

LSS 1st Grade Draft - 1-PS4-1

1-PS4-1 Waves and Their Applications in Technologies for Information Transfer	
Performance Expectation	Plan and conduct investigations to provide evidence that vibrating materials can make sound and that sound can make materials vibrate.
Clarification Statement	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.
Science & Engineering Practices	1. Asking questions (for science) and defining problems (for engineering). 2. Developing and using models 3. Planning and carrying out investigations to answer questions or test solutions to problems in K-2 build on prior experiences and progresses to simple investigations, based on fair tests, which provide data to support explanations or design solutions. <input type="checkbox"/> Plan and conduct investigations collaboratively to produce data to serve as the basis for evidence to answer a question. 4. Analyzing and interpreting data 5. Using mathematics and computational thinking 6. Constructing explanations (for science) and designing solutions (for engineering) 7. Engaging in argument from evidence 8. Obtaining, evaluating, and communicating information
Disciplinary Core Ideas	PS4.A Wave Properties -Sound can make matter vibrate, and vibrating matter can make sound.
Crosscutting Concepts	Cause and Effect -Simple tests can be designed to gather evidence to support or refute student ideas about causes.

Note: All Science and Engineering Practices have been included on every standards document. The one in black is the focus practice for the standard. The ones in grey should be incorporated into instruction when possible.

LSS 1st Grade Draft - 1-PS4-2

1-PS4-2 Waves and Their Applications in Technologies for Information Transfer	
Performance Expectation	Make observations to construct an evidence-based account that objects can be seen only when illuminated.
Clarification Statement	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. This can be explored with light tables, 3-way mirrors, overhead projectors and flashlights.
Science & Engineering Practices	<ol style="list-style-type: none"> 1. Asking questions (for science) and defining problems (for engineering). 2. Developing and using models 3. Planning and carrying out investigations 4. Analyzing and interpreting data 5. Using mathematics and computational thinking 6. Constructing explanations (for science) and designing solutions (for engineering): Constructing explanations and designing solutions in K-2 builds on prior experiences and progresses to the use of evidence and ideas in constructing evidence-based accounts of natural phenomena and designing solutions. <ul style="list-style-type: none"> <input type="checkbox"/> Make observations to construct an evidence-based account for natural phenomena. 7. Engaging in argument from evidence 8. Obtaining, evaluating, and communicating information
Disciplinary Core Ideas	PS4.B Electromagnetic Radiation -Objects can be seen if light is available to illuminate them or if they give off their own light.
Crosscutting Concepts	Cause and Effect -Simple tests can be designed to gather evidence to support or refute student ideas about causes

LSS 1st Grade Draft - 1-PS4-3

1-PS4-3 Waves and Their Applications in Technologies for Information Transfer	
Performance Expectation	Plan and conduct an investigation to determine the effect of placing objects made with different materials in the path of a beam of light.
Clarification Statement	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).
Science & Engineering Practices	<ul style="list-style-type: none"> 1. Asking questions (for science) and defining problems (for engineering). 2. Developing and using models 3. Planning and carrying out investigations to answer questions or test solutions to problems in K-2 builds on prior experiences and progresses to simple investigations, based on fair tests, which provide data to support explanations or design solutions. <ul style="list-style-type: none"> <input type="checkbox"/> Plan and conduct investigations collaboratively to produce data to serve as the basis for evidence to answer a question. 4. Analyzing and interpreting data 5. Using mathematics and computational thinking 6. Constructing explanations (for science) and designing solutions (for engineering) 7. Engaging in argument from evidence 8. Obtaining, evaluating, and communicating information
Disciplinary Core Ideas	<p>PS4.B Electromagnetic Radiation</p> <p>-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>
Crosscutting Concepts	<p>Cause and Effect</p> <p>-Simple tests can be designed to gather evidence to support or refute student ideas about causes.</p>

LSS 1st Grade Draft - 1-PS4-4

1-PS4-4 Waves and Their Applications in Technologies for Information Transfer	
Performance Expectation	Use tools and materials to design and build a device that uses light or sound to solve the problem of communicating over a distance.
Clarification Statement	Examples of devices could include a light source to send signals, paper cup and string "telephones," and a pattern of drumbeats.
Science & Engineering Practices	<ol style="list-style-type: none"> 1. Asking questions (for science) and defining problems (for engineering). 2. Developing and using models 3. Planning and carrying out investigations 4. Analyzing and interpreting data 5. Using mathematics and computational thinking 6. Constructing explanations (for science) and designing solutions (for engineering): Constructing explanations and designing solutions in K-2 builds on prior experiences and progresses to the use of evidence and ideas in constructing evidence-based accounts of natural phenomena and designing solutions. <ul style="list-style-type: none"> <input type="checkbox"/> Use tools and materials provided to design a device that solves a specific problem. 7. Engaging in argument from evidence 8. Obtaining, evaluating, and communicating information
Disciplinary Core Ideas	<p>PS4.C Information Technologies and Instrumentation -People also use a variety of devices to communicate (send and receive information) over long distance</p> <p>ETS1.A Developing Possible Solutions -A situation that people want to change or create can be approached as a problem to be solved through engineering. Such problems may have many acceptable solutions. -Asking questions, making observations, and gathering information are helpful in thinking about problems. -Before beginning to design a solution, it is important to clearly understand the problem.</p>
Crosscutting Concepts	N/A

LSS 1st Grade Draft - 1-LS1-1

1-LS1-1 Structure, Function, and Information Processes	
Performance Expectation	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.
Clarification Statement	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.
Science & Engineering Practices	<ol style="list-style-type: none"> 1. Asking questions (for science) and defining problems (for engineering) 2. Developing and using models 3. Planning and carrying out investigations 4. Analyzing and interpreting data 5. Using mathematics and computational thinking 6. Constructing explanations (for science) and designing solutions (for engineering): Constructing explanations and designing solutions in K-2 builds on prior experiences and progresses to the use of evidence and ideas in constructing evidence-based accounts of natural phenomena and designing solutions. <ul style="list-style-type: none"> <input type="checkbox"/> Use tools and materials provided to design a device that solves a specific problem. 7. Engaging in argument from evidence 8. Obtaining, evaluating, and communicating information
Disciplinary Core Ideas	<p>LS1.A Structure and Function -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.</p> <p>LS1.D Information Processing -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.</p> <p>ETS1.B Developing Possible Solutions -Designs can be conveyed through sketches, drawings, or physical models. These representations are useful in communicating ideas for a problem's solutions to other people.</p> <p>ETS1.C Optimizing the Design Solution -Because there is always more than one possible solution to a problem, it is useful to compare and test designs.</p>
Crosscutting Concepts	<p>Structure and Function -The shape and stability of structures of natural and designed objects are related to their function(s).</p>

LSS 1st Grade Draft - 1-LS1-2

1-LS1-2 Structure, Function, and Information Processes	
Performance Expectation	Read texts and use media to determine patterns in behavior of parents and offspring that help offspring survive.
Clarification Statement	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).
Science & Engineering Practices	<ol style="list-style-type: none"> 1. Asking questions (for science) and defining problems (for engineering). 2. Developing and using models 3. Planning and carrying out investigations 4. Analyzing and interpreting data 5. Using mathematics and computational thinking 6. Constructing explanations (for science) and designing solutions (for engineering) 7. Engaging in argument from evidence 8. Obtaining, evaluating, and communicating information: Obtaining, evaluating, and communicating information in K-2 builds on prior experiences and uses observations and texts to communicate new information. <input type="checkbox"/> Read grade-appropriate texts and use media to obtain scientific information to determine patterns in the natural world
Disciplinary Core Ideas	LS1.B Growth and Development of Organisms -Adult plants and animals can have offspring. In many kinds of animals, parents and the offspring themselves engage in behaviors that help the offspring to survive.
Crosscutting Concepts	Patterns -Patterns in the natural and human-designed world can be observed, used to describe phenomena, and used as evidence.

LSS 1st Grade Draft - 1-LS3-1

1-LS3-1 Structure, Function, and Information Processes	
Performance Expectation	Make observations to construct an evidence-based account that young plants and animals are like, but not exactly like, their parents.
Clarification Statement	Examples of patterns could include features plants or animals share. Examples of observations could include: leaves from the same kind of plant are similar in shape but can differ in size, and a particular breed of dog looks like its parents but is not exactly the same.
Science & Engineering Practices	<ol style="list-style-type: none"> 1. Asking questions (for science) and defining problems (for engineering). 2. Developing and using models 3. Planning and carrying out investigations 4. Analyzing and interpreting data 5. Using mathematics and computational thinking 6. Constructing explanations (for science) and designing solutions (for engineering): Constructing explanations and designing solutions in K-2 builds on prior experiences and progresses to the use of evidence and ideas in constructing evidence-based accounts of natural phenomena and designing solutions. <input type="checkbox"/> Make observations to construct an evidence-based account for natural phenomena. 7. Engaging in argument from evidence 8. Obtaining, evaluating, and communicating information.
Disciplinary Core Ideas	<p>LS3.A Inheritance of Traits -Young animals are very much, but not exactly, like their parents. Plants also are very much, but not exactly, like their parents.</p> <p>LS3.B Variation of Traits -Individuals of the same kind of plant or animal are recognizable as similar but can also vary in many ways.</p>
Crosscutting Concepts	<p>Patterns -Patterns in the natural and human-designed world can be observed, used to describe phenomena, and used as evidence.</p>

LSS 1st Grade Draft - 1-ESS1-1

1-ESS1-1 Earth's Place in the Universe	
Performance Expectation	Use observations of the sun, moon, and stars to describe patterns that can be predicted.
Clarification Statement	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.
Science & Engineering Practices	<ol style="list-style-type: none"> 1. Asking questions (for science) and defining problems (for engineering). 2. Developing and using models 3. Planning and carrying out investigations 4. Analyzing and interpreting data: Analyzing and interpreting data in K-2 builds on prior experiences and progresses to collecting, recording, and sharing observations. <ul style="list-style-type: none"> <input type="checkbox"/> Use observations to describe patterns in the natural world in order to answer scientific questions. 5. Using mathematics and computational thinking 6. Constructing explanations (for science) and designing solutions (for engineering) 7. Engaging in argument from evidence 8. Obtaining, evaluating, and communicating information.
Disciplinary Core Ideas	<p>ESS1.A The Universe and its Stars</p> <p>-Patterns of the motion of the sun, moon, and stars in the sky can be observed, described, and predicted.</p>
Crosscutting Concepts	<p>Patterns</p> <p>-Patterns in the natural and human-designed world can be observed, used to describe phenomena, and used as evidence.</p>

LSS 1st Grade Draft - 1-ESS1-2

1-ESS1-2 Earth's Place in the Universe	
Performance Expectation	Make observations at different times of year to relate the amount of daylight to the time of year.
Clarification Statement	Emphasis is on relative comparisons of the amount of daylight in the winter to the amount in the spring, fall, or summer.
Science & Engineering Practices	<ul style="list-style-type: none"> 1. Asking questions (for science) and defining problems (for engineering). 2. Developing and using models 3. Planning and carrying out investigations: Planning and carrying out investigations to answer questions or test solutions to problems in K-2 build on prior experiences and progresses to simple investigations, based on fair tests, which provide data to support explanations or design solutions. <ul style="list-style-type: none"> <input type="checkbox"/> Make observations to collect data that can be used to make comparisons. 4. Analyzing and interpreting data 5. Using mathematics and computational thinking 6. Constructing explanations (for science) and designing solutions (for engineering) 7. Engaging in argument from evidence 8. Obtaining, evaluating, and communicating information.
Disciplinary Core Ideas	ESS1.B Earth and the Solar System -Seasonal patterns of sunrise and sunset can be observed, described, and predicted.
Crosscutting Concepts	Patterns -Patterns in the natural and human-designed world can be observed, used to describe phenomena, and used as evidence.

LSS 1st Grade Draft - 1-ESS3-1

1-ESS3-1LA Human Impacts on Earth's Systems	
Performance Expectation	Ask questions about how personal choices impact the environment and design solutions that will reduce the impact of humans on the land, water, air, and/or other living things in the local environment.
Clarification Statement	Examples of human impact on the land could include cutting trees to produce paper and using resources to produce bottles. Examples of solutions could include plans for reusing paper and recycling cans and bottles.
Science & Engineering Practices	<p>1. Asking questions (for science) and defining problems (for engineering): Asking questions and defining problems in 2 builds on prior experiences and progresses to simple descriptive questions that can be tested.</p> <p><input type="checkbox"/> Ask questions based on observations to find more information about the natural or designed world.</p> <p>2. Developing and using models</p> <p>3. Planning and carrying out investigations</p> <p>4. Analyzing and interpreting data</p> <p>5. Using mathematics and computational thinking</p> <p>6. Constructing explanations (for science) and designing solutions (for engineering)</p> <p>7. Engaging in argument from evidence</p> <p>8. Obtaining, evaluating, and communicating information: Obtaining, evaluating, and communicating information in K- builds on prior experiences and uses observations and texts to communicate new information.</p>
Disciplinary Core Ideas	<p>ESS3.C Human Impacts on Earth's Systems -Things that people do to live comfortably can affect the world around them; but they can make choices that reduce their impacts on the land, water, air, and other living things.</p> <p>ETS1.B Developing Possible Solutions -Designs can be conveyed through sketches, drawings, or physical models. These representations are useful in communicating ideas for a problem's solution(s) to other people.</p>
Crosscutting Concepts	<p>Cause and Effect -Events have causes that generate observable patterns.</p>