IDAHO EXTENDED CONTENT STANDARDS

CORE CONTENT CONNECTORS

SCIENCE

STATE SUPERINTENDENT OF PUBLIC INSTRUCTION
SHERRI YBARRA
STATE DEPAREMENT OF EDUCATION
PO BOX 83720
BOISE, ID 83720-0027

Approved June 19, 2019

Table of Contents

Introduction

The *Idaho Content Standards in Science* are essential for developing the science literacy of Idaho students, as it is vital that our students understand the fundamental laws and practices within scientific disciplines. The unifying goal is for Idaho students to practice and perform science and use their working knowledge of science to successfully function in a complex world. This document contains the *Idaho Extended Content Standards in Science*. The *Idaho Extended Content Standards in Science* are aligned with the *Idaho Content Standards in Science*, but have been reduced in depth and complexity, as is appropriate for students with the most significant cognitive impairments who qualify to participation in the Idaho Alternate Assessment. At the standard level, the *Idaho Extended Content Standards* are referred to as *Core Content Connectors*, signifying that the *Idaho Extended Content Standards* are "connected to the core content" of the *Idaho Content Standards in Science*.

Organization of the Standards

Kindergarten through Grade 2

The *Idaho Content Standards in Science* for students in kindergarten through grade 2 are broad and foundational. This makes them relevant and meaningful for all students, including those with the most significant cognitive impairments. Therefore, the *Core Content Connectors* for kindergarten through grade 2 are exactly the same as the performance standards outlined in the *Idaho Content Standards in Science* for the same grades. In kindergarten through grade 2, the *Core Content Connectors* are organized in tables with the header rows as illustrated below:

Science Domain	Category	Idaho General Education Performance Standard	Summary of Supporting Content
The Science Domains include the following: • Physical Science • Life Science • Earth Science	Categories specific to each science domain.	Description of the performance standard, including the numbering convention.	Statement summarizing the supporting content for each standard.

The numbering convention for the kindergarten through grade 2 *Core Content Connectors* also mirror those found in the *Idaho Content Standards in Science*, as illustrated below:

Science Domain	Unit	Grade Level	Standard Number	Numbering Convention
Physical Science (PS)	2	K	1	PS2-K-1

Grade 3 through High School

The remaining *Idaho Extended Content Standards in Science* are organized into grades 3, 4, and 5; middle school; and high school. The *Core Content Connectors* for students in these grades are aligned with the *Idaho Content Standards in Science*, but have been reduced in depth and complexity as appropriate for students with the most significant cognitive disabilities. The *Core Content Connectors* for grades 3, 4, and 5; middle school; and high school are organized in tables with header rows as illustrate below:

Science Domain	Category	Idaho General Education Performance Standard	Idaho Core Content Connector	Summary of Supporting Content
The Science Domains include the following: • Physical Science • Life Science • Earth Science	Categories specific to each science domain.	Description of the performance standard, including the numbering convention.	Description of the Idaho Core Content Connector that is aligned with each Idaho General Education Performance Standard, including the numbering convention.	Statement summarizing the supporting content for each standard.

The numbering convention for the *Core Content Connectors in* grades 3, 4, and 5; middle school; and high school is illustrate below:

Core Content Connector	Science Domain	Unit	Grade Level	Standard Number	Numbering Convention
CCC	Physical Science (PS)	1	5	1	CCC-PS1-5-1

Kindergarten Core Content Connectors

Science Domain	Category	Idaho General Education Performance Standard	Summary of Supporting Content
Physical Science	Motion and Stability: Forces and Interactions	PS1-K-1. Plan and conduct an investigation to compare the effects of different strengths or different directions of pushes and pulls on the motion of an object.	Pushing or pulling can have different strengths and directions (e.g., the student pushes a ball in different ways.)
Physical Science	Motion and Stability: Forces and Interactions	PS1-K-2. Analyze data to determine if a design solution works as intended to change the speed or direction of an object with a push or a pull.	Pushing or pulling on an object can change the speed or direction of its motion and can start or stop it (e.g., the student pulls an object toward them).
Physical Science	Energy	PS2-K-1. Make observations to determine the effect of sunlight on Earth's surface.	Sunlight warms Earth's surface (e.g., the student moves into sunlight to get warm).
Physical Science	Energy	PS2-K-2. Use tools and materials to design and build a structure that will reduce the warming effect of sunlight on an area.	Umbrellas, canopies, and tents that minimize the warming effect of the sun (e.g., the student stands under a structure when too warm).
Life Science	Molecules to Organisms: Structure and Processes	LS1-K-1. Use observations to describe patterns of what plants and animals (including humans) need to survive.	All animals need food to live and grow. They obtain their food from plants or from other animals. Plants need water and light to live and grow.

Science Domain	Category	Idaho General Education Performance Standard	Summary of Supporting Content
Life Science	Molecules to Organisms: Structure and Processes	LS1-K-2. Use classification supported by evidence to differentiate between living and non-living items.	Living and non-living things have distinct characteristics (e.g., the student can differentiate between a plant and a rock).
Earth Science	Earth's Systems	ESS1-K-1. Use and share observations of local weather conditions to describe patterns over time, which includes the 4 seasons.	Different types of weather occur during the 4 seasons.
Earth Science	Earth's Systems	ESS1-K-2. Construct an argument supported by evidence for how plants and animals (including humans) can change the environment to meet their needs.	Plants and animals interact with Earth's surface to meet their needs (e.g., a bird uses twigs and pine straw to make a nest and a tree's roots can break apart a rock).
Earth Science	Earth and Human Activity	ESS2-K-1. Use a model to represent the relationship between the needs of different plants and animals (including humans) and the places they live.	Living things need specific resources (e.g., food water and shelter) from the land, and they typically live in places that have the things they need.
Earth Science	Earth and Human Activity	ESS2-K-2. Ask questions to obtain information about the purpose of weather forecasting to prepare for, and respond to, severe weather.	Certain kinds of intense weather events are more likely than others to occur in a given region.
Earth Science	Earth and Human Activity	ESS2-K-3. Communicate solutions that will reduce the impact of humans on the land, water, air, and/or other living things in the local environment.	Humans can make choices that determine how much they impact Earth with interacting with it's resources.

Grade 1 Core Content Connectors

Science Domain	Category	Idaho General Education Performance Standard	Summary of Supporting Content
Physical Science	Waves	PS1-1-1. Plan and conduct investigations to provide evidence that vibrating materials can make sound and that sound can make materials vibrate.	Vibrating materials can make sound, and sound can make certain materials vibrate if held near the source.
Physical Science	Waves	PS1-1-2. Make observations to construct an evidence-based account that objects in darkness can be seen only when illuminated.	Illumination could be from an external light source or by an object giving off its own light. Different observations can be made in different areas using varying light sources.
Physical Science	Waves	PS1-1-3. Plan and conduct investigations to determine the effect of placing objects made with different materials in the path of a beam of light.	Some materials allow light to pass through them, others allow only some light through and others block all the light.
Physical Science	Waves	PS1-1-4. Use tools and materials to design and build a device that uses light or sound to solve the problem of communicating over a distance.	Devices can be used to send information over distances (a light source, a paper cup and string, or drum beats.)
Life Science	Molecules to Organisms: Structure and Processes	LS1-1-1. Use materials to design a solution to a human problem by mimicking how plants and/or animals use their external parts to help them survive, grow, and meet their needs.	Humans can copy animals' and plants' structures to solve a problem (e.g., a lily pad's design can be used to create a raft for a human).

Science Domain	Category	Idaho General Education Performance Standard	Summary of Supporting Content
Life Science	Molecules to Organisms: Structure and Processes	LS1-1-2. Read texts and use media to determine patterns in behavior of parents and offspring that help offspring survive.	Offspring can tell their parents they need something by making certain noises or acting in a certain manner.
Life Science	Molecules to Organisms: Structure and Processes	LS1-1-3. Develop models to describe that organisms have unique and diverse life cycles but all have in common birth, growth, reproduction, and death.	A pattern can be shown when plants and animals are born, grow, change, and expire.
Life Science	Heredity: Inheritance and Variation of Traits	LS2-1-1. Make observations to construct an evidence-based account that young plants and animals are like, but not exactly like, their parents.	Young plants and animals can look very similar to their parents, but do not exactly match.
Earth Science	Earth's Place in the Universe	ESS1-1-1. Use observations of the sun, moon, and stars to describe patterns that can be predicted.	The moon revolves around Earth and Earth revolves around the sun.
Earth Science	Earth's Place in the Universe	ESS1-1-2. Make observations at different times of year to relate the amount of daylight to the time of year.	The number of hours of daylight during the summer season is more than the number of hours during the winter season.

Grade 2 Core Content Connectors

Science Domain	Category	Idaho General Education Performance Standard	Summary of Supporting Content
Physical Science	Matter and Its Interactions	PS1-2-1. Plan and conduct an investigation to describe and classify different kinds of materials by their observable properties.	Different types of materials can be grouped together based on observable features (e.g., color, texture, hardness, and flexibility).
Physical Science	Matter and Its Interactions	PS1-2-2. Analyze data obtained from testing different materials to determine which materials have the properties that are best suited for an intended purpose.	Determining the different properties of materials can help determine their varied purposes.
Physical Science	Matter and Its Interactions	PS1-2-3. Make observations to construct an evidence-based account of how an object made of a small set of pieces can be disassembled and made into a new object.	Objects can be made of smaller pieces that can be taken apart and put back together.
Physical Science	Matter and Its Interactions	PS1-2-4. Construct an argument with evidence that some changes caused by heating or cooling can be reversed and some cannot.	After heating certain substances, they can be cooled back down to what they were originally. Other substances are permanently changed after heating or cooling.
Life Science	Ecosystems: Interactions, Energy, and Dynamics	LS1-2-1. Plan and conduct an investigation to determine if plants need sunlight and water to grow.	A plant will grow bigger when it is placed in the sun and given water.

Science Domain	Category	Idaho General Education Performance Standard	Summary of Supporting Content
Life Science	Ecosystems: Interactions, Energy, and Dynamics	LS1-2-2. Develop a simple model that mimics the function of an animal in dispersing seeds or pollinating plants.	Animals can interact with plants to help pollinate them or spread their seeds (e.g., bee covered in pollen sucking the nectar from a flower).
Life Science	Biological Adaptation: Unity and Diversity	LS2-2-1. Make observations of plants and animals to compare the diversity of life in different habitats.	Plants and animals on land and in water have structures that help them survive in that habitat.
Earth Science	Earth's Place in the Universe	ESS1-2-1. Use information from several sources to provide evidence that Earth events can occur quickly or slowly.	Natural Earth events can either occur very quickly or very slowly (e.g., comparing a lightning strike to a glacier melting).
Earth Science	Earth's Systems	ESS2-2-1. Compare multiple solutions designed to slow or prevent wind or water from changing the shape of the land.	Blowing wind and flowing water and move Earth particles and change the shape of Earth's surface.
Earth Science	Earth's Systems	ESS2-2-2. Develop a model to represent the shapes and kinds of land and bodies of water in an area.	Pictures and drawings of Earth from high up can show different land formations and bodies of water.

Grade 3 Core Content Connectors

Science Domain	Category	Idaho General Education Performance Standard	Idaho Core Content Connector	Summary of Supporting Content
Physical Science	Motion and Stability: Forces and Interactions	PS1-3-1 Plan and conduct an investigation to provide evidence of the effects of balanced and unbalanced forces on the motion of an object.	CCC-PS1-3-1 Identify forces as the cause of an object's movement.	Forces can cause an object to move and changes in forces can change that motion (e.g., students pushing on a wooden crate).
Physical Science	Motion and Stability: Forces and Interactions	PS1-3-2 Make observations and/or measurements of an object's motion to provide evidence that a pattern can be used to predict future motion.	CCC-PS1-3-2 Predict the cycle of motion for an object moving in a pattern.	Patterns of motion can be used to predict future motion (e.g., a child on a swing).
Physical Science	Motion and Stability: Forces and Interactions	PS1-3-3 Ask questions to determine cause-and-effect relationships of electric or magnetic interactions between two objects not in contact with each other.	CCC-PS1-3-3 Describe how magnets interact with metal objects when they are not in contact with each other (e.g., place a paper clip two inches away from a magnet and slowly push the paper clip until the magnetic force pulls the paper clip to the magnet).	Some forces, such as electrical and magnetic forces, do not require objects to be in contact (e.g., for balloons, static electricity; for magnets, distance and orientation).
Life Science	Ecosystems: Interactions, Energy, and Dynamics	LS1-3-1 Construct an argument that some animals form groups that help members survive.	CCC-LS1-3-1 Determine how the group behavior helps the animals. (Note: Benefits might include obtaining food and protection).	Animals often form groups to help them survive.
Life Science	Inheritance and Variation of Traits	LS2-3-1 Analyze and interpret data to provide evidence that plants and animals have traits inherited from parents and that variation of these traits exists in a group of similar organisms.	CCC-LS2-3-1 Use evidence from graphics to identify similarities and differences between parents and their offspring.	Many of the traits of organisms are similar to those of their parents.

Science Domain	Category	Idaho General Education Performance Standard	Idaho Core Content Connector	Summary of Supporting Content
Life Science	Inheritance and Variation of Traits	LS2-3-2 Use evidence to support the explanation that traits can be influenced by the environment.	CCC-LS2-3-2 Identify evidence that shows how the environment has influenced traits in plants and animals.	Some traits of organisms result from environmental factors, such as lack of food, water, and exercise (for animals).
Earth Science	Earth's Systems	ESS1-3-1 Represent data in tables and graphical displays to describe typical weather conditions expected during a particular season.	CCC-ESS1-3-1 Describe typical weather conditions expected during a particular season.	Specific seasons have typical weather conditions.
Earth Science	Earth's Systems	ESS1-3-2 Obtain and combine information to describe climates in different regions of the world.	CCC-ESS1-3-2 Describe the climate of a region of the world.	Different regions of the world have different climates.
Earth Science	Earth and Human Activity	ESS2-3-1 Make a claim about the merit of a design solution that reduces the impacts of a weather-related hazard.	CCC-ESS2-3-1 Match the preventative measure to the related weather hazard.	Humans can take steps to reduce the impact of weather-related hazards.

Grade 4 Core Content Connectors

Science Domain	Category	Idaho General Education Performance Standard	Idaho Core Content Connector	Summary of Supporting Content
Physical Science	Energy	PS1-4-1 Use evidence to construct an explanation relating the speed of an object to the energy of that object.	CCC-PS1-4-1 Recognize that if two identical objects are moving at different speeds, then the one moving faster has more energy.	The faster a given object is moving, the more energy it has. (Note: A "given object" is important here. It is not about comparing the energy of different objects, but two identical objects at different speeds can be compared).
Physical Science	Energy	PS1-4-2 Make observations to provide evidence that energy can be transferred from place to place by sound, light, heat, and electric currents.	CCC-PS1-4-2 Identify examples of energy transferring from place to place (e.g., electrical energy becoming light energy in a lamp, electrical energy becoming heat energy in a microwave).	Energy can be transferred from place to place through sound, light, heat, or electricity.
Physical Science	Energy	PS1-4-3 Ask questions and predict outcomes about the changes in energy that occur when objects collide.	CCC-PS1-4-3 Predict the motion of a stationary object when a moving object collides with it.	When a moving object collides with another object, energy is transferred and the motion changes.
Physical Science	Energy	PS1-4-4 Apply scientific ideas to design, test, and refine a device that converts energy from one form to another.	CCC-PS1-4-4 Given a situation, identify the device that is used to convert energy from one form to another (e.g., in a flashlight, a battery converts chemical energy to light; in a fan, electrical energy is converted to motion energy).	Devices can convert energy from one form to another for a variety of uses.
Physical Science	Waves	PS2-4-1 Develop a model of waves to describe patterns in terms of amplitude and wavelength and understand that waves can cause objects to move.	CCC-PS2-4-1 Identify how wave patterns (amplitude and wavelength) can cause objects to move.	Waves move in patterns that can differ in amplitude (height) and wavelength (spacing between waves) and understand that waves can cause objects to move.

Science Domain	Category	Idaho General Education Performance Standard	Idaho Core Content Connector	Summary of Supporting Content
Physical Science	Waves	PS2-4-2 Develop a model to describe that light reflecting from objects and entering the eye allows objects to be seen.	CCC-PS2-4-2 Identify the correct path light follows between a light source, the object, and the eye.	The reflection of light from objects and light entering the eyes allows the objects to be seen.
Physical Science	Waves	PS2-4-3 Generate and compare multiple solutions that use patterns to transfer information.	CCC-PS2-4-3 Describe how different sound patterns can convey different meanings.	Information can be transmitted in patterns through the use of multiple devices (e.g., Morse code, binary code, music).
Life Science	From Molecules to Organisms: Structure and Function	LS1-4-1 Construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction.	CCC-LS1-4-1 Identify the functions (survival, growth, behavior, and/or reproduction) of various plant and animal structures. (Note: Structures could include thorn, stem, roots, petal, heart, lungs, stomach, brain, skin, or skeleton).	Structures of organisms work together to sustain life.
Life Science	From Molecules to Organisms: Structure and Function	LS1-4-2 Use a model to describe how animals receive different types of information through their senses, process the information in their brains, and respond to the information in different ways.	CCC-LS1-4-2 Identify an animal's response to a given environmental stimuli (e.g., ring a bell, a dog hears it and comes to the food bowl; a porcupine senses danger and bristles its quills at an enemy; a skunk senses danger and sprays).	Animals receive information through their senses, process the information in their brains, and respond.
Life Science	Ecosystems: Interactions, Energy, and Dynamics	LS2-4-1 Develop a model to describe the movement of matter among plants, animals, decomposers, and the environment.	CCC-LS2-4-1 Sequence the producers, consumers, and decomposers in a food web.	Matter flows among organisms.

Science Domain	Category	Idaho General Education Performance Standard	Idaho Core Content Connector	Summary of Supporting Content
Earth Science	Earth's Place in the Universe	ESS1-4-1 Identify evidence from patterns in rock formations and fossils in rock layers to support an explanation for changes in a landscape over time.	CCC-ESS1-4-1 Describe how fossils in rock layers reveal changes in the landscape over time.	Patterns of rock formations and fossils in rock layers reveal changes in the landscape over time.
Earth Science	Earth's Systems	ESS2-4-1 Make observations and/or measurements to provide evidence of the effects of weathering or the rate of erosion by water, ice, wind, or vegetation.	CCC-ESS2-4-1 Use evidence (e.g., pictures, measurements, data) to show how erosion and/or weathering changes the landscape.	Erosion and weathering reshape the landscape over time.
Earth Science	Earth's Systems	ESS2-4-2 Analyze and interpret data from maps to describe patterns of Earth's features.	CCC-ESS2-4-2 Use map symbols to describe Earth's features.	Maps describe patterns of Earth's features.
Earth Science	Earth's Systems	ESS3-4-1 Obtain and combine information to describe that energy and fuels are derived from natural resources and their uses affect the environment.	CCC-ESS3-4-1 Describe an energy source's effect on the environment.	Energy and fuels are derived from natural resources and their uses affect the environment.
Earth Science	Earth's Systems	ESS3-4-2 Generate and compare multiple solutions to reduce the impacts of natural Earth processes on humans.	CCC-ESS3-4-2 Choose a design that would lessen the impact of a natural hazard on an environment (e.g., a raised house in an area prone to flooding).	Humans can take steps to reduce the impact of natural hazards.

Grade 5 Core Content Connectors

Science Domain	Category	Idaho General Education Performance Standard	Idaho Core Content Connector	Summary of Supporting Content
Physical Science	Matter and Its Interactions	PS1-5-1 Develop a model to describe that matter is made of particles too small to be seen.	CCC-PS1-5-1 Use a model to explain that matter is still present even when it too small to be seen (e.g., sugar dissolved in water is still present; thus, the water is sweet).	Matter still exists even when it is too small to be seen.
Physical Science	Matter and Its Interactions	PS1-5-2 Measure and graph quantities to provide evidence that, regardless of the type of change that occurs when heating, cooling, or mixing substances, the total weight of matter is conserved.	CCC-PS1-5-2 Identify total weight data that show the total weight of matter before and after heating, cooling, or mixing materials.	Regardless of the type of change that occurs, the total weight of the matter stays the same.
Physical Science	Matter and Its Interactions	PS1-5-3 Make observations and measurements to identify materials based on their properties.	CCC-PS1-5-3 Make observations and match the materials based on their properties (e.g., color, hardness, solubility).	Different substances have different properties (e.g., color, texture, hardness).
Physical Science	Matter and Its Interactions	PS1-5-4 Conduct an investigation to determine whether the mixing of two or more substances results in new substances.	CCC-PS1-5-4 Use observations to determine if the mixing of two or more substances results in a new substance (e.g., baking cookies, making slime).	The mixing of two or more substances sometimes forms a new substance.
Physical Science	Motion and Stability: Forces and Interactions	PS2-5-1 Support an argument that the gravitational force exerted by Earth on objects is directed down.	CCC-PS2-5-1 Use observations to determine that objects, regardless of weight, fall toward Earth due to its gravitational force.	Gravity causes objects to fall toward Earth.

Science Domain	Category	Idaho General Education Performance Standard	Idaho Core Content Connector	Summary of Supporting Content
Physical Science	Energy	PS3-5-1 Use models to describe that energy in animals' food (used for body repair, growth, motion, and warmth) was once energy from the sun.	CCC-PS3-5-1 Trace the source of an animal's energy through a food chain back to the sun.	Energy in animals' food was once energy from the sun.
Life Science	From Molecules to Organisms: Structure and Function	LS1-5-1 Support an argument that plants get the materials they need for growth chiefly from air and water.	CCC-LS1-5-1 Use data from investigations to identify that air and water are the main sources of growth materials for plants (e.g., essential vs. non-essential).	Plants acquire their material for growth chiefly from air and water.
Life Science	Biological Evolution: Unity and Diversity	LS2-5-1 Analyze and interpret data from fossils to provide evidence of the organisms and the environments in which they lived long ago.	CCC-LS2-5-1 Identify the environment in which the fossil animal or plant lived.	Some plants and animals that once lived are no longer alive, but fossils provide information about those plants and animals and their environment.
Life Science	Biological Evolution: Unity and Diversity	LS2-5-2 Use evidence to construct an explanation for how the variations in characteristics among individuals of the same species may provide advantages in surviving, finding mates, and reproducing.	CCC-LS2-5-2 Determine which variation of the characteristic is most helpful to the animal in its current environment (e.g., birds: shape and size of beaks).	Sometimes, differences in the characteristics between individuals of the same species provide advantages.
Life Science	Biological Evolution: Unity and Diversity	LS2-5-3 Construct an argument with evidence that in a particular habitat some organisms can survive well, some survive less well, and some cannot survive at all.	CCC-LS2-5-3 Determine the needs of organisms that can survive in a habitat and/or needs of organisms that cannot survive in a habitat.	In a particular habitat, some organisms can survive and some cannot.

Science Domain	Category	Idaho General Education Performance Standard	Idaho Core Content Connector	Summary of Supporting Content
Life Science	Biological Evolution: Unity and Diversity	LS2-5-4 Make a claim about the merit of a solution to a problem caused when the environment changes and the types of plants and animals that live there may change.	CCC-LS2-5-4 Determine how the environment may need to change after a natural or manmade event in order for the organisms found there to survive.	When an environment changes, the organisms in the environment may be impacted.
Earth Science	Earth's Place in the Universe	ESS1-5-1 Support an argument that differences in the apparent brightness of the sun compared to other stars is due to their relative distances from Earth.	CCC-ESS1-5-1 Identify that the sun is the closest star to Earth.	The sun appears brighter because it is closer to Earth than other stars.
Earth Science	Earth's Place in the Universe	ESS1-5-2 Represent data in graphical displays to reveal patterns of daily changes in length and direction of shadows, day and night, and the seasonal appearance of some stars in the night sky.	CCC-ESS1-5-2 Use data and/or images to show that shadows can change in length and direction depending on the time of day in a predictable pattern. Use a graphical display to sequence up to four basic phases of the moon. Given a model, name the seasons.	Day and night, seasons, phases of the moon, and shadows follow a regular pattern.
Earth Science	Earth's Systems	ESS2-5-1 Develop a model using an example to describe ways the geosphere, biosphere, hydrosphere, and/or atmosphere interact.	CCC-ESS2-5-1 Use a model to describe how an organism interacts with the land, water, or air in its environment.	All living things interact with the air, water, and land available on Earth.

Science Domain	Category	Idaho General Education Performance Standard	Idaho Core Content Connector	Summary of Supporting Content
Earth Science	Earth's Systems	ESS2-5-2 Describe and graph the amounts and percentages of salt water and fresh water in various reservoirs to provide evidence about the distribution of water on Earth.	CCC-ESS2-5-2 Using a model, identify where fresh water and salt water are found.	The majority of the water found on Earth is salt water. Fresh water is limited and found in various areas.
Earth Science	Earth's Systems	ESS3-5-1 Support, obtain, and combine information about ways that individual communities use science ideas to protect Earth's resources and the environment.	CCC-ESS3-5-1 Describe ways to protect Earth's resources and clean up the environment (e.g., place trash in the trash can).	People can take steps to protect Earth's resources and the environment.

Middle School Core Content Connectors

Science Domain	Category	Idaho General Education Performance Standard	Idaho Core Content Connector	Summary of Supporting Content
Physical Science	Matter and Its Interactions	PS1-MS-1 Develop models to describe the atomic composition of simple molecules and extended structures.	CCC-PS1-MS-1 Use models to distinguish molecules as either simple molecules (such as oxygen) or extended structures (such as carbon dioxide).	Matter is made up of very small pieces called molecules, and within molecules there are atoms.
Physical Science	Matter and Its Interactions	PS1-MS-2 Analyze and interpret data on the properties of substances before and after the substances interact to determine if a chemical reaction has occurred.	CCC-PS1-MS-2 Recognize that chemical changes involve changes in the molecules (atoms are rearranged), leading to a new material with properties that are different from the properties of the original substances.	Some materials interact to form new substances with new properties.
Physical Science	Matter and Its Interactions	PS1-MS-3 Gather and make sense of information to describe how synthetic materials come from natural resources and impact society.	CCC-PS1-MS-3 Gather information to identify the natural resources used to make a synthetic product (e.g., petroleum into plastics, aluminum into cans).	Natural resources can be used to make materials useful to society.
Physical Science	Matter and Its Interactions	PS1-MS-4 Develop a model that predicts and describes changes in particle motion, temperature, and state of a pure substance when thermal energy is added or removed.	CCC-PS1-MS-4 Use a model to identify that the particles that make up an object move fast or slowly, depending on the temperature of the object.	Matter exists in various states (i.e., solid, liquid, and gas). The molecules in matter behave differently when heat is added or removed.
Physical Science	Matter and Its Interactions	PS1-MS-6 Undertake a design project to construct, test, and modify a device that either releases or absorbs thermal energy by chemical processes.	CCC-PS1-MS-6 Use presented evidence to determine if a reaction has released or absorbed thermal energy (e.g., fireworks).	Some chemical reactions release heat; others store heat.

Science Domain	Category	Idaho General Education Performance Standard	Idaho Core Content Connector	Summary of Supporting Content
Physical Science	Motion and Stability: Forces and Interactions	PS2-MS-1 Apply Newton's Third Law to design a solution to a problem involving the motion of two colliding objects.	CCC-PS2-MS-1 Use models to predict how the motion of objects of the same size with different speeds will be affected when the objects collide.	When objects collide, they exert forces on each other that will affect their motion (e.g., collisions between balls or between a ball and a stationary object).
Physical Science	Motion and Stability: Forces and Interactions	PS2-MS-2 Plan an investigation to provide evidence that the change in an object's motion depends on the sum of the forces on the object and the mass of the object.	CCC-PS2-MS-2 Predict how the motion of objects with different masses will change when acted on by forces.	Unbalanced forces cause a change of motion. The amount of change depends upon the size of the force and mass of the object.
Physical Science	Motion and Stability: Forces and Interactions	PS2-MS-3 Ask questions about data to determine the factors that affect the strength of electric and magnetic forces.	CCC-PS2-MS-3 Use data to make statements about the effect of distance on the interactions between magnets.	Some forces (e.g., magnetic forces) act at a distance without physical contact with an object.
Physical Science	Motion and Stability: Forces and Interactions	PS2-MS-4 Construct and present arguments using evidence to support the claim that gravitational interactions are attractive and depend on the masses of interacting objects.	CCC-PS2-MS-4 Predict how the motion of objects with different masses will change when acted on by forces.	Gravitational force exists between any two objects. The size of the force depends upon the mass of the object.
Physical Science	Motion and Stability: Forces and Interactions	PS2-MS-5 Conduct an investigation and evaluate the experimental design to provide evidence that fields exist between objects exerting forces on each other even though the objects are not in contact.	CCC-PS2-MS-5 Relate the orientation of magnets and the distance between them to the behavior of the magnets.	The behavior of magnets varies with changes in orientation, distance, and the strength of the magnet.

Science Domain	Category	Idaho General Education Performance Standard	Idaho Core Content Connector	Summary of Supporting Content
Physical Science	Energy	PS3-MS-1 Construct and interpret graphical displays of data to describe the relationships of kinetic energy to the mass of an object and to the speed of an object.	CCC-PS3-MS-1 Use mass and speed data to determine the object with the greatest kinetic energy.	Kinetic energy (motion energy) is proportional to the mass of the object. Kinetic energy increases as speed increases.
Physical Science	Energy	PS3-MS-3 Apply scientific principles to design, construct, and test a device that either minimizes or maximizes thermal energy transfer.	CCC-PS3-MS-3 Describe situations where thermal energy is transferred (e.g., if ice is added to a cup of water or if water in a pot is heated on a stove).	Heat can be transferred from one object to another. Humans have invented devices to "manage" this transfer.
Physical Science	Energy	PS3-MS-4 Plan an investigation to determine the relationships among the energy transferred, the type of matter, the mass, and the change in the average kinetic energy of the particles as measured by the temperature of the sample.	CCC-PS3-MS-4 Use temperature data to determine the changes of objects of the same material but different masses when heat is applied for a certain period of time.	Temperature is a measure of the average kinetic energy of matter.
Physical Science	Energy	PS3-MS-5 Construct, use, and present arguments to support the claim that when the kinetic energy of an object changes, energy is transferred to or from the object.	CCC-PS3-MS-5 Identify the motion energy transfer in presented examples (e.g., a ball that was moving begins to slow down, so this means that energy was transferred from the object).	When the motion energy of an object changes, the object may gain or lose energy, but the total energy is conserved.

Science Domain	Category	Idaho General Education Performance Standard	Idaho Core Content Connector	Summary of Supporting Content
Physical Science	Waves	PS4-MS-1 Use mathematical representations to describe a simple model for waves that includes how the amplitude of a wave is related to the energy in a wave.	CCC-PS4-MS-1 Compare wave diagrams to identify differences in wavelength and amplitude.	Mechanical waves (water, sound, waves in a rope at the gym) have a repeating pattern, including amplitude, which demonstrates the energy of the wave.
Physical Science	Waves	PS4-MS-2 Develop and use a model to describe that waves are reflected, absorbed, or transmitted through various materials.	CCC-PS4-MS-2 Use models to recognize that light can be reflected, absorbed, or transmitted (light passes through the object).	Light waves can be reflected, transmitted, or absorbed by different materials.
Physical Science	Waves	PS4-MS-3 Integrate qualitative scientific and technical information to support the claim that digitized signals are a more reliable way to encode and transmit information than analog signals.	CCC-PS4-MS-3 Identify advantages or disadvantages of various means of communication.	Technological advances have improved our ability to communicate.
Life Science	From Molecules to Organisms: Structure and Function	LS1-MS-1 Conduct an investigation to provide evidence that living things are made of cells; either one cell or many different numbers and types of cells.	CCC-LS1-MS-1 Use evidence to show that all living things are made up of one or more cells, which are the smallest units that can be said to be alive.	All living things are made up of one or more cells, which are the smallest units that can be said to be alive.
Life Science	From Molecules to Organisms: Structure and Function	LS1-MS-2 Develop and use a model to describe the function of a cell as a whole and ways that parts of cells contribute to the function.	CCC-LS1-MS-2 Describe the function of one or more of the following cell parts: nucleus, chloroplast, mitochondria, cell membrane, and cell wall.	Cells are made up of parts with different functions that work together.

Science Domain	Category	Idaho General Education Performance Standard	Idaho Core Content Connector	Summary of Supporting Content
Life Science	From Molecules to Organisms: Structure and Function	LS1-MS-3 Use argument supported by evidence for how a living organism is a system of interacting subsystems composed of groups of cells.	CCC-LS1-MS-3 Use evidence to support a claim that groups of cells form tissues. Tissues come together to form organs, and multiple organs form organ systems.	The body is a group of systems working together to carry out body functions.
Life Science	From Molecules to Organisms: Structure and Function	LS1-MS-4 Construct a scientific argument based on evidence to defend a claim of life for a specific object or organism.	CCC-LS1-MS-4 Use evidence to describe how living things share characteristics (e.g., response to the environment, reproduction, energy use, growth and development, life cycles, made of cells).	All living things have certain shared characteristics.
Life Science	From Molecules to Organisms: Structure and Function	LS1-MS-5 Construct a scientific explanation based on evidence for the role of photosynthesis in the cycling of matter and flow of energy into and out of organisms.	CCC-LS1-MS-5 Use a model or diagram to show that during photosynthesis, sunlight is used to combine carbon dioxide and water into food molecules, which can be used or stored by the plant and oxygen is given off.	Plants take in matter (in the form of carbon dioxide and water), and use energy from the sun to produce food, and release oxygen into the environment through photosynthesis.
Life Science	From Molecules to Organisms: Structure and Function	LS1-MS-6 Develop a model to describe how food is rearranged through chemical reactions forming new molecules that support growth and/or release energy as this matter moves through an organism.	CCC-LS1-MS-6 Describe how food must be broken down so that the nutrients can be absorbed by the organism.	Food moves through different processes to form new molecules that support growth and release energy.

Science Domain	Category	Idaho General Education Performance Standard	Idaho Core Content Connector	Summary of Supporting Content
Life Science	Ecosystems: Interactions, Energy, and Dynamics	LS2-MS-1 Analyze and interpret data to provide evidence for the effects of resource availability on organisms and populations of organisms in an ecosystem.	CCC-LS2-MS-1 Use data as evidence to show whether a population increases or decreases as a result of a change in the availability of resources in the ecosystem.	Organisms are dependent on interactions in their environment, including other living things and the physical environment.
Life Science	Ecosystems: Interactions, Energy, and Dynamics	LS2-MS-2 Construct an explanation that predicts patterns of interactions among organisms across multiple ecosystems.	CCC-LS2-MS-2 Describe interactions among organisms across multiple ecosystems (e.g., how a predatory, land-based animal interacts with prey in water ecosystems).	There are a variety of interactions within and across ecosystems that may be competitive or mutually beneficial.
Life Science	Ecosystems: Interactions, Energy, and Dynamics	LS2-MS-3 Develop a model to describe the cycling of matter and flow of energy among living and nonliving parts of an ecosystem.	CCC-LS2-MS-3 Complete a cycle to show the flow of energy within the ecosystem.	Energy cycles show how matter and energy is transferred within an ecosystem.
Life Science	Ecosystems: Interactions, Energy, and Dynamics	LS2-MS-4 Develop a model to describe the flow of energy through the trophic levels of an ecosystem.	CCC-LS2-MS-4 Use a food chain/web to complete an energy pyramid.	Food webs can be broken down into an energy pyramid, showing the energy available to organisms.
Life Science	Ecosystems: Interactions, Energy, and Dynamics	LS2-MS-5 Construct an argument supported by empirical evidence that changes to physical or biological components of an ecosystem affect populations.	CCC-LS2-MS-5 Use data to determine the effect on a population when a supply is limited due to environmental conditions.	Ecosystems are dynamic; their characteristics can vary over time. Disruptions to any physical or biological component of an ecosystem can lead to shifts in all its populations.

Science Domain	Category	Idaho General Education Performance Standard	Idaho Core Content Connector	Summary of Supporting Content
Life Science	Heredity: Inheritance and Variation of Traits	LS3-MS-1 Develop and use a model to describe why mutations may result in harmful, beneficial, or neutral effects to the structure and function of the organism.	CCC-LS3-MS-1 Describe that changes to gene structures can cause new traits that may be helpful or harmful.	Structural changes to genes lead to mutations that may be helpful or harmful.
Life Science	Heredity: Inheritance and Variation of Traits	LS3-MS-2 Develop and use a model to describe why asexual reproduction results in offspring with identical genetic information and sexual reproduction results in offspring with genetic variation.	CCC-LS3-MS-2 Use a model to describe how asexual reproduction differs from sexual reproduction.	All organisms reproduce, either sexually and/or asexually. Asexual reproduction occurs from a single organism. Sexual reproduction leads to offspring that inherit traits from both their parents.
Life Science	Biological Evolution: Unity and Diversity	LS4-MS-1 Analyze and interpret data for patterns in the fossil record that document the existence, diversity, extinction, and change of life forms throughout the history of life on Earth under the assumption that natural laws operate today as in the past.	CCC-LS4-MS-1 Given images of ancient and present-day organisms, describe how the organism changed over time (e.g., wooly mammoth and modern elephant).	Fossil records provide information about how living things have changed over time.
Life Science	Biological Evolution: Unity and Diversity	LS4-MS-2 Apply scientific ideas to construct an explanation for the anatomical similarities and differences among modern organisms and between modern and fossil organisms to infer relationships.	CCC-LS4-MS-2 Compare fossils with present-day organisms with similar characteristics.	Similarities and differences between various organisms living today and organisms in the fossil record.

Science Domain	Category	Idaho General Education Performance Standard	Idaho Core Content Connector	Summary of Supporting Content
Life Science	Biological Evolution: Unity and Diversity	LS4-MS-3 Analyze displays of pictorial data to compare patterns of similarities in the anatomical structures across multiple species of similar classification levels to identify relationships.	CCC-LS4-MS-3 Compare the similarities of organisms within a similar classification (e.g., genus, species).	Similarities in anatomical structures across multiple species can be used to identify relationships.
Life Science	Biological Evolution: Unity and Diversity	LS4-MS-4 Construct an explanation based on evidence that describes how genetic variations of traits in a population increase some individuals' probability of surviving and reproducing in a specific environment.	CCC-LS4-MS-4 Describe a trait in a population that would help organisms survive in a specific environment (e.g., wolf surviving in Yellowstone Park better than in a desert environment).	Natural selection favors organisms that have traits that increase the likelihood of survival.
Life Science	Biological Evolution: Unity and Diversity	LS4-MS-5 Gather and synthesize information about the technologies that have changed the way humans influence the inheritance of desired traits in organisms.	CCC-LS4-MS-5 Use information to describe selective breeding as a process that allows the best traits to be chosen.	Humans have the ability to influence the characteristics that organisms have.
Life Science	Biological Evolution: Unity and Diversity	LS4-MS-6 Use mathematical representations to support explanations of how natural selection may lead to increases and decreases of specific traits in populations over time.	CCC-LS4-MS-6 Given a description of an environment, identify the animals or plants within a species that are most likely to survive.	Natural selection favors the survival of organisms in a species with favorable traits.

Science Domain	Category	Idaho General Education Performance Standard	Idaho Core Content Connector	Summary of Supporting Content
Earth Science	Earth's Place in the Universe	ESS1-MS-1 Develop and use a model of Earth-sun-moon system to describe the cyclic patterns of lunar phases, eclipses of the sun and moon, and seasons.	CCC-ESS1-MS-1 Use a model to identify Earth's seasons and relate them to Earth's tilt and revolution around the sun	Patterns of the motion of the sun, the moon, and stars in the sky can be observed, described, and predicted.
Earth Science	Earth's Place in the Universe	ESS1-MS-2 Develop and use a model to describe the role of gravity in the motions within galaxies and the solar system.	CCC-ESS1-MS-2 Describe the motions of all objects in the solar system that occur due to the gravitational force of the sun. Our solar system is within the Milky Way galaxy which is one of many galaxies.	Earth is part of the solar system, and gravity is the attractive force between objects in the system.
Earth Science	Earth's Place in the Universe	ESS1-MS-3 Analyze and interpret data to determine scale properties of objects in the solar system.	CCC-ESS1-MS-3 Use data to order the planets based on their size or distance from the sun.	Planets can be compared based on size, distance from the sun, and composition (e.g., hot versus cold, rocky versus gaseous).
Earth Science	Earth's Place in the Universe	ESS1-MS-4 Construct a scientific explanation based on evidence from rock strata for how the geologic time scale is used to organize Earth's history.	CCC-ESS1-MS-4 Identify the relative age of fossils based on their location in a column of rock layers.	Rock layers and the fossil record provide a way to organize Earth's history.
Earth Science	Earth's Systems	ESS2-MS-1 Develop a model to describe the cycling of Earth's materials and the flow of energy that drives this process.	CCC-ESS2-MS-1 Describe how heat from Earth's core powers the rock cycle. Describe how the water cycle impacts the rock cycle (weathering and erosion).	Earth materials cycle through processes such as the rock cycle (which includes weathering and erosion).

Science Domain	Category	Idaho General Education Performance Standard	Idaho Core Content Connector	Summary of Supporting Content
Earth Science	Earth's Systems	ESS2-MS-2 Construct an explanation based on evidence for how geoscience processes have changed Earth's surface at varying time and spatial scales.	CCC-ESS2-MS-2 Given a scenario, describe which process (weathering, erosion, deposition) contributed to the change of Earth's surface.	Fast and slow processes (geoscience processes) shape and reshape the surface of Earth.
Earth Science	Earth's Systems	ESS2-MS-3 Analyze and interpret data on the distribution of fossils and rocks, continental shapes, and seafloor structures to provide evidence of the past plate motions.	CCC-ESS2-MS-3 Use maps to show how the shapes of continents fit together as evidence of plate motions.	Data (maps, investigations of rocks and fossils) show that the surface of Earth consists of plates that have collided, spread apart and moved over time.
Earth Science	Earth's Systems	ESS2-MS-4 Develop a model to describe the cycling of water through Earth's systems driven by energy from the sun and the force of gravity.	CCC-ESS2-MS-4 Describe the parts of the water cycle.	Water continually cycles through Earth's systems: among land, ocean, and the atmosphere.
Earth Science	Earth's Systems	ESS2-MS-5 Collect data to provide evidence for how the motions and complex interactions of air masses results in changes in weather conditions.	CCC-ESS2-MS-5 Describe weather conditions to predict local weather patterns.	The movement of air masses causes changes in weather, including temperature, precipitation, and wind.
Earth Science	Earth's Systems	ESS2-MS-6 Develop and use a model to describe how unequal heating and rotation of Earth cause patterns of atmospheric and oceanic circulation that determine regional climates.	CCC-ESS2-MS-6 Describe how climate is determined in an area based on location, shape of land, and distance from water.	Climates vary and are influenced by interactions involving sunlight, the ocean, the atmosphere, and landforms.

Science Domain	Category	Idaho General Education Performance Standard	Idaho Core Content Connector	Summary of Supporting Content
Earth Science	Earth and Human Activity	ESS3-MS-1 Construct a scientific explanation based on evidence for how the uneven distributions of Earth's mineral, energy, and groundwater resources are the result of past and current geoscience processes.	CCC-ESS3-MS-1 Use data to explain why specific resources are limited.	Humans depend on a variety of natural resources for survival. These come from various parts of the world, and many are not renewable.
Earth Science	Earth and Human Activity	ESS3-MS-2 Analyze and interpret data on natural hazards to forecast future catastrophic events and inform the development of technologies to mitigate their effects.	CCC-ESS3-MS-2 Classify natural hazards as "predictable" or "not yet predictable."	Data from natural hazards (volcanic eruptions, earthquakes, tsunamis, severe weather, hurricanes, tornados, landslides, floods, and forest fires) can be used to help mitigate the harmful effects of future events.
Earth Science	Earth and Human Activity	ESS3-MS-3 Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment.	CCC-ESS3-MS-3 Match human activities with their effect on Earth.	Human activities can alter the biosphere by damaging habitats.
Earth Science	Earth and Human Activity	ESS3-MS-4 Construct an argument supported by evidence for how increases in human population and per-capita consumption of natural resources impact Earth's systems.	CCC-ESS3-MS-4 Link population increases to a greater need for consumption of resources.	Human population and the resources they use impact Earth systems.

Science Domain	Category	Idaho General Education Performance Standard	Idaho Core Content Connector	Summary of Supporting Content
Earth Science	Earth and Human Activity	ESS3-MS-5 Ask questions to interpret evidence of the factors that cause climate variability over time.	CCC-ESS3-MS-5 Use data (numerical, graphical, or pictorial) as evidence of rising temperatures over the last 100 years.	Human activities (by burning fossil fuels) and natural processes can alter the Earth which can lead to climate variability.

High School Core Content Connectors

Science Domain	Category	Idaho General Education Performance Standard	Idaho Core Content Connector	Summary of Supporting Content
Life Science	From Molecules to Organisms: Structure and Function	LS1-HS-1 Construct an explanation based on evidence for how the structure of DNA determines the structure of proteins, which carry out the essential functions of life through systems of specialized cells.	CCC-LS1-HS-1 Explain that the DNA in a cell's nucleus is the genetic code that creates proteins that determine a cell's function.	Living things are made up of a variety of types of cells that have different functions. The function of a cell is determined by its DNA, which is found in the cell's nucleus.
Life Science	From Molecules to Organisms: Structure and Function	LS1-HS-2 Develop and use a model to illustrate the hierarchical organization of interacting systems that provide specific functions within multicellular organisms.	CCC-LS1-HS-2 Use a model to explain the function of a body system and identify the major organ in the system.	Living organisms have systems that work together to maintain life. The organs that make up these systems carry out specific functions.
Life Science	From Molecules to Organisms: Structure and Function	LS1-HS-3 Plan and conduct an investigation to provide evidence that feedback mechanisms maintain homeostasis.	CCC-LS1-HS-3 Sequence the steps in an investigation to show how an organism reacts to stimuli (e.g., eyes reacting to light, heart or lungs reacting to exercise).	Organisms, and the organs and cells within them, react to maintain an internal balance (homeostasis). [Note: The term "homeostasis" should not be used within items for the Low and Moderate levels.]
Life Science	From Molecules to Organisms: Structure and Function	LS1-HS-4 Use a model to illustrate the role of cellular division (mitosis) and differentiation in producing and maintaining complex organisms.	CCC-LS1-HS-4 Use a model to explain what happens during cell division.	Cell division and multiplication, which occurs through a process called mitosis, enable growth and the replacement of dead or damaged cells.

Science Domain	Category	Idaho General Education Performance Standard	Idaho Core Content Connector	Summary of Supporting Content
Life Science	From Molecules to Organisms: Structure and Function	LS1-HS-5 Use a model to illustrate how photosynthesis transforms light energy into stored chemical energy.	CCC-LS1-HS-5 Use a model to identify the inputs that go into the plant (e.g., sunlight, water) and the outputs from the plant (e.g., food, oxygen) during photosynthesis (for example, fill in the missing part of the model).	Plants produce their food through a process called photosynthesis. Photosynthesis uses light energy to convert carbon dioxide and water into sugars plus released oxygen.
Life Science	From Molecules to Organisms: Structure and Function	LS1-HS-6 Construct and revise an explanation based on evidence for how carbon, hydrogen, and oxygen from sugar molecules may combine with other elements to form amino acids and/or other large, carbon-based molecules.	CCC-LS1-HS-6 Use a model to identify that the elements that make up sugar molecules can be used to form other molecules (e.g., amino acids, DNA, proteins).	Sugar molecules contain carbon, hydrogen, and oxygen. They are used to make other carbon-based molecules.
Life Science	From Molecules to Organisms: Structure and Function	LS1-HS-7 Use a model to illustrate that cellular respiration is a chemical process whereby the bonds of food molecules and oxygen molecules are broken, and the bonds in new compounds are formed, resulting in a net transfer of energy.	CCC-LS1-HS-7 Use a model of cellular respiration to explain the input and output of the process.	Cellular respiration converts oxygen and sugar into carbon dioxide, water, and energy.

Science Domain	Category	Idaho General Education Performance Standard	Idaho Core Content Connector	Summary of Supporting Content
Life Science	Ecosystems: Interactions, Energy, and Dynamics	LS2-HS-1 Use mathematical and/or computational representations to support explanations of factors that affect the carrying capacities of ecosystems at different scales.	CCC-LS2-HS-1 Use data to determine if the food supply present in an ecosystem can sustain a specified increase in the number of organisms, or populations of organisms, eating that food supply in an ecosystem.	Ecosystems have carrying capacities, which limit the numbers of organisms and populations they can support. Balance exists in organisms, populations, and ecosystems.
Life Science	Ecosystems: Interactions, Energy, and Dynamics	LS2-HS-2 Use mathematical representations to support and revise explanations based on evidence about factors affecting biodiversity and populations in ecosystems of different scales.	CCC-LS2-HS-2 Use data or a graphical representation to describe the relationship between population size and the availability of resources in an ecosystem.	Balance (equilibrium) exists in organisms, populations, and ecosystems. Interactions within an ecosystem keep the numbers and types of organisms relatively constant. If a modest disturbance to an ecosystem occurs, it may return to its original status. Extreme changes can challenge the functioning of an ecosystem.
Life Science	Ecosystems: Interactions, Energy, and Dynamics	LS2-HS-4 Use mathematical representations to support claims for the cycling of matter and flow of energy among organisms in an ecosystem.	CCC-LS2-HS-4 Create a food web that shows the movement of matter and energy within an ecosystem	Matter and energy flow through a food web (ecosystem) with only small fractions transferred from one level to another.

Science Domain	Category	Idaho General Education Performance Standard	Idaho Core Content Connector	Summary of Supporting Content
Life Science	Ecosystems: Interactions, Energy, and Dynamics	LS2-HS-5 Develop a model to illustrate the role of photosynthesis and cellular respiration in the cycling of carbon among the biosphere, atmosphere, hydrosphere, and geosphere.	CCC-LS2-HS-5 Given a model, describe the role of carbon during photosynthesis and respiration as it moves through the environment.	Photosynthesis and cellular respiration result in the cycling of carbon in the environment.
Life Science	Ecosystems: Interactions, Energy, and Dynamics	LS2-HS-6 Evaluate the claims, evidence, and reasoning that the complex interactions in ecosystems maintain relatively consistent numbers and types of organisms in stable conditions, but that changing conditions may result in a new ecosystem.	CCC-LS2-HS-6 Classify natural and human-initiated changes in the physical environment that can affect a population.	Changes in the physical environment (e.g., landslides, floods, development) can lead to temporary or permanent changes to an ecosystem.
Life Science	Ecosystems: Interactions, Energy, and Dynamics	LS2-HS-7 Design, evaluate, and refine a solution for reducing the impacts of human activities on the environment and biodiversity.	CCC-LS2-HS-7 Identify actions that can be taken to preserve or restore the environment.	Human activity can change the environment. Many changes are harmful, but humankind can also take steps to preserve and restore the environment/ ecosystems.
Life Science	Ecosystems: Interactions, Energy, and Dynamics	LS2-HS-8 Evaluate the evidence for the role of group behavior on individual's and species' chances to survive and reproduce.	CCC-LS2-HS-8 Given a group behavior, explain how that behavior helps individuals and species survive and reproduce.	Group behavior has evolved because it can increase the chances of survival and reproduction.

Science Domain	Category	Idaho General Education Performance Standard	Idaho Core Content Connector	Summary of Supporting Content
Life Science	Heredity: Inheritance and Variation of Traits	LS3-HS-1 Ask questions to clarify relationships about the roles of DNA and chromosomes in coding the instructions for characteristic traits passed from parents to offspring.	CCC-LS3-HS-1 Explain how traits (genes) are passed from one generation to the next through DNA.	DNA contains genetic information that is passed from parent (cell or organism) to offspring. The instructions for forming species' characteristics (traits) are carried in DNA.
Life Science	Heredity: Inheritance and Variation of Traits	LS3-HS-2 Make and defend a claim based on evidence that inheritable genetic variations may result from: (1) new genetic combinations through meiosis, (2) viable errors occurring during replication, and/or (3) mutations caused by environmental factors.	CCC-LS3-HS-2 Use a model to explain how new genetic combinations are a result of meiosis, DNA replication errors, or mutations caused by environmental factors.	Genetic variation can involve reproduction between two individuals and the process of meiosis (cell division).
Life Science	Biological Evolution: Unity and Diversity	LS4-HS-1 Communicate scientific information that common ancestry and biological evolution are supported by multiple lines of empirical evidence.	CCC-LS4-HS-1 Using descriptions and pictures, determine the sequential development pattern from a fossil to a present-day organism.	Many organisms currently found on Earth are similar and can be traced back to common ancestors that lived very long ago.

Science Domain	Category	Idaho General Education Performance Standard	Idaho Core Content Connector	Summary of Supporting Content
Life Science	Biological Evolution: Unity and Diversity	LS4-HS-2 Construct an explanation based on evidence that the process of evolution primarily results from four factors: (1) the potential for a species to increase in number, (2) the heritable genetic variation of individuals in a species due to mutation and sexual reproduction, (3) competition for limited resources, and (4) the proliferation of those organisms that are better able to survive and reproduce in the environment.	CCC-LS4-HS-2 Determine which factor (e.g., an inherited genetic variation, limited resources, organisms that were more fit to survive in an environment) resulted in a specific adaptation within a species.	Evolution explains the change across successive generations in a biological population.
Life Science	Biological Evolution: Unity and Diversity	LS4-HS-3 Apply concepts of statistics and probability to support explanations that organisms with an advantageous heritable trait tend to increase in proportion to organisms lacking this trait.	CCC-LS4-HS-3 Given a scenario of similar organisms with different traits, predict which organism will likely survive (e.g., birds with different shaped beaks trying to eat insects).	Organisms with traits that are advantageous and affect survival are more likely to reproduce, and thus become more common in the population.
Life Science	Biological Evolution: Unity and Diversity	LS4-HS-4 Construct an explanation based on evidence for how natural selection leads to adaptation of populations.	CCC-LS4-HS-4 Use evidence to explain that organisms that survive can pass on beneficial traits.	Natural selection is the result of the survival of organisms with traits that increase the survival rate and the production of more offspring.

Science Domain	Category	Idaho General Education Performance Standard	Idaho Core Content Connector	Summary of Supporting Content
Life Science	Biological Evolution: Unity and Diversity	LS4-HS-5 Evaluate the evidence supporting claims that changes in environmental conditions may result in: (1) increases in the number of individuals of some species, (2) the emergence of new species over time, and (3) the extinction of other species.	CCC-LS4-HS-5 Describe an environmental change that will result in changes in the population of organisms.	Changes in an environment favor the survival of some organisms over others and can support the emergence of new species.
Life Science	Biological Evolution: Unity and Diversity	LS4-HS-6 Create or revise a simulation to test a solution to mitigate adverse impacts of human activity on biodiversity.	CCC-LS4-HS-6 Use data (pictorial, graphical, or tabular) to determine the effectiveness of a strategy to protect a species.	Human activity often changes the physical environment in ways that favor some species and harm others, sometimes leading to extinction.
Earth Science	Earth and Space Sciences	ESS1-HS-1 Develop a model based on evidence to illustrate the life span of the sun and the role of nuclear fusion in the sun's core to release energy that eventually reaches Earth in the form of radiation.	CCC-ESS1-HS-1 Use a model to explain that the energy released from the sun's core warms the Earth and provides the surface of the Earth with light.	Energy from the sun reaches the Earth.

Science Domain	Category	Idaho General Education Performance Standard	Idaho Core Content Connector	Summary of Supporting Content
Earth Science	Earth and Space Sciences	ESS1-HS-2 Construct an explanation of the current model of the origin of the universe based on astronomical evidence of light spectra, motion of distant galaxies, and composition of matter in the universe.	CCC-ESS1-HS-2 Use evidence to explain that the motion of distant galaxies is one way we know that the universe is expanding from its origin.	The expansion of the universe from its origins can be explained in multiple ways, one of which is the motion of distant galaxies.
Earth Science	Earth and Space Sciences	ESS1-HS-3 Communicate scientific ideas about the way stars, throughout their life cycles, produce elements.	CCC-ESS1-HS-3 Use a model to explain that stars produce elements (including hydrogen, helium, and iron) during their life cycles.	Stars, throughout their life cycle, produce elements.
Earth Science	Earth and Space Sciences	ESS1-HS-4 Use mathematical or computational representations to predict the motion of orbiting objects in the solar system.	CCC-ESS1-HS-4 Use data to predict the motion of an object with a consistent orbit.	Data can be used to predict the motion of orbiting objects in the solar system.
Earth Science	Earth and Space Sciences	ESS1-HS-5 Evaluate evidence of past and current movements of continental and oceanic crust and the theory of plate tectonics to explain the ages of crustal rocks.	CCC-ESS1-HS-5 Explain that the youngest rocks are formed as tectonic plates move apart.	The theory of plate tectonics and evidence from movements of continental and oceanic plates can be used to explain the ages of crustal rocks.

Science Domain	Category	Idaho General Education Performance Standard	Idaho Core Content Connector	Summary of Supporting Content
Earth Science	Earth and Space Sciences	ESS2-HS-1 Develop a model to illustrate how Earth's internal and surface processes operate at different spatial and temporal scales to form continental and ocean-floor features.	CCC-ESS2-HS-1 Use models to demonstrate the results of surface and internal processes (e.g., mountains, valleys, sea mounts, volcanoes).	Changes to Earth's continental and ocean-floor features are caused by Earth's internal and surface processes over time.
Earth Science	Earth and Space Sciences	ESS2-HS-5 Plan and conduct an investigation of the properties of water and its effects on Earth's materials and surface processes.	CCC-ESS2-HS-5 Use a model to explain how water changes Earth's materials and surface processes through erosion.	Water affects Earth's materials and changes surface processes.
Earth Science	Earth and Space Sciences	ESS2-HS-7 Construct an argument based on evidence about the simultaneous coevolution of Earth's systems and life on Earth.	CCC-ESS2-HS-7 Explain how life on Earth changes as Earth's systems change (Note: limit to common occurrences and simple cause/effect relationships).	Changes in Earth's systems and life on Earth occur simultaneously.
Earth Science	Earth and Space Sciences	ESS3-HS-1 Construct an explanation based on evidence for how the availability of natural resources, occurrence of natural hazards, and changes in climate have influenced human activity.	CCC-ESS3-HS-1 Evaluate how the availability of natural resources and/or the occurrence of natural hazards influence human activity.	Human activity can be influenced by the availability of natural resources and occurrence of natural hazards.

Science Domain	Category	Idaho General Education Performance Standard	Idaho Core Content Connector	Summary of Supporting Content
Earth Science	Earth and Space Sciences	ESS3-HS-4 Evaluate or refine a technological solution that reduces the impacts of human activities on natural systems.	CCC-ESS3-HS-4 Predict how given technologies (e.g., recycling plants, devices to reduce emissions, etc.) will reduce the effect of human activities on natural systems based on a scenario.	Technology can be used to reduce the impacts of human activities on natural systems.
Earth Science	Earth and Space Sciences	ESS3-HS-5 Analyze geoscience data and the results from global climate models to make an evidence-based forecast of the current rate of global or regional climate change and associated future impacts to Earth systems.	CCC-ESS3-HS-5 Predict environmental change based on current climate data.	Data and evidence forecast the current and future rates of global or regional change that impact Earth systems.
Earth Science	Earth and Space Sciences	ESS3-HS-6 Use a computational representation to illustrate the relationships among Earth's systems and how those relationships are being modified due to human activity.	CCC-ESS3-HS-6 Use a model to explain the influence of two or more human activities on Earth's systems.	Illustrate the relationships among Earth's systems and how those relationships are influenced due to human activity.
Physical Science	Physical Sciences (Chemistry)	PSC1-HS-1 Develop models to describe the atomic composition of simple molecules and extended structures.	CCC-PSC1-HS-1 Use a model to show how atoms combine to form simple molecules (O_2) or complex molecules (NaCl or CO_2).	Matter is made up of single and complex molecules, and within molecules there are atoms.

Science Domain	Category	Idaho General Education Performance Standard	Idaho Core Content Connector	Summary of Supporting Content
Physical Science	Physical Sciences (Chemistry)	PSC2-HS-3 Apply scientific principles and evidence to provide an explanation about the effects of changing the temperature or concentration of the reacting particles on the rate at which a reaction occurs.	CCC-PSC2-HS-3 Identify increasing the amount of reactants or increasing the temperature as ways to speed up a chemical reaction.	Chemical reactions can be sped up by increasing the amount of reactants or by increasing the temperature.
Physical Science	Physical Sciences (Chemistry)	PSC2-HS-4 Use mathematical representations to support the claim that atoms, and therefore mass, are conserved during a chemical reaction.	CCC-PSC2-HS-4 Recognize that when chemicals change, new material is formed after the reaction with equivalent mass/atoms before and after.	When substances change, mass is conserved (i.e., the masses before and after the reaction are present in different forms).
Physical Science	Physical Sciences (Physics)	PSP1-HS-3 Apply scientific and engineering ideas to design, evaluate, and refine a device that minimizes the force on a macroscopic object during a collision.	CCC-PSP1-HS-3 Use models to predict how impact is minimized when protective components are included.	When objects collide, they exert forces on each other, which affects their motion. Some objects minimize force (e.g., bumper on a car, helmet on a football player.)
Physical Science	Physical Sciences (Physics)	PSP2-HS-5 Develop and use a model of two objects interacting through electric or magnetic fields to illustrate the forces between objects and the changes in energy of the objects due to the interaction.	CCC-PSP2-HS-5 Model magnetic behavior based on force (e.g., stronger magnets versus weaker magnets; number of paper clips one magnet can hold versus another.)	When two objects interact in a magnetic field, forces between the objects change due to the interaction.

Science Domain	Category	Idaho General Education Performance Standard	Idaho Core Content Connector	Summary of Supporting Content
Physical Science	Physical Sciences (Physics)	PSP3-HS-1 Use mathematical representations to support a claim regarding relationships among the frequency, wavelength, and speed of waves traveling in various media.	CCC-PSP3-HS-1 Compare wave diagrams to identify differences in frequency, wavelength, and amplitude through media.	Mechanical waves (water, sound, waves in a rope at the gym) have repeating patterns (including amplitude, frequency, wavelength) that are impacted by the media (e.g., air, water) through which they travel.
Physical Science	Waves	PSP3-HS-2 Evaluate questions about the advantages of using digital transmission and storage of information.	CCC-PSP3-HS-2 Identify an advantage or disadvantage of a specific digital information technology.	Technological advances have improved our ability to store and transmit information. There are advantages and disadvantages to digital transmission and storage.