

Embedded Inquiry

Conceptual Strand - *Understandings about scientific inquiry and the ability to conduct inquiry are essential for living in the 21st century.*

Guiding Question - *What tools, skills, knowledge, and dispositions are needed to conduct scientific inquiry?*

Grade Level Expectations (GLE)	Checks For Understanding (CFU)	State Performance Indicator (SPI)	Next Generation Science Standards (NGSS)
<p>GLE 0207.Inq.1</p> <p>Observe the world of familiar objects using the senses and tools.</p>	<p>✓0207.Inq.1</p> <p>Use senses and simple tools to make observations.</p>	<p>Not addressed</p>	<p>Constructing Explanations and Designing Solutions</p> <ul style="list-style-type: none"> 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. Make observations (firsthand or from media) to construct an evidence-based account for natural phenomena. (2-PS1-3) <p>Engaging in Argument from Evidence</p> <ul style="list-style-type: none"> Engaging in argument from evidence in K–2 builds on prior experiences and progresses to comparing ideas and representations about the natural and designed world(s). Construct an argument with evidence to support a claim. (2-PS1-4) <p>Connections to Nature of Science</p> <p>Scientific Knowledge is Based on Empirical Evidence</p> <ul style="list-style-type: none"> Scientists look for patterns and order when making observations about the world. (2-LS4-1)
<p>GLE 0207.Inq.2</p> <p>Ask questions, make logical predictions, plan investigations, and represent data.</p>	<p>✓0207.Inq.2</p> <p>Communicate interest in simple phenomena and plan for simple investigations.</p> <p>✓0207.Inq.3</p> <p>Communicate understanding of simple data using age-appropriate vocabulary.</p> <p>✓0207.Inq.4</p> <p>Collect, discuss, and communicate findings from a variety of investigations.</p>	<p>Not addressed</p>	<p>Planning and Carrying Out Investigations</p> <ul style="list-style-type: none"> 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. Plan and conduct an investigation collaboratively to produce data to serve as the basis for evidence to answer a question. (2-PS1-1) <p>Obtaining, Evaluating, and Communicating Information</p> <ul style="list-style-type: none"> Obtaining, evaluating, and communicating information in K–2 builds on prior experiences and uses observations and texts to communicate new information. Obtain information using various texts, text features (e.g., headings, tables of contents, glossaries, electronic menus, icons), and other media that will be useful in answering a scientific question. (2-ESS2-3)
<p>GLE 0207.Inq.3</p> <p>Explain the data from an investigation.</p>	<p>✓0207.Inq.2</p> <p>Communicate interest in simple phenomena and plan for simple investigations.</p> <p>✓0207.Inq.3</p> <p>Communicate understanding of simple data using age-appropriate vocabulary.</p> <p>✓0207.Inq.4</p> <p>Collect, discuss, and communicate findings from a variety of investigations.</p>	<p>Not addressed</p>	<p>Analyzing and Interpreting Data</p> <ul style="list-style-type: none"> Analyzing data in K–2 builds on prior experiences and progresses to collecting, recording, and sharing observations. Analyze data from tests of an object or tool to determine if it works as intended. (2-PS1-2)

Embedded Technology & Engineering

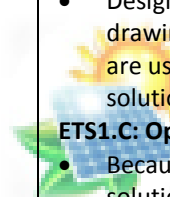
Conceptual Strand - Society benefits when engineers apply scientific discoveries to design materials and processes that develop into enabling technologies.

Guiding Question - How do science concepts, engineering skills, and applications of technology improve the quality of life?

Grade Level Expectations (GLE)	Checks For Understanding (CFU)	State Performance Indicator (SPI)	Next Generation Science Standards (NGSS)
<p>GLE 0207.T/E.1</p> <p>Recognize that both natural materials and human-made tools have specific characteristics that determine their uses.</p>	<p>✓0207.T/E.1</p> <p>Explain how simple tools are used to extend the senses, make life easier, and solve everyday problems.</p>	<p>Not addressed</p>	<p>Influence of Engineering, Technology, and Science on Society and the Natural World</p> <ul style="list-style-type: none"> Developing and using technology has impacts on the natural world. (2-ESS2-1)
<p>GLE 0207.T/E.2</p> <p>Apply engineering design and creative thinking to solve practical problems.</p>	<p>✓0207.T/E.2</p> <p>Invent designs for simple products.</p> <p>✓0207.T/E.3</p> <p>Use tools to measure materials and construct simple products.</p>	<p>Not addressed</p>	<p>Constructing Explanations and Designing Solutions</p> <ul style="list-style-type: none"> 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. Make observations (firsthand or from media) to construct an evidence-based account for natural phenomena. (2-ESS1-1) <p>ETS1.C: Optimizing the Design Solution</p> <ul style="list-style-type: none"> Because there is always more than one possible solution to a problem, it is useful to compare and test designs.(secondary to 2-ESS2-1) <p>K-2-ETS1-1. Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.</p> <p>K-2-ETS1-2. Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.</p> <p>K-2-ETS1-3. Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs.</p> <p>Asking Questions and Defining Problems</p> <ul style="list-style-type: none"> Asking questions and defining problems in K–2 builds on prior experiences and progresses to simple descriptive questions.

			<ul style="list-style-type: none"> • Ask questions based on observations to find more information about the natural and/or designed world(s). (K-2-ETS1-1) • Define a simple problem that can be solved through the development of a new or improved object or tool. (K-2- ETS1-1) <p>ETS1.A: Defining and Delimiting Engineering Problems</p> <ul style="list-style-type: none"> • A situation that people want to change or create can be approached as a problem to be solved through engineering. (K-2-ETS1-1) • Asking questions, making observations, and gathering information are helpful in thinking about problems. (K-2-ETS1-1) • Before beginning to design a solution, it is important to clearly understand the problem. (K-2-ETS1-1) <p>ETS1.B: Developing Possible Solutions</p> <ul style="list-style-type: none"> • 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. (K-2-ETS1-2) <p>ETS1.C: Optimizing the Design Solution</p> <ul style="list-style-type: none"> • Because there is always more than one possible solution to a problem, it is useful to compare and test designs. (K-2-ETS1-3)
<p>Not addressed</p>	<p>Not addressed</p>	<p>Not addressed</p>	<p>Developing and Using Models</p> <ul style="list-style-type: none"> • Modeling in K–2 builds on prior experiences and progresses to include using and developing models (i.e., diagram, drawing, physical replica, diorama, dramatization, or storyboard) that represent concrete events or design solutions. • Develop a simple model based on evidence to represent a proposed object or tool. (2-LS2-2) <p>ETS1.B: Developing Possible Solutions</p> <ul style="list-style-type: none"> • 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.(secondary to 2-LS2-2)

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Standard 1 – Cells

Conceptual Strand 1 - All living things are made of cells that perform functions necessary for life.

Guiding Question 1 - How are plant and animals cells organized to carry on the processes of life?

Grade Level Expectations (GLE)	Checks For Understanding (CFU)	State Performance Indicator (SPI)	Next Generation Science Standards (NGSS)
GLE 0207.1.1 Recognize that plants and animals are made up of smaller parts and use food, water, and air to survive.	✓0207.1.1 Design a new living thing and explain how it would acquire food, water, and air.	Not addressed	Not addressed

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Standard 2 – Interdependence

Conceptual Strand 2 - All life is interdependent and interacts with the environment.

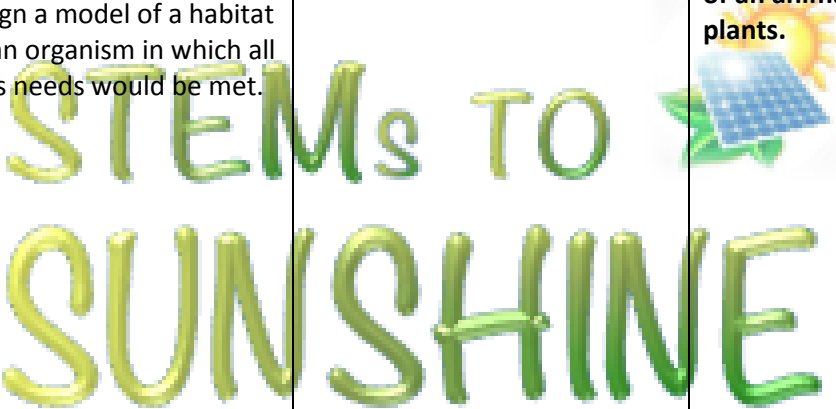
Guiding Question 2 - How do living things interact with one another and with the non-living elements of their environment?

Grade Level Expectations (GLE)	Checks For Understanding (CFU)	State Performance Indicator (SPI)	Next Generation Science Standards (NGSS)
<p>GLE 0207.2.1</p> <p>Investigate the habitats of different kinds of local plants and animals.</p>	<p>✓0207.2.1</p> <p>Draw or use pictures of a local environment to label the plants and animals.</p>	<p>Not addressed</p>	<p>2-LS4-1.</p> <p>Make observations of plants and animals to compare the diversity of life in different habitats.</p> <p>LS4.D: Biodiversity and Humans</p> <ul style="list-style-type: none"> There are many different kinds of living things in any area, and they exist in different places on land and in water. (2-LS4-1)
<p>GLE 0207.2.2</p> <p>Investigate living things found in different places.</p>	<p>✓0207.2.2</p> <p>Investigate ways that plants and animals depend on each other.</p>	<p>Not addressed</p>	<p>2-LS4-1.</p> <p>Make observations of plants and animals to compare the diversity of life in different habitats.</p> <p>LS4.D: Biodiversity and Humans</p> <p>There are many different kinds of living things in any area, and they exist in different places on land and in water. (2-LS4-1)</p>
<p>GLE 0207.2.3</p> <p>Identify basic ways that plants and animals depend on each other.</p>	<p>✓0207.2.3</p> <p>Construct a flow chart that demonstrates how plants, animals, and the environment interact to provide basic life requirements.</p>	<p>Not addressed</p>	<p>2-LS2-1.</p> <p>Plan and conduct an investigation to determine if plants need sunlight and water to grow.</p> <p>2-LS2-2.</p> <p>Develop a simple model that mimics the function of an animal in dispersing seeds or pollinating plants.</p> <p>LS2.A: Interdependent Relationships in Ecosystems</p> <ul style="list-style-type: none"> Plants depend on water and light to grow. (2-LS2-1) Plants depend on animals for pollination or to move their seeds around. (2-LS2-2)

Standard 3 – Flow of Matter & Energy

Conceptual Strand 3 – *Matter and energy flow through the biosphere.*

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Grade Level Expectations (GLE)	Checks For Understanding (CFU)	State Performance Indicator (SPI)	Next Generation Science Standards (NGSS)
<p>GLE 0207.3.1</p> <p>Recognize that animals eat plants or other animals for food.</p>	<p>✓0207.3.1 Describe the habitat of a particular organism based on its food, water, and air requirements.</p> <p>✓0207.3.2 Design a model of a habitat for an organism in which all of its needs would be met.</p>	<p>Not addressed</p>	<p>2-LS2-1. Plan and conduct an investigation to determine if plants need sunlight and water to grow.</p> <p>2-LS2-2. Develop a simple model that mimics the function of an animal in dispersing seeds or pollinating plants.</p> 

Standard 4 – Heredity

Conceptual Strand 4 – *Plants and animals reproduce and transmit heredity information.*

Guiding Question 4 – *What are the principal mechanisms by which living things reproduce and transmit information between parents and offspring?*

Grade Level Expectations (GLE)	Checks For Understanding (CFU)	State Performance Indicator (SPI)	Next Generation Science Standards (NGSS)
<p>GLE 0207.4.1</p> <p>Compare the life cycles of various organisms.</p>	<p>✓0207.4.1 Compare and contrast the life cycles of different organisms such as a chicken, butterfly, meal worm, frog, or human.</p> <p>✓0207.4.2 Sequence a collection of pictures or illustrations into the correct stages of an organism's life cycle.</p>	<p>Not addressed</p>	<p>Not addressed</p>
<p>GLE 0207.4.2</p> <p>Realize that parents pass along physical characteristics to their offspring.</p>	<p>✓0207.4.3 Look for similarities in pictures of members from the same human family.</p> <p>✓0207.4.4 Create a graphic organizer that compares observable traits that offspring share with their parents.</p>	<p>Not addressed</p>	<p>Not addressed</p>

Standard 5 – Biodiversity & Change

Conceptual Strand 5 – *A rich diversity of complex organisms have developed in response to a continually changing environment.*

Guiding Question 5 – *How does natural selection explain how organisms have changed over time?*

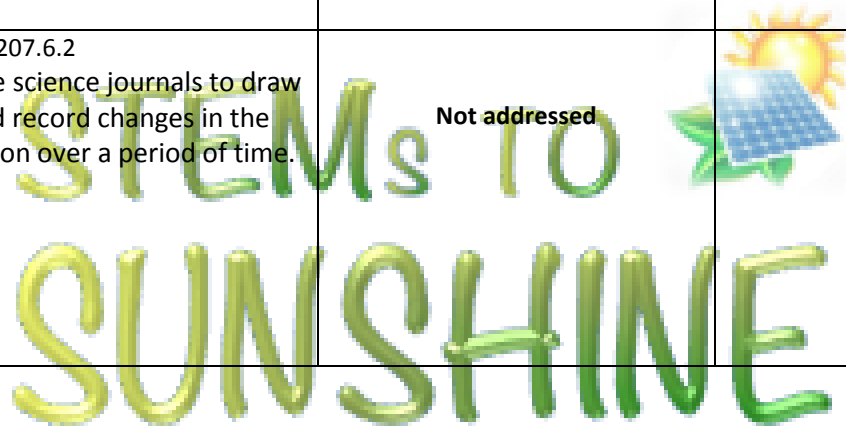
Grade Level Expectations (GLE)	Checks For Understanding (CFU)	State Performance Indicator (SPI)	Next Generation Science Standards (NGSS)
<p>GLE 0207.5.1</p> <p>Investigate the relationship between an animal's characteristics and the features of the environment where it lives.</p>	<p>✓0207.5.1 Compare and contrast the characteristics of organisms from two different environments.</p> <p>✓0207.5.2 Infer the characteristics needed by an organism to survive in a particular environment.</p>	<p>Not addressed</p>	<p>Structure and Function</p> <ul style="list-style-type: none"> The shape and stability of structures of natural and designed objects are related to their function(s). (2-LS2-2)
<p>GLE 0207.5.2</p> <p>Draw conclusions from fossils about organisms that lived in the past.</p>	<p>✓0207.5.3 Observe fossils or pictures of fossils and make inferences about the organisms from which they originated.</p> <p>✓0207.5.4 Compare pictures of fossils with animals or plants that are living today.</p>	<p>Not addressed</p>	<p>2-ESS1-1. Make observations from media to construct an evidence-based account that Earth events can occur quickly or slowly.</p> <p>ESS1.C: The History of Planet Earth</p> <ul style="list-style-type: none"> Some events happen very quickly; others occur very slowly, over a time period much longer than one can observe. (2-ESS1-1) <p>Stability and Change</p> <ul style="list-style-type: none"> Things may change slowly or rapidly. (2-ESS1-1)

Standard 6 – The Universe

Conceptual Strand 6 – *The cosmos is vast and explored well enough to know basic structures and operational principals.*

Guiding Question 6 – *What big ideas guide human understanding about the origin and structure of the universe, Earth’s place in the cosmos, and observable motions and patterns in the sky?*

Grade Level Expectations (GLE)	Checks For Understanding (CFU)	State Performance Indicator (SPI)	Next Generation Science Standards (NGSS)
GLE 0207.6.1 Realize that the sun is our nearest star and that its position in the sky appears to change.	✓0207.6.1 Observe and collect data on the sun’s position at different times of the day.	Not addressed	Not addressed
GLE 0207.6.2 Make observations of changes in the moon’s appearance over time.	✓0207.6.2 Use science journals to draw and record changes in the moon over a period of time.	Not addressed	Not addressed



Standard 7 – The Earth

Conceptual Strand 7 - Major geologic events that occur over eons or brief moments in time continually shape and reshape the surface of the Earth, resulting in continuous global change.

Guiding Question 7 - How is the earth affected by long-term and short term geological cycles and the influence of man?

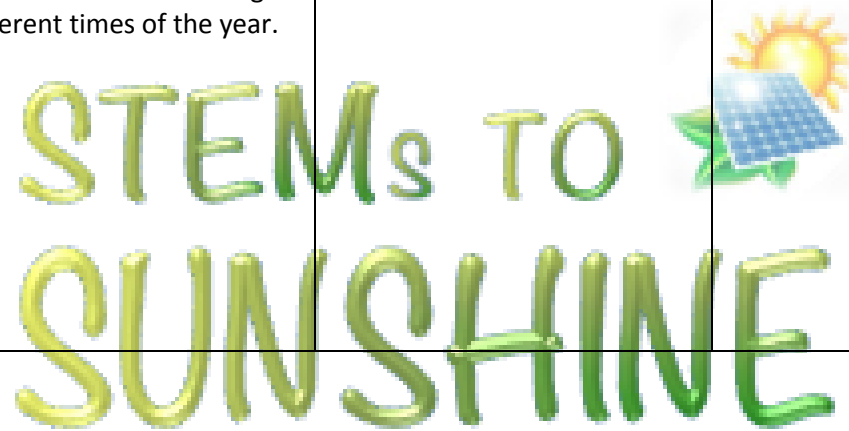
Grade Level Expectations (GLE)	Checks For Understanding (CFU)	State Performance Indicator (SPI)	Next Generation Science Standards (NGSS)
<p>GLE 0207.7.1</p> <p>Compare and record the components of a variety of soil types.</p>	<p>✓0207.7.1</p> <p>Sort, analyze, and compare a variety of soil types.</p>	<p>Not addressed</p>	<p>2-ESS2-1. Compare multiple solutions designed to slow or prevent wind or water from changing the shape of the land.</p> <p>2-ESS2-2. Develop a model to represent the shapes and kinds of land and bodies of water in an area.</p> <p>2-ESS2-3. Obtain information to identify where water is found on Earth and that it can be solid or liquid.</p> <p>ESS2.C: The Roles of Water in Earth’s Surface Processes Water is found in the ocean, rivers, lakes, and ponds. Water exists as solid ice and in liquid form. (2-ESS2-3)</p>
<p>GLE 0207.7.2</p> <p>Describe rocks according to their origin, size, shape, texture, and color.</p>	<p>✓0207.7.2</p> <p>Observe rocks of different sizes with a hand lens and describe these materials according to their basic features.</p>	<p>Not addressed</p>	<p>ESS2.A: Earth Materials and Systems Wind and water can change the shape of the land. (2-ESS2-1)</p> <p>ESS2.B: Plate Tectonics and Large-Scale System Interactions Maps show where things are located. One can map the shapes and kinds of land and water in any area. (2-ESS2-2)</p>
<p>GLE 0207.7.3</p> <p>Differentiate between renewable and non-renewable resources.</p>	<p>✓0207.7.3</p> <p>Identify and categorize items in the classroom made from renewable or non-renewable resources.</p> <p>✓0207.7.4</p> <p>Identify simple methods for reusing the earth’s resources.</p>	<p>Not addressed</p>	<p>Connections to Engineering, Technology, and Applications of Science Influence of Engineering, Technology, and Science on Society and the Natural World</p> <ul style="list-style-type: none"> Every human-made product is designed by applying some knowledge of the natural world and is built by using natural materials. (2-PS1-2) <p>2-ESS1-1. Make observations from media to construct an evidence-based account that Earth events can occur quickly or slowly.</p> <p>ESS1.C: The History of Planet Earth</p> <ul style="list-style-type: none"> Some events happen very quickly; others occur very slowly, over a time period much longer than one can observe. (2-ESS1-1) <p>Stability and Change Things may change slowly or rapidly. (2-ESS1-1)</p>

Standard 8 - The Atmosphere

Conceptual Strand 8 - *The earth is surrounded by an active atmosphere and an energy system that controls the distribution life, local weather, climate, and global temperature.*

Guiding Question 8 - *How do the physical characteristics and the chemical makeup of the atmosphere influence surface processes and life on Earth?*

Grade Level Expectations (GLE)	Checks For Understanding (CFU)	State Performance Indicator (SPI)	Next Generation Science Standards (NGSS)
<p>GLE 0207.8.1</p> <p>Associate temperature patterns with seasonal changes.</p>	<p>✓0207.8.1</p> <p>Use records and graphs of seasonal temperature changes to draw conclusions about the weather during different times of the year.</p>	<p style="text-align: center;">Not addressed</p>	<p style="text-align: center;">Not addressed</p>



Standard 9 – Matter

Conceptual Strand 9 - *The composition and structure of matter is known, and it behaves according to principles that are generally understood.*

Guiding Question 9 - *How does the structure of matter influence its physical and chemical behavior?*

Grade Level Expectations (GLE)	Checks For Understanding (CFU)	State Performance Indicator (SPI)	Next Generation Science Standards (NGSS)
<p>GLE 0207.9.1</p> <p>Use tools to observe the physical properties of objects.</p>	<p>✓0207.9.1</p> <p>Use tools such as hand lenses, measurement devices, and simple arm balances to gather data about the physical properties of different objects.</p>	<p>Not addressed</p>	<p>2-PS1-1. Plan and conduct an investigation to describe and classify different kinds of materials by their observable properties.</p> <p>2-PS1-2. Analyze data obtained from testing different materials to determine which materials have the properties that are best suited for an intended purpose.</p> <p>2-PS1-3. 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.</p> <p>PS1.A: Structure and Properties of Matter</p> <ul style="list-style-type: none"> • Different kinds of matter exist and many of them can be either solid or liquid, depending on temperature. Matter can be described and classified by its observable properties. (2-PS1-1) • Different properties are suited to different purposes. (2-PS1-2),(2-PS1-3) • A great variety of objects can be built up from a small set of pieces. (2-PS1-3) <p>Energy and Matter</p> <ul style="list-style-type: none"> • Objects may break into smaller pieces and be put together into larger pieces, or change shapes. (2-PS1-3)
<p>GLE 0207.9.2</p> <p>Investigate how temperature changes affect the state of matter.</p>	<p>✓0207.9.2</p> <p>Describe what happens when ice changes from a solid to a liquid.</p> <p>✓0207.9.3</p> <p>Describe what happens when water is heated to the point of evaporation.</p>	<p>Not addressed</p>	<p>2-PS1-4. Construct an argument with evidence that some changes caused by heating or cooling can be reversed and some cannot.</p> <p>PS1.B: Chemical Reactions</p> <ul style="list-style-type: none"> • Heating or cooling a substance may cause changes that can be observed. Sometimes these changes are reversible, and sometimes they are not. (2-PS1-4) <p>2-ESS2-3. Obtain information to identify where water is found on Earth and that it can be solid or liquid.</p>
<p>GLE 0207.9.3</p> <p>Recognize that air takes up space.</p>	<p>✓0207.9.4</p> <p>Explain what happens when a balloon is blown up and pops.</p>	<p>Not addressed</p>	<p>Not addressed</p>

Standard 10 - Energy

Conceptual Strand 10 - Various forms of energy are constantly being transformed into other types without any net loss of energy from the system.

Guiding Question 10 - What basic energy related ideas are essential for understanding the dependency of the natural and man-made worlds on energy?

Grade Level Expectations (GLE)	Checks For Understanding (CFU)	State Performance Indicator (SPI)	Next Generation Science Standards (NGSS)
GLE 0207.10.1 Explain why the sun is the primary source of the earth's energy.	✓0207.10.1 Identify and explain how the sun affects objects on the surface of the earth. ✓0207.10.2 Investigate how the sun affects various objects and materials.	Not addressed	Not addressed

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Standard 11 – Motion

Conceptual Strand 11 - *Objects move in ways that can be observed, described, predicted, and measured.*

Guiding Question 11 - *What causes objects to move differently under different circumstances?*

Grade Level Expectations (GLE)	Checks For Understanding (CFU)	State Performance Indicator (SPI)	Next Generation Science Standards (NGSS)
<p>GLE 0207.11.1</p> <p>Investigate how vibrating objects produce sound.</p>	<p>✓0207.11.1</p> <p>Use a variety of objects that vibrate to demonstrate how sounds are produced.</p> <p>✓0207.11.2</p> <p>Describe the sounds produced by different types of vibrating objects.</p>	<p>Not addressed</p>	<p>Not addressed</p>
<p>GLE 0207.11.2</p> <p>Classify sounds according to their loudness and pitch.</p>	<p>✓0207.11.2</p> <p>Describe the sounds produced by different types of vibrating objects.</p>	<p>Not addressed</p>	<p>Not addressed</p>

Standard 12 - Forces in Nature

Conceptual Strand 12 - *Everything in the universe exerts a gravitational force on everything else; there is an interplay between magnetic fields and electrical currents.*

Guiding Question 12 - *What are the scientific principles that explain gravity and electromagnetism?*

Grade Level Expectations (GLE)	Checks For Understanding (CFU)	State Performance Indicator (SPI)	Next Generation Science Standards (NGSS)
GLE 0207.12.1 Experiment with magnets to determine that objects can move without being touched.	✓0207.12.1 Explain how two magnets interact.	Not addressed	Not addressed
GLE 0207.12.2 Realize that things fall toward the ground unless something holds them up.	✓0207.12.2 Describe what happens when an object is dropped and record the observations in a science notebook.	Not addressed	Not addressed

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