

Instructional Support for the Idaho State Science Content and Performance Standards: First Grade

<u>Content Domain</u>	<u>Performance Standard</u>	<u>Supporting Content</u>	<u>Science and Engineering Practice</u>	<u>Cross Cutting Concept</u>
Physical Sciences: Waves	PS1-1-1. Plan and conduct investigations to provide evidence that vibrating materials can make sound and that sound can make materials vibrate.	<p>Sound and Vibration Sound can make matter vibrate, and vibrating matter can make sound.</p> <ul style="list-style-type: none"> Examples of vibrating materials that make sound could include tuning forks and plucking a stretched string. Examples of how sound can make matter vibrate could include holding a piece of paper near a speaker making sound and holding an object near a vibrating tuning fork. 	<p>Planning and Carrying Out Investigations</p> <ul style="list-style-type: none"> Identify and describe the relationship between vibrating materials and sound. Plan and conduct investigations collaboratively to produce and record observations about sounds produced by vibrating materials, and the vibrations of materials that are produced by sound. Collaboratively collect and record observations according to the plan. 	<p>Cause and Effect</p> <ul style="list-style-type: none"> Simple tests can be designed to gather evidence to support or refute student ideas about causes.
	PS1-1-2. Make observations to construct an evidence-based account that objects in darkness can be seen only when illuminated.	<p>Properties of Light Objects can be seen if light is available to illuminate them or if they give off their own light.</p> <ul style="list-style-type: none"> Examples of observations could include those made in a completely dark room, a pinhole box, and a video of a cave explorer with a flashlight. Illumination could be from an external light source or by an object giving off its own light. 	<p>Constructing Explanations and Designing Solutions</p> <ul style="list-style-type: none"> Make observations about objects in a lit space, objects in a dark space with and without illumination, and object in a dark space that produce their own light. Logically connect the evidence to explain the phenomenon that objects can be seen in the dark if they are illuminated or if they produce their own light. 	<p>Cause and Effect</p> <ul style="list-style-type: none"> Simple tests can be designed to gather evidence to support or refute student ideas about causes.
	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.	<p>Long Distance Communication Some materials allow light to pass through them, others allow only some light through, and others block all the light and create a dark shadow on any surface beyond them, where the light cannot reach. Mirrors can be used to redirect a light beam.</p> <ul style="list-style-type: none"> Examples of materials could include those that are transparent (such as clear plastic), translucent (such as wax paper), opaque (such as cardboard), and reflective (such as a mirror). <p>Limit: Assessment does not include the speed of light.</p>	<p>Planning and Carrying Out Investigations</p> <ul style="list-style-type: none"> Ask what will happen when objects made of different materials (that allow light to pass through them in different ways) are placed in the path of a beam of light. Collaboratively develop an investigation plan to answer the question. Conduct the experiment and make observations. Use the evidence to answer the question. 	<p>Cause and Effect</p> <ul style="list-style-type: none"> Simple tests can be designed to gather evidence to support or refute student ideas about causes.
	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.	<p>Long Distance Communication People use a variety of devices to communicate (send and receive information) over long distances.</p> <ul style="list-style-type: none"> Examples of devices could include a light source to send signals, paper cup and string “telephones,” and a pattern of drum beats. <p>Limit: Assessment does not include technological details for how communication devices work.</p>	<p>Constructing Explanations and Designing Solutions</p> <ul style="list-style-type: none"> Describe a given problem involving people communicating over long distances and how communicating over long distances would be helpful to people. With guidance, describe the scientific information they use to design the solution. With guidance, design and build a device that uses light or sound to solve the given problem. Describe whether or not the designed device meets the expectations of the design solution and provides a solution to the problem of people communicating over a distance. 	<p>Influence of Engineering, Technology, and Science on Society and the Natural World</p> <ul style="list-style-type: none"> People depend on various technologies in their lives; human life would be very different without technology.

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Life Sciences: 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.	Plants and Animals Use External Parts to Survive All organisms have external parts. Different animals use their body parts in different ways to see, hear, grasp objects, protect themselves, move from place to place, and seek, find, and take in food, water and air. Plants also have different parts (roots, stems, leaves, flowers, fruits) that help them survive and grow. Animals have body parts that capture and convey different kinds of information needed for growth and survival. Animals respond to these inputs with behaviors that help them survive. Plants also respond to some external inputs. <ul style="list-style-type: none"> • Examples of human problems that can be solved by mimicking plant or animal solutions could include designing clothing or equipment to protect bicyclists by mimicking turtle shells, acorn shells, and animal scales; stabilizing structures by mimicking animal tails and roots on plants; keeping out intruders by mimicking thorns on branches and animal quills; and, detecting intruders by mimicking eyes and ears. 	Constructing Explanations and Designing Solutions <ul style="list-style-type: none"> • With guidance, use given scientific information about plants and/or animals to design a solution to a human problem that involves growth, survival, capturing and conveying information, or responding to information from the environment. • Create a device using student-suggested materials that provides a solution to the problem. • Describe how the device is expected to solve the human problem and whether the device meets the specific required features. 	Structure and Function <ul style="list-style-type: none"> • The shape and stability of structures of natural and designed objects are related to their function(s). • Every human-made product is designed by applying some knowledge of the natural world and is built using materials derived from the natural world.
	LS1-1-2. Read texts and use media to determine patterns in behavior of parents and offspring that help offspring survive.	Survival of Offspring Adult plants and animals can have young. In many kinds of animals, parents and the offspring themselves engage in behaviors that help the offspring to survive. <ul style="list-style-type: none"> • Examples of patterns of behaviors could include the signals that offspring make (such as crying, cheeping, and other vocalizations) and the responses of the parents (such as feeding, comforting, and protecting the offspring). 	Obtaining, Evaluating, and Communicating Information <ul style="list-style-type: none"> • Use grade-appropriate books and other reliable media to obtain information about how both plants and animals help their offspring survive. • Evaluate information to determine and describe patterns in what animal parents and their offspring do to help ensure survival. 	Patterns <ul style="list-style-type: none"> • Patterns in the natural and human designed world can be observed, used to describe phenomena, and used as evidence.
	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.	Life Cycle Reproduction is essential to the continued existence of every kind of organism. Plants and animals have unique and diverse life cycles. <ul style="list-style-type: none"> • Examples could include patterns of change organisms go through during their lives. Limit: Assessment of plant life cycles is limited to those of flowering plants. Assessment does not include details of human reproduction.	Developing and Using Models <ul style="list-style-type: none"> • Use models to describe how living things have common stages within diverse and unique life cycles. 	Patterns <ul style="list-style-type: none"> • Patterns in the natural and human designed world can be observed, used to describe phenomena, and used as evidence.
Life Sciences: 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 are Alike and Different from Parents Young animals are very much, but not exactly like, their parents. Plants also are very much, but not exactly, like their parents. Individuals of the same kind of plant or animal are recognizable as similar but can also vary in many ways. <ul style="list-style-type: none"> • Examples of patterns could include features plants or animals share. Examples of observations could include leaves from the same kind of plant are the same shape but can differ in size; and, a particular breed of dog looks like its parents but is not exactly the same. Limit: Assessment does not include inheritance or animals that undergo metamorphosis or hybrids.	Constructing Explanations and Designing Solutions <ul style="list-style-type: none"> • Use evidence and reasoning to construct an account about differences between different types of plants and animals. • Use evidence and reasoning to construct an account about how young and adult plants and animals of the same type have similar, but not identical features. • Use evidence and reasoning to construct an account about how individuals of the same type of animal or plant are recognizable as similar, but they can also vary in many ways. 	Patterns <ul style="list-style-type: none"> • Patterns in the natural and human designed world can be observed, used to describe phenomena, and used as evidence.

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Earth and Space Sciences: Earth's Place in the Universe	ESS1-1-1. Use observations of the sun, moon, and stars to describe patterns that can be predicted.	Patterns of the Sun, Moon, and Stars Patterns of the motion of the sun, moon, and stars in the sky can be observed, described, and predicted. <ul style="list-style-type: none"> Examples of patterns could include that the sun and moon appear to rise in one part of the sky, move across the sky, and set; and stars other than our sun are visible at night but not during the day. Limit: Assessment of star patterns is limited to stars being seen at night and not during the day.	Analyzing and Interpreting Data <ul style="list-style-type: none"> Use graphical displays to identify and describe patterns of the sun, moon, and stars. Patterns include that stars (except the sun) are seen at night, the sun is at different positions in the sky at different times of the day, and the moon can be seen in different positions during the day and at night. Use patterns to provide evidence that future appearances of objects in the sky can be predicted. 	Patterns <ul style="list-style-type: none"> Patterns in the natural world can be observed, used to describe phenomena, and used as evidence.
	ESS1-1-2. Make observations at different times of year to relate the amount of daylight to the time of year.	Seasonal Patterns Seasonal patterns of sunrise and sunset can be observed, described, and predicted. Seasons are created by weather patterns for a particular region and time. Local patterns create 4 distinct seasons. <ul style="list-style-type: none"> Examples emphasize relative comparisons of the amount of daylight in the winter to the amount in the spring or fall. Limit: Assessment is limited to relative amounts of daylight, not quantifying the hours or time of daylight.	Planning and Carrying Out Investigations <ul style="list-style-type: none"> Identify and describe the relationship between the amount of daylight and the time of year. Observe (first hand or from media) the relative length of the day throughout the seasons. Describe how these observations reveal patterns between the amount of daylight and the time of year. 	Patterns <ul style="list-style-type: none"> Patterns in the natural world can be observed, used to describe phenomena, and used as evidence.