested. Using geographic information systems and aerial imaging, I compared changes in abundance of the squirrels' populations to changes in forest canopy coverage over the past 40 years. These comparisons allowed me to test the prevailing hypothesis for the population declines of this rare species by testing the prediction that forest fire suppression has allowed tree growth and encroachment into the squirrel's habitat. This hypothesis predicts that the areas with the most pronounced population declines of Northern Idaho Ground Squirrels will have the most pronounced forest encroachment in the areas used by these squirrels. Our results indicate a 50% increase in tree cover over the colonies and the historical range for the last 40 years.

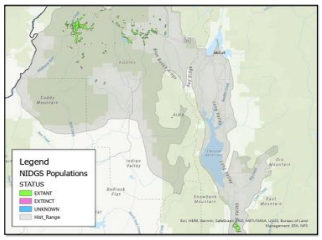


Figure 1: Map of Northern Idaho Ground Squirrel (NIDGS) colonies illustrating their status – extant, extinct, or unknown.

Project Description

The Northern Idaho Ground Squirrel (NIDGS) is a threatened species endemic to central Idaho. With already small numbers dropping, the species is threatened by extinction. The main hypothesis for population decline is habitat loss due to fire suppression, causing more trees to grow and encroach into natural clearings, which are the squirrel's habitat. This leads to a loss of suitable habitat for the squirrel and subsequent population decline. This hypothesis, however, has never been directly tested. The main objective for this project is to test the prevailing hypothesis for the squirrel's population declines.

Methods

- Programs utilized for this project: ArcGIS, Rangeland Analysis Platform, Google Earth Engine, and aerial photographs from the USDA over the past 40 years.
- Obtained ground squirrel count data from state and federal agencies to document variation among colonies in population declines.
- Documented change in tree cover over the past 40 years within Northern Idaho Ground Squirrel 1) historical range and 2) mapped colonies.
- Synthesized all these data to determine if the encroachment of trees is a likely cause of the squirrel's decline in abundance.

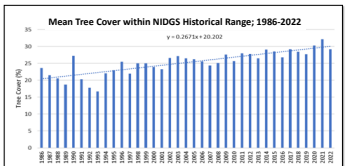


Figure 2: Change in the mean tree cover for the historical range of Northern Idaho Ground Squirrels (NIDGS) from 1986-2022.

Results

Two main analyses were run on ArcGIS Pro: zonal statistics of change in tree cover over the past 40 years within the historical range of the Northern Idaho Ground Squirrel and within the squirrels' colony areas only. Results of the first test show that there has been an increase in tree cover in the historical range over the past 40 years. The effect size shows a 50% increase in tree cover through the entirety of the historical range. Results of the second test show that there has also been an increase in tree cover in the squirrels' colonies over the past 40 years. The effect size again shows a 50% increase in tree cover within extinct and extant colonies.

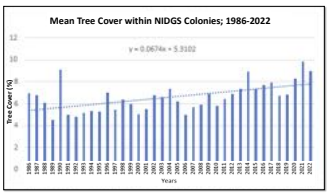


Figure 3: Change in the mean tree cover within colony footprints of Northern Idaho Ground Squirrels (NIDGS) from 1986-2022.

Conclusions

The fire suppression hypothesis – that squirrel population declines are caused by tree encroachment due to fire suppression - was supported based on 2 predictions. Forest canopy cover has significantly increased over the last 40 years in both the historical range of the Northern Idaho Ground Squirrel and also in the explicit colonies within their range. Canopy cover within the historical range (15% cover) was higher than canopy cover within the actual colonies (5% cover). Experts on this rare species believe that these squirrels need areas with <15% canopy cover.

Synthesis and Structural Characterization of Zinc Complexes with N,S Donor Ligands

DEPARTMENT OF CHEMISTRY, UNIVERSITY OF IDAHO

Mason Kilker, Alina Andrasi, and Sebastian Stoian

University of Idaho

University of Idaho Office of Undergraduate Research

Abstract

Zinc (Zn) complexes are diamagnetic species with no unpaired electrons sought after for their unique chemical and biological applications as enzyme analogues or bioinspired catalysts; as such, Zn complexes are relevant to several different areas in pathophysiology and bio-inorganic chemistry.

The inorganic field of metal complexation has a diverse and important role in biological functions. For example, the binding of molecular oxygen (O_2) to hemoglobin involves forming coordinate bonds at alveoli of the lungs and breaking them in the tissues, while O_2 remains bound to the heme group during transport[1]. The exact signaling mechanism has not been reported in literature[1].

Alkaline phosphatases are hepatic enzymes distributed widely in mammalian cells[2]. They are Zn-based complexes that are thought to have a role in cell signaling and catalyzing protein folding, though their chemistry and functions are not well understood. High mammalian alkaline phosphatase levels have been associated with liver and heart disease, with any physiologic role yet to be underlined[2].

Given the Zn-regulated biological functions, it is important, of course, to acquire a fundamental understanding of model Zn-complexes and their properties in order to apply them further. The main goal of this short summer project was to prepare several novel series of Zn complexes and to elucidate their coordination modes, structures, and properties in solution and in solid state.

Introduction

The main goal of the project was to synthesize several Zn(II) complexes with a coordination number of 6. The complexes were to incorporate the tetradentate ligand S,S'-**b**is(2- **p**yridylmethyl)-1,2-**t**hio**e**thane (**bpte**) with two anionic co-ligands NCX, where X=O; S; and BH_3.

Zn(II) used for these reactions was sourced from zinc perchlorate hexahydrate salt. Anionic co-ligands were obtained from their sodium or potassium salts, and **bpte** was synthesized using published methods [3].

X-ray crystal diffraction at 100K was used to determine the composition of the complex in solid state, and ^{1}H-NMR was used to determine the composition in liquid state (DMSO-D6 solvent). NMR was also used to verify the purity of **bpte**.

Several crystallization techniques were employed, including vapor diffusion and slow evaporation.

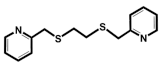


Figure 1: Structure of the bpte ligand

Results

Several novel Zn complexes were synthesized and characterized using x-ray crystallography and NMR. All compounds are hexa-coordinated and exhibit an octahedral geometry. The compounds were synthesized by allowing Zn perchlorate hexahydrate to react with bpte for 20 min., followed by the addition of a potassium or sodium salt of the anionic co-ligand.

[Zn(bpte)(NCBH$_3$)$_2$]

This octahedral zinc complex was isolated as clear block crystals and exhibits a slightly distorted octahedral geometry around the metal center with an N-Zn-S angle of ~80°.

X-ray Crystallography

Single crystals were sent for x-ray diffraction. The result, as compared with the anticipated drawn structure, is shown below.

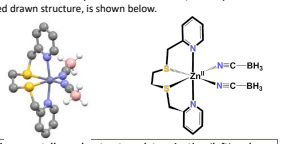


Figure 2: X-ray crystallography structure determination (left) and drawn structure (right) of [Zn(bpte)(NCBH$_3$)$_2$]. Hydrogen atoms other than those on the co-ligand were omitted for simplicity.

Nuclear Magnetic Resonance (NMR)

The NMR spectrum (below) was recorded for a sample obtained by dissolving several single crystals in DMSO-D6. The NMR indicates that the complex structure observed in solid state is maintained in solution.

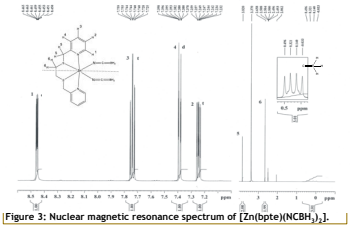


Figure 3: Nuclear magnetic resonance spectrum of [Zn(bpte)(NCBH$_3$)$_2$].

[Zn(bpte)(NCS)$_2$]

This octahedral Zn complex also exhibits a slightly distorted octahedral geometry around the metal center. Single crystals were sent for x-ray diffraction. The result, as compared with anticipated drawn structure, is shown below.

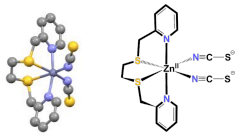


Figure 4: Comparison of the X-ray single crystal (left) and ChemDraw® (right) structures of Zn(bpte)(NCBH$_3$)$_2$.

Conclusions and Outlook

1. A series of zinc complexes with a N,S donor ligand have been synthesized.
2. X-ray diffraction has been used to elucidate the solid-state structure.
3. Nuclear magnetic resonance has shown the structure to be rigid and maintained in solution.
4. Future work will explore other Zn complexes by attempting to make a dimer.
5. We will also explore other metals such as copper (II) and cobalt (II) for future structural analysis.
6. Further, we plan to study the interaction of these diamagnetic Zn complexes with biomolecules such as deoxyribose nucleic acid (DNA) or ribose nucleic acid (RNA).

References

[1] Carbon Monoxide Poisoning: Pathogenesis, Management, and Future Directions of Therapy: Rose, J.J. et. al.: Am J Respir Crit Care Med, pg 596, 2017; Vol. 195.

[2] Alkaline phosphatase: beyond the liver: Fernandez N. et, al: Veterinary Clinical Pathology; 3rd edition (pg 223-227); 2007; Vol. 36.

[3] 1,2-Bis[(pyridin-2-ylmethyl)sulfanyl]-ethane and its dimorphic hydro-chloride salt: Lennartson A. et. al.: Acta Crystallographica Section C, 9th edition (pg m287-o372); 2011; Vol. 9

Acknowledgements

I would like to thank Drs. Stoian and Andrasi for their continued support in this project. Crystallographic data sets were obtained through the expertise of Dr. Kraig Wheeler at Whitworth University using an instrument acquired using NSF-MRI grant (CHE-1827313).

This work was funded by an Office of Undergraduate Research SURF award.

Selective Reflections for the Nelder-Mead Algorithm

Zaiden Espe Department of Mathematics, University of Idaho

University of Idaho

Abstract

The Nelder-Mead Algorithm is an established algorithm to search for a minimum to a function. Since its first description, the algorithm has had various improvements made to it. With this project, I searched for improvements to the algorithm through changes to its reflective direction and geometric structure. I found in testing that directions that maintain the shape of the algorithm's search structure perform better than those that do not. The algorithm's speed can also be increased in higher test dimensions by increasing the number of points in the simplex by one. With these alterations, the Nelder-Mead algorithm can find solutions to problems it previously could not and do so with fewer function evaluations.

Methods

In a single iteration, the basic algorithm does not directly use all the information that is stored within the simplex. The algorithm overlooks the fullest extent of rank and value of the n-best points during an iteration. To use this information, I calculated new direction vectors to use as a basis for the reflection. To gather more information, I added an extra point to the simplex as a second point of reflection and used another mirror reflection to allow more movement of the simplex.

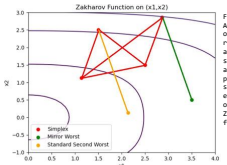


Figure 1. An example of the reflection and mirror steps on an n+2 point simplex evaluated on the Zhakarov function.

This project was funded by a SURF award 2023.

Introduction

The Nelder-Mead method optimizes a function of n variables by creating a simplex with n+1 points in an n-dimensional space. It then uses a combination of five steps to transform the simplex by moving the point with the worst evaluation to a hopefully better location. The direction in which it moves this point is what this project focused on studying. The standard algorithm moves the point in the direction of the center of the rest of the points, called the centroid. The centroid is calculated by taking the mean of the n-best points. Once the last ranked point has been moved, the algorithm starts again with the new set of points and iterates until a stopping condition is met. In a single iteration, the basic algorithm does not directly use a lot of information that is stored within the simplex.

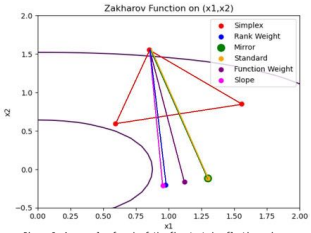


Figure 2. An example of each of the five tested reflections given a simplex evaluated on the Zhakarov function.

References

Nelder, J. A., & Mead, R. (1965). A simplex method for function minimization. *The Computer Journal*, 7(4), 308-313. https://doi.org/10.1093/comjnl/7.4.308

Results

This project found that the additional point to the simplex improved the performance of the base algorithm without any changes to the reflective direction as the dimension of the function increased. The mirror transformation used with the extra point also helped the algorithm perform faster on multiple test functions and find more accurate minimums. However, more aggressive reflections that did not uphold the shape of the simplex as closely as the standard reflection or mirror reflection would often cause the algorithm to fail to find an acceptable minimum or perform within an acceptable speed.

		Standard NM		Combination NM	
Function	Dim	f-min	f-eval	f-min	f-eval
Quadratic Sum	20	2.314075e-16	3408.3	0.6774126e-17	2713.0
Quadratic Sum	50	5.711590e-16	10720.7	1.8457666e-17	6503.3
Quadratic Sum	100	8.047040e-16	25268.9	2.882725e-17	11907.0
Zakharov	20	2.706404e-16	10140.6	0.6444124e-16	3103.2
Zakharov	50	4.287115e+01	50000.1	2.887930e-15	7065.0
Zakharov	100	3.349520e+03	50000.3	4.700199e-15	13240.1
Dixon-Price	20	0.6666667e-01	4050.6	0.6666667e-01	29507.9
Dixon-Price	50	6.6666667e-01	16461.5	6.6675104e-01	50000.0
Dixon-Price	100	6.6033304e-01	50000.1	6.6370613e-01	50000.6
Rosenbrock	20	3.986624e-01	23634.1	9.3475566e+00	50000.0
Rosenbrock	50	4.161088e+01	50000.1	4.657621e+01	50000.6
Rosenbrock	100	9.518226e+01	50000.0	9.703387e+01	50000.7
RH_Ellipsoid	20	1.804901e-15	3547.4	5.570239e-16	2779.9
RH_Ellipsoid	50	5.704937e-15	11366.7	5.104931e-16	6770.2
RH_Ellipsoid	100	1.759450e-14	30437.1	1.570800e-15	11952.3

Figure 3. Data collected comparing the standard Nelder-Mead algorithm to the one found in the project. Note that "Dim" stands for dimension of the test function. "RH_Ellipsoid" stands for the Rotated Hyper-Ellipsoid function.

Conclusions

These results open avenues to understanding the functioning of the Nelder-Mead algorithm and improving its design. Future research can be done to explore the effect of using even more points in the simplex, new transformations that continue to maintain the shape of the simplex and fine-tune the selection of multiple types of reflections in a single algorithm run.

Appendix 2

The Folk Influences on the Piano Works of Manuel M. Ponce

Alexandro Aguilar (agui6621@vandals.uidaho.edu) and Dr. Roger McVey (rmcvey@uidaho.edu)

University of Idaho
Lionel Hampton School of Music

Motivation and Project Background

The compositions of musicians from underrepresented backgrounds have gone largely overlooked in the core literature for piano and in academic fields such as musicology and theoretical analysis. Inadvertently, the field of music has missed out on rich cultural inspiration by doing so. It is important to highlight music from people of color and help expand the scope of music as a studied form of art if the study of classical piano were to stay relevant in modern day.

For this project, I prepared four pieces for solo piano composed by Mexican composer, Manuel Maria Ponce, for performance. Research was done on the history of native folk music in Mexico and how it influenced Ponce's works for the piano.

The four works of focus throughout the project are Scherzino Mexicano, Romanza De Amor, Quatro Danzas Mexicanas, and Intermezzo No. 1. Latin folk genres of music and dance such as **Huapangos**, **Sons**, **Cuban Contradanzas**, **Jarabes**, and **Corridos** were discovered to have heavy influence in the rhythmic, melodic, sonic, and harmonic motifs found in Ponce's compositions for the piano.

Manuel M. Ponce (1882-1948)

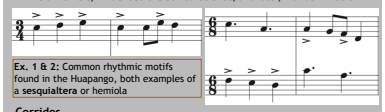
- Born on December 8, 1882, in Fresnillo, Zacatecas
- Began studying the piano at age 6
- Made his first composition at age 9
- Attended the National Conservatory of Music in Mexico City in 1901 for one year
- Traveled to Europe in 1904 to study composition and piano in Italy and Germany
- Returned to Mexico City in 1908 and taught composition and music history at the National Conservatory
- In 1923, Ponce met Spanish guitarist, Andres Segovia, a lifelong friend who helped spread Ponce's influence as a composer around the world.
- Moved to Paris in 1925 for 7 years to work on his compositional technique.
- Moved back to Mexico in 1933 and spends the last 15 years of his life composing and teaching at the National Conservatory.
- Manuel Maria Ponce passed away in Mexico City on April 24, 1948

The Music of Mexico

The Mexican composer Carlos Chavez gives a definition to the term "Mexican Music" as "the native music of the ancient Mexicans, the music of Spanish or other origin implanted in Mexico, and the production in Mexico of a mixture of these elements."

Sons/Huapangos

- Mexican folk music and dance genre identifiable by the **sesquialtera** rhythmic motif and zapateado (tap dance) dancing
- Simultaneous 2 against 3 rhythmic motifs and alternating ternary and binary rhythms
- The **Huapango** is a regional sub-genre of the **Son**, known as the "Son Huasteco"
- The "Son Jaliscience" originating in the region of Jalisco evolved into what we know as modern **Mariachi** music
  - Call and response melodic motifs, originating from work songs sung by field workers, influenced the Son Jaliscience, and later, mariachi music.



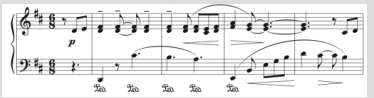
Ex. 1 & 2: Common rhythmic motifs found in the Huapango, both examples of a **sesquialtera** or hemiola

Corridos

- Mexican ballad genre identifiable by its narrative story telling
- Falsetto style vocals
- Melodies typically resolving in thirds
- Circle of fifths-based harmony
- Melodies voiced in thirds
- Chromaticism treated as ornamentation to melody,

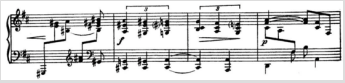
The Piano Works of Manuel M. Ponce

Scherzino Mexicano (1909)

- "Dominant-Tonic" or circle of fifths based harmony, familiar to late 1800s to early 1900s Mexican **salon** music
- A melody voiced in intervals of thirds, akin to Mexico's early **Corridos**
- Familiar ABA form Ponce frequently used in his works for solo piano
- **Huapango**/**Son** influenced alternating ternary and binary rhythms (sesquialtera)
- Mariachi-influenced call and response phrase structure

Ex. 3: Scherzino Mexicano - Measures 1-5

The Piano Works of Manuel M. Ponce (cont.)

Quatro Danzas Mexicanas (1941)

- Syncopated rhythms familiar to **corridos** in the A section
- Ambiguous chromatic harmony
- Two-part AAB form influenced by Cuban **Contradanzas**
  - A as a faster introductory theme
  - B as a slower and more contrastive theme
- Four and eight measure phrases
- Alternating groupings of duple and triple **Habanera**-based rhythms, familiar to the **sesquialtera**.

Ex. 4: Quatro Danzas Mexicanas - Danza I - Measures 28-31

Conclusions and Future Directions

A lecture recital will be held at the Lionel Hampton School of Music where I will present my research on the traditional folk music of Mexico, a biographical overview of Manuel Maria Ponce, and I will perform the four pieces of music that were of focus throughout this project, Intermezzo No. 1, Quatro Danzas Mexicanas, Scherzino Mexicano, and Romanza de Amor.
I will also plan on applying to present my research at poster sessions hosted at music pedagogy conferences around the country such as the MTNA National Conference.

Scan this QR Code for a list of musical references pertaining to this project:

References

1. Guerra, Dahlia Ann. "Manuel M. Ponce: A Study of His Solo Piano Works and His Relationship to Mexican Musical Nationalism". ProQuest Dissertations Publishing, 1997.
2. Herrera Arizmendi, Omar. "Manuel M. Ponce: Style and Aesthetics". ProQuest Dissertations Publishing, 2012.
3. Gaytan, Luis Francisco. "An Introduction to the Piano Music of Manuel M. Ponce". ProQuest Dissertations Publishing, 2014.

Acknowledgements
Thank you to Dr. Roger McVey for helping me prepare the pieces for performance and assisting me in my research

This award was funded by an OUR Semester (or SURF) award 2023

Anxiety and the Effectiveness of Misinformation Fact-Checks

DEPARTMENT OF POLITICS AND PHILOSOPHY, UNIVERSITY OF IDAHO

Kendall Mitton

Abstract

As levels of misinformation rise in the United States, so does the threat to efficient and effective policy-making. Most Americans are subject to misinformation, causing them to actively think/behave against the recommendations and empirical findings of experts. That said, in the absence of misinformation fact-checks and the presence of individual defiance toward corrective information, a variety of problems have been fostered within our borders (e.g., events like *Pizzagate and* conspiracies about Covid-19). Anxiety may be a factor contributing to this phenomenon, but it has been largely overlooked in previous research. Building off existing scholarship surrounding these variables, I conducted an online survey experiment to test the relationship between anxiety and fact-checks on individual perceptions. After analyzing my results, I found increased levels of anxiety and the presence of fact-checks do not have a significant effect on an individual's perception about the Covid-19 vaccine. However, anxiety itself has a negative and significant impact on an individual's perception about the effectiveness of the Covid-19 vaccine.

Overview

Background:

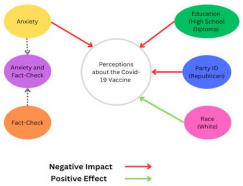
- What factors contribute to an individual's belief in misperceptions?
- Previous research shows...
  - Misinformation in the U.S. has created adverse complications for a range of different salient issues in politics, science, and medicine (Flynn et al., 2017).
  - In general, human emotions can have a significant impact on our actions and beliefs (Albertson & Gadarian, 2015).
- *Hypothesis: I hypothesize an increase in the level of anxiety individuals have will lead to a decrease in the effectiveness of a misinformation fact-check.*

Research Design:

- Nationally representative online survey experiment
- Original Survey Data: June 2023
- 607 respondents
- 2x2 between-subjects experiment
  - Independent Variables:
    - Anxiety Treatment (i.e., Artificial Intelligence article)
    - Anxiety Control (i.e., Virgin-Birth in Crocodile article)
    - Misinformation Treatment (i.e., Facebook post about the Covid-19 vaccine being harmful)
    - Misinformation Control (i.e., fact-check from PolitiFact about the Covid-19 vaccine being helpful)
  - Dependent Variables:
    - 5 opinion questions measured with a Likert scale

Results

- Interaction Analysis (Figure 1)
  - Anxiety Dummy: respondents induced with anxiety
  - Fact-Check Dummy: respondents presented with fact-check
  - Interaction: respondents from both groups above
- Figure 1 shows...
  - There is a negative but significant correlation between anxiety and individual perceptions. Substantively, a 1-point increase in a respondent's level of anxiety leads to a .35-point decrease in that respondent's average perception about the effectiveness of the Covid-19 vaccine.
  - Neither the presence of a fact-check nor the combination of both anxiety and a fact-check have a significant effect on an individual's perceptions about the Covid-19 vaccine.
  - A respondent only having a high school diploma, or being a republican, has a negative and significant impact on individual perceptions about the Covid-19 vaccine.
  - A respondent being white has a positive and significant impact on individual perceptions about the Covid-19 vaccine.



Conclusions and Future Directions

- Does the presence of anxiety and misinformation fact-checks influence an individual's perceptions?
  - My research suggests no (kind of).
- This could likely be due to the topic (i.e., Covid-19 vaccines) I chose.
- In future research, one should explore the effects of other emotions that may lead an individual to hold misperceptions. Furthermore, one could examine other topics where common misperceptions are held.
  - For example, what effect does trait aggression have on an individual's misperceptions. Or what factors cause people to hold misperceptions about election fraud in the US?

Acknowledgements
This research was funded by an OUR Semester (or SURF) award 2023

Figure 1

	Dependent variable:
	Individual Perceptions
Anxiety Dummy	-0.35***
	(0.11)
Fact-Check Dummy	-0.09
	(0.11)
Interaction	0.08
	(0.15)
Age	0.004
	(0.002)
Gender (Male)	0.09
	(0.08)
Education (High School Diploma)	-0.40***
	(0.10)
Party ID (Republican)	-1.08***
	(0.10)
Race (White)	0.64***
	(0.11)
Average Income ($80,000 - $84,999)	0.09
	(0.29)
Region (West)	-0.06
	(0.10)
Constant	3.04***
	(0.16)
Observations	607
R^2	0.25
Adjusted R^2	0.24
Residual Std. Error	0.93 (df = 596)
F Statistic	19.77*** (df = 10; 596)
Note:	*p **p ***p <0.01

References

Flynn, D. J., Nyhan, B., & Reifler, J. (2017). The nature and origins of misperceptions: Understanding false and unsupported beliefs about politics. *Political Psychology*, *38*, 127-150.

Albertson, B., & Gadarian, S. K. (2015). *Anxious politics: Democratic citizenship in a threatening world*. Cambridge University Press.

Missing and Murdered Indigenous Women, Girls, and Two-Spirits in the United States

Amara Bailey (bail8404@vandals.uidaho.edu)
Dr. Omi Hodwitz (omi@uidaho.edu)
Department of Culture, Society, and Justice

University of Idaho
Department of Culture, Society and Justice

Research Goal

The United States has a history littered with abuse against Indigenous populations. Today, there is an epidemic of Missing and Murdered Indigenous Women, Girls, and Two-Spirit individuals (MMIWG2). Despite Indigenous Women, Girls, and Two-Spirit individuals being at greater risk of victimization than other populations, their disappearances and murders are under-documented (Hodwitz & King, 2021). The MMIWG2 database aims to resolve the information deficit surrounding this phenomenon by being an exhaustive culmination of existing data from community-led efforts. Through the collection and subsequent authentication of each individual's case, the MMIWG2 database provides much-needed context to this epidemic for governing institutions in the United States to give this issue the time, attention, and resources it deserves. In addition to identifying the trends of this phenomenon, the MMIWG2 database provides an opportunity to analyze the response and effectiveness of law enforcement.

Research Questions

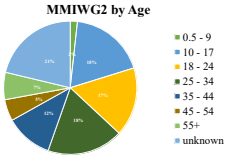
What is the demographic breakdown of MMIWG2s?
What is the demographic breakdown of their offenders?
Given the role of tribal police in law enforcement, how many incidents occur on reservation and require their involvement?
How many MMIWG2 cases are resolved?

Research Methods

Utilizing publicly available resources such as reliable news publications, existing public databases, government documents, and other community-led efforts, we are able to verify the authenticity of each MMIWG2 case. There are over 1,000 cases of MMIWG2s in the United States between 1980 and 2021 in the current data set. Roughly 30% have been identified as confirmed cases so far.

Victim Demographics

MMIWG2 by Age



Age
Sample Size: 253
18 and Older: 188
Under 18: 65

Gender
Sample Size: 280
Female: 183
Male: 96
Non-Binary: 1

Offender Demographics

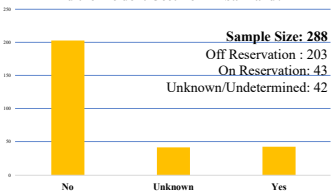
Out of **56** cases where there is at least one known offender

Age
18 and Older: 53
Under 18: 3

Gender
Male: 52
Female: 4

Incidents on Reservation

Did the Incident Occur on Tribal Land?

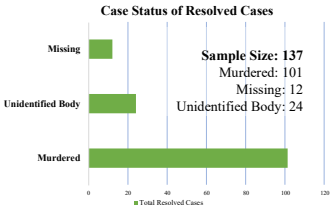


Sample Size: 288
Off Reservation : 203
On Reservation: 43
Unknown/Undetermined: 42

Case Resolution

Of the total confirmed cases, **244** have known outcomes. **56.1%** of these are resolved, meaning an individual or their remains have been located. The remaining **43.9%** of cases are still missing a body.

Case Status of Resolved Cases



Sample Size: 137
Murdered: 101
Missing: 12
Unidentified Body: 24

The data reveal a disturbing trend; the majority of MMIWG2 cases remain unsolved. Of the total confirmed cases, only **18%** have both a known offender and a recovered body. Low resolution rates may indicate the ineffectiveness of law enforcement or a lack of accessible reporting systems for MMIWG2s.

References

King, S. and Hodwitz, O. (2020). What's the plan? Broadening the MMIWG2 conversation in North America, Comparative American Studies An International Journal, 17:3-4, Retrieved March 15, 2022, from https://www.tandfonline.com/doi/full/10.1080/14775700.2021.1877082

Funding

This research was funded by the University of Idaho's Office of Undergraduate research.

Final Report for HERC Funding for the 2023 Idaho Conference on Undergraduate Research (ICUR)
Submitted by Donna Llewellyn, Executive Director of the Boise State Institute for Inclusive and Transformative Scholarship

ICUR 2023 was held on July 19 and 20, 2023. Due to uncertainties related to COVID-19 and space constraints at Boise State, the conference was an online event with in-person receptions at each of the three research universities. We used the Fourwaves platform for the display of student posters and a synchronous poster fair and Zoom for synchronous talks and workshops. In terms of attendance, the participation was robust. We utilized the funding from HERC to allow each research university to reserve space and technology along with catering to host a local optional reception. In addition, we purchased a license to use a larger zoom room, and we needed a much greater amount of staff time to get the conference designed, planned, and implemented. We are grateful for the HERC funding that allowed us to hold ICUR this year.

There were 519 people who registered for the conference this year, with 335 participating in the Zoom sessions. This included people from over 30 different institutions/organizations. There were 196 poster presentations with a total of 533 project collaborators including 250 undergraduate students, 79 graduate students and 164 faculty (plus some postdoctoral fellows, high school students, and other community members). Our planning committee of representatives from the different colleges and universities across the state really worked hard to encourage and facilitate participation.

There were two days of workshops and presentations – see the following pages for the program schedule. More details are also available at https://www.boisestate.edu/icur/. Note that Boise State has disallowed the use of pdf programs due to accessibility issues so all materials for the conference were posted at the event site.

A survey was been sent out to all of the attendees. The likert scale responses and an overview of the open-ended responses are attached. We intend to use these results to improve the conference next year, as we learn from our virtual conferences about what aspects of this event are best suited to a virtual setting and which parts really suffer from a lack of in-person interaction.

The funding from HERC went to the following categories of expenditures:

Item	Amount
Zoom license to allow for over 100 participants	675
Materials and Supplies	9
Receptions at BSU, ISU, UI	6072.57
Admin, Evaluation, and Director Support	33,324.43
TOTAL	**$39,991**

Day 1: July 19	
9:30 AM - 10:15 AM MDT	**ICUR Opening Session**
10:30 AM - 11:45 AM MDT	Lightning Talks
11:45 AM -12:45 PM MDT	Lunch Break
12:45 PM - 2:15 PM MDT	Networking: Meet a Prof
2:15 PM - 2:30 PM MDT	Open Discussion/Introduction to panel discussions
2:30 PM - 3.30 PM MDT	Faculty Panel: Flavors of UG Research
	Student Panel: Industry Opportunities
3:30 PM - 3:35 PM MDT	Transition back to main room
3:35 PM - 4:35 PM MDT	Panel
4:35 PM - 4:45 PM MDT	Closing
Day 2: July 20	
9:00 AM - 11:00 AM MDT	Paired Research Talks
11:00 AM - 11:15 PM MDT	Intro to Fourwaves
11:15 - 12:15	Poster Session 1
12:15 - 1:15	Lunch break
1:15 - 2:15	Poster Session 2
2:15 - 3:15 PM MDT	Poster Session 3
3:15 PM - 3:30 PM MDT	Break and transition back to Zoom
3:30 PM - 4:15 PM MDT	**ICUR Closing Session**

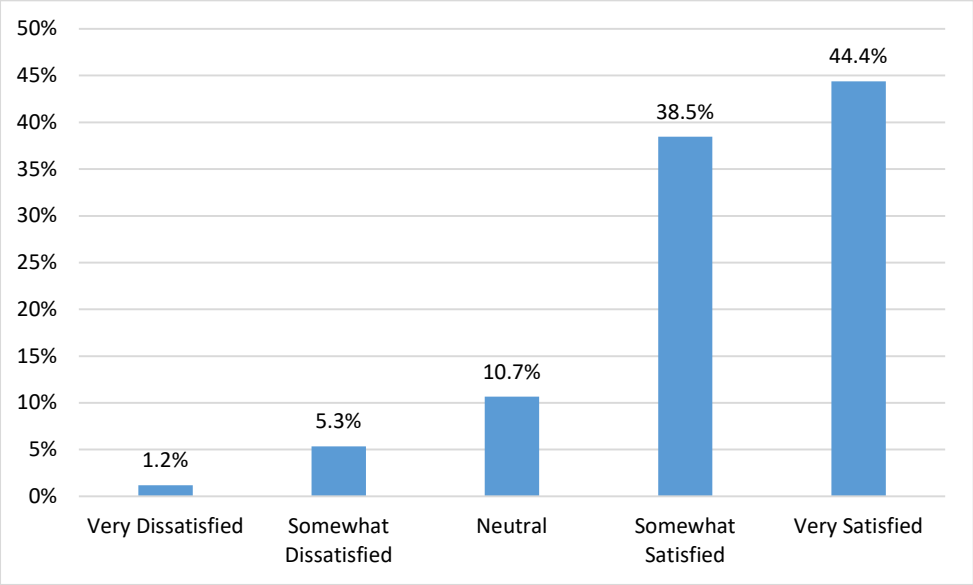
Idaho Conference on Undergraduate Research 2023
Survey Results

RESPONSE RATE: 35.3%

- 514 survey recipients (excludes 6 IFITS staff who did not receive the survey)
  - 329 (64.0%) students
  - 185 (36.0%) faculty/staff/other

- 172 recorded responses; 5 of these are incomplete responses
  - 3 of the incomplete responses answered no questions and are therefore EXCLUDED from analysis.

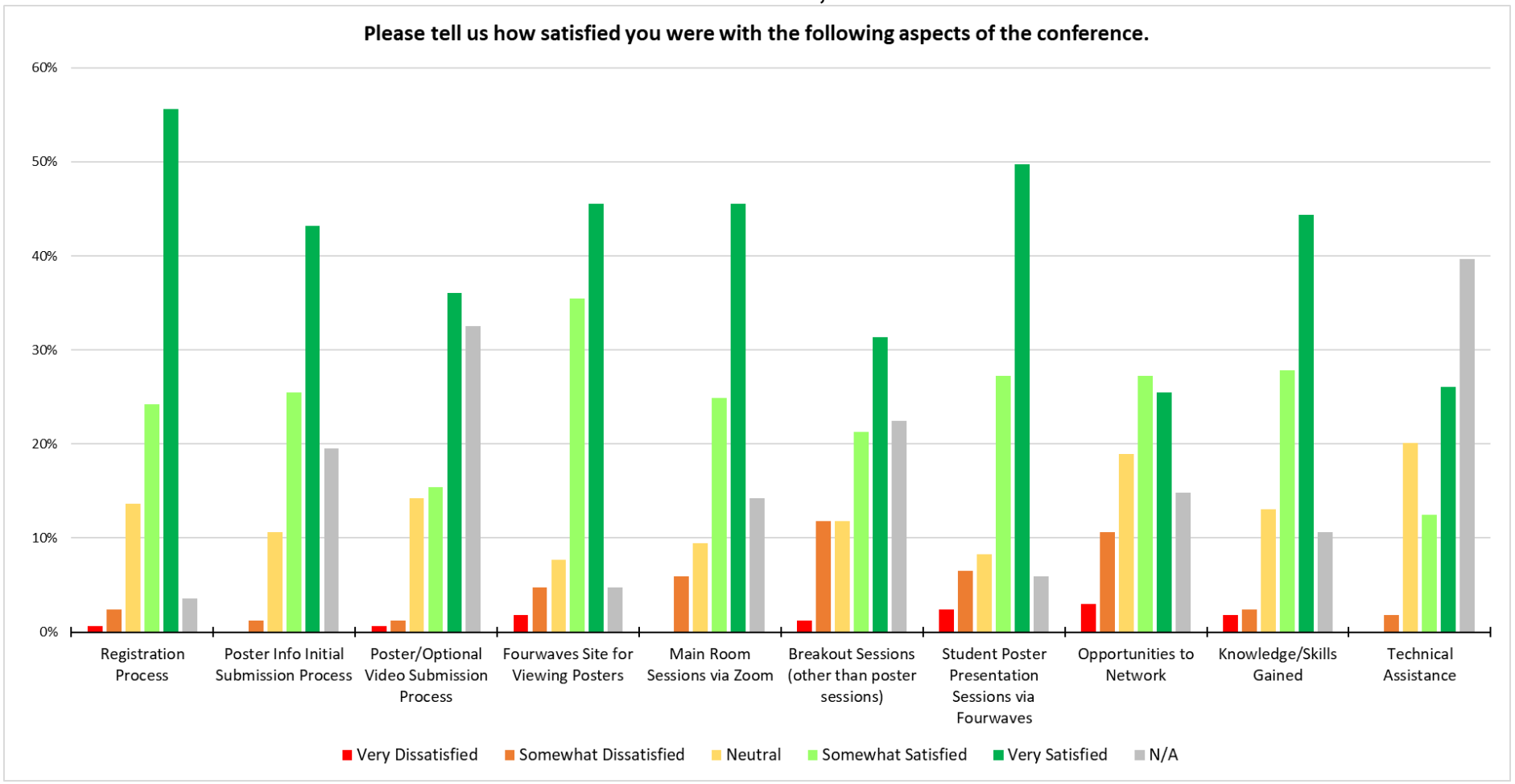
Please indicate your overall satisfaction with the 2023 Idaho Conference on Undergraduate Research.



Answer	%	Count
Very Dissatisfied	1.2%	2
Somewhat Dissatisfied	5.3%	9
Neutral	10.7%	18
Somewhat Satisfied	38.5%	65
Very Satisfied	44.4%	75
Total	100.0%	169

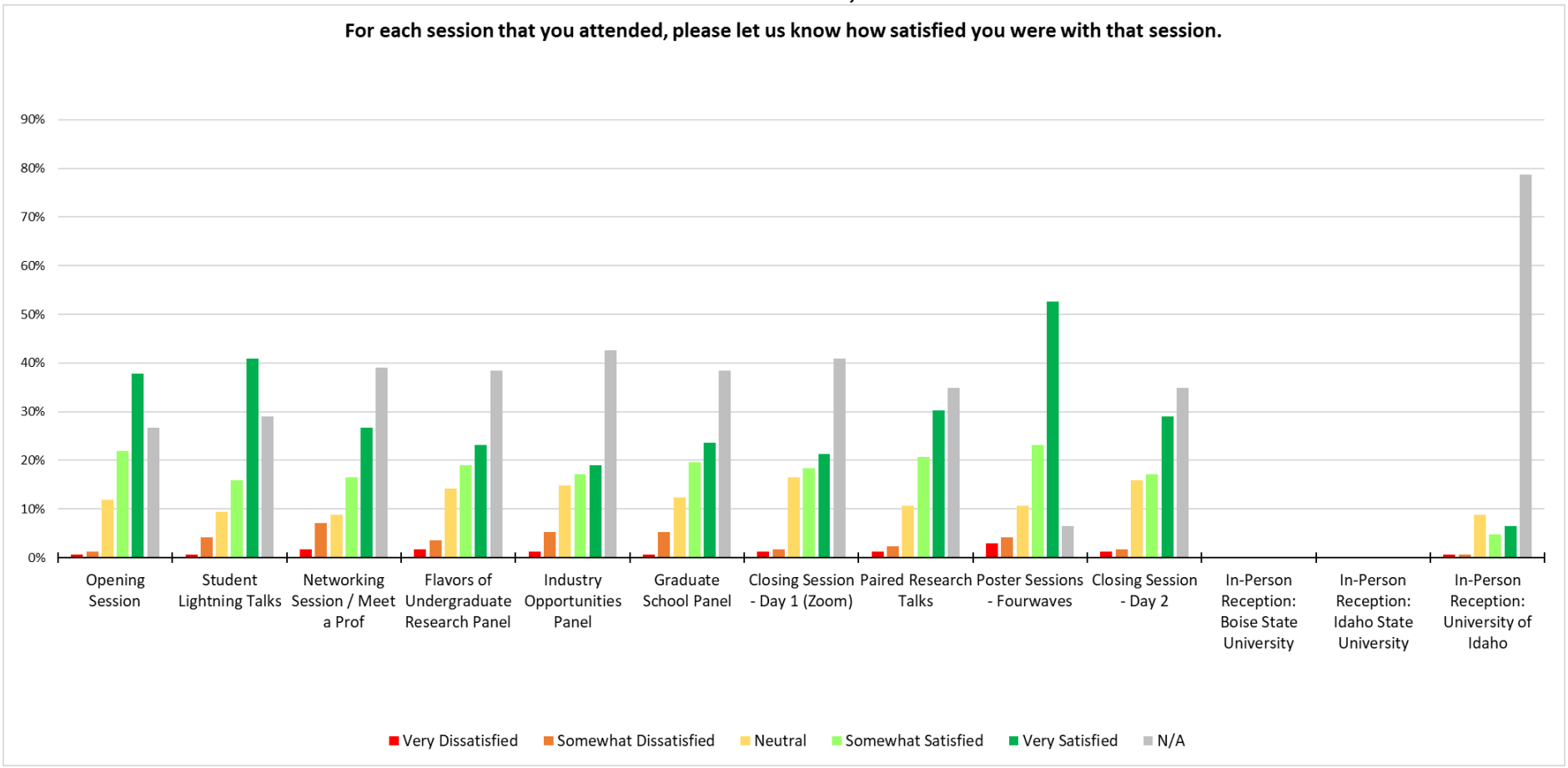
Please tell us how satisfied you were with the following aspects of the conference.

	Very Dissatisfied		Somewhat Dissatisfied		Neutral		Somewhat Satisfied		Very Satisfied		N/A		Total	
Aspect	**%**	**Count**	**%**	**Count**	**%**	**Count**	**%**	**Count**	**%**	**Count**	**%**	**Count**	**%**	**Count**
Registration Process	1%	1	2%	4	14%	23	24%	41	56%	94	4%	6	100%	169
Poster Info Initial Submission Process	0%	0	1%	2	11%	18	25%	43	43%	73	20%	33	100%	169
Poster/Optional Video Submission Process	1%	1	1%	2	14%	24	15%	26	36%	61	33%	55	100%	169
Fourwaves Site for Viewing Posters	2%	3	5%	8	8%	13	36%	60	46%	77	5%	8	100%	169
Main Room Sessions via Zoom	0%	0	6%	10	9%	16	25%	42	46%	77	14%	24	100%	169
Breakout Sessions (other than poster sessions)	1%	2	12%	20	12%	20	21%	36	31%	53	22%	38	100%	169
Student Poster Presentation Sessions via Fourwaves	2%	4	7%	11	8%	14	27%	46	50%	84	6%	10	100%	169
Opportunities to Network	3%	5	11%	18	19%	32	27%	46	25%	43	15%	25	100%	169
Knowledge/Skills Gained	2%	3	2%	4	13%	22	28%	47	44%	75	11%	18	100%	169
Technical Assistance	0%	0	2%	3	20%	34	12%	21	26%	44	40%	67	100%	169

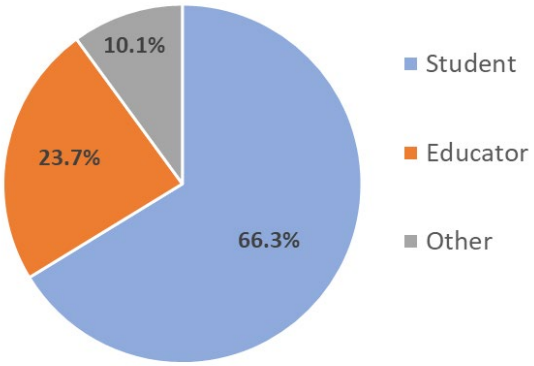

Please tell us how satisfied you were with the following aspects of the conference.
60%
50%
40%
30%
20%
10%
0%
Registration Process
Poster Info Initial Submission Process
Poster/Optional Video Submission Process
Fourwaves Site for Viewing Posters
Main Room Sessions via Zoom
Breakout Sessions (other than poster sessions)
Student Poster Presentation Sessions via Fourwaves
Opportunities to Network
Knowledge/Skills Gained
Technical Assistance
Very Dissatisfied
Somewhat Dissatisfied
Neutral
Somewhat Satisfied
Very Satisfied
N/A

For each session that you attended, please let us know how satisfied you were with that session.

	Very Dissatisfied		Somewhat Dissatisfied		Neutral		Somewhat Satisfied		Very Satisfied		N/A		Total	
Session	**%**	**Count**	**%**	**Count**	**%**	**Count**	**%**	**Count**	**%**	**Count**	**%**	**Count**	**%**	**Count**
Opening Session	1%	1	1%	2	12 %	20	22 %	37	38 %	64	27 %	45	100%	169
Student Lightning Talks	1%	1	4%	7	9%	16	16 %	27	41 %	69	29 %	49	100%	169
Networking Session / Meet a Prof	2%	3	7%	12	9%	15	17 %	28	27 %	45	39 %	66	100%	169
Flavors of Undergraduate Research Panel	2%	3	4%	6	14 %	24	19 %	32	23 %	39	38 %	65	100%	169
Industry Opportunities Panel	1%	2	5%	9	15 %	25	17 %	29	19 %	32	43 %	72	100%	169
Graduate School Panel	1%	1	5%	9	12 %	21	20 %	33	24 %	40	38 %	65	100%	169
Closing Session - Day 1 (Zoom)	1%	2	2%	3	17 %	28	18 %	31	21 %	36	41 %	69	100%	169
Paired Research Talks	1%	2	2%	4	11 %	18	21 %	35	30 %	51	35 %	59	100%	169
Poster Sessions - Fourwaves	3%	5	4%	7	11 %	18	23 %	39	53 %	89	7%	11	100%	169
Closing Session - Day 2	1%	2	2%	3	16 %	27	17 %	29	29 %	49	35 %	59	100%	169
In-Person Reception: Boise State University		1		2		20		11		49		86		169
In-Person Reception: Idaho State University		2		1		16		3		14		133		169
In-Person Reception: University of Idaho	1%	1	1%	1	9%	15	5%	8	7%	11	79 %	133	100%	169


For each session that you attended, please let us know how satisfied you were with that session.
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
Opening Session
Student Lightning Talks
Networking Session / Meet a Prof
Flavors of Undergraduate Research Panel
Industry Opportunities Panel
Graduate School Panel
Closing Session - Day 1 (Zoom)
Paired Research Talks
Poster Sessions - Fourwaves
Closing Session - Day 2
In-Person Reception: Boise State University
In-Person Reception: Idaho State University
In-Person Reception: University of Idaho
Very Dissatisfied
Somewhat Dissatisfied
Neutral
Somewhat Satisfied
Very Satisfied
N/A

Please select your role.

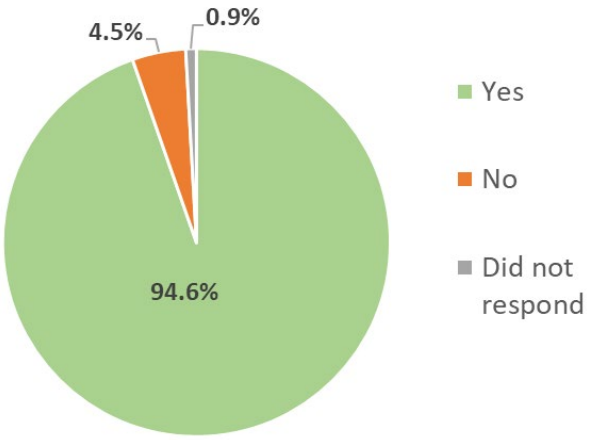


Answer	%	Count
Student	66.3%	112
Educator	23.7%	40
Other	10.1%	17
Total	100.0%	169

Other roles reported:

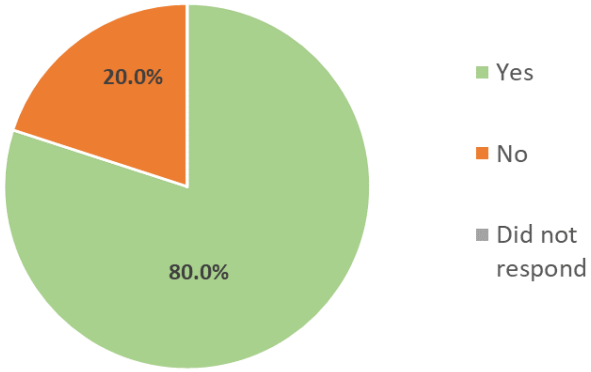
- Educator
- Industry
- Postdoc
- Staff
- Student

Did you present a poster? (This question presented only to the respondents who selected "Student" as their Role.)



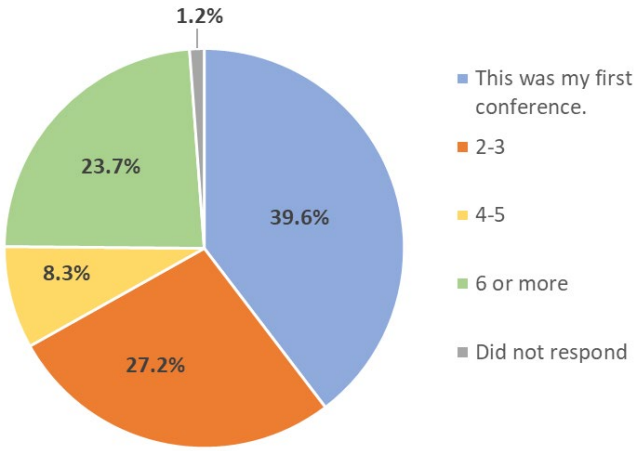
Answer	%	Count
Yes	94.6%	106
No	4.5%	5
Did not respond	0.9%	1
Total	100.0%	112

Were you a mentor of a student researcher who presented a poster? (This question presented only to the respondents who selected "Educator" as their Role.)



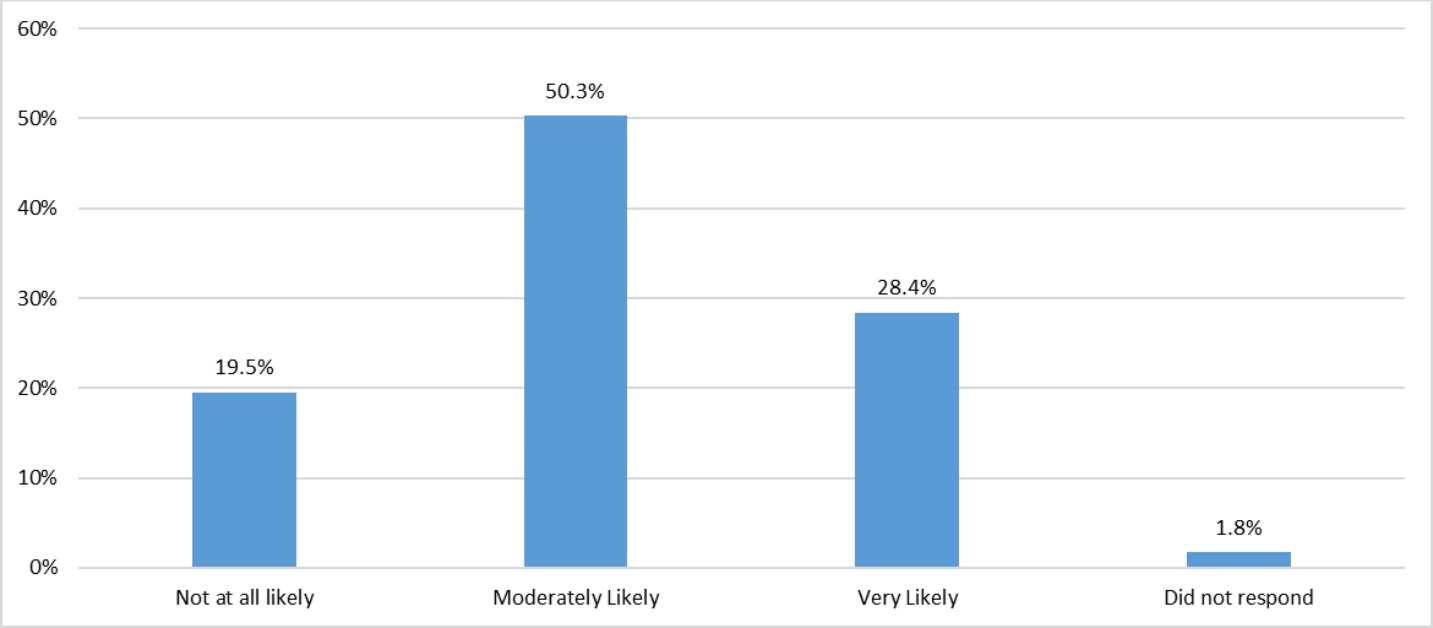
Answer	%	Count
Yes	80.0%	32
No	20.0%	8
Did not respond	0.0%	0
Total	100.0%	33

How many conferences (technical and professional conferences) have you attended including this one?



Answer	%	Count
This was my first conference.	39.6%	67
2-3	27.2%	46
4-5	8.3%	14
6 or more	23.7%	40
Did not respond	1.2%	2
Total	100.0%	169

How likely are you to attend ICUR next year?



Answer	%	Count
Not at all likely	19.5%	33
Moderately Likely	50.3%	85
Very Likely	28.4%	48
Did not respond	1.8%	3
Total	100.0%	169

How did you find out about ICUR?

The following table summarizes categories mentioned in the open-ended responses to this question and the count of respondents who mentioned them. The summary is sorted by the greatest number of mentions to the lowest. 140 respondents answered to this question.

CATEGORIES OF COMMENTS	COUNT
Specific faculty or staff member	29
SARE	16
REU program	12
Email	10
Student	7
Program requirement - not specified	6
Project SEED	5
I have previously attended	5
McNair	4
Fellowship	4
SURF	4

Internship	4
Student research participation (not specified)	4
Advisor	4
From the university/school (no specifics given)	3
IFITS	3
Not specified	3
ICUR committee	2
Lab - not specified	2
CAES	2
Office of Undergraduate Research (not necessarily BSU)	2
B2B	2
SRC	2
Announcements (not specified)	1
UI College of Science	1
Lewis-Clark State College Johnston's Lab	1
LSAMP	1
Website	1

What were your greatest lessons or take-aways from the conference?

The following table summarizes categories mentioned in the open-ended responses to this question and the count of respondents who mentioned them. The summary is sorted by the greatest number of mentions to the lowest. 134 respondents answered to this question; 19 mentioned more than one take-away. The sum of the category counts is 153.

CATEGORIES OF COMMENTS	COUNT
Learn about students'/others' research	32
Opportunity to present/practice presenting my research/poster	11
Exposure to research conference experience	9
Interacting with/meeting students	9
Networking opportunities	8
Learn to communicate to a large audience/people outside my field	7
Different paths to research/careers	6
Diversity of research	6
Graduate school info	5
How to present research/posters	5
In-person reception	5
Learn about fields and types of research	5
Interacting with/meeting faculty/professionals	4
Ability to support students	3
How to conduct research	3
Importance of mentoring	3

Perseverance in research	3
Value of research	3
Diversity of perspectives	2
Gained confidence to present/conduct research	2
Imposter syndrome talk/issues	2
Opportunity to present specifically in person	2
Paired research talks	2
Research is enjoyable	2
Research opportunities	2
Students' positive response to ICUR experience	2
Ability/potential/growth/empowerment of students	1
Attendance/participation level	1
Benefits of a remote/virtual conference platform	1
Breakout sessions - not specified	1
Criticism: Not in person	1
Feedback on my research	1
How to create a poster	1
Meet the Prof session	1
Okay to fail	1
Students' enthusiasm	1

Strong responses:

- STUDENT: *"After the "talk to a Prof" session I really liked talking to one of the mentors. She was able to provide "deeper" advice that many are not open to talking about. I resonated with the story she shared and hearing what she had to say afterwards were words that will forever be engraved into my brain. I appreciated her words and guidance so much, I reached out after ICUR to meet more often not just about research but the struggling of being a first generation student."*
- STUDENT: *"Student mentors care very much about the development of their students, and that investment in success makes a big difference."*
- STUDENT: *"I really enjoyed seeing how many other undergraduate students are interested by research. I also thought hearing from graduate students and students that had entered the workforce after completing their undergraduate degrees was useful. It demonstrated the variety of paths that can be taken."*
- EDUCATOR: *"WOW! Students are doing incredible work and I am hopeful for the future."*
- EDUCATOR: *"I love the camaraderie. It was inspiring to see the quality of the undergraduate researchers and how much they were benefiting from working with their faculty mentor."*
- EDUCATOR: *"It's great to have an accessible way for Idaho researchers to get together and showcase their work."*

The complete list of comments grouped by role follows, excluding “n/a” responses.

STUDENTS	
Student	A better understanding of the STEM research field
Student	A greater desire to continue with summer research.
Student	Actually getting the experience of presenting a research poster and sharing what research I actually conducted with peers and seniors.
Student	After the "talk to a Prof" session I really liked talking to one of the mentors. She was able to provide "deeper" advice that many are not open to talking about. I resonated with the story she shared and hearing what she had to say afterwards were words that will forever be engraved into my brain. I appreciated her words and guidance so much, I reached out after ICUR to meet more often not just about research but the struggling of being a first generation student.
Student	Being able to do the in person conference and talk to people
Student	Being able to present my research in a way that people from multiple disciplines could understand
Student	Being confident presenting my research.
Student	Experience
Student	Gaining experience doing poster presentations.
Student	Getting actually involved in presenting my research, and having to put it all together into a collective presentation.
Student	getting the opportunity to do research and share it with others
Student	Getting to connect with everyone
Student	Getting to see other posters on similar topics to my project. I was able to meet with some of the other researchers in my department and floor that I share, as well as researchers from other universities who worked on projects with similar goals to mine.
Student	Graduate students panel
Student	Hearing from the paired student-faculty researchers was really valuable.
Student	Hearing people from all over and what knowledge they offered
Student	How rewarding it is to be part of a research group
Student	How to communicate my research to a general audience; how to talk and listen
Student	How to present data to a broad audience
Student	How to present effectively
Student	I appreciated the knowledge gained with practicing presenting research in a variety of ways, and answering academic questions.
Student	I enjoy presenting.
Student	I finally felt confident in communicating my research to a variety of audiences.
Student	I got to connect with people who shared advise on how to better improve my project.
Student	I learned a lot about other people’s research and different projects going on.
Student	I learned that Imposter Syndrome is real and inevitable and that career path is limitless out there.
Student	I liked getting to know professors from all over Idaho.
Student	I love being able to network and see research outside of my field!
Student	I really appreciated hearing from the graduate students because it put a lot of things I was struggling with into perspective.
Student	I really enjoyed being able to see and talk to other students and professors from different parts of Idaho.
Student	I really enjoyed seeing how many other undergraduate students are interested by research. I also thought hearing from graduate students and students that had entered the workforce after completing their undergraduate degrees was useful. It demonstrated the variety of paths that can be taken.

Student	I really like in-person presenting.
Student	I really liked the grad school talks. I thought learning about experiences for everyone are different so really listening to myself and where I'm at in my career is what is most important.
Student	I think the most impactful part of attending the conference was talking to other researchers and getting to know new ideas.
Student	I was able to learn a lot about other research disciplines
Student	I was surprised at the range of projects taken on by participants.
Student	It was my first time presenting a poster and the most impactful part was the support I felt and the lack of judgement
Student	It was nice that I could practice poster presentation in a conference setting.
Student	It was really interesting to see what others were researching and how they went about it.
Student	It's okay to not know exactly what you are going to go into but still put forth the effort to learn.
Student	Learning about how the process
Student	Learning about new things and meeting others who were in similar situations as me.
Student	Learning about other areas of research and former students in grad school or industry.
Student	Learning about other students' projects and meeting professors from other institutions (I just wish we had more time for those things, especially the profs!)
Student	Learning about the different types of research conducted at Boise State
Student	Learning about the research of others
Student	Learning about the types and methods of research conducted in my field of study
Student	Learning how to communicate research and understand others research outside my own knowledge.
Student	Learning how to present complex scientific ideas to a general audience.
Student	Learning that everyone deals with imposter syndrome and doesn't actually know what they're doing.
Student	learning to present a poster for the first time
Student	listening to others' research is really fun
Student	Making and presenting a scientific poster
Student	Many people experienced failure
Student	My greatest takeaway was the opportunity to present a new poster I had not presented before. It helped me gain more presentation experience.
Student	My take away is that there is no need to rush.
Student	Networking with professors
Student	Other students were doing great work in other disciplines, some of which I didn't even know research could be done in.
Student	Others enjoyed my research and were excited to learn more
Student	Paired research talks were great!!!
Student	People outside of my discipline can still be interested in my research. Also, grad school isn't what I thought it was.
Student	Persistence is key.
Student	Poster presentations, learning about other research being done at my university
Student	Presenting my poster
Student	Presenting my poster and visiting others' posters.
Student	presenting research
Student	Research can be important
Student	Research extends to all fields and it is very exciting to hear other people talk about the work they are proud of
Student	Research takes more time then one might expect.

Student	Seeing friends from other disciplines come.
Student	Seeing research from other researchers in Idaho
Student	Seeing research goes beyond stem
Student	show up and try your best.
Student	Student mentors care very much about the development of their students, and that investment in success makes a big difference.
Student	Talking to other students about their research was the most impactful
Student	That all of our research is really interconnected as we're trying to better understand the world as a whole!
Student	That I don't need to have everything figured out right now.
Student	that I might be interested in public health
Student	That there's so many people passionate about so many things, and are trying hard to change the world.
Student	That undergraduate research is growing at Boise State, which is awesome!
Student	that undergraduate research is possible!
Student	The amount and variety of research that goes on
Student	The general process of making a research poster and then presenting it.
Student	The greatest take-away was how to present my research to others.
Student	the in-person presentation experience
Student	The in-person reception
Student	The intense research experience
Student	The most impactful part of attending ICUR was learning how to present my research.
Student	The posters
Student	The research skills that I learned along the way.
Student	The sense of community in the Research Industry.
Student	To continue to see what pathways everyone takes and what aspects of their lives I can apply to my own.
Student	To keep going down my path
Student	virtual conferencing is not the best format.
Student	What's it's like to present and experience.
EDUCATORS	
Educator	Diversity of research in Idaho
Educator	Great opportunity for students.
Educator	Great opportunity for students. Impressive knowledge.
Educator	great research opportunities
Educator	helping student develop their first-ever poster
Educator	helping students
Educator	How technology allowed me to connect with colleagues on different continents.
Educator	I just like seeing what the undergraduate students are doing and watching my own students grow in there awareness of the academic world
Educator	I love the camaraderie. It was inspiring to see the quality of the undergraduate researchers and how much they were benefiting from working with their faculty mentor.
Educator	I loved seeing so many student posters
Educator	In-person session - very valuable for students
Educator	Interacting with students
Educator	It was great to connect, even briefly, with other college instructors across Idaho
Educator	It's great to have an accessible way for Idaho researchers to get together and showcase their work.
Educator	Meeting excellent students and colleagues

Educator	Mentoring and time-management.
Educator	networking, and the introduction for many students to a professional scientific meeting
Educator	Our students are doing some excellent work!
Educator	seeing all of the variety in the ongoing research that in taking place in Idaho never fails to broaden my horizons
Educator	Seeing the quality of student work
Educator	Seeing the students in 2 projects with which I am associated describe their work to others.
Educator	student presentations for the interesting research, seminars for different models of undergraduate research-you did a great job with seminars and speakers
Educator	Student research presentations were very impressive
Educator	talking to folks at the live event
Educator	The level of attendance this year was fantastic.
Educator	The variety of high quality research projects involving undergraduate students.
Educator	Undergrads do great research.
Educator	We got a great couple of questions from one of our Boise State colleagues. It was very educational for the student, who had never done a poster presentation before.
Educator	WOW! Students are doing incredible work and I am hopeful for the future.
OTHER ROLES	
Other	Awareness of other work on campus
Other	Helped challenge me to ask insightful but balanced questions of the students.
Other	I was able to view posters of UI students.
Other	I was impressed with the work performed by the students and how well they presented their findings.
Other	It was a good opportunity for students to practice communicating their work
Other	It was great to see some of the posters in person at the reception and talk to each of the students!
Other	It was great to see the undergrads work on their projects. The timeline was too short, however.
Other	Listening to the excitement that the students had in their projects.
Other	no comment
Other	Student presentations
Other	The in-person session at ISU was amazing and we well put together.

What changes in the ICUR would significantly improve the conference experience for you?

The following table summarizes categories mentioned in the open-ended responses to this question and the count of respondents who mentioned them. The summary is sorted by the greatest number of mentions to the lowest. 102 respondents suggested at least one change; 15 made more than one suggestion. 70 respondents either did not answer this question or indicated they had no suggestions for improvement.

CATEGORIES OF COMMENTS	COUNT
Conference - general	53
Poster sessions	19
Other logistics	16
Plenary/breakout/other talk sessions	12
Networking	6

Reception	5
SRC	4
Discipline focus	2
No changes suggested	67

Highlights:

- Conference - general
  - 49 people desire resuming an in-person conference and/or did not like the virtual format*
  - 2 people suggested that ICUR be moved to later in the summer
- Poster sessions
  - 5 people said there were few or no attendees for a student's individual poster*
  - 5 people indicated a preference for in-person sessions specific to the poster presentations; these were generally geared toward allowing more time to see posters and/or having fewer posters available during a given session to increase audience size at individual posters OR grouping posters by discipline
  - 3 people made session structure redesign suggestions
  - 2 people had technological issues
- Plenary/breakout/other talk sessions
  - 5 people felt the sessions weren't long enough. There were specific mentions of the "Meet a Prof" session.
  - 3 people made session structure redesign suggestions*
- Networking
  - 4 people suggested better/more networking opportunities
- In-Person Receptions
  - 3 people felt the reception was too tight on space.
    - *This is likely specific to the Boise State reception, at least in the cases where posters were mentioned.*
- Other logistics
  - 5 people had technological issues
  - 4 suggested better/more communication of sessions and details before the conference*
- SRC
  - 4 people responded regarding SRC rather than ICUR and made suggestions regarding those sessions.

**Repeat highlight from last year*

Strong criticisms:

- STUDENT: *"This conference was heavily geared toward STEM majors. It made it very hard for outside majors to interact with everyone involved in the conference and have key takeaways."*
- STUDENT: *"Although it was eye opening to learn about other majors, I feel that I couldn't make a connection with non-STEM majors."*
- STUDENT: *"I would suggest having more in-person events to participate in. I know it is easier for people from all over the country to attend on zoom. However, I did not have a stable internet connection for a lot of the conference, and it was difficult for me to find somewhere else to connect to the internet that would have the quiet I needed. I know this is just a one time issue for me, but it would have been nice to have more in person events I could attend."*
- STUDENT: *"IN PERSON. I understand wanting to include a community of researchers from all over Idaho and that might be difficult to accomplish in person. However, the zoom meetings were not relevant or effective in the least bit. I would love to have better chances to network with other researchers. Zoom did not offer me that opportunity the same way that an in person meeting or casual dinner/reception would have provided."*
- EDUCATOR: *"The online part was nonsense and i did not attend the poster after not figuring our how it worked and seeing that poster were made for live sessions and not zoom session. the other part was that the icur posters were all too similar and dominated by certain PIs and topics. a single PI should only be on one poster to avoid this"*
- EDUCATOR: *"The conference needs to be in-person. The online format of presenting posters results in very few interactions, which prevents networking and prevents providing students the opportunity to really show off their research. Many students I polled after the conference felt it was a waste to invest so much time putting together a poster but only a few individuals visited their poster session. If ICUR is online again next year, then I will have students participate in another regional conference instead."*
- OTHER: *"The days were super long."*
- One student wrote an extremely long reponse; it may be found in the compiled comments list.

Changes/Comments by Category (sorted by the greatest number of mentions to the lowest):

CATEGORY > SPECIFICS	COUNT
Conference - general	***53***
Desires in-person / did not like virtual format	49
Change dates of conference	2
More undergrad focus	1
Too long	1
Poster sessions	***19***
Desires in-person / did not like virtual format	5
Few or no attendees for student's individual poster	5
Session structure redesign suggestion	3
Technological issue	2
Fewer students per session	1
Group by discipline	1

More diversity of content	1
More variety of fields	1
Other logistics	***16***
Technological issue	5
Better/more communication of sessions and details before conference begins	4
Change dates of conference	2
Group by discipline	1
Poster citations	1
Poster printing	1
Submission process is confusing/complicated	1
Website is confusing/difficult to navigate	1
Plenary/breakout/other talk sessions	***12***
Not long enough	5
Session structure redesign suggestion	3
Allow choosing which session/room/poster to attend	1
Better/more communication of sessions and details before conference begins	1
Desires in-person / did not like virtual format	1
Sessions were repetitive/had the same info	1
Networking	***6***
Better/more networking opportunities	4
Better/more communication of sessions and details before conference begins	1
Desires in-person / did not like virtual format	1
Reception	***5***
Too tight on space	3
Change dates of conference	1
Session structure redesign suggestion	1
SRC	***4***
Session structure redesign suggestion	4
Discipline focus	***2***
Make accessible to non-STEM majors	1
More science content	1
No changes suggested	***67***

The complete list of comments grouped by role follows, excluding “n/a” and “none” responses that do not elaborate further.

STUDENTS	
Student	Being able to network with each other more
Student	Being in person
Student	Being in person
Student	Being in person will be fun
Student	Being in person would be great

Student	Better access to information. Know what is going on in advance as to how we will be presenting and such.
Student	Can all ICUR in-person posters be printed for free ahead of time, so no students are dismissed, forgotten, regardless of where their home schools are?
Student	having in person events to talk to other researchers
Student	Having it in person would be much more engaging...
Student	Having it in person.
Student	Having the conference in person would be perfect.
Student	Holding the conference in person.
Student	Honestly, my only big issue with the conference was how confusing the website was. For example, when trying to find the zoom link, going to the ICUR website and clicking 'Schedule' would not show me the link, but if I went to my email and clicked the ICUR website link that was sent to me, it took me to a page labeled 'Schedule' which had the link. I still have no idea how I could have navigated to that page without the email. There were a few other situations like this where I had problems navigating the website.
Student	I believe it was ran very well and currently I do not have any suggestions on optimizing the ICUR experience.
Student	I believe the ICUR could be improved significantly by being an in person conference.
Student	I don't really think any that could be done by the organizers. There weren't a lot of posters or presenters from my field which lessened my enthusiasm a bit, but that's just how the draw goes with who presents.
Student	I feel like it would be interesting to have an in person conference but I understand the need for it to be online
Student	I have no major changes besides being in person, however, that's not applicable this year.
Student	I liked the in-person closing reception last summer (2022). It felt like the next best thing to having the conference in-person.
Student	I loved the idea of "meet a prof" but there definitely wasn't enough time to interact- too much time was taken introducing them.
Student	I think being in person will make ICUR much easier to talk to people and allow people to feel more open to visiting other people’s posters.
Student	I think being in-person would greatly benefit the conference
Student	I think that being able to have to conference in-person would make the experience that much more interesting and poignant.
Student	I think that having more in-person events and sessions would be more impactful! That would involve a greater number of buildings or rooms, but I think it is a much greater way to make connections.
Student	I think that I would have benefited most if the session for "Effective Research posters" didn't just go through a "good" or "bad" looking poster but rather the actual process of constructing these posters. I would have liked getting more advice on how large a title should be. about how many words to use, how to edit and make pictures fit nicely, creating and choosing the right graph for the date we are using, or as simple as how do you set up a slide in PowerPoint or google slides to be edited. I found it that just going through multiple posters and finding similar patterns of what is ideal and what is not for a poster could have been narrowed down to only a few minutes and rather than extending that to a full hour session could have used that hour to go through tips and tricks on how to even make and edit these posters.
Student	I think the in-person presentations were much more enjoyable
Student	I thought having the in person closing ceremony before the actual conference started was a little strange. I also did not know about it until a few days before so I wasn't actually able to attend because I had prior commitments. Maybe next year it should be at the conclusion of the conference. Also, the conference being in person would be cool.

Student	I was not all that aware on how to network with other students and observers in the online conference. Some guidance on how to go about that would be much appreciated.
Student	I was satisfied with the ICUR experience
Student	I wish the breakout rooms were just a little longer so we had the opportunity to ask more questions.
Student	I wished that the students knew specifically that they are invited to attend all the sessions and not just the ones they were presenting.
Student	I would have prefered to attend the in-person ICUR, as the zoom conference was quite long.
Student	I would like to attend in person sometime.
Student	I would like to see it in person and I more flexibility with the guest speakers and choosing who I want to hear from.
Student	I would like to see more time spent actively helping participants create their posters and practice their presentations. I work as the only person on my project with little to no outside assistance from others in my lab. Therefore, I was unable to get outside feedback on my poster and presentation leading up to ICUR. I believed that the SRC meetings leading to the conference would help with that but I do not believe that they did. I found that the topics discussed in the beginning stages of SRC were the exact same topics discussed during ICUR prior to the Poster Sessions. Although there were different people talking about different experiences, the overall message and "guidance" given towards participants felt exactly the same. What I would have liked to see was more direct communication and hands-on guidance between SRC/ICUR participants and coordinators/advisors about the posters and presentations. I felt as though SRC established itself as a resource and guide for participants in preparation for ICUR but did not truly give useful guidance for how to create a poster and craft a presentation until it was too late. I personally felt as though I was expected to instead, lean on mentors and colleagues for preparation help, but that was something I did not have the luxury of receiving due to my project's circumstances. I expected to have multiple SRC sessions leading up to ICUR that were purely focused on having students come with their posters and practice presentations to get feedback do they could adjust their poster accordingly. Instead, I got one session only four days before the Final Posters were due where I felt like I got the same experience as during the first SRC meeting. All we were able to do was explain what our project was about, but we didn't get to adequately show our posters, practice a presentation, or gain feedback due to lack of time and the fact that some participants had not started their posters. I know of other participants within my own department who had mentors who actively set aside time for their students to practice and prepare for ICUR, something I, again, did not have. Therefore, I was placed in an unfair disadvantage in comparison because I was unable to prepare and make changes to a poster before the deadline. If SRC/ICUR had spent more meetings doing these kinds of exercises, I believe that this issue wouldn't have existed. Lastly, I believe that ICUR itself occurred too early in the summer. While I understand that universities around Idaho begin and end their projects at different times, it was frustrating that ICUR occurred as early as it did. I do have a unique experience in that my research continues into the school year, but even then, the academic school year doesn't start until mid-August. Therefore, there was about a month of time between ICUR and the start of the school year in which summer research could be, and is, still occurring. However, the information gathered in that time could not be presented. Participants who work on projects that last for different time periods are placed on a variety of schedules that can prevent meaningful work to be completed by conference time. Being on a more limited time scale reduces participants ability to work through and develop their research and turn it into a presentation. I talked with a handful of participants during early SRC meetings who were in similar situations to me in that they were unable to collect data or work on their project at all for weeks due to a variety of reasons. Therefore, all of us were placed at a disadvantage compared to other researchers who were able to join their project and start working immediately. Pushing back the date

	for ICUR would allow for participants on a longer time scale to “catch up” to those who finished their projects earlier, therefore allowing for a more equalized level of research being conducted across all participants. While I understand that ICUR is not about “gathering data” and that participants can present their project without gathering data at all, I still found it incredibly stressful to finally get data a week before the poster was due and then have only a few days to analyze that data and turn it into useable content for my poster. I felt as though I did not have enough time to adequately synthesize my data and create a poster that showed what I truly wanted to share. If the “Poster Deadline” that was imposed this year was purely a “rough draft” deadline instead of the deadline for the final poster that could not be changed after submission, I do not believe that this process would have been as stressful and mentally taxing as it had been. Instead, I would have been able to show this rough draft to my peers and other advisors to gain helpful feedback on what could be improved upon in the poster as well as any additional information that they wanted to see. In my opinion, this would be a significantly better use of time during SRC meetings leading to ICUR because it allows participants to not only gain a community of fellow undergraduate researchers, but it also actively helps them learn how to create posters and presentations, as well as how to take constructive criticism and use it to improve their project. This is something that everyone will experience at some point in their career, regardless of if they end up in a research field or not, and therefore it is vital to spend time practicing so that participants young and old, new or veterans to research, can understand how to take that feedback and use it to their advantage. Overall, please consider pushing back the date of ICUR at least a week or two to allow for more time to be spent gathering data for projects that may have been setback for whatever reason. Further, please consider altering some of the original content of early SRC meetings and develop multiple meetings that instead focus on actively helping students craft posters and presentations and allow for feedback from peers. I believe that it is significantly more beneficial for participants to be given more time to learn how to craft presentations and gain feedback on them prior to ICUR. Finally, I believe that it is a much better use of time for some content from this year’s SRC meetings be kept primarily to the ICUR Sessions leading to the Poster Sessions to allow for more engagement during those presentations and free time to insert the suggestions I have made. All presenters at ICUR deserve to be listened to and focused on, however if participants have already learned what these speakers are advocating for, this does not occur. Instead, time should be spent preparing posters and presentations leading to ICUR so that participants can learn what they can do with the new skills and information that they have learned during the early sessions of ICUR. I greatly appreciate that you have created this opportunity for undergraduate and even high school researchers to come together and I hope that this feedback will allow for this opportunity to improve even more in the future.
Student	I would rather it have been in person
Student	I would suggest having more in-person events to participate in. I know it is easier for people from all over the country to attend on zoom. However, I did not have a stable internet connection for a lot of the conference, and it was difficult for me to find somewhere else to connect to the internet that would have the quiet I needed. I know this is just a one time issue for me, but it would have been nice to have more in person events I could attend.
Student	If it were in-person, it'd be easier to be engaged and I would have hopefully had more than one person (who wasn't already familiar with my project) stop by my poster.
Student	If presenters were able to familiarize themselves with Fourwaves, as a presenter, before poster sessions.
Student	In person meeting, change the questions for the industry people to less about personal life and more about their role in industry, make more major specific

Student	In person poster presentation.
Student	In person!
Student	IN PERSON. I understand wanting to include a community of researchers from all over Idaho and that might be difficult to accomplish in person. However, the zoom meetings were not relevant or effective in the least bit. I would love to have better chances to network with other researchers. Zoom did not offer me that opportunity the same way that an in person meeting or casual dinner/reception would have provided.
Student	In-person would make networking and staying awake easier
Student	Just make it in person, as a whole.
Student	Make it in person
Student	make it in person
Student	More in depth talks with undergraduate students.
Student	More interactions between current grad students and the undergrad students
Student	More time in Meet the Prof breakout rooms to ask questions
Student	More time per session or fewer posters per session
Student	Moving away from the fourwaves platform.
Student	Not doing the conference online.
Student	not sure
Student	Nothing it was fine.
Student	Nothing, I liked how it worked.
Student	Nothing.
Student	Online meetings are really hard to stay excited about, in-person would be much more preferred and engaging.
Student	Perhaps transitioning better from smaller groups to bigger ones
Student	Providing more time in the breakout rooms for interaction with the professors would have been beneficial.
Student	Registration date being accurate.
Student	Scheduling SRC at a more convenient time
Student	Shorter weekly meetings!
Student	Splitting the posters up into more groups would help people view more posters
Student	Switching from Fourwaves to in-person or another format.
Student	Talks sometimes seemed to not align with what folks were studying. I was invited to the conference under the impression it was more biological science based but speakers or panel members were from political or communication backgrounds and that wasn't as helpful for me.
Student	The conference should be in person. Presenting a poster online was awful.
Student	The in-person conference could have been more structured to make the posters an important part of the event.
Student	The in-person reception in the Micron Center for Materials Research was super tight and hard to navigate, but pizza was an excellent idea.
Student	The poster session needs to be in person, i only had one person come to my poster so it felt like a huge waste of time and effort. Maybe do a poster award and have a group of judges so everyone could at least share their research with 2 judges
Student	The processing method
Student	This conference was heavily geared toward STEM majors. It made it very hard for outside majors to interact with everyone involved in the conference and have key takeaways.
Student	Would love the opportunity to do more in person poster sessions and networking!
EDUCATORS	
Educator	A slightly later date for the conference.

Educator	Attendance was very low. I am guilty of only attending the 2 posters of students in projects I am affiliated with, and not others. I think attendance online by non-presenters/mentors was very small. The process of nominating a student was ok for me, but unclear to others. It is summer and not everyone is around full time, so lead time needed to be more.
Educator	Can we please get a persistent link, DOI, and citation for the poster presentation? It is very convenient to be able to highlight the presentation for resumes and reporting purposes.
Educator	Having smaller poster sessions would increase the traffic flow so people would get questions. It was OK in person I think as people spread out, but I had a couple students that didn't get any visitors (besides me and the others in my group). Having more poster sessions (that are even smaller) would help.
Educator	having the conference in-person or using a different hosting platform. Finding and attending posters was challenging. If you attended a poster, you had to log out and log back in to attend another one in that same session. Having posters grouped (or at least searchable) by Discipline would be very helpful.
Educator	I know some students were disappointed at the lack of people coming to their poster session.
Educator	I like when the paired research talks were more conversational between students and faculty.
Educator	I think you do the best you could have using Fourwaves and having the conference on line. In person is a much more engaging event, of course. The main problem I had was that there were so many posters in each session and with the Fourwaves site, I could not visit very many, and some of my students did not have many visitors to their poster. In person, with people strolling to posters, this would be less of a problem. Thank you for the great event.
Educator	I though the conference was very well run. Personally, I would love to see it return to in-person simply for the increased interaction between attendees. I thought the BSU in-person reception was great.
Educator	It would be more engaging if the content was organized by topics/disciplines.
Educator	Larger room for the in person presentations. the room was too small for the number of presentations.
Educator	Maybe more in person at BSU. Next year I'll have my students give in person poster presentations but maybe not both in person and virtual. That is asking too much of them.
Educator	More in person poster presentations.
Educator	More in-person as feasible
Educator	More time for networking with both students and colleagues
Educator	please consider shifting back to an in-person conference: last year's student had zero visitors during the poster session and this year's only had one visitor outside our research group
Educator	Poster sessions should just not be done online.
Educator	The conference needs to be in-person. The online format of presenting posters results in very few interactions, which prevents networking and prevents providing students the opportunity to really show off their research. Many students I polled after the conference felt it was a waste to invest so much time putting together a poster but only a few individuals visited their poster session. If ICUR is online again next year, then I will have students participate in another regional conference instead.
Educator	The online part was nonsense and i did not attend the poster after not figuring our how it worked and seeing that poster were made for live sessions and not zoom session. the other part was that the icur posters were all too similar and dominated by certain PIs and topics. a single PI should only be on one poster to avoid this
Educator	Though no one at BSU realizes this fact, Idaho has two time zones. They have different times of day, separates by an hour. Therefore, whenever you post any scheduling at all, always include the time zone that is being used. It matters not how important or insignificant the event is, always include the time zone that is being used.
Educator	Trying to access the Fourwaves site the day before the conference to check out the detailed schedule, make sure I had access, etc. was frustrating since it wasn't really open yet. Might include some sort of statement with registration that says when the site will actually be accessible.

OTHER ROLES	
Other	Allowing students more time to work on their projects. I think posters should be divided into sessions based on topic to increase the number of people who engage each student. Really low engagement outside each students immediate work circle.
Other	For in person, larger space so posters are less crowded. Seems like that size crowd was not anticipated.
Other	Give the undergrads a little more time to work on their projects.
Other	I think that the all in-person finale planned for next year will be an awesome addition
Other	In person
Other	Some weird audio echoes on Fourwaves--not sure how to fix
Other	The days were super long.
Other	The login/sign up process was exhaustively tedious! Would have loved to be able to click a link and join/sign in with an existing account (i.e. Google single sign-on, etc)
Other	Virtual works, fills a niche, but I always prefer in person for the networking and learning that happens as well as the friendships that follow. You did nothing wrong, people worked hard. I just gave you my honest feedback.

2022/2023 Idaho ICorps Ignite
After-Action Report

Program Overview

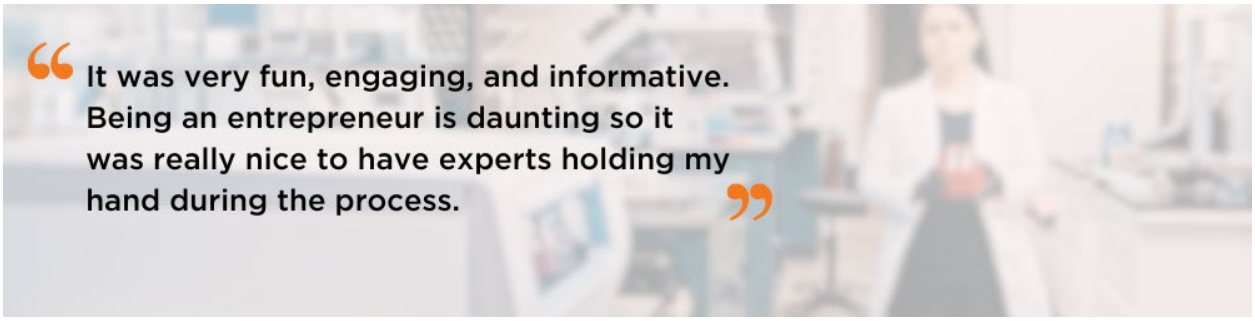
Idaho I-Corps Ignite was a pilot program that Boise State University (BSU), Center for Advanced Energy Studies (CAES), Idaho State University (ISU), and University of Idaho (UI) collaborated to deliver during the summer of 2022. The program was developed jointly by these Idaho institutions, starting with materials adapted by the BSU Venture College from a National Science Foundation (NSF) program named “Innovation Corps” (I-Corps).

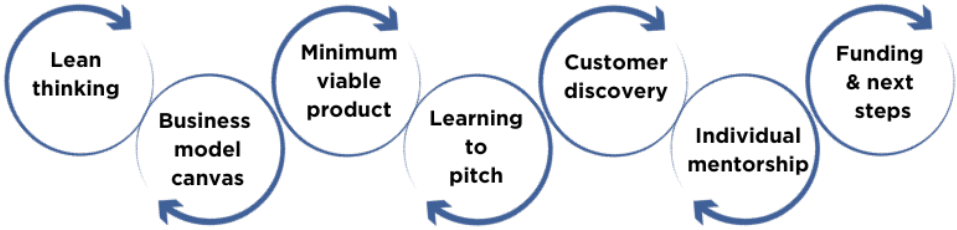
This program has also been adapted by the National Institutes of Health (NIH) and the U.S. Department of Energy (DOE).

Designed to provide a cohort-driven learning environment, faculty and graduate students would receive training and resources to help move their research ideas closer to a real-world product or service, through a state-wide program meant to bolster connections between Idaho researchers. The program was funded by in-kind contributions of faculty and staff time from each institution, and a $2,500 stipend was provided for each participant.

The stipend was made possible by a $40,000 IGEM HERC grant. The 6-week program began in June 2022 and met twice weekly for 90 minutes.

Informational fliers were circulated around each institution and the online application was made available on May 11, 2022, and closed on May 28, 2022, garnering 13 applications. Due to the generous funding, admission was extended to all applicants although not all applicants chose to participate. The cohort consisted of 7 teams, made up of five faculty members and one graduate student from ISU, one faculty from BSU, and one faculty from UI. The technology readiness level from the 2022 Ignite cohort varied greatly, with some participants having patented technology and some still in the ideation stage. The overall maturity of the technologies was notably young.

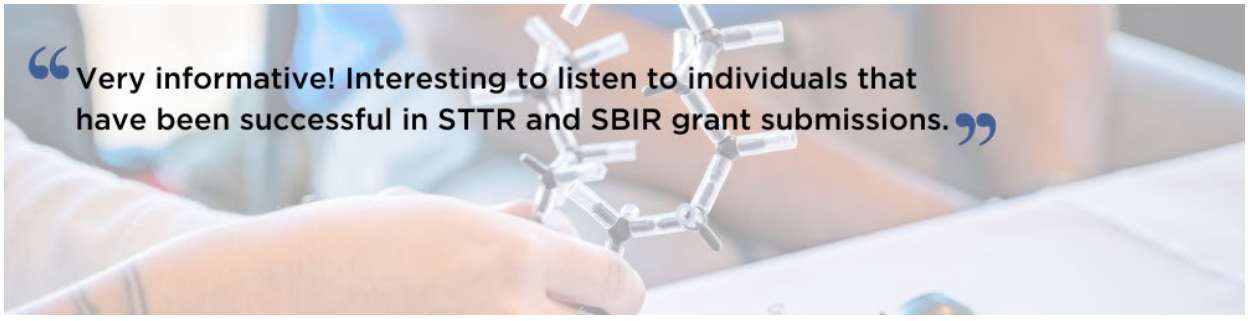




The focus for participants was to learn the basics of how to test an academic research idea as the basis for a business. Participants learned how to better communicate about their research as a business idea, and how to incorporate feedback from potential customers into their product planning process. Each cohort meeting featured some time spent highlighting Idaho entrepreneurial resources for participants to leverage along the commercialization path, inside and outside the universities. All 7 participants completed the entire program, and during the last cohort meeting, each pitched their project to a virtual audience of university and community leaders.

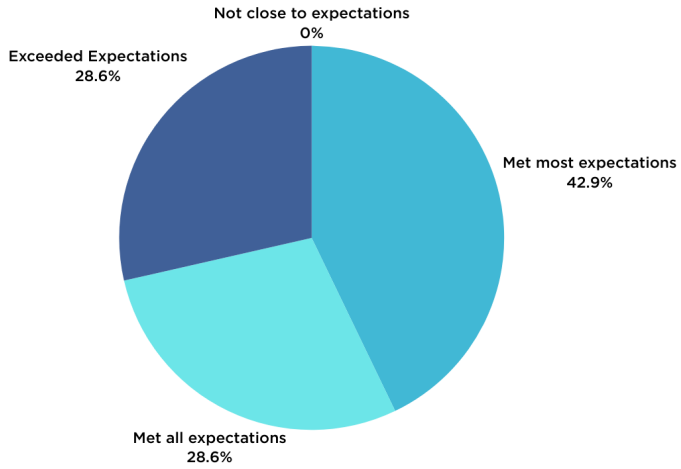
Three $2,500 follow-on funding opportunities were offered to each participant as an incentive to continue to develop their ideas. Participants would receive these stipends following the completion of milestones tailored to their technology and progress. Venture College staff met with each team to determine milestones to advance their ideas. All participants accepted this challenge to continue their entrepreneurial pursuits. Of these 7 teams, 2 completed their first milestone, receiving an additional $2,500 stipend. One went on to complete a second milestone for an additional $2,500.

Following the completion of these milestones, remaining funding was used by each partner institution to provide additional incentives for faculty and student teams to participate in the NSF I-Corps Desert and Pacific Region Hub 4-week training. This program focuses on research-based technology venture products and services, allowing teams to realize the commercial potential of their research and innovation. Ten teams received a $1,203.25 stipend for participating. Participants consisted of: 2 faculty from BSU, 1 undergraduate from BSU, 1 faculty from ISU, 1 faculty from UI, 3 undergraduates from UI, 1 researcher at Idaho National Laboratory (INL), and 1 undergraduate from College of Southern Idaho (CSI).

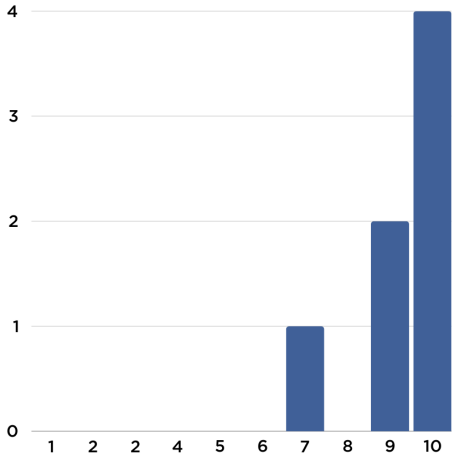


Participant Feedback Highlights

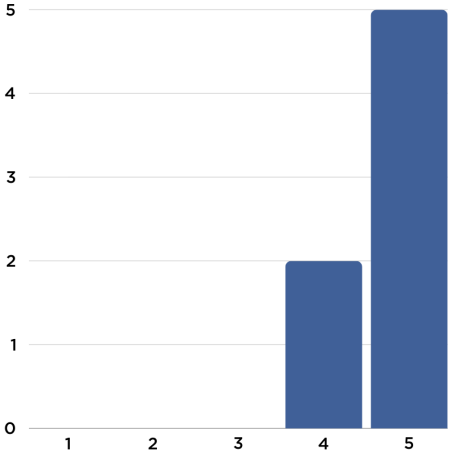
How did the class meet your initial expectations:
7 responses



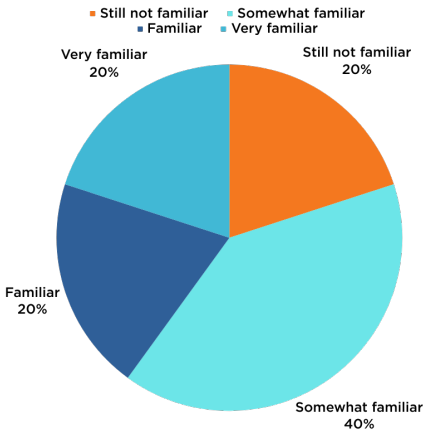
How likely are you to refer Idaho Ignite to other faculty looking to launch their venture?
On a scale from 1 - 10 (1 not very likely, 10 very likely)
7 responses



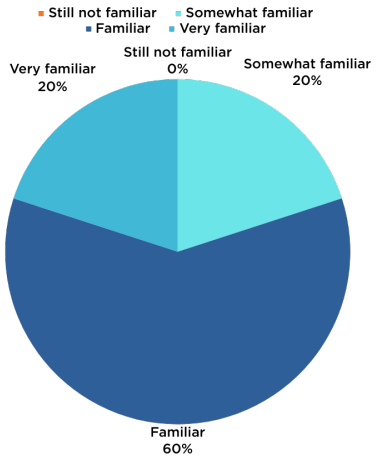
After taking the course, how interested are you in commercializing your proposed venture?
On a scale from 1 - 5 (1 not interested, 5 very interested)
7 responses



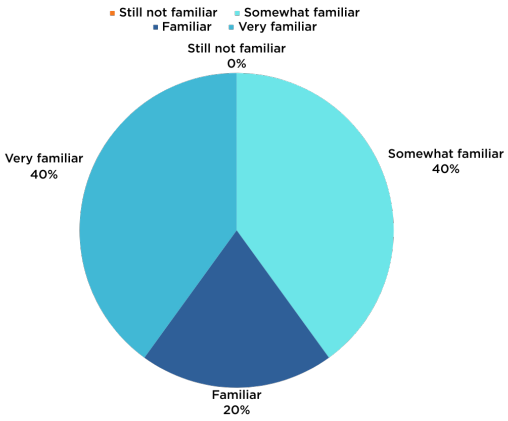
After the Idaho Ignite Program, how familiar are you with:
Research Council (HERC) Incubation Fund



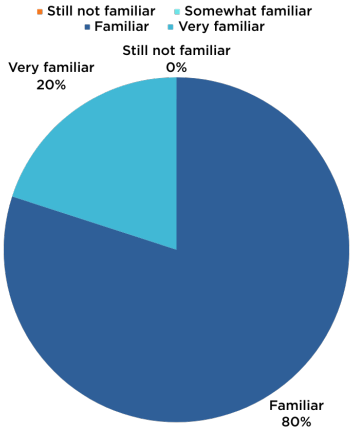
After the Idaho Ignite Program, how familiar are you with:
Idaho Global Entrepreneurial Mission (IGEM) Funds



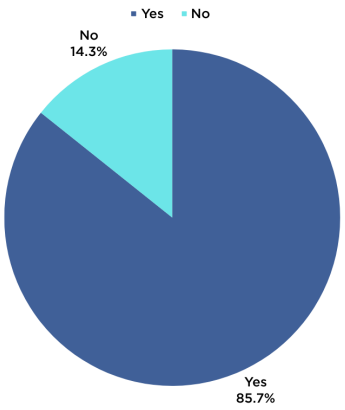
After the Idaho Ignite Program, how familiar are you with:
Small Business Technology Transfer



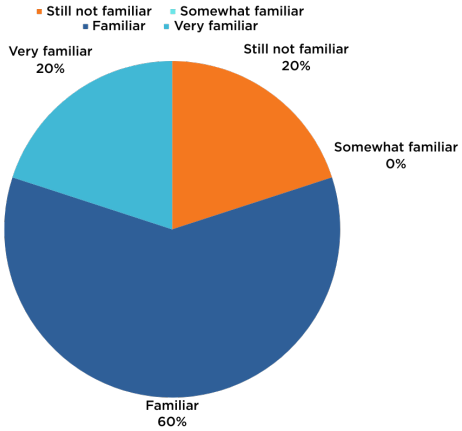
After the Idaho Ignite Program, how familiar are you with:
Small Business Innovation Research



After the Idaho Ignite Program, do you know how and where to submit an Invention Disclosure at your home institution?
7 responses



After the Idaho Ignite Program, how familiar are you with:
Angel/Venture Capital Funds



Program Budget Narrative

The budget for stipends for participating faculty ventures was $40,000, broken down as follows:

Idaho ICorps Ignite Participant Stipends

- All 7 teams received a $2,500 stipend for participating
- 2 teams met their second milestone
- 1 team met their third milestone
- Total stipends awarded: $25,000[1]

Milestones

Teams	First	Second	Third	Total
1	$2,500	$2,500	$2,500	**$7,500**
2	$2,500	$2,500		**$5,000**
3	$2,500			**$2,500**
4	$2,500			**$2,500**
5	$2,500			**$2,500**
6	$2,500			**$2,500**
7	$2,500			**$2,500**
Total Stipends Awarded	**$17,500**	**$5,000**	**$2,500**	**$25,000**

[1] Fringe benefits totaling $2,850.91 are not included in the total stipend award amount.

NSF I-Corps Desert and Pacific Region Hub Participant Stipends

- 10 teams awarded $1,203.25, for a total of $12,032.50
- Remaining funds: $116.59[2]

Teams	Stipends
1	$1,203.25
2	$1,203.25
3	$1,203.25
4	$1,203.25
5	$1,203.25
6	$1,203.25
7	$1,203.25
8	$1,203.25
9	$1,203.25
10	$1,203.25
Total Stipends Awarded	**$12,032.50**

Staffing
The staffing was an in-kind contribution from each institution, with the primary program facilitation team consisting of the following dedicated professionals from each organization:

Boise State University:
- Ryan Vasso, Interim Director of Venture College
- Cara Van Sant, Interim Associate Director of Venture College
- Brett Adkins, Director of Technology Transfer

Idaho State University:
- Dan Cravens, Clinical Assistant Professor of Management, Bengal Solutions Director

University of Idaho:
- Jeremy Tamesen, Director of Technology Transfer

Lessons Learned
The bullet points below are recommendations from the participants as possible improvements moving forward:

- Highlight how to bring about a consultancy to spin off at a later time.
- Discuss ways to involve students and education in the entire process.
- Better help faculty navigate potential conflicts of interest for grant opportunities.
- A “next steps” class would be helpful, especially if mentors are included.

[2] The remaining $116.59 will be returned to HERC.

- The creation of a resource center would be a good takeaway for participants to refer to throughout their entrepreneurial journey.

Next Steps

Boise State and University of Idaho are now recognized as members of the National Science Foundation's Innovation Corps (NSF I-Corps) Desert and Pacific Region Hub, each receiving awards as part of a five year grant to fund entrepreneurial training for faculty, staff, and students at Idaho public universities and INL.

As an I-Corps member, these universities will collaborate with R1– or "very high research activity"– institutions to accelerate innovations that benefit the region and society.
NSF I-Corps Hubs provide experiential entrepreneurial training to academic researchers and graduate/postdocs across all fields of science and engineering, and help them translate fundamental research results to the marketplace. The I-Corps Hubs work collaboratively to build and sustain a diverse and inclusive innovation ecosystem throughout the U.S.

The Desert and Pacific Region Hub consists of the following universities: Arizona State University, University of Arizona, Northern Arizona University, UC San Diego, University of Hawaii, Boise State University, University of Idaho, and University of Nevada, Las Vegas.

Idaho ICorps Ignite will be paused for the foreseeable future as we focus our efforts on the NSF I-Corps programming. ISU, INL, CAES, and Idaho community college participants will have the opportunity to participate in these training sessions as they are partner institutions to both BSU and UI. This programming will take place over the course of 5 years, and this January we will kick off our 2nd year.

One consideration for Idaho ICorps Ignite is to serve a prerequisite to the NSF I-Corps regional training, however this will be determined at a future date once we have a better understanding of how it could lead into the NSF I-Corps training.

Other next steps include:

- Continue follow-on conversations with participants to track their progress, including but not limited to funding, services needed, patent applications, etc.
- Identify the types of barriers to faculty commercialization, including technical and financial barriers, as well faculty timelines and career policies, that impact the multi-year stages of the faculty commercialization process.
- Tailor efforts to the respective stages of the faculty commercialization process.
- Leverage existing federal commercialization programs, including NSF I-Corps, within the faculty commercialization process.

Appendix A
Summer 2022 Participants

- **Juliette Tinker | Pentamer Biologics, LLC**
  Boise State University
  Professor, Department of Biological Sciences & Biomolecular Graduate Program

  Business Description:
  Vaccine company targeting diseases in dairy cows.

  Total Stipends Received: $2,500

- **Mary Nies | Robotic Pets**
  Idaho State University
  Special Assistant to the Dean of the College of Health for Grant Writing, Tenured Professor

  Business Description:
  Robotic pets to decrease social isolation in assisted living residents.

  Milestones Met: 1
  Total Stipends Received: $5,000

- **Melody Weaver | Gat a Friend in Me (GaFiM)**
  Idaho State University
  Assistant Clinical Professor, Graduate Studies

  Business Description:
  An interactive product to decrease loneliness in older homebound adults.

  Total Stipends Received: $2,500

- **Rifat Ara Tasnim | ARCoD**
  Idaho State University
  Ph.D. Student, Graduate Research Assistant, Department of Computer Science

  Business Description:
  A video game to measure the level of cognitive distortions through gameplay.

  Total Stipends Received: $2,500

- **Ryan Manwaring | Sperovue**
  Idaho State University
  Clinical Assistant Professor, Department of Clinical Psychopharmacology

  Business Description:
  Nonpharmacologic sleep aid for children, offering an alternative solution to conventional pharmaceutical interventions.

  Milestones Met: 2
  Total Stipends Received: $7,500

- **Teresa Conner | (entity not yet formed)**
  Idaho State University
  Dean & Professor, College of Health

  Business Description: A multi-component motorized device that allows a single therapist to safely gait train patients.

  Total Stipends Received: $2,500

- **Zachary Kayler | Idaho Soil Carbon Solutions (in process)**
  University of Idaho
  Assistant Professor, Department of Soil and Water Systems

  Business Description: Hybrid education-consultancy entity offering services to producers interested in entering the carbon market.

  Total Stipends Received: $2,500

Appendix B
2022 NSF I-Corps Stipend Recipients

- **Arielle Levi | Relevarte LLC**
  University of Idaho
  Undergraduate Student

  Business Description:
  Fozzio Music Healing device that uses classical music and specific audio frequencies to provide consumers with a non-invasive healing solution.

- **Brandon Yagla | Sol Well**
  College of Southern Idaho
  Undergraduate Student

  Business Description:
  An all-in-one ground-based solar concentrator. Inspired by nature's brilliance, particularly the efficiency of the honeycomb structure found in beehives, the Sol Well harnesses solar energy in innovative ways.

- **Byung Kim | COIFM**
  Boise State University
  Professor, Physics Department

  Business Description:
  Novel scanning probe microscope called COIFM, enabling microscopy at the single molecule level as well as imaging biomolecular dynamics.

- **Cambria Brann | INE**
  Boise State University
  Undergraduate Student

  Business Description:
  Nail extension that is designed to both improve convenience and functionality in day to day life for those who choose to wear long nails.

- **Marcia Darling | StreamPad**
  University of Idaho
  Undergraduate Student

  Business Description:
  Device that provides an innovative way for livestreamers to interact with their stream and audience.

- **Ryan Manwaring | Sperovue**
  Idaho State University
  Clinical Assistant Professor, Department of Clinical Psychopharmacology

  Business Description:
  Nonpharmacologic sleep aid for children, offering an alternative solution to conventional pharmaceutical interventions.

- **Sarah Abraham | Caprine**
  University of Idaho
  Undergraduate Student

  Business Description:
  Luxury mohair knitwear brand.

- **Suketu Gandhi | X-Rad-i-Cl Solutions**
  Idaho National Laboratory
  Chemist

  Business Description:
  Chlorine isotope separation research for molten salt reactors.

- **Tony Valayil Varghese | INFlex Labs**
  Boise State University
  Research Scientist, Material Science & Engineering Department

  Business Description:
  INFlex Labs provides nanomaterial inks that are compatible with multiple printer modalities, offering a solution of interchangeability between printers and an opportunity to choose between speed and precision for the customers.

- **Tyler Bland | Medimon**
  University of Idaho
  Clinical Assistant Professor, Idaho WWAMI Medical Program

  Business Description:
  Our technology, Medimon, is a cross-generational form of health promotion and disease prevention that utilizes a video game as a form of health science education.

IGEM Grant Report

☐ Progress (due Jan. 1) ☒ Annual (due Jul. 31) ☐ Final (due Aug. 31)

IGEM Grant # ___***IGEM 22-001***____ Principal Investigator _Edward Vasko_____

Submission Date _July 31, 2023_____ Primary Institution Boise State University__

The Cyberdome: An Investment in Idaho's Cybersecurity Future

Section 1: Summary of project accomplishments for the reporting period and plans for the upcoming reporting period.

Objective 1: Workforce development metrics:

For the reporting period, the Cyberdome project has funded an equivalent of 32 full student internships. During this period, student workers from 5 of our public institutions, including Boise State University, College of Western Idaho, College of Eastern Idaho, Lewis Clark State College, and University of Idaho worked together to monitor & detect client issues.

Objective 2: Risk reduction for clients:

For the reporting period, our technology platform reported a total of 78,809 client alerts to our student workers covering 4,783 total monitored assets in our client community. From these alerts, the students were able to analyze the reported data and filter this information to 6,449 possible incidents. These incidents were then further examined with our lead mentor team members for possible impact levels to our clients. Of the possible incidents, a total of 431 escalated to our clients. The team then worked with our clients to determine next steps and escalation paths. These alerts, incidents, and escalations would not have been caught without the technology, processes, and student workers in the Cyberdome.

Objective 3: Produce innovative research, tools, & techniques

Our Co-PIs and Graduate Assistants (GAs) submitted a total of five papers, with one paper being selected for publication. The papers range across topics such as: anomaly detection in process execution, malware polymorphism mitigation, cybersecurity predictive models, useful certificateless email encryption, and election security. After examination of the changes in cybersecurity workforce development frameworks, coupled with industry advancements, we made the decision to stop any further refinement of the one technology licensing/transfer involving predictive individualized training for cybersecurity workers.

Status of other planned accomplishments from last year's report:

Building recurring (annual) penetration testing offering for clients with vulnerability scans. After a successful test, our student team established test endpoints with two of our longest standing clients and are almost ready to begin initial tests on the actual scanning and

reporting process. While establishing the network pieces - which has been the most complex part – this student team has also been working on establishing reporting automation processes, which are already complete enough to test. If our initial tests prove to be both successful and the product useful to our clients, we expect to deploy the process to all our clients the second half of 2023.

Continue development of the Virtual City/CyberRange as a training platform.
In recent weeks our "Manticore" public range environment underwent significant retooling in order to create isolate computing sets for our Idaho sister schools & programs to utilize as part of the Idaho Cyber Range (project name: Chimera). This involved significant development effort for all the individual components necessary to implement significant networking and system isolation. All pieces have been initially tested & verified to work.

Continue activating Cybedome clients.
Increasingly complex clients provide real world experience for our engineers and analysts as they architect and implement sensors, and monitor the events and alerts, respectively. We have nine active clients and nine prospective clients in varying stages of movement forward towards activation, far exceeding our original grant goal of five clients. Two of these prospective partners include the Idaho Secretary of State and Idaho Rural Education Association.

Training improvements
The team continues to improve training for engineers and analysts based on new methods, approaches, and available content. This includes training on how to restore systems when they go down; how to build new system components from scratch; how to monitor the full security grid; and how to scan assets for vulnerabilities. Analyst specific training now includes exercises in simulated security events, how to detect and then threat hunt events, and how to manage cases (including client etiquette).

Platform refinement & automation
There are many regular, repetitive tasks involved in the regular upkeep of Cyberdome systems and lab environments, and student workers have been involved with documenting these processes. One such example is that automated reports being are pulled from Stellar via API and refinement of client deliverables is on-going.

Section 2: High-level summary of budget expenditures for the period just completed. If budget is underspent at time of report, explain why and plans for expending funds.
The table in Section 6 presents an expenditure report for the full-year of this period. An equivalent of thirty-two students, three graduate assistants, five faculty, and 2.5 full-time staff were directly supported by the grant in FY23. As in prior years, in FY23 we experienced a surplus in our Other Expenses (OE) due to much lower than anticipated Amazon Web Services (AWS) expenses. Our original grant proposal submitted in 2021 included an estimated $62,700 towards subscription and storage costs while actual expenses were just under $14,000. These surplus funds were used to pay for expenses including five months of effort from a full-time Engineering mentor and training materials to help interns work towards industry certifications.

Section 3: Demonstration of economic development/impact, including the following as applicable: patents, copyrights, plant variety protection certificates received or pending; technology licenses signed, start-up businesses created, and industry involvement; private sector engagement; jobs created; external funding; any other pertinent information.

Industry Involvement/Private Sector Engagement

A wide range of industry partners continue to express interest in supporting the Cyberdome's dual missions. Partners engaged in this period include: PlexTrac (www.plextrac.com), Sophos (www.sophos.com), AllPoints Logistics (www.allpointsllc.com); Secure-IoT (www.secureiot.com), Hyprfyre (www.hyprfire.com) CRI Advantage (www.criadvantage.com), Silent Sector (www.silentsector.com), and Shadowscape (www.shadowscape.io).

Economic Development via Jobs Created:

Since the beginning of the reporting period, 31 student workers responded to surveys indicating their expected wage over the next year. Out of those 31 respondents seven indicated that they already had accepted a job offer and reported an average salary of $51,666 per year. Those who had studied for either a bachelor's or master's degree reported a significantly higher salary of $75,000 compared to those with an associate's degree that report an expected annual salary of $42,000.

Additional funding received through leveraging the Cyberdome:

In the mid-year report, we identified an Idaho Workforce Development Council (WDC) Industry Sector Grant equal to $800K over 3 years (approximately $266,000/year). The grant period spans FY'23 through FY'25 with a possible extension into FY'26

Two other Federal grants leveraged the Cyberdome data/platforms for delivery/support. The first is a $750,000 2-year grant from the NSA Center for Academic Excellence program. The grant is to develop AI/ML analysis graphs leveraging the Cyberdome datasets and platforms. The second grant is a $280,000 2-year grant for a GenCyber instructor camp that will leverage the Cyberdome platform.

Technology Transfer/Licensing Opportunity:

After a detailed examination of the available solution landscape for individualized skill translation, combined with the recent update to the NICE workforce framework, it was decided to place any efforts for technology transfer on hold.

Section 4: Number of faculty and student participants as a result of funding, and brief description of student efforts.

Undergraduate students: For the reporting period, this project has funded an equivalent of 32 full student internships. Section 1 outlines various accomplishments of the team.

There are a total of three GAs and five Co-PIs working on the specific research areas of this grant. Specific Co-PI/GA accomplishments include submission of a total of five papers, with one paper being selected for publication. The papers range across topics

such as: anomaly detection in process execution, malware polymorphism mitigation, cybersecurity predictive models, useful certificateless email encryption, and election security. Paper development continues leveraging research on temporal graph neural network approaches to predict whether government organizations will be affected by a specific type of cyber-attack and a survey paper around the detection of fraud in elections.
Published papers, including:

- "Developing Accessible Email Encryption Using a Certificateless One-Way Key Agreement Scheme," 2023 4th Information Communication Technologies Conference, May 2023.

Section 5 : Updated details and/or progress on the long-term sustainability plan for the project and description of future plans for project continuation or expansion.

Federal, State, and private funding sources
Funding requests are being put forward in support of Governor Little's Cybersecurity Task Force objectives, of which PI Vasko was a member. The Cyberdome specific request included state appropriations equal to four (4) full-time support mentors, paid internships for up to 55 students across the state, and platform support for up to 18 rural communities. Barring changes from the President's Leadership Council (PLC) or other external factors, this effort is on-going with the new legislative session beginning in January, 2023.

Employer partners
PI Vasko is actively pursuing sustainable funding from employer partners for this program. Leveraging the identified "Activation Gap" thesis in our original proposal, employers are spending 6+ months activating new employees on methods and techniques. Under the thesis that the Cyberdome eliminates up to 3 months of that activation period, if an employer provides the Cyberdome between $10,000 - $15,000 as a gift, the employer potentially receives a tax-donation AND an employee that activates in their environment faster than ever before.

PI Vasko and our communication interns are executing on an outreach campaign to the Managed Security Service Providers (MSSPs) market across the nation, discussing the aforementioned sustainability model. PI Vasko is also speaking at regional and national conferences on the results of the Cyberdome enabling experiential learning for cybersecurity employers.

Section 6: Expenditure Report – Attach an expenditure report as a separate document showing expenses toward the original budget submitted for this project. The expenditure report does not count toward the page limit. A written summary of budget expenditures should be provided in section 2 of this report.

See attached expenditure report below. Explanation for line items that are under budget are provided in Section 2.

Expenditure Report

	Original Budget	Revised Budget	FY23 Spend*
Salaries	$482,648.00	$526,244.00	$526,244.00
Benefits	$107,974.00	$100,100.00	$100,100.00
Capital Expense	$4,900.00	$7,000.00	$7,000.00
Other Expense**	$115,478.00	$77,656.00	$77,656.00
Annual Totals	$711,000.00	$711,000.00	$711,000.00

*Salaries and Benefits are projected numbers, but overspend is expected in both categories and will be handled via other funding sources with no impact to the HERC grant funds.

**The full-year budget takes into account a HERC approved carry-forward of $11,000 from 2022.

IGEM Grant Report

IGEM Grant # _IGEM 22-002_____Principal Investigator_Owen McDougal____

Submission Date_06/15/2023_____ Primary Institution_Boise State University__

Boise State University Food and Dairy Innovation Center

Section 1: *Summary of project accomplishments for the reporting period and plans for the upcoming reporting period.*

From 07/22 - 06/23, our team has completed the design and planning of FDIC labs, obtained bids, and contracted with state approved contractors for laboratory construction of FDIC lab modules 1 and 2 to be completed in 2024. In year 2 of the FDIC HERC award, we proposed to submit 10 grants and generate $1M in external funding. Now, at the end of FY23, we have submitted 22 proposals with 14 of them funded and three pending, for a total of $3,130,366 (see Table 1). Our team also received BUILD Dairy funds in the amount of $421,848 to support dairy research conducted by six graduate students and contribute to the hiring startup package for Dr. Konrad Meister ($25K). The FDIC team mentored 12 graduate students, 45 undergraduate students, and 6 full-time staff. Of the estimated 3-5 publications/patents for FY23, our team has published four papers with more submissions in progress. Our goal of 5-10 internships and jobs for FY23, has led to five internships and three pending jobs at this time. Our plans for FY24 are to continue grant submissions, student mentorship, publication submissions, and promote internship and job opportunities for students.

Table 1. Summary of extramural funding activity in FY23.

External Funding / Grants & funding	YR1 Goal - 6	Funding Goal - $500K	YR2 Goal - 10	Funding Goal - $1M	YR3 Goal - 12	Funding Goal - $1.5M
Grant Submission			22	$24,927,028		
Grants Awarded	5	**$668,541**	14	**$3,130,366**		
Foundations/Gifts	0	$ -	4	$446,848		

Section 2: *High-level summary of budget expenditures for the period just completed. If the budget is underspent at time of report, explain why and plans for expending funds.*

The overall budget expenditures equate to 100%, however, some funds shifted category due to personnel changes, travel and equipment purchases that were posted to OE (<$5K) or capital (>$5K). The funds spent are in the following categories: infrastructure, instrumentation and equipment (104%); salary (82%) and fringe (56%); OE (241%); travel (147%); student tuition and fees (96%). The expenditures equal the total budget of $684K.

Section 3: *Demonstration of economic development/impact, including: patents, copyrights, plant variety protection certificates received or pending; technology licenses signed, start-up businesses created, and industry involvement; private sector*

engagement; jobs created; external funding; any other pertinent information.

The FDIC has been exceedingly engaged with private sector companies as partners on external grants and as sponsors of funded projects. The companies and organizations that have contributed time, resources, and funds in FY23 include Agropur, Glanbia Nutritionals, Daisy Brand, Jones & Company Flavorings, Valley Food Tec, Dairy West, Lactalis, High Desert Milk, Cinder Wines, Telaya Winery, Split Rail Winery, Food Physics, Anheuser Busch, Global Gardens - Jannis Inc., Clextral, SREUS, Southern Fabrication Works, Giddy Group, Dairy West, and Chobani. These partnerships and collaborative grants have led to the hiring and continued employment of three postdoctoral researchers and two research technicians for the FDIC. Of the twenty-two grant proposals submitted in the past year, eleven of them included industry collaborators and described industry priority projects. Of twelve grants with industry partners, eight were funded, one is pending, and two were declined. Total external funding for the fourteen grants and BUILD Dairy contributions obtained during this reporting period amounts to $3,577,241, with another $259,183 pending. Industry partners have also provided internship opportunities for students in FY23. Table 2 gives an overview of our progress in securing internships and jobs for students since the FDIC was originally funded. The YR2 partners are DuBois Chemical (2 students), Lactalis (1 student), and Agropur (2 students). There are currently three FDIC students being considered for full-time employment with Food Physics Group.

Table 2. Summary of internships and jobs for students that have worked with the FDIC.

Internships/Jobs	YR1 (2-4)	YR2 (5-10)	YR3 (10-20)
Internships	6	5	
Jobs	2	3 pending	

Section 4: *Number of faculty and student participants as a result of funding, and brief description of student efforts.*

Table 3 provides a summary of student, staff and faculty participation in the FDIC. Students work together with FDIC faculty in independent research or through one of three Vertically Integrated Project (VIP) courses in (1) Food Systems, (2) Plasma Medicine and Agriculture, and (3) Let's Light up Science. The staff are postdoctoral researchers and technicians working with FDIC faculty. The faculty are FDIC team members and the expanded network of faculty collaborators for extramural grant activity or industry engagement through FDIC sponsored projects. In the past year, the team has hosted visits by Dr. Anand Rao, VP of Ingredients Innovation at Agropur, Dr. Eric Bastian, VP of Industry Relations at Dairy West and Director of the Western Dairy Center, Kristi Spence, Sr. VP of Marketing and Communication for Dairy West, Dr. Loren Ward, Chief R&D Officer at Glanbia Nutritionals, Neil Justesen, owner of Southern Fabrication Works (SFW), Kalen McKenzie, CEO of SFW, Don Thomason, VP Sales for Sustainable Renewable Energy Systems (SREUS), Paul Freeman, Co-owner of SREUS, Beau Lewis, Sr. Utilities Manager and Brett Hudson, Wastewater Supervisor for Chobani, Brian Meyer, Sr. Technical Director for Food Physics Group (FPG), and Brandon Nelson, Dir. Innov. Tech. Services, Fernando Munoz, Lab Ctrl. Mgr. and Ashraf Hassan, Mgr. R&D for Daisy Brand.

FDIC Student Training	YR1 (3-5)	YR2 (5-10)	YR3 (5-10)
Undergraduate Students	25	45	
Graduate Students	6	12	
Staff	6	6	
Faculty	5	16	

Table 4 provides a summary of students, academic degree programs, and a brief description of FDIC project activity. The student academic program has been provided to demonstrate the interdisciplinary nature of the work being addressed in the FDIC.

Table 4. Brief description of student effort associated with the FDIC.

Project/Topic	Student (graduate*)
PEF in potato chip processing	Mark Skinner* (MSMSE PhD), Alyssa Hendricks (CHEM BS), Tauras Rimkus (CHEM BS)
Dairy protein analysis	Rianat Lukman* (CHEM MS), Angelica Cabrera (CHEM BS), Joseph Collins* (BMOL PhD), Madison Dirks* (BMOL PhD), Elizabeth Ryan* (BMOL PhD), Habeeb Babatunde* (CS PhD)
PEF treatment of grapes for better wine	Matt Lorentz (CHEM BS), Kylie Johnson (CHEM BS), Alder Escobar (CHEM BS)
Bioactive ingredient degradation in ready-to-mix drinks and protein bars	Mia Rheede* (BMOL PhD), Nick Franklin (CHEM BS), Gennivyve Williams (CHEM BS), Morgan Fong (CHEM BS)
Bioactive alkaloids in kratom products; potato protein	Anna Shuey* (BMOL PhD), Delaney Odell (CHEM BS), McKenzi Riggs (CHEM BS), Jordan Hoover (CHEM BS)
Cold atmospheric-pressure plasma	Zahraa Alomar (BIOL BS), Kato Burgess (CHEM BS), Asher Chivvis (HealthSci BS), Zahraa Alomar (BIOL BS), Gracie Garringer (CHEM BS), Sarah Knowlton (CHEM BS), Taylor Koch (CHEM BS), Matthew Ostapovich (CHEM BS), Keaton Poe (CHEM BS), Christian Rainey (HealthSci BS), Stephanie Rood (BIOL BS), Konnor Sjullie (BIOL BS), Sevio Stanton (CHEM BS), Dalton Miller* (CHEM MS)
Biofilms in agriculture and biofilm experiments in medicine	Kyle McCleary (ECE BS), Cameron Waite (ECE BS), Madison Rizzo* (CHEM MS), Luca Manning (CHEM BS), Antonio Reyes (CHEM BS),
In-cell NMR analysis of metabolites	Cale Thorton* (CHEM MS), Wes Hirons (CHEM BS), Nicole Aughtry (CHEM BS),
Fluorescence detection of RNA	Steve Broyles* (CHEM MS), Aaron Stone (BIOL BS), Katie Matteo (BIOL BS), Jasmine Baclig (CHEM BS), Courtney Beard (CHEM BS)
Protein Characterization	Vyan Mohaamed (ChEM BS), Amber Hawley (CHEM BS), Hannah Herring (CHEM BS), Maddie Cardenas (BIOL BS), Chloe Day (BIOL BS), Kathryn Pierson (CHEM BS), McKenna Whiting (BIOL BS), Halle Torgerson (HEALTH STY BS), Kenzie Ballinger (CHEM BS), Gabe Miles (CHEM BS), Clariza Arteaga (BIOL BS)

Table 5 provides a summary of publications and patents associated with FDIC activity. In FY23, we proposed to publish 3-5 papers/patents and have four publications with more submissions in progress.

Table 5. Summary of publication and patent activity associated with the FDIC.

Patents & publications	YR1 (6)	YR2 (10)	YR3 (5-10)
Publications	6	4	
Patents	0	0	

Section 5: *Updated details and/or progress on the long-term sustainability plan for the project and description of future plans for project continuation or expansion.*

The long-term sustainability plan for the FDIC will be dependent on grant support and industry engagement. Our team will continue to submit proposals under the topics of NSF/USDA infrastructure (e.g., NSF Mid-scale Research Infrastructure-1, DOE EarthShot, NSF Convergence Accelerator Phase II, USDA NIFA Food and Nutrition Security, NSF RAISE, etc.), advanced manufacturing or center programs that build capabilities for support staff and academic programs to leverage sustainable operations that align with the CHIPS and Science Act. We will adopt (1) a recharge center model to include infrastructure for the industry to supplement financing for the center, (2) industry funds “facility use agreement” industry partners use the center equipment, and (3) industry directly funds research. In the final year of this IGEM HERC award, the PI will explore the initiation of a start-up company to facilitate the development of intellectual property for the promotion of economic development in Idaho.

Section 6: *Expenditure Report – Attach an expenditure report as a separate document showing expenses toward the original budget submitted for this project. The expenditure report does not count toward the page limit. A written summary of budget expenditures should be provided in section 2 of this report.*

Expenditure Report

	Year 2 Budget	BAR 4/6/2023	BAR 6/14/2023		Revised Budget	Total Expenses	Balance	Encumbrance	Available Balance	Burn Rate
	Year 2 Budget Summary 6/30/2023									
Salary	181,065.00	(10,685.78)	(22,199.65)		148,179.57	(148,179.57)	-		-	100%
Fringe	69,006.00	(15,000.00)	(15,695.82)		38,310.18	(38,310.18)	-		-	100%
Other Expense	32,843.00	25,000.00	21,378.15		79,221.15	(79,233.70)	(12.55)		(12.55)	100%
Travel	3,900.00	1,123.78	714.72		5,738.50	(5,738.50)	-		-	100%
Student	10,626.00	(438.00)			10,188.00	(10,188.00)	-		-	100%
Capital	386,560.00		15,802.60		402,362.60	(402,362.60)	-		-	100%
Subtotal	684,000.00	0.00	-	-	684,000.00	(684,012.55)	(12.55)	-	(12.55)	100%
Indirect 0.0%	-				-	-	-	-	-	
Total Costs	684,000.00	0.00	-	-	684,000.00	(684,012.55)	(12.55)	-	(12.55)	100%

The BAR 6/14/2023 column which is highlighted in yellow, represents expenses that have yet to be approved by IGEM HERC at the time of submission of this annual report.

IGEM Grant Report

☐ Progress (due Jan. 1) ☑ Annual (due Jul. 31) ☐ (due Aug. 31)

IGEM Grant #23-001 Principal Investigator – Prof. Michael Haney

Submission Date – 2023.07.31 Primary Institution – University of Idaho

Library of Reconfigurable Immersive Attack and Defend Scenarios for Cybersecurity Research and Workforce Development

Section 1: Summary of project accomplishments for the reporting period and plans for the upcoming reporting period.

- Built a new Reconfigurable Attack-Defend Instructional Computing Laboratory (RADICL) at the University Place campus in Idaho Falls. This novel, immersive environment is integrating physical processes, full-scale enterprise IT systems, and Internet-scale cyber-attacks on-demand to offer researchers, students, and trainees a controlled live-fire environment like no other currently available. The laboratory will be a hybrid virtual and physical environment allowing access from across the state through the Idaho Cyber Range.
- Development began of the laboratory focused on power system communication and control systems. We have expanded our relationships with industry partners, including Schweitzer Engineering Laboratories, Westinghouse (now WESCO), Datacast Technologies, and Edge Velocity to begin integrating their technologies into the laboratory. This includes significant donations from the vendors to complement Idaho's investments through the HERC IGEM program. We have also used matching funds provided by the university to procure the real-time digital grid simulator and have begun initializing it.
- Produced four journal publications, five conference papers, and used our expertise to deliver a report to the U.S. House of Representatives regarding the cybersecurity of the electric distribution system, to be made public in the coming months. We have also submitted five additional funding proposals based on the preliminary research performed in the laboratory, including to DOE Cybersecurity, Energy Security and Emergency Response (CESER) for nearly $3mil. We have also been successful in securing an additional $100,000 per year from our partnership with the INL for our work in the lab focused on grid data transport and security.
- Introduced a framework for effectively and quickly detecting malicious USB peripherals in the Cyber-Human-Physical Systems (CHiPS) lab. This research aims to provide authentication for USB devices, to detect and prevent USB-laden attacks. The proposed solution adopts side-channel analysis as its core analysis methodology.
- Began using the new RADICL spaces and equipment to train college students, active professionals, and high school students and teachers in an immersive research environment. Hosted events include the first Idaho Cyber Range Day in April 2023, Computing, Programming, and Engineering merit badges offered to a local Scouting troop, and the Cybercore Advanced Day Camp.

Publications

(1) Taegan Williams, Tiffany Fuhrmann, and Michael Haney (2022), "Low-cost CTF Platform for Industrial Control Systems Education," 26th Colloquium for Information Systems Security Education (CISSE 2022), 14 November, 2022.

(2) Tiffany Fuhrmann, Taegan William, and Michael Haney (2022), "Cyber-physical Shooting Gallery: Gamification to Address the IT-OT Gap in Cybersecurity Education," 26th Colloquium for Information Systems Security Education (CISSE 2022), 14 November, 2022.

(3) R.A. Borrelli, Samuel Root, Porter Throckmorton, Jonathan Tacke, Jacob Benjamin, and Michael Haney, "Cyber Hardening of Nuclear Power Plants with Real-time Nuclear Reactor Operation Simulation," Journal of Progress in Nuclear Energy, (accepted and in revision).

(4) Sam J. Root, Porter Throckmorton, Jonathan Tacke, Jacob Benjamin, Michael Haney, R. A. Borrelli (2023). Cyber Hardening of Nuclear Power Plants with Real-time Nuclear Reactor Operation – 1. Preliminary Operational Testing. Progress in Nuclear Energy 162, 104742.

(5) Sam J. Root, Porter Throckmorton, Michael Haney, R. A. Borrelli (2022). Simulated boron shimming cyber-attack on pressurized water reactor. Phoenix, Arizona: Proc., American Nuclear Society Winter Meeting.

Proposals submitted

(1) R. A. Borrelli (PI), Michael Haney (co-PI) - University of Idaho. Cyber-informed design, education, and training for cyberthreat resiliency with real-time nuclear reactor simulation. University of Idaho. Operation: Resubmission Support. $34,122. 2022.04.30 - 2022.09.30.

(2) R. A. Borrelli (PI), Michael Haney (co-PI), Lee Ostrom (co-PI) - University of Idaho. Nuclear Power Plant Cyber-Risk Assessment with Real-Time Reactor Operations. U.S. Nuclear Regulatory Commission Notice of Funding Opportunity (NOFO), Research and Development Grant, Fiscal Year 2023 $499,036. 2024.06.01- 2027.05.31. [*in review*]

(3) Dakota Roberson (PI), R. A. Borrelli (co-PI), Michael Haney (co-PI), Brian Johnson (co-PI) - University of Idaho, Hany Abdel-Khalik (co-PI) – Purdue University, Arthur Deacon (co-PI) - Datacast Technologies, Inc., Steve Bukowski (co-PI) - Idaho National Laboratory. Securing Grid Edge Devices through Distributed Intelligence Synthesis. Department of Energy Cybersecurity, Energy Security, and Emergency Response (CESER). $2,900,000. 2024.01.01 - 2026.12.31. [*in review*]

Section 2: High-level summary of budget expenditures for the period just completed. If budget is underspent at time of report, explain why and plans for expending funds.

- Funding of $693,000 for FY23 is split between UI and co-PIs to manage ($300,000 subaward to ISU, $393 allocated to UI.)
- Overall this project remains ahead of schedule and on budget. At the end of the first year of the grant, due to reasons documented and explained in the detailed expenditure report, at the end of the fiscal year, we had $16,000 that remained unencumbered and was carried forward to year two.
- Student and faculty support, post-doctoral fellow search, and related human capital expenses are all on target.
- Focus during this initial grant reporting period has been on acquisition of equipment, materials, supplies, and renovation of available facilities

During the first year of this grant effort, our focus has been on the renovation of existing laboratory

spaces and acquisition of materials and equipment to enable future training and research. The budget plan explicitly called for the support of one full-time graduate student, and several specific purchases. We have successfully combined our funds with other sources and strategically addressed facilities upgrades,including expanding into an additional laboratory space of 600 square feet for "Balance of Plant" and power substation equipment, which will be connected via networking in the next reporting period. We were also able to engage additional students to support these efforts, as discussed in Section 4 of this report. These resources combined to make our team more successful and ahead of schedule.

Facilities, materials, and equipment under this FY23 HERC IGEM grant specifically fall under one of several categories. In order to support the backbone of our "cyberspace" environment, we have created a private cloud environment to support the reconfigurable virtual spaces for cybersecurity and energy research and training. This was done first through the acquisition of refurbished computing equipment to expand our existing environment. Secondly we had a significant outlay of $100,000 to purchase new cloud computing equipment. Combined, the computing capacity is many times greater than previously available. Ongoing efforts and support from this grant will be allocated to improve our network equipment connecting our separate lab spaces to one another and to the Idaho Cyber Range.

Next, we focused on the acquisition of the materials and supplies to begin building our "Cyber Shooting Gallery". This environment will consist of 20 or more platforms of small-scale cyber-physical systems for students to design, attack, defend, and reconfigure. Three initial prototypes have been completed. We are facing significant supply-chain constraints, specifically with the Raspberry Pi computers we hoped to employ, which has forced us to reconsider some design elements. Nonetheless, our initial prototypes were unveiled and met with great enthusiasm at the "BSides Idaho Falls 2022" cybersecurity conference and can be seen in this article: https://www.postregister.com/news/local/more-than-200-attend-idaho-falls-cybersecurity-conference/article_664ec6f2-4666-11ed-a46e-3f8e96e066a2.html

Additionally, we have acquired both information technology (IT) and operations technology (OT) equipment to outfit sixteen student "workstations" that feature state-of-the-art computing capabilities as well as industry-leading cyber-physical control systems. Our spending in this area is complete at $315,000. The details of this research and training equipment are included in the attached spreadsheets under Section 6 of this report.

The major equipment acquisition for this first year of grant funding was for the RTDS Technologies real-time data simulator for electric grid operations research. This purchase was made possible by $76,000 from this grant matched by funds from other sources. Additional equipment made available through partnership with Schweitzer Engineering Labs has helped enhance the complexity and realism of simulations for cybersecurity research.

The balance of our expenditures falls either under materials and supplies or salary and related expenses. These expenses are on budget and in accordance with the HERC IGEM requirements and the UI's Office of Sponsored Programs and are included in the attached spreadsheets under Section 6 of this report.

Section 3: Demonstration of economic development/impact, including the following as applicable: patents, copyrights, plant variety protection certificates received or pending; technology licenses signed, start-up businesses created, and industry involvement; private sector engagement; jobs created; external funding; any other pertinent information.

The initial economic impact of our first year of funding under this HERC IGEM effort can be summarized:

- Multiple journal and conference papers published in initial period.
- Multiple external funding opportunities currently submitted or in development.
- Multiple engagements with private sector partners as well as other academic and research institutions.
- Post-doctoral fellowship positions created to be filled in future reporting period.

External funding has been secured from multiple sources as a result of initial efforts based on this HERC IGEM grant fund, including with the Department of Energy and private partnerships. We have made a significant impact on the national discussion regarding the cybersecurity of the electric grid, as Dr. Roberson was the lead technical contributor to a report to the U.S. House of Representatives, via DOE CESER, on the subject. He has also participated in high-level meetings on the topic representing INL through his joint appointment at the national level and is working to secure further funding to continue growing these efforts at UI-Idaho Falls.

Commercialization efforts of our initial research has begun in the first year. An Idaho-based cybersecurity startup, Datacast Technologies, has begun working on commercializing their product based on the work we are doing in the laboratory and the partnerships developed therein. Curtiss-Wright in Idaho Falls has also expressed interest in collaborating with us towards developing a prototype of our USB monitor setup. They aim to adopt an extension of the concept to test for malicious USB drives inside their airgapped facilities. This collaboration may open opportunities for submitting more proposals.

The co-PIs of this grant are all involved in the ongoing development efforts of the Idaho Cyber Range to make the Idaho Falls-based laboratories and equipment interoperable with research laboratories and training facilities across the state, including at the Idaho National Laboratory's Cybercore Integration Center and the Center for Advanced Energy Studies. Additionally, we are now working with Montana State University on the development of training and education curriculum for hands-on cyber-physical systems security. We have begun regular meetings with industry partners including SEL, Siemens, Intel, Wesco, Western Services Corp, Mickelsen Farms, CLOAKED Cybersecurity, Shadowscape, and CourseOps to form an advisory group for our efforts.

Section 4: Number of faculty and student participants as a result of funding, and brief description of student efforts.

- 1 Master's student directly funded in initial reporting period,
- 1 PhD student directly funded in next reporting period (Spring 23).
- 12 additional undergraduate and graduate students directly involved in supporting initial project efforts.
- 7 principle investigators supported by this grant.

Several students were supported over the course of the project, and most of them have published papers as a result of their efforts. Our students have helped to design, acquire, build, configure, and implement all of our laboratory spaces, capabilities, and equipment described in this report. Future HERC IGEM funding will substantially shift from equipment and materials acquisition to

student education and research involvement by directly supporting multiple graduate students and post-doctoral fellows each year.

Section 5: Updated details and/or progress on the long-term sustainability plan for the project and description of future plans for project continuation or expansion.

- Multiple federal and state grant proposals submitted, under review, or planned (currently over $8 million under review).
- Multiple levels of engagement with private industry partners for workforce training needs.

The RADICL and related research laboratory and training facilities are designed to enable sustained education, research, and workforce development in Idaho Falls. This involves significant engagement with our industry partners, the Idaho National Laboratory, and the campuses across the state of Idaho connected via the Idaho Cyber Range, as well as through current and planned external funding from federal and state funding agencies. Initial plans for sustained growth and expansion of our capabilities include several grant proposals recently submitted or currently under development. We have also begun development of our model for industry engagement and workforce training opportunities. Recently, the co-PIs, led by Dr. R.A. Borrelli, submitted a robust grant proposal to the National Science Foundation entitled “Cyber-informed Design, Education, and Training for Energy Resiliency with Real-time Nuclear Reactor Operation.” This grant proposal for $1.2 million will provide for expansion of our nuclear power plant simulation environment, including licensing fees for our current simulator software, expansion of hardware and supporting equipment, and the funding of many students in several disciplines (e.g. computer science, computer engineering, nuclear engineering, electrical engineering) to continue the development of this important platform. The preliminary results necessary to submit a viable NSF grant of this size were made possible by the students and equipment funded during this initial period of the HERC IGEM grant. Additional grant proposals in development and expected to be submitted in the upcoming reporting period include grants led by Dr. Roberson to the Department of Energy’s Nuclear Energy University Programs(NEUP) program (invited proposal for $800,000), as well as the DoE’s Office of Cybersecurity, Energy Security, and Emergency Response (CESER), by Dr. Kolias to the NSF’s Computer and Information Science and Engineering (CISE) Directorate, and Dr. Haney’s proposals to the Department of Homeland Security and Cybersecurity and Infrastructure Security Agency’s (CISA) programs. The team led by Dr. McBride also has current and planned proposals to the Department of Labor and Department of Education for ongoing workforce development efforts.

We have begun to organize an advisory group to expand on the engagement we have with our community and industry partners across the region. With the development of our multiple spaces, our private cloud computing environment, our shooting gallery, and the data created and collected for running multiple reconfigurable cyber wargame scenarios, we expect to engage and train a wide variety of industry professionals in different roles and critical infrastructure industries. This engagement will allow for a revenue stream to sustain our staff, equipment, software licensing and other operating expenses indefinitely.

Section 6: Expenditure Report – Attach an expenditure report as a separate document showing expenses toward the original budget submitted for this project. The expenditure report does not count toward the page limit. A written summary of budget expenditures should be provided in Section 2 of this report.

Title: ISBOE IGEM HERC: Secure Cyberspace **NO F&A**
Funding Agency: IGEM HERC
PI: Dr. Michael Haney

Budget Category	Budget	Activity	Commitments as of 07/31/2023
10 - Senior/Key Personnel	**$35,517.54**	**$30,341.25**	**$0.00**
Faculty - Academic Year - Dr. Haney			
Faculty - Summer - Dr. Haney			
Faculty - Academic Year - Dr. Borrelli			
Faculty - Summer - Dr. Borrelli			
Faculty - Academic Year - Dr. Roberson			
Faculty - Summer - Dr. Roberson			
Faculty - Academic Year - Dr. Kolias			
Faculty - Summer - Dr. Kolias			
Other Personnel	**$15,195.40**	**$15,195.40**	**$0.00**
Grad Student - Academic Year (G. Makrakis)			
Grad Student - Academic Year (T. Williams)			
12 - Irregular Help	**$12,289.92**	**$4,407.48**	**$0.00**
Grad Student - Summer (J. Tacke)			
Grad Student - Summer (G.Makrakis)			
11 - Fringe	**$11,466.21**	**$9,852.30**	**$0.00**
Fringe - Faculty - Academic Year			
Fringe - Faculty - Summer			
Fringe - Grad Student - Academic Year			
Fringe - Grad Student - Summer			
30 - Operating Expenses	**$39,133.52**	**$39,438.24**	**$318.36**
40 - Capital	**$189,765.52**	**$110,547.32**	**$76,051.95**
45 - Small Equipment	**$78,487.89**	**$67,580.71**	**$7,902.44**

70 - Tuition	$11,144.00	$11,144.00	$0.00
Subaward with Idaho State University	$300,000.00	$155,817.32	$144,182.68
Total Direct and Indirects Costs	$693,000.00	$444,324.02	$228,455.43

Available 07/31/2023	# Hrs	# Students	$/Hr	Budget Remaining	Total
$5,176.29					
	0.00		$0.00	$0.00	$0.00
	0.00		$0.00	$0.00	$0.00
	0.00		$0.00	$0.00	$0.00
	0.00		$0.00	$0.00	$0.00
	0.00		$0.00	$0.00	$0.00
	80.00		$64.69	$5,175.20	$5,175.20
	0.00		$0.00	$0.00	$0.00
	0.00		$0.00	$0.00	$0.00
$0.00					
	0.00	0	$24.00	$0.00	$0.00
	0.00	0	$20.41	$0.00	$0.00
$7,882.44					
	160.00	1	$20.79	$3,326.40	$3,326.40
	0.00	1	$24.00	$0.00	$0.00
$1,613.91					
	31.0%			$0.00	$0.00
	31.0%			$1,604.31	$1,604.31
	2.5%			$0.00	$0.00
	2.5%			$83.16	$83.16
-$623.08				$0.00	$0.00
$3,166.25				$0.00	$0.00
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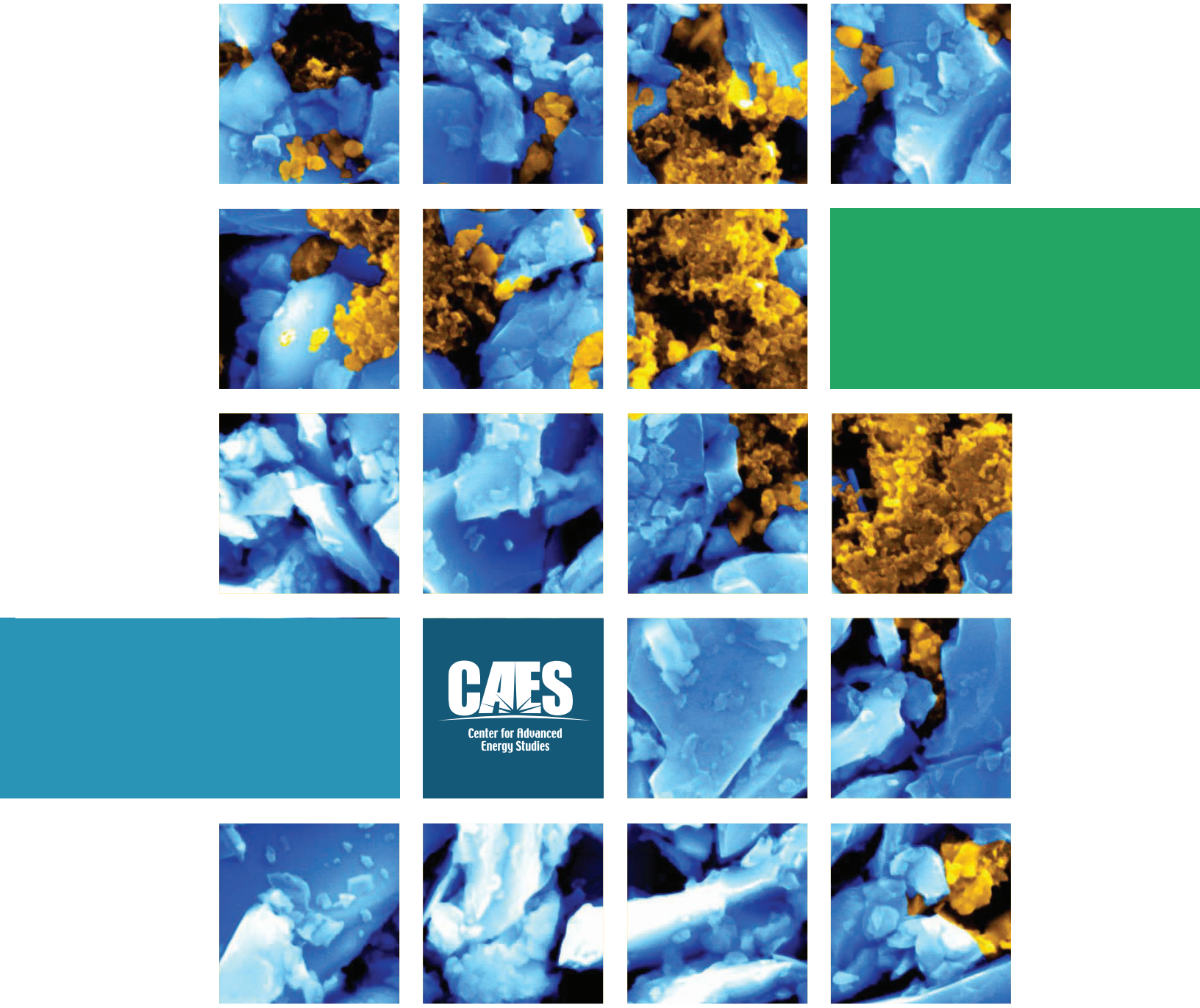
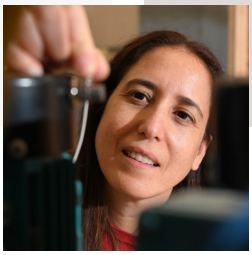
$20,220.55	**$20,220.55**	**$20,220.55**
		$0.00



CENTER FOR ADVANCED ENERGY STUDIES

2022 ANNUAL REPORT

This report provides an overview of the main accomplishments of the CAES community in FY22.



On the cover, the photo is a microscopic view of batteries from research conducted by an Idaho National Laboratory researcher—one of the four entities collaborating with CAES.

DIRECTOR'S LETTER

IT HAS BECOME CLEAR IN MY RELATIVELY SHORT TIME AT THE CENTER FOR ADVANCED ENERGY STUDIES that the integrity and professionalism of those involved with CAES, from the students to the maintenance crew, are admirable. A second revelation has been the receptiveness to collaboration. This is the key to CAES' success and the reason for its existence; the willingness to work together is exciting and important to the continued success of CAES. In the coming months, I will work with the associate directors, the universities and the national laboratory to explore how we can harness this willingness to collaborate. The focus of this effort will be twofold: to bring more students and researchers into the building and to refine the CAES Strategy into areas where our collaborative efforts can have the most impact.

As you will see in this report, our impact in 2022 was extensive. We saw the introduction of the Research Experience for Undergraduates program and the 10 REU fellows who participated over the summer. We also saw the resumption of the in-person Center for Space Nuclear Research Summer Fellowship Program after the program went virtual for two years due to the pandemic. These are examples of experiential learning that we look to replicate and expand in the years ahead.

We're also working to develop a sense of community at CAES. The goal is to not only make CAES a great place to conduct research, with state-of-the-art tools and equipment, but also to create a welcoming environment that makes it a great place to work. On that front, we are working with Idaho State University to open the parking lot to food trucks. This will facilitate networking among the CAES community. And we're working on an in-house newsletter to ensure CAES residents are better informed about upcoming events and research news.

There are many exciting developments on the horizon and many to celebrate in this year's annual report. CAES researchers are receiving financial support, as well as recognition at the state and national levels. We installed new state-of-the-art equipment that will increase the opportunities for collaboration in the years to come and initiated new programs while building on others. Those are just a few of the accomplishments outlined in this report – accomplishments that make me proud to be part of this consortium.

I look forward to working with all of you as we transform the culture at CAES, to improve and expand our collaborative opportunities while fulfilling our mission and vision.

In the meantime, I welcome your ideas for improving the way things are done around here. My door is always open.

Philip Reppert
Center for Advanced Energy Studies director

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NEW FACES

New CAES director announced

Philip Reppert was named director of Idaho University Collaborations and CAES in April. Reppert was previously the associate director of Geological and Environmental Systems at the National Energy Technology Laboratory. There, he provided technical leadership and capability stewardship for a complex organization with three teams/branches who conduct research in the earth sciences. Prior to that, Reppert spent seven years at the National Geospatial-Intelligence Agency as a senior project scientist and supervisor of the geophysics subsurface research branch.

In addition to serving as CAES director, Reppert oversees collaboration between Idaho National Laboratory and the CAES universities.

Reppert earned a bachelor's degree in Electrical Engineering from Pennsylvania State University and a doctorate in Geophysics from the Massachusetts Institute of Technology. Reppert has a distinguished research background in near-surface geophysics and ground-penetrating radar, as well as rock physics.

Reppert took over for Terry Brog, who had served as interim CAES director since fall 2020. We thank Brog for his work as interim director, particularly his effort to streamline operations at CAES during the pandemic. His leadership has helped us get researchers into the laboratories.

CAES steering committee gains new member as ISU names VPR

Idaho State University named **Martin Blair** as vice president for research (VPR) in June. As VPR, Blair joins INL Deputy Laboratory Director for Science and Technology and Chief Research Officer Marianne Walck, CAES Director Philip Reppert, Boise State Vice President of Research and Economic Development Nancy Glenn and University of Idaho Vice President for Research and Economic Development Christopher Nomura on the CAES steering committee.

Prior to his arrival at ISU, Blair served as executive director at the University of Montana's Rural Institute for Inclusive Communities, responsible for developing

community-focused interdisciplinary research partnerships, overseeing strategic planning and managing a multi-million dollar budget across more than 50 programs.

Blair earned a bachelor's degree in Special Education, a master's degree in Secondary Education and a doctorate in Education and Disability Policy from Utah State University. He also earned certifications from the National Leadership Institute at the University of Delaware and CITI: Social and Behavioral Research.

Kiyo Fujimoto named lab lead

INL researcher **Kiyo Fujimoto** was named lab lead for the Advanced Manufacturing Suite this fall. Fujimoto received her PhD in Materials Science and Engineering from Boise State University in the spring. She has been involved with INL since 2017, when she was an INL Graduate Fellow, and is now a staff scientist leading research focused on additive manufacturing methods for the development of advanced sensors and instrumentation for extreme environments.

Fujimoto earned a bachelor's degree in Chemistry from Boise State. In addition to receiving an INL Graduate Fellowship, she is the recipient of the Idaho Space Grant Consortium Fellowship and the Department of Energy Nuclear Energy University Partnerships Fellowship. At INL, her work is focused on materials development or feedstock synthesis relevant to harsh environments for a wide range of additive manufacturing techniques.

BSU names Glenn VPR after serving as interim

Nancy Glenn was named vice president for research and economic development (VPR) for Boise State University in September. Glenn, a professor in the Department of Geosciences, had served as interim VPR since June 2021.

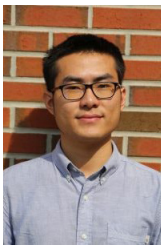
Glenn earned a bachelor's degree in Geological Engineering from University of Nevada, Reno; a master's degree in Civil Engineering from University of California, Berkeley; and a PhD in Geo-Engineering from University of Nevada, Reno.

New professors at UI

Krishnan Raja, a Chemical and Materials Engineering Department faculty member, joined UI, Idaho Falls as a visiting faculty member.

Ming-Hsun Cheng joined UI, Idaho Falls as an assistant professor for Energy & Environment.

Microscopy & Characterization Suite adds to staff



Yu Lu (top left) is a senior research associate and instrument lead. **Sidharth (Sid) Sukumaran Nair** (top right) is a research associate and sample preparation lead. Ching-Heng Shiau is a postdoctoral researcher.

Interns

Nahuel Guaita was CAES' Programmatic graduate intern over the summer and fall, as he was completing his master's degree in Public Policy, with a concentration in Energy and Environmental Policy, from Oregon State University.

Undergraduates

Mia Rudin is a student at University of Texas at Dallas, where she is majoring in Geological and Earth Sciences/Geosciences.

Leah Alboucq is a student at Boise State University, where she is majoring in Health Studies.

CAES universities sign MOU for full access to Falcon supercomputer

Researchers at the CAES universities have exclusive access to the Falcon supercomputer, one of the nation's fastest academic computers, thanks to an agreement signed in mid-January. The memorandum of understanding between the universities and Battelle Energy Alliance provides students and researchers from the universities unfettered access to the computer, which is located at Idaho National Laboratory's Collaborative Computing Center in Idaho Falls. The arrangement has also increased opportunities for collaboration between INL researchers and those at the universities. This investment in INL's future fulfills a CAES mission of training and educating the future energy workforce.

BSU's Nuclear Energy Student Club formally recognized by American Nuclear Society

The American Nuclear Society board approved the creation of a new student section at Boise State University in May. Assistant professor Brian Jaques, a CAES fellow, serves as the group's faculty adviser. "This is a great opportunity for students to engage and network with other sections in the state of Idaho, as well as nationally and internationally," said Jaques, who holds a joint appointment with INL. "The section brings awareness and excitement of Idaho's rich nuclear energy history to the community, in addition to introducing our future nuclear energy workforce to the vast opportunity and promise of the field."

CAES hosts NSF Research Experience for Undergraduate (REU) program

Ten students took part in the inaugural REU program, "Advanced Manufacturing for a Sustainable Energy Future," at CAES over the summer. A $365,000 grant from the National Science Foundation led to the creation of the program, which will run 10 weeks each summer through 2024. The program is designed to give students hands-on research experiences and networking opportunities to develop their science, technology, engineering and math identity and literacy, while providing professional development opportunities for careers in the energy sector.

Five students from Idaho's two- and four-year higher-education institutions were in the inaugural cohort this year, along with five students selected from a pool of applicants from across the nation. The students worked alongside faculty from the CAES universities and Idaho National Laboratory researchers to assist on projects related to advanced manufacturing.

Here are the REU fellows along with their project titles and mentors:

Lydia Beardsley
University of Idaho

PROJECT: Development of High-Temperature Resistant Permanent Magnets Using Advanced Manufacturing

MENTORS: Dan LaBrier, Idaho State University (faculty) and Bryce Kelly (INL)

Miranda Cardenas
University of Utah

PROJECT: Multiphysics Modeling and Experimental Characterization of Printed Magnetostrictive Acoustic Sensors

MENTORS: Dan Deng, Boise State University (faculty) and Josh Daw (INL)

Dylan Cox
Oregon State University
and Katelyn Shadley
University of Idaho

PROJECT: 3D Li-ion Batteries through Advanced Manufacturing

MENTORS: Claire Xiong, Boise State University (faculty) and Bin Li (INL)

Stratton Jenks
University of Idaho
and Josh Peck
Idaho State University

PROJECT: Advanced Manufacturing for Bulk Storage of Hydrogen

MENTORS: Mustafa Mashal & Bruce Savage, Idaho State University (faculty) and Kunal Mondal (INL)

Minh Nguyen
Idaho State University

PROJECT: Novel Alloy Development for Nuclear Applications

MENTORS: Brian Jaques, Boise State University (faculty) and Boone Beausoleil (INL)

Hayden Pritchard
University of Montana

PROJECT: Corrosion Performance of Additively Manufactured Structured Materials

MENTORS: Mike Hurley, Boise State University (faculty) and Donna Guillen (INL)

Avery Rambur
College of Idaho

PROJECT: Classical Molecular Dynamics Simulations of Nuclear Materials

MENTORS: John Russell, University of Idaho (faculty) and TBD (INL)

Hannah Smith
University of Utah

PROJECT: Modeling and Optimization of Advanced Manufacturing Processes

MENTORS: Lan Li, Boise State University (faculty) and Michael McMurtrey (INL)

New 3D metal printer installed at CAES as Advanced Manufacturing Laboratory takes shape

A new 3D metal printer for nuclear-grade materials was installed at CAES over the summer, one of several pieces of equipment that complement Idaho National Laboratory's advanced manufacturing strategy, accelerating and supporting INL's research and development capabilities as well as its partnerships with academia, industry, federal agencies and national laboratories through the Nuclear Science User Facilities network. The printer, part of approximately $1.5 million in equipment installed in the new Advanced Manufacturing Laboratory at CAES, was made possible by a 2020 award through the Nuclear Energy University Program for a project led by Boise State University faculty member Mike Hurley. The project stems from Hurley's participation in the 2019 CAES Summer Visiting Faculty Program and includes his faculty program partner Donna Guillen from INL and Boise State faculty members and fellow 2019 faculty program alumni Dave Estrada, who is the CAES associate director for Boise State, and CAES Fellow Brian Jaques, the CAES Advanced Manufacturing lead at Boise State.

The printer is an Open Additive PANDA with a 6x6x4-inch build volume, 300 W laser and production print speeds that is capable of printing stainless steels, super alloys and tool steels.

The equipment in the new Advanced Manufacturing Laboratory supports materials development, printed sensors and structural additive manufacturing from INL and the CAES universities, while supporting existing programs and opening new areas in printed and flexible electronics and trusted artificial intelligence for advanced manufacturing. The Advanced Manufacturing Laboratory is managed as a shared resource benefitting the CAES universities, multiple INL mission areas and several directorates at INL, including Nuclear Science & Technology, Energy & Environment Science & Technology, National and Homeland Security, Advanced Test Reactor and Materials and Fuels Complex.

The laboratory is complemented by a new ThermoFisher Spectra 300 scanning transmission electron microscope in CAES's Atomic-Scale Imaging Laboratory, part of the Material and Characterization Suite, that is capable of doing post irradiation examination of printed structural materials and sensors.

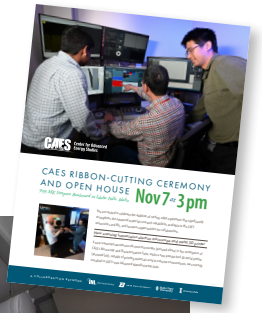
Equipment in the new Advanced Manufacturing Laboratory includes a Superinkjet printer and Nanojet aerosol jet printer capable of printing sensors as well as:

- Mills for powder production, including a Torrey Hills three-roll mill, Retsch Emax high energy ball mill, Retsch mortar and pestle mill, Retsch cronymil
- High precision scales
- Zeiss Axio imager KMAT (an upright, fully motorized, PC controlled, high performance research microscope)
- Particle size analyzer w/zeta potential measurement
- Rotary evaporators
- Planetary centrifuge
- Anton Paar dynamic mechanical analyzer and rheometer

CAES debuts new scanning transmission electron microscope

CAES officially debuted a new scanning transmission electron microscope (S-TEM) in late July. The ThermoFisher FEI Spectra 300 kV S-TEM is Idaho National Laboratory's latest investment in CAES, designed to create opportunities for collaborative materials research for the CAES universities, INL and industry in several of the national laboratory's mission areas. The new microscope is part of the Microscopy and Characterization Suite, a Nuclear Science User Facilities laboratory, and is more technologically advanced than any of the current TEM resources across the CAES complex. Among its capabilities:

- The new S-TEM offers an energy resolution of less than 0.2 eV compared to 0.8 eV with current TEMs at INL
- It enables the study of stoichiometry changes in oxide fuels, chemistry of fission products in nuclear fuels, and oxidation/corrosion behavior of metals and ceramics
- It is equipped with a next-generation Cs S-CORR probe corrector
- It provides improved spatial resolution at low accelerating voltages, enabling analysis of light elements (carbon, nitrogen and oxygen for example)
- It enables research on a wider range of materials, from those that are sensitive to high-energy electron beams to high atomic number materials such as uranium
- It is equipped with an EMPAD detector, which can obtain more than 1,000 diffraction patterns per second
- It captures dynamic material behavior such as phase changes and crystallization in harsh environments
- It has a broader electron energy range (30kV-300kV) for characterization than current TEMs in the CAES complex (80kV – 200kV)
- It is equipped with a double-corrector (probe and image) configuration
- It is capable of achieving point-resolution close in value to the information limit of the system



CAES celebrated the S-TEM and 3D Metal Printer at a ribbon-cutting ceremony.

Center for Space Nuclear Research Summer Fellowship Program returns to CAES

CAES welcomed the summer fellows for the Center for Space Nuclear Research in June – the first year the fellowship has been held in person since 2019. Stephen Herring, the center's director, led the program virtually in 2020 and 2021.

Each summer, the center, which is housed at CAES, invites a group of undergraduate and graduate students from across the country to learn about cutting-edge research in nuclear power and propulsion technologies through its Summer Fellowship Program. The program runs for 10 weeks and allows the fellows to work as a team, in partnership with Idaho National Laboratory researchers, to complete a research project of interest to NASA in potential nuclear technology performance. The Summer Fellowship Program allows participants to experience a real research environment, to learn from nuclear scientists and to preview careers in research. This year, those accepted as fellows had the option of participating in person or virtually. Nine students attended in person while two participated online.

Here are the fellows and the schools they attend:

Zyed Ansary
University of Denver

Daniel John Black
Brigham Young University-Idaho

Aanchal Gupta
University of Illinois Urbana-Champaign

Kaasturi Khatun
University of Southern California

Kean Martinic
Idaho State University

Arnold Pradhan
University of Idaho

Berenice Sosa Aispuro
Idaho State University

Daniel Watson
Texas A&M

Teyen Widdicombe
University of Idaho

Participating online

Manikandan Pandiyan
University of Michigan

Bikash Parajuli
University of Akron

Did you know?

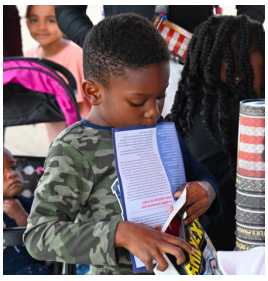
Idaho National Laboratory and the Universities Space Research Association created the Center for Space Nuclear Research in 2005 to foster collaboration between the lab and university scientists. The center's scientists and engineers research and develop advanced space nuclear systems, including power systems, nuclear thermal propulsion and radioisotopic generators.

State legislature approves funding for Nuclear Engineering program

The Idaho Legislature approved $1.1 million to support the joint Nuclear Engineering program offered by Idaho State University and University of Idaho, a move that will allow for expansion of the program's faculty. The partnership between the two CAES universities demonstrates the state Board of Education's push for collaboration between Idaho's public universities and colleges. Students enrolled at either of the universities can take classes at the other university, either at physical campuses or online, and collaborate with Idaho National Laboratory researchers. As of spring 2022, more than 200 students from UI were enrolled at the Idaho Falls campus, and 974 ISU students were enrolled both online and on campus.

CAES hosts open house

Approximately 100 affiliates of CAES – students, faculty and INL researchers – attended an open house at CAES in mid-September. The event featured tours of the facility, a poster session and demonstrations in the Applied Visualization Laboratory and the Small Modular Reactor Simulator Laboratory, which features a simulator of the control room for a NuScale small modular reactor. The open house offered a chance for the affiliates to bring their families and network with other members of the CAES community.



ACCOLADES

Notable awards at a glance

National Science Foundation Scholarships in STEM program award

National Science Foundation Scholarships in STEM program award of $5 million went to Boise State University to help students from historically underserved backgrounds.

CAES' involvement focuses on designing a Scholars Seminar to help establish networks, provide skills-based training and highlight career opportunities. *Read more on this page.*

Higher Education Research Council-Idaho Global Entrepreneurial Mission

The Higher Education Research Council-Idaho Global Entrepreneurial Mission awarded $2.1 million over three years to a team led by University of Idaho's Michael Haney for a project that calls for creating an immersive training environment for students across Idaho.

The award will lead to a project at CAES called Secure Cyberspace and Resilient Industrial Systems Workforce Development, a physical lab that ties into an existing simulator at the Applied Visualization Laboratory that focuses on cybersecurity for the nuclear industry and infrastructure. *Read more on page 11.*

Nuclear Regulatory Commission grant

The Nuclear Regulatory Commission (NRC) awarded a $450,000 Faculty Development Grant to Idaho State University faculty member Amir Ali.

Ali, the lab lead for CAES' Innovation Laboratory, plans to use the award to create a program enabling thermal hydraulic research at ISU. *Read more on page 9.*

Idaho Global Entrepreneurial Mission award

Idaho Global Entrepreneurial Mission awarded $348,000 to University of Idaho assistant professor Amin Mirkouei and industry partner Idaho Strategic Resources to research and develop a new technique for drilling and extracting rare earth elements. The project includes researchers from INL, CAES and the state of Idaho. *Read more on page 13.*

Boise State receives NSF award to establish CAES Scholars Consortium

A $5 million award from the National Science Foundation's Scholarships in STEM program will enable Boise State University to create a statewide academic consortium with the College of Southern Idaho and the College of Western Idaho. Boise State's award will fund scholarships for more than 150 students pursuing degrees in electrical and computer engineering. The goal is to address the nation's need for scientists, mathematicians, engineers and researchers. CAES' role will be to create a Scholars Consortium to assist first-year students at the colleges prepare for careers in science, technology, engineering and math fields with targeted mentorship, self-discovery, and development of their career aptitude and professional identity.

UI, ISU team gets grant to create immersive cybersecurity training

A team led by University of Idaho faculty member **Michael Haney** received a $2.1 million award from the Higher Education Research Council-Idaho Global Entrepreneurial Mission (HERC-IGEM) for a project that calls for creating an immersive training environment for cybersecurity students statewide.

The project, Reconfigurable Attack-Defend Instructional Computing Laboratory (RADICL) at the University of Idaho's Idaho Falls Center for Higher Education, will be available to students at any Idaho university. The project will provide access to what will eventually be a hybrid physical/virtual environment through the Idaho Regional Optical Network, a high-speed optical network that connects higher education institutions, health care organizations, government agencies and not-for-profit organizations throughout the state. It expands on the RADICL facility on University of Idaho's main campus in Moscow, which provides hands-on teaching and research in the areas of information assurance, cyber defense, and modern computing platforms and networks. The new effort will include cyber-physical systems and operations technology for critical infrastructure. The immersive environment created by the project will mimic real-world activity on the internet – "Things you couldn't do in a classroom," said Haney, associate professor of computer science for the University of Idaho and a cybersecurity researcher at Idaho National Laboratory.

Led by Haney, the project includes UI researchers R.A. Borrelli, Dakota Roberson and Constantinos Kolias, and Idaho State University researchers Benjamin Lampe, Sean McBride and Ryan Lind.

The HERC-IGEM program, which is designed to stimulate competitive research at Idaho's higher education institutions, will fund the project for three years at $693,000 annually.

Projects selected for funding must align with the statewide higher education research strategic plan. Haney's project aligns with the plan to boost cybersecurity education at the state's universities and colleges through a private fiber-optic network that connects classrooms and research laboratories on all of Idaho's public higher education institutions. The goal is to eventually incorporate CAES and INL's Collaborative Computing Center and Cybercore into the plan. At CAES, Haney plans a project called Secure Cyberspace and Resilient Industrial Systems Workforce Development, a physical lab that ties into an existing simulator at the Applied Visualization Laboratory and focuses on cybersecurity for the nuclear industry and infrastructure.

ISU's Nuclear Engineering Program receives NRC grant

Idaho State University's Nuclear Engineering Program received a $450,000 grant from the Nuclear Regulatory Commission through the Faculty Development Grant program to support assistant professor **Amir Ali's** research program.

The NRC program provides support for education in nuclear science, engineering and related trades to develop a workforce capable of designing, constructing, operating and regulating nuclear facilities and safely handling nuclear materials. The grant is for faculty members in the first four years of their career and is intended to support faculty development under supervision by a mentor.

Ali, who leads the Innovation Laboratory at CAES, plans to use the award to create a program enabling thermal hydraulic research in ISU's Nuclear Engineering Department.

"We've never had that at ISU," Ali said, adding that the new program will meet a "strong need" from Idaho National Laboratory.

The program Ali is developing under the mentorship of Chad Pope – a professor, Nuclear Engineering program director at ISU, and principal investigator on the grant – will feature two to three courses, one on computational thermal hydraulics and another on fire protection systems for nuclear applications.

Ali's award will most immediately impact CAES through the introduction of research on the fission gas release phenomenon in advanced reactors.

Researchers from ISU, BSU receive DOE grants for projects involving INL

Two projects involving Idaho National Laboratory and CAES universities were among 29 projects that received a total of $21 million through the Department of Energy's Established Program to Stimulate Competitive Research (EPSCoR) program in September.

Idaho State University's Cori Jenkins, an assistant professor of chemistry, and ISU colleague Josh Pak were recipients of an EPSCoR award in collaboration with INL researcher Simon Pimblott, in the Nuclear Science and Technology directorate. The project, "Mechanistic and Kinetic Analysis of Polymer Deconstruction and Modification by Irradiation for Polymer Upcycling," developed in part from an ISU-CAES seed grant also involving INL researchers. ISU awards seed grants to collaborative research projects involving partners from INL and the other CAES universities, with funding from the portion of ISU's annual state funding allocated for CAES activities.

Boise State University's Kurtis Cantley, an associate professor of electrical and computer engineering, received EPSCoR funding for a project called "Neuromorphic Systems for Power Grid Cyber-Resilience," on which he is collaborating with researcher Craig Rieger in INL's National and Homeland Security directorate.

DOE's EPSCOR program is designed to enhance the capabilities of states and territories to conduct sustainable and nationally competitive energy-related research. Twenty-five states, including Idaho, plus Puerto Rico, Guam and the U.S. Virgin Islands are eligible to participate in the program, which pairs innovative ideas from EPSCoR-eligible institutions with leading-edge capabilities at national laboratories. The goal is to enhance research while building expertise and capabilities that will enable the institutions to better compete for other federal research and development funding, while advancing the geographic diversity of researchers conducting competitive energy-related research.

"The EPSCoR program is a long-standing and critical pillar in the Department of Energy's efforts to ensure that all regions and institutions, particularly those that have been historically underrepresented in federal research funding programs, are engaged in competitive, impactful, clean-energy-relevant research," Asmeret Asefaw Berhe, director of the DOE Office of Science, said in a news release announcing the awards. "The projects selected for awards will help to build expertise and capabilities at the EPSCoR institutions and will strengthen their connections to the wealth of capabilities at the DOE national laboratories."

CAES Fellow Mustafa Mashal receives two fellowships

Mustafa Mashal, a CAES fellow and associate professor in the Department of Civil and Environmental Engineering at ISU, received the Fulbright U.S. Scholar Award and the University of Canterbury's Visiting Erskine Fellowship this year.

For his Fulbright award, Mashal is spending 10 months at Qatar University in Doha, Qatar, conducting research on the use of titanium alloy bars to retrofit structurally deficient concrete buildings, teaching a graduate-level class on precast concrete and providing seminars and training sessions.

Prior to his Fulbright program, Mashal spent four months at the University of Canterbury for the Visiting Erskine Fellowship, teaching a class on designing and retrofitting reinforced concrete bridges to withstand earthquakes, and he collaborated with the faculty on research projects.

Mashal, a member of the initial cohort of CAES Fellows, received a $1.1 million award through the Idaho Global Entrepreneurial Mission in 2019 for a project that led to the construction of the Disaster Response Complex on ISU's campus in Pocatello. Mashal collaborated with INL researcher Bryon Marsh on the project. Their collaboration dates to a CAES Collaboration meeting in 2018.

Boise State faculty member on team awarded NEUP grant

CAES Fellow **Brian Jaques** of Boise State University is among the researchers involved in a project that received a $300K grant via the Nuclear Energy University Program. Led by a researcher from the University of Texas at San Antonio, the project supports the fabrication and testing of advanced nuclear fuels and materials, specifically the development of uranium-bearing compounds, alloys and composites. Jaques, an assistant professor of Materials Science and Engineering, is a frequent collaborator

with Idaho National Laboratory researchers in the High Temperature Test Laboratory, Transient Reactor Test Facility and the Advanced Test Reactor on the In-Pile Instrumentation Program. He is also the Boise State representative in CAES' effort to collaborate with ATR for student engagement.

ISU faculty member, CAES resident, awarded NASA fellowship

Dan LaBrier, an assistant professor of nuclear engineering at Idaho State University and a CAES resident, was recently awarded an Idaho NASA Established Program to Stimulate Competitive Research (EPSCoR) Summer Faculty Fellowship.

The fellowship program supports Idaho-based faculty in their efforts to better align their research programs with topical areas and missions that NASA leads, offering participating faculty members time and resources to analyze and understand NASA's needs and examine how their research and expertise might meet those needs.

Fellows are introduced to resources such as the NASA Solicitation and Proposal Integrated Review and Evaluation System, the 2020 NASA Technology Taxonomy, the NASA Human Research Roadmap and TechPort, and the opportunity to meet with the Idaho NASA EPSCoR team to better understand processes.

CAES fellow part of team that lands NSF grant

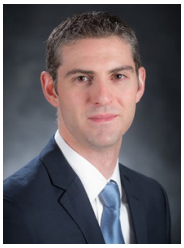
CAES Fellow **Claire Xiong** from Boise State University is a member of a research team that received a grant of nearly $2 million from the National Science Foundation to engage prospective elementary teachers' mathematical learning through science, technology, engineering and math (STEM) inquiry and experiential learning. The goal of the research is to improve prospective elementary teachers' engagement through innovative, interdisciplinary and inquiry-based approaches to address the pressing needs for integration of multiple disciplines in

STEM education. The grant will empower interdisciplinary collaboration across STEM fields, including mathematics, computer science, and materials science and engineering, across four universities: Boise State, Augusta University, the University of Texas at San Antonio, and Kapi'olani Community College. Xiong is an associate professor of materials science and engineering at Boise State.

INL researcher, ISU faculty member, named to statewide Accomplished Under 40 list

Idaho National Laboratory researcher **Kunal Mondal**, an affiliate faculty member in Idaho State University's Department of Civil and Environmental Engineering, was recognized by Idaho Business Review's Accomplished Under 40. The publication awards the title each year to 40 people selected by a panel for their "exceptional work ethic and leadership in both government and private sector organizations." Mondal, in INL's Energy and Environment Science and Technology directorate, has collaborated often with CAES Fellow Mustafa Mashal, an ISU associate professor, to advance the field of materials science. Mondal's research focus is micro/nano fabrication of functional materials, soft and stretchable electronics, and carbon nanomaterials.

University of Idaho faculty member leads team that received NSF EPSCoR award



University of Idaho faculty member **Michael Maughan** leads a research team that received a $3.9 million Research Infrastructure Improvement Track-2 Focused Established Program to Stimulate Competitive Research (EPSCoR) Collaboration award from the National Science Foundation's Office of Integrative Activities. The project calls for teams from UI and Auburn University to create a framework to utilize renewable and waste feedstocks to develop 100% bio-based materials for the Advanced Housing Manufacturing Industry of the Future. The project includes outreach to high school chemistry students, undergraduate and graduate student education, and mentoring postdoctoral scholars and early-career faculty members. The two NSF EPSCoR states involved in the project, Idaho and Alabama, are expected to benefit economically from industry partnerships and technology developments that emerge from it. Maughan is an assistant professor in the Advanced Manufacturing and Material Properties Group at UI and a member of the 2021 cohort of the CAES Summer Visiting Faculty Program.

BSU faculty receives multimillion-dollar research grant from US Air Force

The Boise State University Advanced Nanomaterials and Manufacturing Laboratory and NextFlex, a Department of Defense-sponsored Manufacturing USA institute, received a $4.3 million grant from the Air Force Research Laboratory at Wright-Patterson Air Force Base to enable advanced manufacturing of flexible hybrid electronics using mixed dimensional materials.

Dave Estrada, the CAES associate director for BSU and associate professor in the Micron School of Materials Science and Engineering, leads the effort to enable the fundamental science necessary to expedite the manufacturing, maintenance and repair of sensors and systems critical to ensuring global persistent awareness, resilient information sharing, and the speed and reach of U.S. Air Force missions.

"This award will position our team to advance semiconductor manufacturing techniques that may currently not be well suited for processing atomically thin films," said Estrada.

UI faculty member tours French nuclear plants

CAES Fellow Haiyan Zhao visited several nuclear sites in France during a visit arranged through the French section of the American Nuclear Society. Zhao is an associate professor in the Chemical and Biological Engineering Department and affiliated faculty in the Nuclear Engineering and Environmental Science program at University of Idaho, Idaho Falls.

Over seven days in July, she crisscrossed France to tour nuclear facilities such as Cadarache, the largest technological research and development center for energy in Europe that hosts several research reactors; La Hague, a nuclear fuel reprocessing plant; Andrea LLW waste storage site; and Marcoule Nuclear Site.

"It was really eye-opening to see how the French government, industry and the public respond to challenges and work together," Zhao said. She came away from the trip with valuable information about how the country handles the nuclear fuel cycle, from the front-end of preparing material for reactors to the back end of safely preparing, managing and disposing of the radioactive spent nuclear fuel.

Zhao was joined on the trip by eight professors from across the U.S. She applied for and was selected to participate in the journey in 2020. The event was delayed until this year due to the COVID-19 pandemic.

CAES students receive accolades

Two of the students who participated in the CAES Research Experience for Undergraduates (REU): Advanced Manufacturing for a Sustainable Energy Future program this summer received awards for their work. Hannah Smith was one of 10 REU students in the nation selected to present at the Engineering Education Conference, held in Washington, D.C., in September. Miranda Cardenas was awarded the University of Utah's Virginia Lee Beecraft Scholarship for a personal statement she wrote on her REU experience that discussed her background and the impact she hopes to make through her work in advanced manufacturing. The scholarship is awarded to a student who demonstrates creativity, resilience and a desire to positively impact the world. In addition, REU Program Coordinator Hillary Fishler, who is CAES' programmatic lead, was selected to present professional development tools and strategies developed for the program at the Engineering Education Conference.

CAES fellows' team wins INL competition

Several members of the inaugural cohort of CAES's Research Experience for Undergraduates: Advanced Manufacturing for a Sustainable Energy Future program are also members of a team that won Idaho National Laboratory's Innovation Week 2022 Net-Zero Collaboration Challenge. Lydia Beardsley, Miranda Cardenas, Dylan Cox, Hayden Pritchard, Avery Rambur, Katelyn Shadley and Hannah Smith joined INL intern Kari Perry to win the challenge for their proposal, "Bike Commuter Resource Center." The team received 160 hours of time to develop the project, which addresses the lack of bike accessibility in Idaho Falls and offers an innovative solution that includes education, information availability and community development to encourage INL employees to reduce their carbon emissions by biking to work. Contest organizers said the team's proposal has the potential to significantly reduce emissions related to employee commuting, which makes up 12% of INL's total carbon emissions, while improving biker safety and enhancing employee health and well-being.

University of Idaho projects win IGEM awards

Several projects with CAES connections won awards through the Idaho Global Entrepreneurial Mission, a grant program that funds research projects in which faculty members from CAES universities collaborate with industry to bring viable technologies to market.

HempWool project

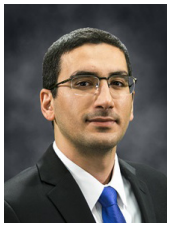
University of Idaho received a $206,000 grant from IGEM to collaborate with industry partner Hempitecture Inc. to research and develop a natural fiber insulation product. The goal is to develop the product, called HempWool, into a pioneering sustainable product in the building industry.

"This innovation means exciting changes to the building industry in Idaho and beyond," said Tom Kealey, director of the Idaho Department of Commerce, which awards IGEM grants. "We are excited to see this public-private partnership between Hempitecture Inc. and the University of Idaho."

The UI team is composed of several researchers in the university's College of Natural Resources and includes **Damon Woods**, interim director of the university's Integrated Design Lab and a leader of the Innovative Energy Systems working group at CAES.

Hempitecture is a building materials supplier based in Ketchum, Idaho. HempWool is expected be created with the fiber from industrial hemp grown sustainably in rural communities across the U.S.

Development of Idaho Sourced Rare Earth Elements project



A collaborative project led by University of Idaho assistant professor **Amin Mirkouei** received a $348,000 IGEM award. Mirkouei's project, "Development of Idaho Sourced Rare Earth Elements Drilling and Extraction," involves a team from UI, researchers from Idaho National Laboratory and the Idaho Geological Survey, and industry partner Idaho Strategic Resources.

It calls for research and development on a new technique for drilling and extracting rare earth elements.

"This project capitalizes on the university's research strengths in mining, as well as utilizing key partnerships and expertise around the state," Idaho Commerce Director Tom Kealey said in a news release. "The outcome of this IGEM public-private research project could have a profound economic impact on Idaho's mining industry."

Others involved with the project include:

- Indrajit Charit, professor, UI department chair and CAES resident
- Lee Ostrom, UI, Idaho Falls Center executive officer and professor
- John Russell, UI research professor and CAES associate director for the university
- Claudio Berti, director and state geologist, Idaho Geological Survey
- Virginia Gillerman, economic and mining geologist, Idaho Geological Survey
- Daniel Ginosar, INL
- John Swallow and Robert Morgan, Idaho Strategic Resources

HIGHLIGHTS

Summer Visiting Faculty Program's fifth year

Five faculty members from the CAES universities participated in the fifth annual CAES Summer Visiting Faculty Program. The primary objective of the 12-week program is to support and guide faculty from the CAES universities as they develop a submission-ready research proposal in collaboration with an Idaho National Laboratory researcher who will support their proposal. Members of the cohort participated in professional development, seminars and informational sessions aimed at building the faculty members' understanding of DOE and its core capabilities, INL's strategic initiatives and areas of interest, and best practices in cross-institutional collaboration. The program's long-term objectives include continued partnerships between the faculty member, INL and the CAES consortium; strengthening the consortium's inclusive research community; and supporting science, technology, engineering and math (STEM) research and education across Idaho through collaborative university and laboratory networks.

Here are this year's participants:

- Dahzi Yang, Boise State University, collaborated with Hillary Fishler, CAES, and John Koudelka, Nuclear Science and Technology directorate
- Rajib Mahamud, Idaho State University, collaborated with Ahmed Hamed, Energy and Environment Science and Technology directorate
- Hasan Jamil, University of Idaho, collaborated with Shad Staples, NS&T
- Matthew Swenson, UI, collaborated with Kaustubh Bawane, Materials and Fuels Complex
- Alex Vakanski, UI, collaborated with Fei Xu, MFC, and Yachun Wang, NS&T

CAES Summer Visiting Faculty Program, at a glance:

48 faculty members from the CAES universities have participated since the program's inception in FY-18.

Past projects that have received funding include:

- *An offshoot of a project led by Boise State University's Mike Hurley led to the installation of a 3D metal printer for nuclear-grade materials at CAES.*
- *A project led by Idaho State University's Irene van Woerden and former INL Communications Director Rae Mos called for an in-depth analysis of the public perceptions of nuclear energy.*
- *A project led by Boise State's Edoardo Serra used Lego Mindstorms to help teachers inspire middle-school students pursue careers in cybersecurity.*

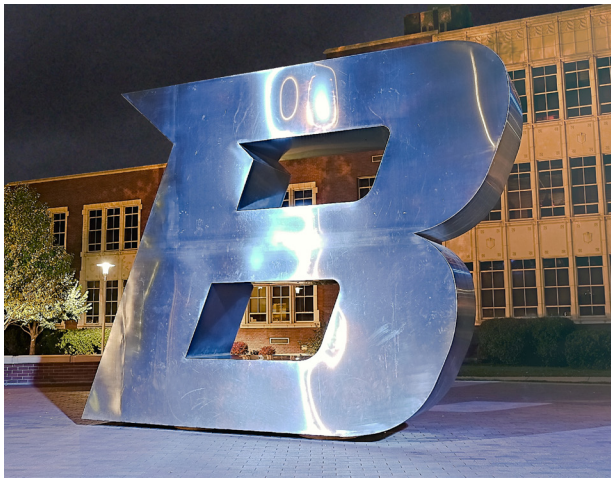
CAES Collaboration Funds celebrates fifth year with record number of submissions

Thirteen projects were selected to receive CAES Collaboration Program Development Funds for 2022, out of a record number of 23 submissions. This marks the fifth year in which these funds have been awarded to projects led by Idaho National Laboratory researchers in partnership with faculty members/researchers from the CAES universities. The goal is to establish and foster relationships between the CAES entities in research, education and innovation. This year, CAES leadership selected 13 proposals best suited to enhance collaborative relationships among the CAES entities.

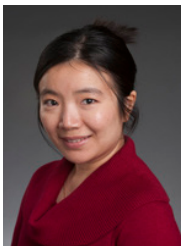
- *This year, the program's fifth year, 13 proposals were awarded out of a record number of submissions (23).*
- *Since the program's inception, 42 projects have been awarded for a total of $1,018,862 in CAES funding.*
- *Eight white papers produced, new course material developed at each university, several seminars held, one award through INL's Laboratory Directed Research and Development program.*
- *The largest awards to emerge are a $1.1 million award through the Idaho Global Entrepreneurial Mission for an ISU/INL project and a $430,000 award from the Office of Nuclear Safety, also for an INL/ISU project.*
- *Since FY-20, 25 graduate students, a Ph.D. student and three interns have supported these projects.*
- *Since the program began, 26 proposals have been submitted, including five pending from FY-22.*

Principal Investigator	INL Researcher(s)	INL Directorate(s)	CAES Focus Area
Boise State University			
Lan Li (with Amir Ali)	Joshua Fishler	NS&T	Nuclear Energy
Brian Jaques	Junhua Jiang	NS&T	Nuclear Energy and Advanced Manufacturing
Sing Ming Loo	Eleanor Taylor	N&HS	Cybersecurity and Innovative Energy Systems
Idaho State University			
Amir Ali (with Lan Li)	Joshua Fishler	NS&T	Nuclear Energy
Mostafa Fouda	Md Riaz Kayser Ahmed Hamed	NS&T EES&T	Nuclear Energy
Mustafa Mashal	Vaibhav Yadav	NS&T	Nuclear Energy
Mustafa Mashal	Kunal Mondal	EES&T	Nuclear Energy
Mustafa Mashal	Xingyue Yang, Rajiv Khadka John Koudelka	NS&T	Computing, Data and Visualization
Anirban Chakraborty	Asef Redwan	EES&T	Energy-Water Nexus
Leslie Kerby	Ryan Stewart	NS&T	Nuclear Energy and Computing, Data and Visualization
University of Idaho			
Min Xian	Mukesh Bachhav	MFC	Advanced Manufacturing
Haiyan Zhao	Hanping Ding	EES&T	Innovative Energy Systems
Ahmed Ibrahim	Elmar Eidelpes Gabriel Ilevbare	NS&T EES&T	Nuclear Energy
Indrajit Charit	Cheng Sun	MFC	Advanced Manufacturing

NS&T = Nuclear Science and Technology, EES&T= Energy & Enviornment Science & Technology, N&HS=National & Homeland Security, MFC=Materials & Fuels Complex



Paper on collaborative research effort published



Researchers from Idaho National Laboratory, Boise State University and University of Idaho who are working on a project studying the long-term performance and safety of lithium-ion batteries had their work published in the journal Small. The project, which is funded by INL's Laboratory Directed Research and Development program, focuses on the least understood areas of the batteries, the solid electrolyte interphase (SEI). The SEI is the region at the interface between the battery electrodes and the electrolyte and enables the transport of charge. The research team includes Boise State professors **Claire Xiong** and **Lan Li**, who are both CAES fellows; UI's I. Frank Cheng; and INL's Eric Dufek. The work utilized nondestructive electrochemical-atomic force microscopy to systematically monitor and compare the dynamic SEI formation and evolution on a pair of representative graphitic materials with and without defects. The outcome is a comprehensive understanding of the formation and evolution of SEI on graphitic electrodes.

"Through this collaboration, we discovered that defects in the graphite structure induce the formation of a thinner, denser and more uniform SEI, which leads to improved battery performance," said Xiong, the principal investigator. "We now have a new design strategy to overcome the Achilles's heel of lithium-ion batteries — limited charge cycling capacity."

Boise State University professor teams with INL on materials science research effort

Boise State University associate professor Paul Simmonds is collaborating with Idaho National Laboratory on research that calls for using a process called molecular beam epitaxy to enable the study of the elements that form the foundation of nuclear energy production. The process will enable Simmonds and his colleagues to "grow" materials with few defects, allowing them to observe the movement of electrons and phonons with unparalleled accuracy. Current studies of the movement of the electrons and phonons found in these elements (uranium, plutonium and other actinides) are limited in part because of defects and impurities. Molecular beam epitaxy will allow the researchers to create a structure with the desired elements arranged in a predetermined arrangement, enabling the electronic and thermal properties of the materials and the observation of quantum mechanical effects. It also could lead to additional research on actinide materials at INL.

ISU awards seed grants for collaborative research efforts

TEN researchers at Idaho State University received $243,000 in ISU-CAES seed grants in December for collaborative research projects involving partners from Idaho National Laboratory and the other CAES universities. The projects range from microreactor design to pumped hydropower to high performance computing. The funding for the projects comes from the portion of ISU's annual state funding allocated for CAES activities.

1. **Amir Ali,** a Nuclear Engineering Department faculty member, is collaborating with INL researcher Yasir Arafat on a project called "*Performance Optimization of MARVEL Microreactor Power Conversion System*"
2. **Paul Bodily,** a faculty member in the Computer Science Department, is collaborating with INL researcher Rajiv Khadka on "*Application of Advanced Computational Theory to Facilitate Efficient Solutions to Real-World Combinatorial Problems*"
3. **Tony Forest,** a Physics Department faculty member, is collaborating with Chutiing Tan (INL) on "*A Neutron Generator for Materials Testing*"
4. **Mostafa Fouda,** a faculty member in the Electrical and Computer Engineering Department, is collaborating with Ahmed Hamed (INL) on "*Smart Analytics of Biomass Images*"
5. **Jon Kalivas,** a faculty member in the Chemistry Department, is collaborating with John Koudelka (INL) on "*Virtual Reality for Dynamic Data Visualization of Analytical Chemical Data*"
6. **Mustafa Mashal,** a Civil Engineering Department faculty member, is collaborating with fellow ISU researchers Dan LaBrier and Jared Cantrell, and INL researchers Som Duhlipala and Amit Jain on "*Machine Learning-Aided Validation of a Sustainable and Highly Durable Construction Technology for the Containment Facility of Advanced Reactors*"
7. **Srinath Pashikanti,** a faculty member in the Biomedical and Pharmaceutical Sciences Department, is collaborating with fellow ISU researcher Rene Rodriguez and INL researchers Robert Fox and Donna Baek on "*Incorporation of Sterics in Novel Phosphonium Ionic Liquid (PIL) and Their Effect on Ligand Intermolecular Interactions and Chelation Properties*"
8. **Bruce Savage,** a Civil Engineering Department faculty member, is collaborating with fellow ISU researchers Chikashi Sato, Jim Mahar and Mustafa Mashal, and University of Idaho researchers Karen Humes and Dakota Roberson on "*Water Storage Infrastructure Viability Using Repurposed Tires for Pumped Hydro*"
9. **Keith Weber,** Geographic Information Systems Training and Research Center director, is collaborating with Boise State University's Kathleen Araújo and Cassandra Koerner, and INL researchers Kelly Wilson, Ryan Hruska, Shiloh Elliot and Chris Forsgren on "*The Power Grid/Wildfire Nexus: Using GIS and Satellite Remote Sensing to Identify Vulnerabilities*"
10. **Danny Xu,** a faculty member in the Biomedical and Pharmaceutical Sciences Department, is collaborating with Boise State researcher Kenneth Cornell and INL's Eric Whiting on "*Hearing Loss Prevention Through Integrative High-Performance Computing, Data Science and Experimental Biology*"

Collaborative project on wastewater involves INL, Boise State University

A collaborative research effort involving Boise State University, Drexel University and Idaho National Laboratory has demonstrated an energy-efficient, conceptually simple technique to remove ammonia from agricultural wastewater. The research team — co-led by **David Estrada**, associate professor of Materials Science and Engineering at Boise State University and the CAES associate director for Boise State, and Tedd Lister, a chemical separations researcher in INL's Energy and Environment Science and Technology directorate — has published an article in the Nature Partner Journal Clean Water on their work. The project demonstrates a technique for removing dissolved ionic impurities from wastewater without the use of filters or high pressure that uses a fraction of the energy of traditional methods. The technique utilized by the research team, capacitive deionization (CDI), is an emerging water treatment technique in which water flows between two oppositely charged electrodes. The ionic impurities in wastewater are polarized, which causes the anions to be attracted and stored in the positive electrode while the cations are attracted and stored in the negative electrode.

"The neat advantage with CDI is that you can reverse the charges on the electrodes and repel the stored ions into a concentrated stream", said Luis Diaz-Aldana, a member of the research team who is an electrochemical engineer in INL's Energy and Environment Science and Technology directorate. "So not only can you clean water, but you can also recover any precious resources that were discharged into the wastewater."

Previous studies have explored carbon-based materials as electrodes in the CDI system. However, these materials can be limited in chemical diversity, surface chemistries and surface-area-to-volume ratio, which all combine to limit performance in CDI systems. This prompted the team to partner with Chris Schuck and Yury Gogotsi at Drexel University to investigate the efficacy of MXenes in a flowing electrode CDI system.

Naqsh Mansoor, a Boise State graduate student in materials science and engineering, was first author on the article, which explained that using MXenes in a flow electrode style CDI architecture results in 100 times improvement in the deionization capacity of the system when compared to activated carbon based electrode systems. This essentially means that a higher number of pollutant ions can be pulled out from the wastewater stream while using less of the electrode material and a fraction of the energy.

CAES leadership approves new capabilities for lab

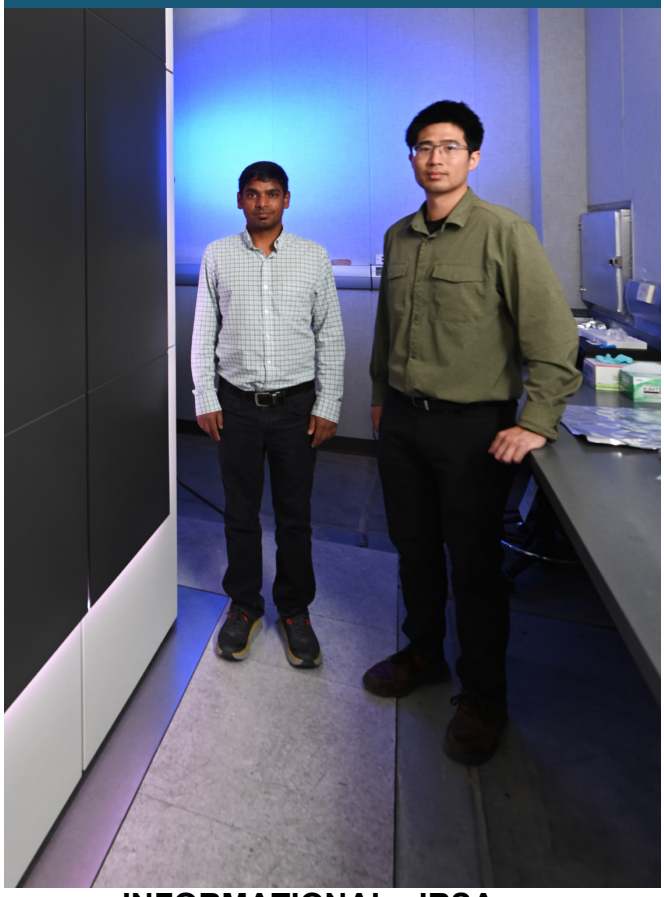
The CAES Executive Board approved the Electronics for Frequency-Domain Feedback Laboratory, expanding the capabilities of the Innovation Laboratory. Led by Idaho National Laboratory's Robert England, the project enables research into instrumentation and controls as well as data science. Idaho State University assistant professor Mostafa Fouda and University of Idaho assistant professor Dakota Roberson are co-principal investigators on the project.

CAES launches seed grant program for MaCS

CAES launched the Microscopy and Characterization Suite (MaCS) Seed Grant Program in the spring to boost opportunities for members of the CAES community to conduct research in the MaCS. The program covers the costs of instrument time and MaCS staff time for selected proposals. The goal is to seed opportunities that advance the vision and mission of CAES, promoting research in all science fields and increasing the MaCS user base.

MaCS is a state-of-the-art materials characterization laboratory with a range of technologically advanced equipment including two scanning transmission electron microscopes and local electrode atom probe that provides cross-cutting capabilities in support of the CAES mission in several areas. MaCS is largely made possible through its partnership with the Nuclear Science User Facilities.

The seed grant program is led by Boise State University and Idaho State University, as well as Boise State's Micron School of Materials Science and Engineering.



Boise State University, INL collaborate on high-density fuel project

A collaborative project led by Boise State University assistant professor Brian Jaques, Boise State Ph.D. student/Idaho National Laboratory Graduate Fellow **Jennifer Watkins,** and INL researcher Adrian Wagner is the subject of three recent review articles. The articles provide a review of the challenges and opportunities associated with the use of four types of high-uranium density fuels in existing and future light water reactors — uranium diboride, uranium carbide, uranium silicide and uranium mononitride.

In general, increasing the uranium density of fuels in these reactors can provide many benefits, including increased power-up rates, longer cycle lengths, improved performance and increased coping time during accident scenarios. However, the fuels also exhibit undesirable corrosion behavior. The articles delve into the need for increased study into this behavior, to identify ways to protect the fuel matrix from degradation. The project findings indicate that further research is warranted due to the potential benefits of using high-uranium density fuels, from safety, economical and nonproliferation standpoints.

Watkins is a Ph.D. student in Boise State's Micron School of Materials Science and Engineering and is part of the Advanced Fuel Fabrication and Development group at INL's Materials and Fuels Complex. Wagner is a researcher at MFC. Jaques, a CAES fellow, is an assistant professor in the Micron School of Materials Science and Engineering who holds a joint appointment with INL.

The three are joined on the project, which is funded by INL and Westinghouse, by University of Texas at San Antonio researchers Elizabeth Sooby and Adrian Gonzales.

CAES-funded project studying perceptions of nuclear energy featured in publications

A CAES-funded project examining the perceptions of nuclear energy is the subject of two recent publications. The project stems from the 2020 CAES Summer Visiting Faculty Program, where Idaho State University's **Irene van Woerden**, an assistant professor in the Department of Community and Public Health, collaborated with former Idaho National Laboratory Communications Director **Rae Moss** to study the public perception of nuclear energy in Idaho.

The team received $20,000 through the ISU-CAES seed grant program, which provides funding for collaborative projects involving researchers from the university and INL, to launch a survey. More than 6,000 people responded to at least one question in the survey, with more than 2,000 responses from Idahoans. The target audience lived within 50 miles of the INL Site.

"We had a much wider and larger response rate than expected," van Woerden said.

She and Moss recruited three graduate students pursuing their master's in public health at ISU to help conduct the survey and analyze the responses.

The survey included questions related to:

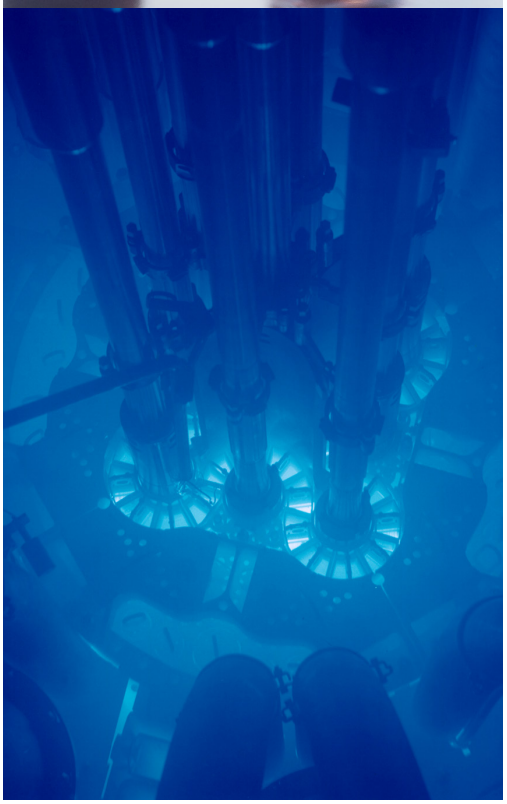
- Demographics
- Attitudes toward nuclear energy
- Perceived risk of nuclear energy
- Environmental factors
- Health concerns related to nuclear energy
- Nuclear waste
- Knowledge of nuclear energy
- Economics of nuclear energy
- Questions on the respondents' health status, food security status, and community and disaster preparedness.

One paper, published in May, was written by van Woerden; Megan Warnement Wrobel, an assistant professor of political science at ISU; and Mark McBeth, a professor of political science at ISU. The article, "Political ideology and nuclear energy: Perception, proximity and trust," was published in May in Review of Policy Research.

The second article, published in April in Energies, was written by ISU graduate student Meesha Iqbal, Moss and van Woerden. It is called, "Peoples' perception toward Nuclear Energy."

The research team is also preparing another article about the perceptions of nuclear energy related to climate change and nuclear waste.

"The general idea behind this work is that the perception toward nuclear energy is a vital factor determining the success or failure of nuclear projects," van Woerden said. "We welcome additional collaboration with those who are interested to use this survey."



EVENTS

Diverse group turns out for innovation workshop at CAES

More than 70 people attended a workshop at CAES designed to develop a roadmap for receiving funding through the National Science Foundation's Regional Innovation Engines program. The program catalyzes and fosters innovation ecosystems across the nation, providing up to 10 years of funding, as much as $160 million, to each "engine" to establish and support diverse regional coalitions that engage in research and development, workforce development and translating innovation to society. A collaborative team from Idaho National Laboratory, Boise State University and CAES submitted a concept paper to NSF over the summer that was accepted, resulting in the workshop. The workshop drew attendees from industry, academia, INL, local government and community organizations, and resulted in the formation of a comprehensive team charged with developing a full phase 1 proposal to submit to NSF that could lead to an innovation "engine" based in eastern Idaho.

Energy Policy Institute hosts annual conference

The Energy Policy Institute at Boise State University held the 10th annual Energy Policy Conference in mid-October 2021. More than 200 people attended, the best draw in the event's history. Keynote speakers included Idaho National Laboratory Director John Wagner; Abigail Ross Hopper, president and CEO of the Solar Energy Industry Association; William Magwood, director-general of the Nuclear Energy Agency; Jennifer Fordham, former senior vice president of Government Affairs for the Natural Gas Supply Association; and Jon Wellinghoff, CEO of Grid Policy, Inc. and former chairman of the Federal Energy Regulatory Commission. The conference featured sessions on resilience in the power sector and the future of electric vehicles, all revolving around the conference's theme of "Disruption and Megatrends in Energy." The conference was cancelled in 2020 due to the COVID-19 pandemic.

CAES hosts meeting with South Korean scholars

CAES hosted a meeting at its facility last spring with a contingent of researchers and faculty members from Gachon University in South Korea. The meeting was part of an effort started by Idaho National Laboratory in 2020 to develop an international research and education force to support the deployment of advanced reactors. Representatives from the two groups discussed implementing an international student and scholar exchange between Idaho State University and Gachon University to encourage collaboration. A memorandum of understanding is being developed to formalize the relationship.

CAES hosts student chapters of American Nuclear Society

CAES hosted an event for the American Nuclear Society student chapters from Boise State University, University of Idaho and Utah State University last spring. The group consisted of 16 students from Boise State, nine from UI and eight from Utah State. Interim CAES Director Terry Brog provided an overview of CAES, and the students toured several laboratories, including the Small Modular Reactor Simulator Laboratory, Microscopy and Characterization Suite and Radiochemistry Laboratory. The event was organized by UI nuclear engineering student Sesily Stewart. The faculty adviser was R.A. Borrelli, an associate professor in nuclear engineering at University of Idaho.

Boise State University hosts workshop

More than a dozen researchers, from Boise State University, Idaho National Laboratory and Idaho State University, attended a workshop hosted by Boise State in August. The goal of the event was to formulate a plan to develop an Engineering Research Center proposal. Engineering Research Centers are university-led institutions developed through the National Science Foundation's Directorate of Engineering. The center would be housed at Boise State, would include all of the CAES institutions, and would focus on advanced manufacturing for renewable energy.

CAES hosts ASME Lunch and Learn

CAES hosted a lunch-and-learn event for the American Society of Mechanical Engineers in August. The event featured a presentation by Bin Li, a senior staff scientist in Idaho National Laboratory's Energy and Environment Science and Technology directorate whose research focuses on energy storage technologies, from discovering new materials to developing novel technologies for lithium-ion and Li-metal batteries.

CAES hosts My Amazing Future

CAES hosted 165 eighth-grade girls and more than two dozen teachers as part of Idaho National Laboratory's annual My Amazing Future in May. The annual event gives the young scholars the chance to explore topics such as DNA extraction from a strawberry, cybersecurity, radioisotope thermoelectric generators, hands-on chemistry and more, at more than a dozen workshops set up across INL's Research and Education campus. They conducted five workshops at CAES.

CAES hosts reception, poster session for REU fellows

Dozens attended a reception at CAES in late July honoring the first cohort of the CAES Research Experience for Undergraduates: Advanced Manufacturing for a Sustainable Energy Future program. The reception featured introductions by Idaho National Laboratory Deputy Director for Science and Technology and Chief Research Officer Marianne Walck and CAES Director Philip Reppert, a poster session and lightning talks on the projects the 10 members of the inaugural cohort worked on throughout the summer.

CAES hosts meeting of regional economic development organization

CAES hosted the quarterly meeting of the Regional Economic Development for Eastern Idaho in June. The group received a briefing from former interim CAES Director Terry Brog and INL Technology Deployment Director Jason Stolworthy on INL's economic impact and the laboratory's role before taking a tour of the CAES facility highlighted by a demonstration in the Applied Visualization Laboratory.

MEETINGS, OPEN HOUSES, SEMINARS AND SPEECHES

CAES scientist featured in EPI Power Talk webinar

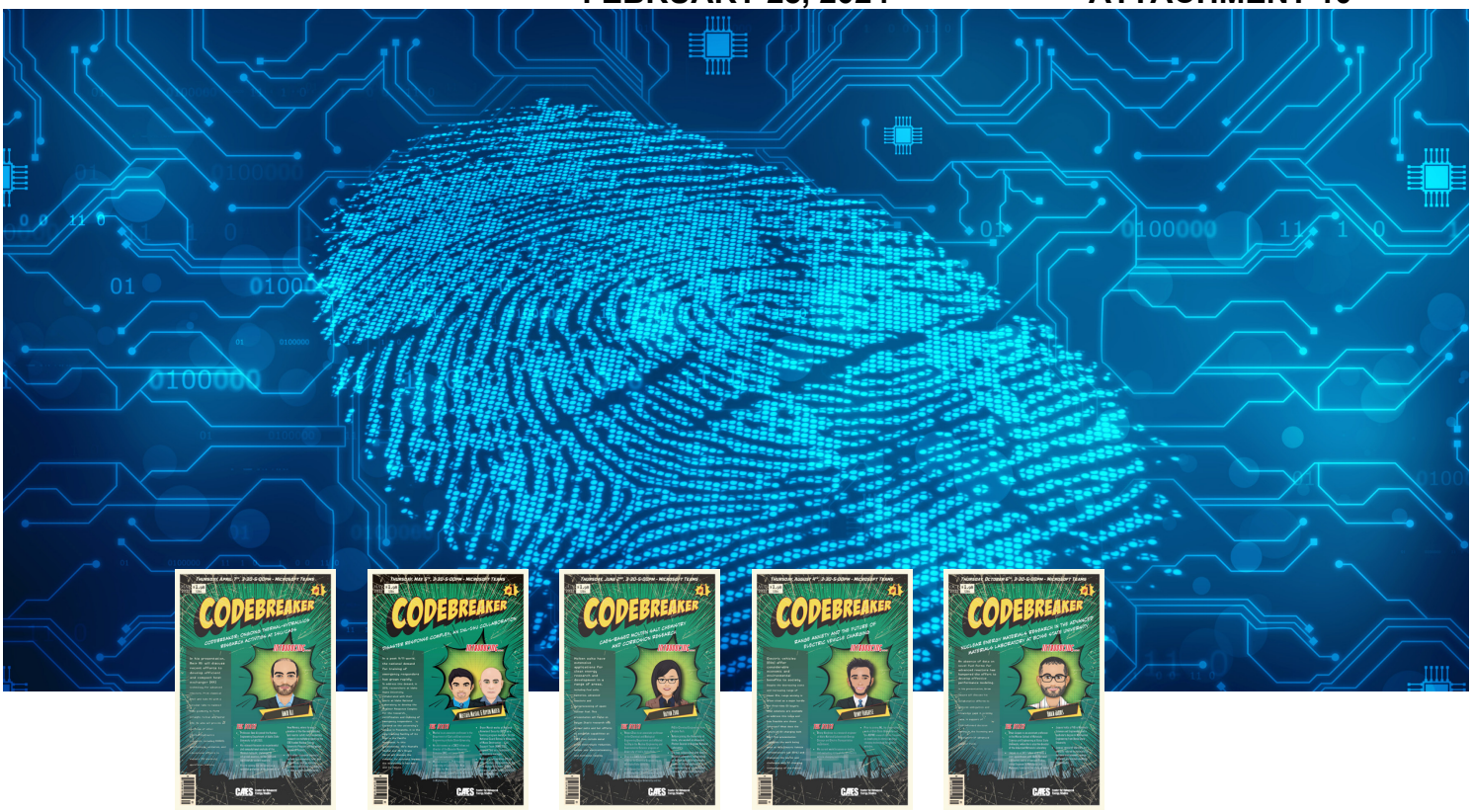
Travis McLing, a research scientist with INL and the lead for the Geochemistry Laboratory at CAES, presented at a Power Talk webinar hosted in mid-June by the CAES Energy Policy Institute at Boise State University. More than 150 people tuned in to the event, called "Geothermal Prospects: Federal Policy, Jobs and Technology Build-out." McLing was joined on the panel by Roy Mink, former director for DOE's Geothermal Technologies Program; CAES Energy Policy Institute Director Kathy Araújo, who is also an associate professor of Sustainable Energy Systems, Innovation and Policy at Boise State; and Jeff Tester, a professor of Sustainable Energy Systems at Cornell University.

McLing, who serves as INL's Carbon Storage lead, is an expert in the fields of geologic mapping, carbon sequestration, geomicrobiology and hydrochemistry. He has developed geochemical models to characterize carbon dioxide transport at potential storage sites, and his primary interest in this field is the study of the geochemical mineralization reactions controlling the fate and transport of carbon dioxide in subsurface environments.

Other Power Talk webinars held throughout the year included "EV Infrastructure, Policy, and Fleet Change," "Economic Opportunities and Challenges for Idaho with Low Carbon Energy Across Sectors" and "Content-Based Siting for Nuclear Energy."

CAES hosted a number of visitors throughout the year, including:

- Representatives of the Nuclear Regulatory Commission
- Representatives from the National Association of Regulatory Utility Commissioners
- Deputy Assistant Secretary for Nuclear Infrastructure Programs Tracey Bishop
- Representatives of Assistant Secretary for Nuclear Energy Kathryn Huff
- State Rep. Chris Mathias and State Sen. James Ruchti
- Idaho Falls Mayor Rebecca Casper
- Ammon Mayor Sean Coletti
- A contingent from the International Atomic Energy Agency
- Bingham County Commissioners Mark Bair, Jessica Lewis and Whitney Manwaring
- Idaho Falls City Council members Jim Francis and John Radford
- Julie Horman and Josh Sorensen with U.S. Rep. Mike Simpson's office
- A delegation from several minority-serving institutions
- A contingent from the University of Utah
- Representatives from industry, including Westinghouse, Dominion Energy, Exelon, Sargent & Lundy, Southern Company and Florida Power & Light Company
- A contingent from Western Wyoming Community College
- Members of the Idaho Falls Chamber of Commerce
- A representative from ClearPath's Advanced Reactor IES Expert Group
- Members of the state's Leadership in Nuclear Energy (LINE) Commission
- Representatives from the Idaho Public Utilities Commission, Idaho Governor's Office of Energy and Mineral Resources, and Idaho Department of Environmental Quality
- A group from the Federal Reserve Bank's Salt Lake City branch
- A delegation from Montana Technological University.



Codebreaker

This monthly webinar provides a forum for students and researchers to address their work, communicate opportunities and challenges to a receptive audience, and increase dialogue among CAES affiliates. Presenters in 2022:

Indrajit Charit

University of Idaho professor Indrajit Charit discussed the role of materials research and development in advancing nuclear energy.

Sarah Freeman

Idaho National Laboratory Industrial Control Systems cybersecurity analyst Sarah Freeman described cyberthreat intelligence and attacker trends that challenge cyber forensics.

SM Shafiul Alam

Idaho National Laboratory's SM Shafiul Alam, a research scientist in the Power and Energy Systems Group in INL's Energy and Environment Science and Technology directorate, discussed a collaborative effort with Idaho Falls Power that called for the use of an energy storage system in a field demonstration of an islanded distribution grid's black start capabilities.

Damon Woods

Damon Woods, the interim director of University of Idaho's Integrated Design Lab, talked about the research underway at the lab and how the systems we design impact our lives.

Jackson Harter

INL scientist Jackson Harter discussed his research on advanced materials and how he used the Applied Visualization Laboratory at CAES to further it.

Amir Ali

Idaho State University professor Amir Ali, the lead of the Innovation Laboratory at CAES, discussed advanced reactors.

Bryon Marsh and Mustafa Mashal

The Disaster Response Complex at ISU was the focus of a presentation by Bryon Marsh, a manager of business relations and training programs with National and Homeland Security's Emergency Response and Readiness organization at INL, and ISU assistant professor Mustafa Mashal.

Haiyan Zhao

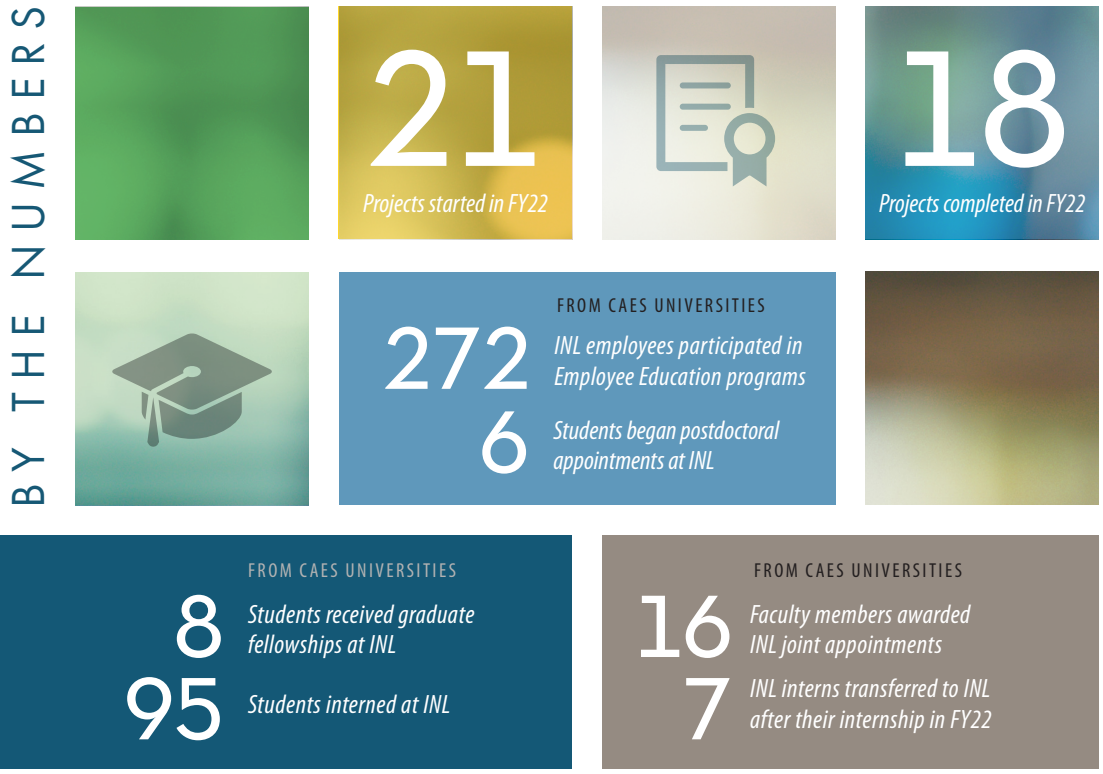
University of Idaho's Haiyan Zhao discussed her work exploring the use of molten salt in applications such as fuel cells, batteries, heat storage and transfer, pyroprocessing of spent nuclear fuels and reactors.

Benny Varghese

INL's Benny Varghese discussed research underway at INL's Electric Vehicle Infrastructure Laboratory.

Yasir Arafat

Yasir Arafat, the technical lead for the Microreactor Applications Research Validation and Evaluation (MARVEL) Project at INL, provided an overview of the project and its potential to pave the way for deployment of a new class of nuclear reactors.



Nuclear Science User Facilities-funded projects in MaCS in FY22:

Title	Organization
Dislocation loop and bubble evolution in helium irradiated ThO2 and UO2 single crystals	The Ohio State University
Irradiation Effects on Unexpected Deformation-Induced Martensitic Phase Transformation in Ni-alloys	Purdue University
Grain Boundary Evolution During Irradiation in RPV Steels	University of Michigan
Irradiation effects on microstructure and mechanical properties in a laser welded ODS alloy	University of Idaho
Ion Irradiation and Characterization of FeCrAl Oxide Dispersion Strengthened Alloy Manufactured via Laser Powder Bed Fusion	Oregon State University
Irradiation behavior of nanostructured ferritic/martensitic Grade 91 steel at high dose	Missouri Science and Technology
Atom probe characterization of oxide and metal/oxide interface on proton irradiated Zry-4 after exposure in high-temperature water	University of Michigan
Accelerated Irradiation and Evaluation of Ultrastrong and Elastic Glassy Carbon	Idaho National Laboratory

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Ansolabehere, S., K. Araújo, Y. He, A. Hu, V. Karplus, H. Li, E. Thom, and D. Tingley. 2021. "A Low Carbon Energy Transition in Southwest Pennsylvania," Roosevelt Project Report, MIT-Harvard.

Araújo, K. 2022. "Energy Transitions and Nuclear Technology in the Arctic," Arctic X Conference.

Araújo, K. 2022. "Strategic Directions for U.S. Industrial, Climate and Trade Policy," Atlantic Council.

Araújo, K. 2022. "Transitions to Net Zero Carbon Systems: Domestic and International Strategies in Policy and Infrastructure Change," presented at Santa Fe Institute, November 3, 2021.

Araújo, K. 2022. "U.S. Science, Technology and Policy Imperatives for Methane: Applicability for Renewable Natural Gas," presented at AICHE 3rd Renewable Gas Summit, December 14, 2021.

Araújo, K. 2022. "Adoption of Offshore Wind," presented at Advanced Energy Conference 2022: Charting the Course for Energy, New York City, NY. September 2022.

Araújo, K. 2022. "Bending the Energy Curve: Insights for Planning and Community-informed Decision-making," Alaska Center for Energy and Power.

Araújo, K. 2022. "Disruptive Change: Concepts and Lessons for Sustainability," presented at 3rd Latin American Conference on Sustainable Development of Energy, Water and Environment Systems, Sao Paulo, July 2022.

Araújo, K. 2022. "Energy and Demand," presented as panel moderator and on the scientific advisory board, at the Energy and Climate Transformations: 3rd International Conference on Energy Research & Social Science, University of Manchester, UK, June 2022.

Araújo, K. 2022. "Geopolitics, the Net Zero Carbon Agenda, and Technology Change: Interdependencies in Energy," Federal University of Rio de Janeiro.

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Cole, S. E., A. E. Lupercio, A. T. Nelson, and B. J. Jaques. 2022. "Fabrication and Characterization of Doped UO2 Nuclear Fuel," presented at Idaho Conference on Undergraduate Research, Boise, Idaho.

Curtis, M., C. Chen, J. Redwing, and D. Estrada. 2022. "Fundamentals of MOCVD," presented at 2DCC NSF Site Visit.

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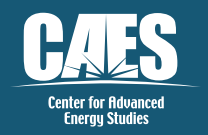

CAES
Center for Advanced
Energy Studies

SUBJECT

Semi-Annual Report of Approved Program Requests

REFERENCE

February 2021	Board received the semi-annual report
August 2021	Board received the semi-annual report
February 2022	Board received the semi-annual report
August 2022	Board received the semi-annual report
February 2023	Board received the semi-annual report
August 2023	Board received the semi-annual report

APPLICABLE STATUTE, RULE, OR POLICY

Idaho State Board of Education Governing Policies and Procedures, Section III.G., Postsecondary Program Review and Approval.

BACKGROUND/DISCUSSION

In accordance with Board Policy III.G.3.a.ii, 3.b., 4.a. and 4.b., prior to implementation, the Executive Director or State Administrator of the Division of Career Technical Education or their designee may approve actions related to academic and career technical programs or units as identified in those subsections. The establishment of a new, or discontinuation of any existing academic undergraduate or graduate certificate consisting of fewer than 30 credits, do not require approval. Per III.G.3.c, institutions are only required to notify the Board office of those new or discontinued certificates within 30 days after implementation.

Consistent with Board Policy III.G.9.a., the Board office is providing a semi-annual report of academic and career technical program requests from Idaho's public postsecondary institutions that were approved by the Board, the Executive Director or State Administrator, or their designee between July 1, 2023, and December 31, 2023.

ATTACHMENTS

Attachment 1 – Semi-Annual Report of Approved Program Requests
Attachment 2 – List of Program Approvals and Discontinuations

BOARD STAFF COMMENTS AND RECOMMENDATIONS

The report provides a list of new academic or career technical programs and certificates approved by the Executive Director or State Administrator or their designee consistent with Board Policy III.G. This includes other instructional activity such as modifications to existing programs. Other non-substantial changes that require notification to the Board office are also included in the report.

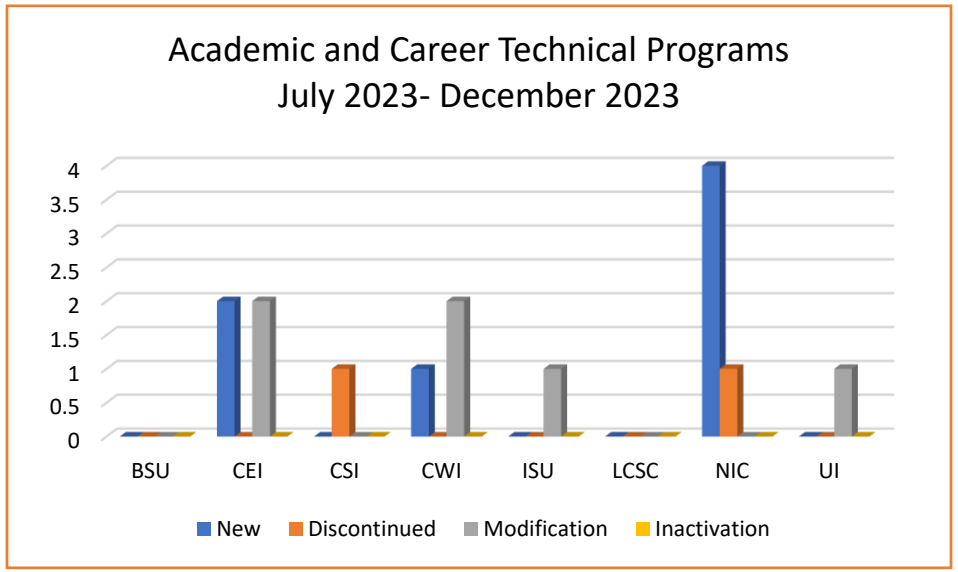
For this current reporting cycle, there were fewer program requests submitted for review and approval. Although, notably, the Board approved three new applied baccalaureate degrees in December from College of Eastern Idaho and College

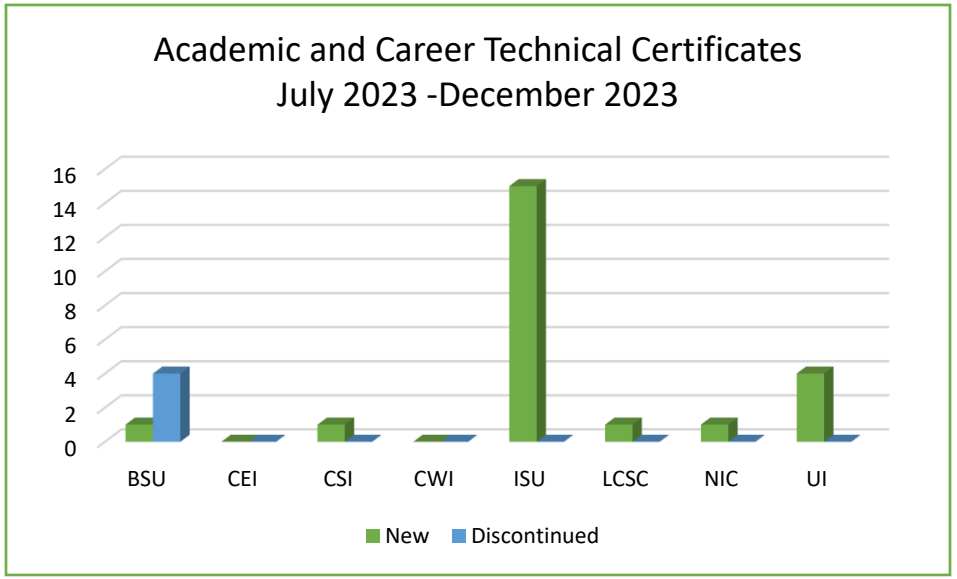
of Western Idaho. The other new programs shown are associate of applied science apprenticeship programs from North Idaho College. Staff notes there were more certificates established versus degree programs in general and fewer discontinuations. Staff will update charts in Attachment 1 and provide a comprehensive annual trend analysis in August 2024.

BOARD ACTION

This item is for informational purposes.

Semi-Annual Report of Approved Program Requests
July 2023 through December 2023





List of Academic Program and Unit Requests Approved by Executive Director or Designee

INST.	Request Type	Program Title	Type	Date
NIC	New	Construction Management	AS	11/27/2023
LCSC	New	General Education Completion	Certificate	11/8/2023
CWI	Modification	Unit - Science, Technology, and Math	N/A	10/13/2023
CWI	Modification	Unit - Agricultural Sciences; Physical Sciences	N/A	10/13/2023
ISU	Expansion	Didactic Program in Dietetics: expansion to Treasure Valley	BS	9/29/2023
CSI	Discontinuance	Education, Early Childhood Education	AA	9/15/2023
NIC	Discontinuance	American Sign Language	AA	8/7/2023

List of Other Academic Program/Unit Changes Notified to Executive Director

The following program changes or additions do not require approval; however, they require notification to OSBE per policy III.G.

INST.	Request Type	Program Title	Certificate Type	Date
ISU	New	Conflict Management	Certificate	12/21/2023
ISU	New	Digital Graphic Design	Certificate	12/21/2023
ISU	New	Sports Media	Certificate	12/21/2023
ISU	New	Social Media	Certificate	12/21/2023
ISU	New	Advocacy	Certificate	12/21/2023
ISU	New	Organizational Leadership	Graduate Certificate	12/21/2023
ISU	New	Human Resource Development	Graduate Certificate	12/21/2023
ISU	New	Homeland Security & Emergency Management (online)	Graduate Certificate	12/20/2023
ISU	New	Environmental Studies	Graduate Certificate	12/20/2023
BSU	New	Generative AI	Undergraduate Certificate	12/19/2023
ISU	New	Supply Chain Management	Academic Certificate	12/6/2023
ISU	New	Theatre: Simulated Participant Actor	Certificate	12/6/2023
BSU	Discontinuance	Mechanical Materials	Undergraduate Certificate	12/1/2023
BSU	Discontinuance	Industrial Processes	Undergraduate Certificate	12/1/2023
BSU	Discontinuance	HVAC/Building Systems	Undergraduate Certificate	12/1/2023
BSU	Discontinuance	Energy/Environment certificate	Undergraduate Certificate	12/1/2023

INST.	Request Type	Program Title	Certificate Type	Date
ISU	New	Cultural Resources Management	Academic Certificate	11/27/2023
ISU	New	Environmental Studies	Academic Certificate	11/27/2023
ISU	New	Technical Communication	Undergraduate Certificate	11/27/2023
UI	New	Professional Skills in Chemical Addictions Counseling	Certificate-UG	11/20/2023
UI	New	Chemical Addictions: Principles and Practice	Certificate-UG	11/20/2023
UI	New	Aerospace	Certificate-UG	11/20/2023
UI	New	Sustainability	Certificate-UG	11/20/2023
ISU	New	Forensic Sciences	Graduate Certificate	8/10/2023

Other Academic Program Changes

INST.	Request Type	Program Title	Program Type	Date
ISU	Discontinuance	Advocacy	Minor	12/21/2023
ISU	Discontinuance	Advocacy (online)	Minor	12/21/2023
ISU	Discontinuance	Social Media	Minor	12/21/2023
ISU	Discontinuance	Social Media (online)	Minor	12/21/2023
BSU	New	Legal Studies	Minor	12/19/2023
BSU	New	Public Humanities	Minor	12/19/2023
BSU	New	Early Childhood Leadership	Emphasis	12/19/2023
BSU	New	Resort and Hospitality Management	Emphasis	12/19/2023
BSU	New	Business Administration	Emphasis	12/19/2023
BSU	New	Sport Media and Communications	B.A. emphasis	12/19/2023
BSU	Change Name	Biomolecular Research Center to Biomolecular Research Institute	N/A	12/19/2023
ISU	CIP Codes	Change CIP code for Professional Sales certificate to 52.1804	Academic Certificate	12/13/2023
CWI	CIP Codes	Change CIP code for the following programs: • Biology – Human Biology emphasis • Business • Entrepreneurship & Small Business Management	 AS AA AA	12/6/2023
BSU	Discontinuance	Spanish Interpretation	Minor	12/1/2023
BSU	New	Spanish for Professions	B.A. emphasis	12/1/2023
ISU	Expansion	Transition existing Master of Public Health to fully online	Master	11/30/2023

INST.	Request Type	Program Title	Program Type	Date
ISU	Expansion	Transition existing certificate in Public Health to fully online	Graduate Certificate	11/30/2023
ISU	Discontinue	Folklore	Minor	11/21/2023
ISU	Discontinue	Discontinue emphases under the following programs: • Accounting, B.B.A. - Data Analytics Emphasis • Accounting, B.B.A. - Operations Management Emphasis • Economics, B.B.A. - Data Analytics Emphasis • Economics, B.B.A. - Operations Management Emphasis • Finance, B.B.A. - Data Analytics Emphasis • Finance, B.B.A. - Entrepreneurship/Small Business Emphasis • Finance, B.B.A. - Operations Management Emphasis • General Business, B.B.A. - Data Analytics Emphasis • General Business, B.B.A. - Operations Management Emphasis • Management, B.B.A. - Data Analytics Emphasis • Management, B.B.A. - Entrepreneurship/Small Business Emphasis • Management, B.B.A. - Human Resources Management Emphasis • Management, B.B.A. - Operations Management Emphasis • Marketing, B.B.A. - Data Analytics Emphasis • Marketing, B.B.A. - Entrepreneurship/Small Business Emphasis • Marketing, B.B.A. - Operations Management Emphasis	B.B.A. emphases	11/21/2023
UI	Discontinuance	International Business	Minor	11/20/2023
UI	Expansion	Interdisciplinary Studies (online)	B.A. | B.S.	11/20/2023
BSU	Change type	Change the following options to emphases under the BS in Advanced Medical Imaging • Computed Tomography • Magnetic Resonance Imaging • Interventional Cardiology • Diagnostic Medical Sonography • Interventional Radiology	BS	11/20/2023
BSU	Change location	Move minor in Critical Theory from College of Arts and Sciences to Department of Humanities and Cultural Studies under the same college.	Minor	11/20/2023

INST.	Request Type	Program Title	Program Type	Date
LCSC	New	Business Administration Healthcare Management emphasis	B.A./B.S. emphasis	11/13/2023
NIC	CIP Codes	Changes to the following programs: • Business 52.02.01 • Education 13.1205	 AS AA	10/10/2023
ISU	New	Interdisciplinary Environmental Social Science concentration under the existing MA in Sociology	MA concentration	7/24/2023
ISU	Name change	Change Department of Mechanical Engineering to Mechanical and Measurement & Control Engineering	N/A	7/24/2023
BSU	Change location	Move Human-Environment Systems Graduate Certificate from the College of Innovation and Design to the College of Arts and Sciences in the School of the Environment	N/A	7/7/2023
BSU	Change location	Move BS in Games, Interactive Media, and Mobile program from the College of Innovation and Design to the College of Arts and Sciences	N/A	7/7/2023

List of Career Technical Program Requests Approved by State Administrator (by Type)

INST.	Request Type	Program Title	Program Type	Date
ISU	New	Medical Assisting	ITC	12/20/2023
CEI	Modification	Registered Nursing	AAS	11/28/2023
CEI	Modification	Practical Nursing	ITC	11/28/2023
CSI	Expansion	Agriculture	BTC	11/28/2023
CWI	Modification	Bookkeeping and Accounting (moving to online)	AAS	11/16/2023
CWI	Modification	Medical Administrative Support (moving to online)	BTC	11/16/2023
NIC	New	Applied Technology and Apprenticeship - HVAC	A.A.S.	8/17/2023
NIC	New	Applied Technology and Apprenticeship - Plumbing	A.A.S.	8/17/2023
NIC	New	Applied Technology and Apprenticeship - Electrical	A.A.S.	8/17/2023
NIC	New	Computer Control Automation Technology	ITC	7/27/2023

List of Other CTE Program Changes Notified to State Administrator

The following program changes or additions do not require approval; however, they require notification to OSBE per policy III.G.

INST.	Request Type	Program Title	Degree	Date
ISU	Discontinuance	Discontinue Veteran to Nurse Option and Traditional Option under the Practical Nursing Program	ITC	12/18/2023
CWI	CIP Codes	Change CIP code for Physical Therapist Assistant to 51.0806	AAS	12/6/2023
CSI	Name change	Cabinet/Woodworking to Woodworking Technology	BTC, ITC, AAS	11/21/2023
LCSC	Name change	Change Administrative Medical Assistant to Medical Administrative Assistant	ATC, AAS	11/21/2023
LCSC	Name change	Applied Accounting to Bookkeeping/Accounting	AAS, ATC	11/9/2023
NIC	CIP Codes	Changes to the following programs: • Mechanical Design Engineering Technology 15.1307 • Virtual Administrative Assistant 52.0401	 AAS, ATC, ITC ITC	10/10/2023
CSI	Discontinuance	Quality Assurance and Automation and Controls options under the Food Processing Technology program	BTC, ITC, AAS	10/5/2023
CWI	Name change	Change Transportation Technology department to Automotive Service and Collision Repair	N/A	10/6/2023
CWI	Name change	Change Diesel Technology department to Powersports and Diesel Technology	N/A	10/6/2023
CSI	CIP Codes	Changes to the following programs:	CIP Codes	8/10/2023

INST.	Request Type	Program Title	Degree	Date
		• Computer Support Technician – ITC 11.1006 • Cyber Security and Programming – AAS 11.1003 • Applied Technology & Apprenticeship – Plumbing 46.0503 • Applied Technology & Apprenticeship - Maintenance Tech 47.0303 • Residential Construction – BTC 46.0415 • Diesel Technology – AAS 47.0613 • Diesel Technology – ITC 47.0613 • Machining & Manufacturing Technology – AAS 48.0501 • Machining & Manufacturing Technology – ITC 48.0501 • Machining & Manufacturing Technology – BTC 48.0501 • Outdoor Recreation Leadership – BTC 31.0601 • Outdoor Recreation Leadership – ITC 31.0601 • Heavy Equipment Ag Technology – ITC 47.0302 • Heavy Equipment Ag Technology – AAS 47.0302 • Agriculture – AAS 01.0301 • Introduction to Cybersecurity - BTC 11.1003 • Agriculture – BTC 01.0301 • Visual and Performing Arts - AA 50.0101 • Outdoor Recreation Leadership - AA 31.0601 • Natural Resources Management - AS 03.0201		

List of Academic Program Requests Approved by the Board

INST.	Request Type	Program Title	Degree	Date
CEI	New	Operations Management	BAS	12/18/2023
CEI	New	Digital Forensics and Analytics	BAS	12/18/2023
CWI	New	Business Administration	BAS	12/18/2023

IDAHO BUREAU OF EDUCATIONAL SERVICES FOR THE DEAF AND THE BLIND

SUBJECT

Idaho Bureau of Educational Services for the Deaf and the Blind (IBESDB) Annual Report

February 2019	IESDB provided the Board with a report updating the Board with current progress of the Bureau.
February 2021	IESDB provided the Board with a report updating the Board with current progress of the Bureau.

APPLICABLE STATUTE, RULE, OR POLICY

Sections 33-3405(4) and 33-3411, Idaho Code

BACKGROUND/DISCUSSION

Pursuant to Idaho Code § 33-3405(4) the administrator of IBESDB shall make an annual report of the Bureau's activities to the State Board of Education at a time and in a format designated by the Board. While IBESDB was moved out from the Board's direct governance in 2009, the Board retains rulemaking authority for education services for students who are deaf or hard of hearing and/or blind or visually impaired, as well as property rights for the School for the Deaf and Blind.

The Idaho Bureau of Educational Services for the Deaf and Blind, originally the Idaho School for the Deaf and Blind, has been providing services to Idaho's children since 1906. Their programs consist of statewide outreach programs and the Idaho School for the Deaf Blind, located in Gooding Idaho. They provide supplemental education services, early intervention and education, consultation, and transition support to families and local school districts throughout Idaho. The property in Gooding that houses the School for the Deaf and Blind is held by the State Board of Education and leased back to IBESDB for their use.

IBESDB presented this report at the Planning, Policy and Government Affairs committee meeting on February 5, 2024. The written report is included in these materials for the Board's review.

IMPACT

This annual update will provide the Board with an update on the scope of IBESDB's efforts to serve Idaho's children.

ATTACHMENTS

Attachment 1 – IBESDB Annual Report

BOARD ACTION

This item is for informational purposes only.

Idaho Bureau of Educational Services for the Deaf and the Blind

OSBE REPORT 2024

****Idaho Educational Services for the Deaf and the Blind: A Legacy of Inclusivity and Excellence****

Established in 1906 to address Article X of the State Constitution, the Idaho Bureau of Educational Services for the Deaf and the Blind (IBESDB) has evolved into a unique institution. Rooted in the commitment to support individuals with sensory impairments, IBESDB serves as one of the 12 dual schools in the United States.

****Historical Journey and Organizational Structure:****

- Initially a State Agency, The IBESDB transitioned in 2009 to operate under its own Board of Directors, chaired by the State Superintendent of Public Instruction.

- Governed by State Statute 33-3400, the bureau aims to ensure accessibility, quality, and equity for students with sensory impairments, tailoring services based on individual educational needs rather than the level of hearing or vision loss.

****Continuum of Services:****

- IBESDB caters to 2,600 students across its continuum, a significant increase from the 1,100 students served in 2009, when it was first established.

- Two distinct departments, "Outreach" and "Campus," along with support services, facilitate a comprehensive approach to education.

****Outreach Department:****

- Seven regional Education Centers, serving students from Birth to age 21.

- Certified teachers, covering 13,000 miles on average, provide services, materials, and technology to their respective regions including families, public and charter school personnel.

- Early intervention programs have witnessed substantial growth, exemplified by increased enrollment in Deaf/Hard of Hearing and Blind/Low Vision categories. Giving all of our kids a good head start.

- Summer offerings for students on work development skills and experiential learning.

****Campus Department:****

- Established in 1906, the campus of the Idaho School for the Deaf and the Blind (ISDB) spans 40 acres in Gooding, featuring a 140,000 sq. ft. primary building and six cottages hosting 63 residential students.

Presented by:
Brian G. Darcy, Administrator
Idaho Educational Services for the Deaf and the Blind
1450 Main St.
Gooding, ID 83330
brian.darcy@iesdb.org
ph. (208) 934-4457 cell/text: (208) 963-0671 VP: (208) 944-2503 Fax: 208-934-8352

Idaho Bureau of Educational Services for the Deaf and the Blind

OSBE REPORT 2024

- Serving preschool to age 21, Campus collaborates with local schools, ensuring no student commutes for more than 3.5 hours.

****Educational Approach and Accomplishments:****

- ISDB students are primarily on individualized education plans (IEPs), acknowledging the diverse needs of students and the complexity of approaches needed in the classroom.

- The institution embraces flexibility in teaching strategies, extending beyond academics to residential life and extracurricular activities.

- Integration of mental health programs and Positive Behavior Intervention Supports (PBIS) through the "CLAW" program, underlines a holistic approach to student development.

- "BridgE" which is the 18-21 program and focusses on development of independent living skills and focusses on building employment ready adults. Operates a working food truck in the community.

- Provides an educational environment where students can engage with peers and educational staff directly, while developing skills beyond the 3 "r's" to become model citizens of Idaho.

****Facilities and Recent Projects:****

- The 116-year-old campus undergoes continuous improvements, with recent projects including bathroom renovations, fire alarm overhauls, a fully accessible playground, parking lot re-pavement, and track renovations.

- Ongoing recommendations before the Permanent Building Fund Advisory Committee include new cottages, ADA accessibility enhancements, and parking lot improvements.

- Collaborative efforts with the Permanent Building Fund Advisory Committee and the Department of Public Works ensure the preservation and enhancement of the campus.

****Community Engagement:****

- IBESDB fosters a positive school climate through initiatives like the Raptor buck system, school-wide events, spirit weeks, and CLAW News.

- Leasing of unused space, which is approved by OSBE, to various stakeholder groups, brings local community members to campus and to engage with our students and staff.

In summary, the Idaho Bureau of Educational Services for the Deaf and the Blind stands as a beacon of inclusive education, continuously adapting to the evolving needs of its diverse student population. Through its rich history, commitment to excellence, and collaborative spirit, IBESDB remains dedicated to developing compassionate leaders who advocate for themselves and others, embodying the institution's mission and vision.

IDAHO STEM ACTION CENTER

SUBJECT

Idaho STEM Action Center Annual Report

APPLICABLE STATUTE, RULE, OR POLICY

Idaho Code § 67-823

BACKGROUND/DISCUSSION

Section 67-823, Idaho Code establishes within the office of the governor a Science, Technology, Engineering, and Math Action Center (STEM Action Center). The STEM Action Center is tasked with coordinating and overseeing STEM programs, to promote best practices in STEM education, and to make recommendations to the Board regarding the issuance of STEM School Designations pursuant to Idaho Code § 33-4701.

Idaho Code § 67-823 further requires that the STEM Action Center make an annual report to the governor, legislature, and state board of education.

Caty Solace, Executive Director of the STEM Action Center, presented the organization's annual report at the Planning, Policy and Government Affairs committee meeting on February 5, 2024. The written report is included in these materials for the Board's review.

IMPACT

This annual update will provide the Board with an update on the scope of the Idaho STEM Action Center's efforts to serve Idaho's children.

ATTACHMENTS

Attachment 1 – Idaho STEM Action Center Annual Report

BOARD ACTION

This item is for informational purposes only.

IDAHO STEM ACTION CENTER

Presenting to: Idaho State Board of Education

February 5, 2024– Caty Solace

Vision:
A diverse STEM-literate Idaho workforce that meets the changing needs of Idaho employers and supports the long-term economic prosperity of Idaho.

Mission:
Providing coordination for statewide STEM education and activities to enhance opportunities for educators, students, communities, and employers in their work to build a competitive Idaho workforce and economy through STEM and computer science education.

Idaho's Economy & Jobs

- Idaho STEM jobs are projected to **grow 15.4%** by 2030 outpacing the national estimated growth at 10.5%.
- Some of **Idaho's biggest industries** increasingly rely on STEM-skilled workers- jobs in advanced manufacturing, skilled trades, agriculture, software development, cybersecurity, and health care, just to name a few.
- STEM jobs **pay nearly double** the median wage of non-STEM jobs in Idaho, setting our students up for financial success.

It takes a village!

Idaho STEM Action Center Advisory Board

- Jennifer Jackson, Board Chair
  - K-12 STEM Program Manager, Idaho National Laboratory
- Ed Atienza, Vice Chair
  - Research and Development Engineering Manager, Schweitzer Engineering Laboratories
- Dee Mooney
  - Executive Director, Micron Foundation
- Dr. David J. Hill
  - Idaho State Board of Education
- Jad Mahnken
  - Recruiter, Saint Alphonsus
- Jake Reynolds
  - Business Development and Operations Admin, Idaho Department of Commerce
- Wendi Secrist
  - Executive Director, Idaho Workforce Development Council
- Steve Christiansen
  - Vice President of Human Resources & Organizational Development, Idaho Milk Products
- Allison Duman
  - K-12 Workforce Project Specialist, State Department of Education

Alignment with Legislation:

IDAHO STEM ACTION CENTER

Coordination of STEM Activities

- Leadership of the Workforce and Education Consortium (Advanced Manufacturing)
- Leading Standard Committee for Early Childhood Development in STEM Apprenticeship

High Quality STEM Professional Development

- i-STEM and other PD programs (711 participants in 7/22-6/23)
- Teacher Extern Program (expanded program from 24-86 educators summer of 23)
  (In partnership with Micron and Idaho Workforce Development Council)

Statewide Learning Platforms

- Learning Blade (over 285,000 online lessons completed by 9,000 students)

STEM School Designation

- 11 STEM Designated Schools; new standards for this year which were approved by the State Board in Nov.

Computer Science

- Computer Science Week Hour / Hour of Code (80 Hour of Code events statewide)
- Co-leading Computer Science Standards review with State Department of Education

Sponsorship of STEM Ecosystem

- "Boots on the Ground" STEM Activity support at the local and regional level 3,650 student interactions in the first 6 months

Looking to the future!

- Update of the Statewide STEM Education Strategic Plan
- Updated model for STEM-related Public Private Partnerships
- Continued efforts to better align with legislation
- Continued process improvement for existing programs
- Building deeper and better-defined partnerships with state agencies operating in the STEM sphere

IDAHO STEM ACTION CENTER

IDAHO STEM ACTION CENTER

Thank you!

Caty Solace
caty.solace@stem.Idaho.gov
208.332.1726