

<p><u>Grade, Subject/Course:</u> 1st Grade Science</p>	
<p><u>Unit:</u> Animal Traits and Survival</p>	<p><u> x </u> Essential <u> </u> Important <u> </u> Compact</p>
<p><u>Big Idea:</u></p> <ul style="list-style-type: none"> ● Organisms have characteristic structures, functions, and behaviors that allow them to grow, reproduce, and die. ● The characteristic structures, functions, and behaviors of organisms change in predictable ways as they progress from birth to old age. ● Offspring resemble, but are not identical to their parents due to traits being passed from one generation to the next via genes. 	
<p><u>PA STEELS (Science, Technology & Engineering, and Environmental Literacy & Sustainability) Standards:</u></p> <p>3.1.1.A. 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.</p> <p>3.1.1.B. Read texts and use media to determine patterns in behavior of parents and offspring that help offspring survive.</p> <p>3.1.1.C. Make observations to construct an evidence-based account that young plants and animals are like, but not exactly like, their parents.</p> <p>3.5.K-2.BB Compare the natural world and human-made world.</p> <p>3.5.K-2.H Explain the needs and wants of individuals and societies.</p>	<p><u>Interdisciplinary Standards (if applicable):</u></p>
<p><u>Essential Questions:</u></p> <ul style="list-style-type: none"> ● How do the structures of organisms enable life’s functions? ● How do organisms grow and develop? ● How are the characteristics of one generation related to the previous generation? 	<p><u>Understandings:</u> Students will know that...</p> <ul style="list-style-type: none"> ● the external characteristics of animals are essential for their survival. ● parents and offspring are similar. ● parents’ behaviors help offspring survive.

<p><u>Knowledge:</u></p> <ul style="list-style-type: none"> • 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. • 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. • 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. • Young animals are very much, but not exactly like, their parents. • Individuals of the same kind of animal are recognizable as similar but can also vary in many ways. 	<p><u>Do/Skills:</u> Students will be able to...</p> <ul style="list-style-type: none"> • observe the traits of adult and baby animals in order to construct an explanation that most young animals are like, but not exactly like their parents. • investigate how different bird beaks are well suited for eating different kinds of food. They explain which beak would help a particular bird survive in a particular environment. • obtain information about the behaviors of animal parents that help their offspring survive. • use observations of animal parents and their offspring to construct an explanation about young plants and animals being similar, but not identical, to their parents.
<p><u>Vocabulary:</u></p> <ul style="list-style-type: none"> • mimic • problem • solution • behavior • observe • offspring • patterns • similar • vary 	<p><u>Core Resources:</u></p> <ul style="list-style-type: none"> • Mystery Science
<p><u>Common Assessment(s):</u></p>	<p><u>Supplemental Resources:</u></p> <ul style="list-style-type: none"> • Brainpop Jr. • Discovery Education • Generation Genius

<p><u>Grade, Subject/Course:</u> 1st Grade Science</p>	
<p><u>Unit:</u> Plant Traits and Survival</p>	<p><u> x </u> Essential <u> </u> Important <u> </u> Compact</p>
<p><u>Big Idea:</u></p> <ul style="list-style-type: none"> ● Organisms have characteristic structures, functions, and behaviors that allow them to grow, reproduce, and die. ● Offspring resemble, but are not identical to, their parents due to traits being passed from one generation to the next via genes. 	
<p><u>PA STEELS (Science, Technology & Engineering, and Environmental Literacy & Sustainability) Standards:</u></p> <p>3.1.1.A. 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.</p> <p>3.1.1.C. Make observations to construct an evidence-based account that young plants and animals are like, but not exactly like, their parents.</p> <p>3.5.K-2.BB Compare the natural world and human-made world.</p>	<p><u>Interdisciplinary Standards (if applicable):</u></p>
<p><u>Essential Questions:</u></p> <ul style="list-style-type: none"> ● How do the structures of organisms enable life’s functions? ● How are the characteristics of one generation related to the previous generation? 	<p><u>Understandings:</u> Students will know...</p> <ul style="list-style-type: none"> ● the different parts of plants. ● how those parts are essential for plant survival.
<p><u>Knowledge:</u></p> <ul style="list-style-type: none"> ● Plants also are very much, but not exactly, like their parents. ● Individuals of the same kind of plant are recognizable as similar but can also vary in many ways. ● 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. 	<p><u>Do/Skills:</u> Students will be able to...</p> <ul style="list-style-type: none"> ● observe seedlings and adult plants and use their observations to identify the pattern that young plants are similar to their parent plants. ● conduct an investigation to compare how the parts of a plant respond to light.

<p><u>Vocabulary:</u></p> <ul style="list-style-type: none">● similar● vary● mimic● problem● solution	<p><u>Core Resources:</u></p> <ul style="list-style-type: none">● Mystery Science
<p><u>Common Assessment(s):</u></p>	<p><u>Supplemental Resources:</u></p> <ul style="list-style-type: none">● Brainpop Jr.● Discovery Education● Generation Genius

<u>Grade, Subject/Course:</u> 1st Grade Science	
<u>Unit:</u> Day Patterns	<u> x </u> Essential <u> </u> Important <u> </u> Compact
<u>Big Idea:</u> <ul style="list-style-type: none"> ● We can infer information about stars based on observations we make from Earth. ● Observations of the sky can be explained by predictable patterns of the movement of Earth, moon, sun and planets. 	
<u>PA STEELS (Science, Technology & Engineering, and Environmental Literacy & Sustainability) Standards:</u> 3.3.1.A. Use observations of the sun, moon, and stars to describe patterns that can be predicted. 3.3.1.B. Make observations at different times of year to relate the amount of daylight to the time of year.	<u>Interdisciplinary Standards (if applicable):</u>
<u>Essential Questions:</u> <ul style="list-style-type: none"> ● What is the universe, and what is Earth’s place in it? ● What is the universe, and what goes on in stars? ● What are the predictable patterns caused by Earth’s movement in the solar system? 	<u>Understandings:</u> Students will know that... <ul style="list-style-type: none"> ● patterns occur throughout the day and seasons because of the sun.
<u>Knowledge:</u> <ul style="list-style-type: none"> ● Patterns of the motion of the sun, moon, and stars in the sky can be observed, described, and predicted. ● Seasonal patterns of sunrise and sunset can be observed, described, and predicted. 	<u>Do/Skills:</u> Students will be able to... <ul style="list-style-type: none"> ● observe how shadows change as time passes, or as the Sun moves across the sky. They analyze how to move a light source to change the shape and direction of shadows, constructing an explanation of what causes a shadow to move. ● conduct an investigation to gather information about how their shadow changes throughout the day. ● develop a Sun Finder, a model of the Sun’s movement across the sky. They use this model to reason about how the Sun can help guide them during the day.

Vocabulary:

- changes
- describe
- moon
- observe
- pattern
- predict
- star
- sun
- system
- sky
- sunrise
- sunset

Core Resources:

- Mystery Science

Common Assessment(s):

Supplemental Resources:

- Brainpop Jr.
- Discovery Education
- Generation Genius

<p><u>Grade, Subject/Course:</u> 1st Grade Science</p>	
<p><u>Unit:</u> Night Patterns</p>	<p><u> x </u> Essential <u> </u> Important <u> </u> Compact</p>
<p><u>Big Idea:</u></p> <ul style="list-style-type: none"> ● We can infer information about stars based on observations we make from Earth. 	
<p><u>PA STEELS (Science, Technology & Engineering, and Environmental Literacy & Sustainability) Standards:</u></p> <p>3.3.1.A. Use observations of the sun, moon, and stars to describe patterns that can be predicted.</p>	<p><u>Interdisciplinary Standards (if applicable):</u></p>
<p><u>Essential Questions:</u></p> <ul style="list-style-type: none"> ● What is the universe, and what is Earth’s place in it? ● What is the universe, and what goes on in stars? 	<p><u>Understandings:</u> Students will know that...</p> <ul style="list-style-type: none"> ● the Moon’s cyclical pattern. ● stars are only visible at night. ● a group of stars can form a constellation.
<p><u>Knowledge:</u></p> <ul style="list-style-type: none"> ● Patterns of the motion of the sun, moon, and stars in the sky can be observed, described, and predicted. 	<p><u>Do/Skills:</u> Students will be able to...</p> <ul style="list-style-type: none"> ● record observations of the Moon’s shape using a series of photos collected over the course of four weeks. Using this information, students discover that the Moon follows a cyclical pattern, which they can use to predict when a full moon will appear. ● develop and use a model of the Big Dipper in the night sky. After conducting a simple investigation, students construct an explanation for why stars are only visible in the night sky. ● observe that groups of stars in the sky form a pattern: constellations. Even though the Big Dipper changes its spot in the sky in different seasons, it always points to the North Star.

Vocabulary:

- Changes
- Describe
- Moon
- Observe
- Pattern
- Predict
- Sun
- Star
- System

Core Resources:

- Mystery Science

Common Assessment(s):

Supplemental Resources:

- Brainpop Jr.
- Discovery Education
- Generation Genius

<p>Grade, Subject/Course: 1st Grade Science</p>	
<p>Unit: Light, Sound, and Communication</p>	<p><u> x </u> Essential <u> </u> Important <u> </u> Compact</p>
<p>Big Idea:</p> <ul style="list-style-type: none"> ● Waves are repeating patterns of motion that transfer energy and information without transferring matter. ● Electromagnetic radiation (e.g., radio, microwaves, light) can be modeled as a wave pattern of changing electric and magnetic fields that interact with matter. ● Useful modern technologies and instruments have been designed based on an understanding of waves and their interactions with matter. 	
<p><u>PA STEELS (Science, Technology & Engineering, and Environmental Literacy & Sustainability) Standards:</u></p> <p>3.2.1.A. Plan and conduct investigations to provide evidence that vibrating materials can make sound and that sound can make materials vibrate.</p> <p>3.2.1.B. Make observations to construct an evidence-based account that objects can be seen only when illuminated.</p> <p>3.2.1.C. Plan and conduct an investigation to determine the effect of placing objects made with different materials in the path of a beam of light.</p> <p>3.2.1.D. 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> <p>3.5.K-2.BB Technology and Engineering Compare the natural world and the human-made world.</p>	<p><u>Interdisciplinary Standards (if applicable):</u></p>
<p><u>Essential Questions:</u></p> <ul style="list-style-type: none"> ● What are the characteristic properties and behaviors of waves? ● What is light? ● How can one explain the varied effects that involve light? ● What other forms of electromagnetic radiation are there? ● How are instruments that transmit and detect waves used to extend human senses? 	<p><u>Understandings:</u> Students will know that...</p> <ul style="list-style-type: none"> ● materials vibrate. ● vibrating materials can make sounds. ● simple devices can be created that allow them to communicate across a distance.

<p><u>Knowledge:</u></p> <ul style="list-style-type: none"> ● Sound can make matter vibrate, and vibrating matter can make sound. ● Objects can be seen if light is available to illuminate them or if they give off their own light. ● 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. ● People also use a variety of devices to communicate (send and receive information) over long distances. 	<p><u>Do/Skills:</u> Students will be able to...</p> <ul style="list-style-type: none"> ● explore how to make different sounds with everyday objects. They construct an explanation that objects vibrate when they make a sound, and if the vibration stops, the sound stops. ● create different sound makers and construct an explanation about where the vibrations are happening in each sound experiment. ● investigate the properties of different materials that they can and cannot see through. ● look inside a completely dark box to determine if they can see the shape of the object inside. They allow more light into the box to illuminate the object and allow them to see it. Students use their observations to explain that objects need light to be seen. ● students are presented with the problem that they need to send a message at night, without using noise. They design a solution to create a color-coded message system and communicate with light signals. ● obtain information about light and sound signals. They analyze different sounds with eyes closed to determine which type of sound they hear.
<p><u>Vocabulary:</u></p> <ul style="list-style-type: none"> ● energy ● investigation ● material ● sound ● vibration ● Waves ● Illuminate ● light ● light beam ● reflection ● mirror ● communicate ● distance ● sound 	<p><u>Core Resources:</u></p> <ul style="list-style-type: none"> ● Mystery Science

Common Assessment(s):

Supplemental Resources:

- Brainpop Jr.
- Discovery Education
- Generation Genius