This scope and sequence document was developed to assist teachers with the implementation of the Louisiana Student Standards for Science. This tool is not full curriculum and will need to be further built out by science educators. It has been designed to help in the initial transition to the new standards.

This document is considered a "living" document, as we believe that teachers and other educators will find ways to improve it as they use it. Please send feedback to classroomsupporttoolbox@la.gov so that we may use your input when updating this tool.

About the Sample Scope and Sequence Tools

The Louisiana Student Standards for Science represent the knowledge and skills needed for students to successfully transition to postsecondary education and the workplace. The standards call for students to:

- Apply content knowledge
- Investigate, evaluate, and reason scientifically
- Connect ideas across disciplines

This scope and sequence document is designed to assist teachers, schools, and districts with the development of instructional resources that align with the Louisiana Student Standards for Science. This scope and sequence is only a sample; it does not illustrate the only appropriate sequence to teach the standards or the only possible ways to bundle the standards. The bundles can be reorganized around different phenomenon, including phenomenon specific to Louisiana or to a region in Louisiana.

Based on the instructional shifts, this tool uses phenomena to drive 3-dimensional science instruction. The incorporated phenomena are observable events that occur in the universe and can be explained by science. They establish the purpose for learning and help students to connect their learning to real-world events.

- The standards are bundled into units.
- The units are built around an anchor phenomenon.
- One unit has been built out further to contain a series of investigative phenomena, which have been sequentially organized to reinforce one another and build toward the performance expectations.

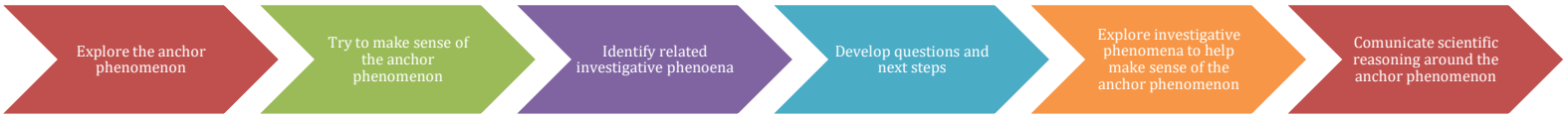
Throughout each unit, students should have multiple opportunities to apply the science and engineering practices, make sense of the crosscutting concepts, and develop a deep understanding of disciplinary core ideas.

Building out the Science Scope and Sequences for Classroom Instruction

How to Use the Anchor and Investigative Phenomena[1]

1. Explore the anchor phenomenon
2. Attempt to make sense of the phenomenon
3. Identify related phenomena
4. Develop questions and next steps
5. Explore investigative phenomena to help make sense of the anchor phenomenon
6. Communicate scientific reasoning around the anchor phenomenon

Instructional Process



Choosing an Anchor Phenomenon

Students should be able to make sense of anchoring phenomenon, but not immediately, and not without investigating it using sequences of the science and engineering practices. With instruction and guidance, students should be able to figure out, step by step, how and why the phenomenon works. [2]

A good anchor phenomenon[3]:

☐ is too complex for students to explain or design a solution for after a single lesson.

- The explanation is just beyond the reach of what students can figure out without instruction.
- Searching online will not yield a quick answer for students to copy.

☐ can be a case (pine beetle infestation, building a solution to a problem), something that is puzzling (why isn't rainwater salty?), or a wonderment (how did the solar system form?).

☐ has relevant data, images, and text to engage students in the range of ideas students need to understand. It should allow them to use a broad sequence of science and engineering practices to learn science through first-hand or second-hand investigations.

☐ will require students to develop an understanding of and apply multiple performance expectations while also engaging in related acts of mathematics, reading, writing, and communication.

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[1] adapted from How do we bring 3-dimensional learning into our classroom?

[2] Using Phenomena

[3] Qualities of a Good Anchor Phenomenon

- ☐ is observable to students. "Observable" can be with the aid of scientific procedures (e.g., in the lab) or technological devices to see things at very large and very small scales (telescopes, microscopes), video presentations, demonstrations, or surface patterns in data.

Choosing Investigative Phenomena

Students should be able to make sense of investigative phenomenon, but not immediately, and not without investigating it using sequences of the science and engineering practices. With instruction and guidance, students should be able to figure out, step-by-step, how and why the phenomenon works.[4]

A good investigative phenomenon:

- ☐ helps students make sense of one or two parts of the anchor phenomenon.
- ☐ has relevant data, images, and text to engage students in the range of ideas students need to understand.
- ☐ can be understood or explained by students using the science and engineering practices.

Investigating the Phenomena

When a phenomenon is introduced, whether anchor or investigative, students should have the opportunity to make observations, discuss current understandings, and pose questions about the phenomenon. Once questions are compiled, it may be helpful to categorize questions as follows:

- Questions that can be investigated by our class
- Questions that can be investigated but not with our current resources and equipment
- Questions that can be researched
- Questions that cannot be answered (due to current technologies or scientific limitations)

Other Useful Questions When Designing a Sequence of Learning[5]

- How do we kick off investigations in a unit?
- How do we work with students to motivate the next step in an investigation?
- How do we help students use practices to figure out the pieces of the science ideas?
- How do we push students to go deeper and revise the science ideas we have built together so far?
- How do we help students put together pieces of the disciplinary core ideas and crosscutting concepts?

[4] Using Phenomena

[5] Questions to Guide the Development of a Classroom Culture That Supports "Figuring Out"

Second Grade Science Standards Overview

The Second Grade Science course focuses on the study of matter and its interactions, dynamics and energy of ecosystems, unity and diversity of biological evolution, Earth's place in the universe and Earth's systems.

	Science and Engineering Practices									
Crosscutting Concepts		Asking Questions and Defining Problems	Developing and Using Models	Planning and Carrying Out Investigations	Analyzing and Interpreting Data	Using Mathematics and Computational Thinking	Constructing Explanations and Designing Solutions	Engaging in Argument from Evidence	Obtaining, Evaluating, and Communicating Information	All Domains
	Patterns		2-ESS2-2	2-PS1-1 2-LS4-1					2-ESS2-3	
	Cause and Effect			2-LS2-1	2-PS1-2			2-PS1-4		
	Scale, Proportion and Quantity									
	Systems and System Models									
	Energy and Matter						2-PS1-3			
	Structure and Function		2-LS2-2							
	Stability and Change						2-ESS2-1		2-ESS1-1	

Overview of Sample Units

	Unit 1 Our Land and Water	Unit 2 Bodies of Water	Unit 3 Relationships in Habitats	Unit 4 Changes in Matter	Unit 5 Properties of Matter
Anchor Phenomenon	Grand Isle and other Louisiana barrier islands are disappearing	Many different migratory birds feed and find shelter in the Barataria-Terrebonne National Estuary.	The Venus Flytrap digests small insects to help it survive.	Ngga Pulu was the highest mountain of New Guinea and the highest summit of the Australia continent. In 1936, the summit was bigger than it is today.	Rondavel homes are found in South Africa, whereas Igloo homes are found in Greenland.
Standards	2-ESS1-1 2-ESS2-1 2-LS4-1*	2-ESS2-2 2-ESS2-3* 2-LS4-1*	2-LS2-1 2-LS2-2 2-LS4-1*	2-PS1-4 2-ESS2-3* 2-LS4-1*	2-PS1-1 2-PS1-2 2-PS1-3

* The performance expectation is only partially addressed using the identified phenomenon. The performance expectation is addressed in other unit(s).

Unit 1: Our Land and Water

About the Standards

Performance Expectations

- 2-ESS1-1: Use information from several sources to provide evidence that Earth events can occur quickly or slowly.
- 2-ESS2-1: Compare multiple solutions designed to slow or prevent wind and water from changing the shape of the land.
- 2-ESS2-2*: Earth's Systems: Develop a model to represent the shapes and kinds of land and bodies of water in an area
- 2-LS4-1*: Make observations of plants and animals to compare the diversity of life in different habitats.

* The performance expectation is only partially addressed using the identified phenomenon. The performance expectation is addressed in other unit(s).

Disciplinary Core Ideas

DCI	Partial Unpacking of the DCI
Some events happen very quickly; others occur very slowly, over a time period much longer than one can observe. (DCI: LE.ESS1C.a; 2-ESS1-1)	• Change occurs all around us. • Change can occur slowly or quickly. • Earth is always changing. • We can observe changes in the Earth every day. • Some changes start small and grow into big changes over time. • Events on earth can be caused by a very slow process and at other times can be caused by a rapid or quick process. • Earth events can occur slowly or quickly in a matter of minutes, hours, days, months, years, decades, etc. • Weathering of rocks and erosion are some events that occur very slowly. • Flooding, severe storms, volcanic eruptions, earthquakes, landslides and erosion of soil can occur quickly. • There is often evidence on Earth's surface that these processes have caused a change. • At times, some events and the resulting changes can be directly observed; therefore those events must occur rapidly. • At times, some changes of Earth events can be observed only after long periods of time; therefore these Earth

	events occur slowly, and change happens over a time period that is much longer than one can observe.
Asking questions, making observations, and gathering information are helpful in thinking about problems. (DCI: ETS.LE1A.b; PE: 2-ESS1-1)	• Scientists study the natural and material world. • Asking questions is one of the first steps in science and engineering. • Questions allow scientists to define the problems that require solutions. • Scientists must determine the problems in order to gather information and design solutions. • The process of gathering information through the senses is called observation. • An organized process used to gather observations and test a hypothesis is called an experiment. • Certain sources of information are likely to provide scientific information. • A conclusion about an observation is an inference. • There can be more than one solution to a problem.
Wind and water can change the shape of land. (DCI: LE.ESS2A.a; 2-ESS2-1)	• The shape of land changes and can these changes can be attributed to several factors. • Wind and water change the shape of land by blowing or moving away soil or sand. • Water is one of the major sources of change in land. • There are some things that can control and/or limit the effects of water and wind on the Earth.
Because there is always more than one possible solution to a problem, it is useful to compare and test designs. (DCI: LE.ETS1C.a; PE: 2-ESS2-1)	• Testing and comparing designs can provide solutions to a problem. • A testable prediction about a possible solution to a problem is called hypothesis. • The engineering design process is a series of steps that engineers follow to come up with a solution to a problem.
There are many kinds of living things in any area, and they exist in different places on land, in water, and in the air. (DCI: LE.LS4D.a; PE: 2-LS4-1)	• There are several different land habitats (e.g. garden, forest, and dessert) and water habitats (e.g. swamp, pond, lake, and stream). • Different types of plants are found in different habitats (e.g. trees, bushes, flowering plants) • Different animals live in different habitats (lizards, squirrels, ants, clams, birds).
Maps show where things are located. One can map the shapes and kinds of land and water in any area. (DCI:	• Maps are pictures or diagrams that show rivers, mountains, streets, etc., in a particular area. • Maps give us information about where land and water are located on Earth.

LE.ESS2B.a; PE: 2-ESS2-2)	• Maps can show us the shapes of landforms and bodies of water on Earth. • A globe is a three-dimensional, spherical, scale model of our Earth. • Maps give us a different kinds of information depending upon the type of map we are using. • Patterns on maps help make a connection between landforms and bodies of water.
Designs can be conveyed through sketches, drawings, or physical models. These representations are useful in communicating ideas for solutions to a problem. (DCI: ETS.LE.1B.a; PE: 2-ESS2-2)	• A model expresses ideas and concepts which can be used to interpret observations and experiments. • Designs, drawings, sketches or models can express solutions to problems. • A physical model is a simplified material representation, usually on a reduced scale, of an object or phenomenon that needs to investigated.

Science and Engineering Practices

- Make observations and/or measurements to collect data that can be used to make comparisons.
- 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 questions and/or supporting a scientific claim.
- Generate and/or compare multiple solutions to a problem.
- Develop and/or use a model to represent amounts, relationships, relative scales (bigger, smaller) and/or patterns in the natural and designed worlds.

Crosscutting Concepts

- Things may change slowly or rapidly.
- Patterns in the natural and human designed world can be observed, used to describe phenomena, and used as evidence.

Putting the Standards into Practice

Sample Anchor Phenomenon: Grand Isle and other Louisiana barrier islands are disappearing.

Explore the anchor phenomenon

Resources: A number of resources for the anchor phenomenon are included below. Teachers should screen the resources and pull photos, quotes, and data that are appropriate to share with second grade students. These resources may not be appropriate to be given to students as they are due to the length, content, or accessibility of the content.

- Coastal Erosion on Grade Isle, Louisiana
- Read Works: Life in the Ocean
- Read Works: The Mighty Mississippi
- Read Works: All Kinds of Maps
- Raccoon Island Shoreline Protection
- USGS: Barrier Islands and Hurricane Katrina Photographs

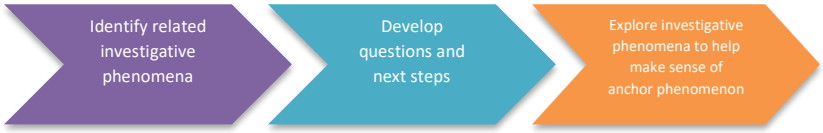
Questions students may pose that could be used for future learning or investigations:

Try to make sense of the anchor phenomenon

What is an island?
How is an island different from where we live?
Where is Grand Isle located?
What is the shape of Grand Isle Island?
How is the shape of the island different from the shape of Louisiana?
Do animals and plants live on Grand Isle and other Louisiana barrier islands?
What animals live on Grand Isle and other Louisiana barrier islands?
What types of plants live on Grand Isle and Louisiana barrier islands?
What types of animals and plants live in the waters off of Grand Isle and other Louisiana barrier islands?
How did Grand Isle and other Louisiana barrier islands form?
Why are the islands considered to be a part of Louisiana if they are not physically attached to our state?
How do the barrier islands help shape Louisiana's coastline?

Teachers should provide Investigative Phenomenon based on student observations, questions, and the Characteristics of Quality Investigative Phenomenon.

Sample Investigative Phenomena



Sample 1: Water changes the shape of an island.

Read Works: Erosion
Science for Kids: Facts about Erosion
Easy Science for Kids: Erosion
Erosion: Changing Earth's Surface – by Robin Koontz
Cracking Up: A Story about Erosion – by Jacqui Bailey

Sample questions for students to investigate:

- How could I develop a three-dimensional model of a barrier island?
- Did the shape of Grand Isle and Louisiana barrier islands change slowly or quickly?
- Make a claim that water impacts Grand Isle and Louisiana barrier islands. Use evidence from your experiment and model to support your claim.
- What are the effects of water on the sand and soil on Grand Isle?

3-D learning opportunities:

SEP: Plan and conduct an experiment; Develop and use a model; Engage in argument with evidence

DCI: LE.ESS1C.a; ETS.LE1A.b

CC: Stability and change; Cause and effect

Sample 2: Wind changes the shape of land.

Photos of Wind Erosion
Read Works: Blow, Wind, Blow
Read Works: Windy Weather
How can wind change the shape of land?

Sample questions for students to investigate:

- Plan and conduct an experiment to demonstrate the impact that wind has on barrier islands.
- Develop a three-dimensional model of a barrier island (sand or soil etc.).
- How does wind impact barrier islands? Use evidence from your model to support your response.
- How does wind affect water off the shoreline of the barrier island?
- How do strong winds impact the water that hits Grand Isle and Louisiana's barrier islands?
- Design a solution to overcome the impact of wind and water on your barrier island.
- How do wind and water contribute to the disappearance of Grand Isle and Louisiana's barrier islands?
- How can engineers help Grand Isle residents overcome erosion?

3-D learning opportunities:

SEP: Plan and conduct an experiment; Develop and use a model

DCI: LE.ESS2A.a; LE.ETS1C.a

CC: Stability and change; Cause and effect

Sample 3: Manatees have been found in Louisiana waterways.

- How to Make a Manatee Model
- Manatees in Louisiana
- Manatee Fact Sheet
- Louisiana Manatee Sightings
- Manatee and Marine Mammal Resources

Sample questions for students to investigate:

- How can maps be used to help us identify where manatees have been sighted in Louisiana? Use evidence from your model to support your response.
- Where have manatees been sighted in Louisiana? Use evidence from a map to support your response.
- Are there patterns in the sightings of manatees in Louisiana? Use evidence from a map to support your response.
- How is the habitat of manatees different from animals that live on land?
- What types of plants and animals live in the manatees' habitat?
- Develop a model of a manatee and describe how its features are different from land animals.
- Have manatees been spotted near Grand Isle or other Louisiana barrier islands?
- How will manatees be impacted if Grand Isle and Louisiana's barrier islands continue to disappear?
- How is water erosion affecting the natural habitat of the wildlife on Grand Isle?

3-D learning opportunities:

SEP: Develop and use models

DCI: LE.LS4D.a; LE.ESS2B.a; ETS.LE.1B.a

CC: Patterns

Sample Anchor Phenomenon Reflections

Communicate scientific reasoning around the anchor phenomenon

- Describe Earth events that occur very quickly and very slowly.
- How can engineering solutions slow or prevent water and wind from changing the shape of Grand Isle and Louisiana barrier islands?
- How can models help us see how wind and water are causing erosion?
- How are the habitats of organisms being impacted by Grand Isle's disappearing island?
- How are land plants and animals different from animals and plants that live in water?

Unit 2: Bodies of Water

About the Standards

Performance Expectations

- 2-ESS2-2 Earth's System: Develop a model to represent the shapes and kinds of land and bodies of water in an area.
- 2-ESS2-3* Earth's Systems: Obtain and communicate information to identify where water is found on Earth and that it can be solid or liquid.
- 2-LS4-1* Biological Evolution: Unity and Diversity: Make observations of plants and animals to compare the diversity of life in different habitats.

Science and Engineering Practices

- Make observations and/or measurements to collect data that can be used to make comparisons.
- Develop and/or use a model to represent amounts, relationships, relative scales (bigger, smaller), and/or patterns in the natural and designed world(s).
- 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 and/or supporting a scientific claim.

Crosscutting Concepts

- The shape and stability of structures of natural and designed objects are related to their function(s).
- Patterns in the natural and human designed world can be observed, used to describe phenomena, and used as evidence.

Putting the Standards into Practice

Explore the anchor phenomenon

Sample Anchor Phenomenon: Many different migratory birds feed and find shelter in the Barataria-Terrebonne National Estuary.

Resources: A number of resources for the anchor phenomenon are included below. Teachers should screen the resources and pull photos, quotes, and data that are appropriate to share with second grade students. These resources may not be appropriate to be given to students as they are due to the length, content, or accessibility of the content.

Migrant Birds
BTNEP: Migratory and Resident Birds
Birds of Barataria-Terrebonne
NOAA: Estuaries

Questions students may pose that could be used for future learning or investigations:

Try to make sense of the anchor phenomenon

- What is an estuary?
- Why do migratory birds visit the Barataria-Terrebonne National Estuary?
- Where do the migratory birds live when they are not visiting Barataria-Terrebonne National Estuary?
- Where is the Barataria-Terrebonne National Estuary located?
- What are some key features of estuaries?
- Are estuaries important to humans and wildlife?
- What types of birds feed on fish in the estuary?
- Do any birds permanently live in the estuary?
- Do other animals live in or around the estuary?
- What is the difference between an island and an estuary?
- Are the plants and animals that live on Grand Isle Island different from plants and animals that live in Barataria-Terrebonne National Estuary?

Teachers should provide Investigative Phenomenon based on student observations, questions, and the Characteristics of Quality Investigative Phenomenon.

Sample Anchor Phenomenon Reflections

Communicate scientific reasoning around the anchor phenomenon

- Create a model to represent the shapes and kinds of land and bodies of water in Louisiana, including the Barataria-Terrebonne National Estuary.
- Use a model to communicate information to identify where water is found on Earth and that the water can be solid or liquid.
- Make observations of plants and animals in Barataria-Terrebonne National Estuary to compare the diversity of life in different habitats.

Unit 3: Relationships in Habitats

About the Standards

Performance Expectations

- 2-LS2-1 Ecosystems: Interactions, Energy, and Dynamics: Plan and conduct an investigation to determine if plants need sunlight and water to grow.
- 2-LS2-2 Ecosystems: Interactions, Energy, and Dynamics: Develop a simple model that mimics the function of an animal in dispersing seeds or pollinating plants.
- 2-LS4-1* Biological Evolution: Unity and Diversity: Make observations of plants and animals to compare the diversity of life in different habitats.

Science and Engineering Practices

- Plan and conduct an investigation collaboratively to produce data to serve as the basis for evidence to answer a question.
- Develop a simple model based on evidence to represent a proposed object or tool.
- Make observations and/or measurements to collect data that can be used to make comparisons.

Crosscutting Concepts

- Events have causes that generate observable patterns.
- The shape and stability of structures of natural and designed objects are related to their function(s).
- Patterns in the natural and human designed world can be observed, used to describe phenomena, and used as evidence.

Putting the Standards into Practice

Explore the anchor phenomenon

Sample Anchor Phenomenon: Venus Fly Traps digest small insects to survive.

Resources: A number of resources for the anchor phenomenon are included below. Teachers should screen the resources and pull photos, quotes, and data that are appropriate to share with second grade students. These resources may not be appropriate to be given to students as they are due to the length, content, or accessibility of the content.

BBC: Venus Fly Traps: Jaws of Death
Sundews: Carnivorous Plants
Smithsonian: The Carnivorous Plant That Feasts on Mice
Venus Fly Trap
National Geographic Kids: Meat Eating Plants
Read Works: How Plants Grow

Try to make sense of the anchor phenomenon

Questions students may pose that could be used for future learning or investigations:

- What is a Venus Fly Trap?
- How do Venus Fly Traps grow and survive?
- How are Venus Fly Traps different from other plants?
- What do other plants need to grow and survive?
- Do animals eat Venus Fly Traps?
- Do other plants digest insects?
- How do plants grow in different areas if they are unable to move?
- What animals help plants disperse seeds or pollinate plants?
- What other plants have unusual characteristics?

Teachers should provide Investigative Phenomenon based on student observations, questions, and the Characteristics of Quality Investigative Phenomenon.

Communicate scientific reasoning around the anchor phenomenon

Sample Anchor Phenomenon Reflections

- Develop a model that mimics the function of an animal in dispersing seeds or pollinating plants.
- Make a claim supported with evidence that some plants need, water and sunlight to grow.
- Make observations of plants to compare the diversity of life in different habitats.

Unit 4: Changes in Matter

About the Standards

Performance Expectations

- 2-PS1-4 Matter and Its Interactions: Construct an argument with evidence that some changes caused by heating or cooling can be reversed and some cannot.
- 2-ESS2-3*Earth's Systems: Obtain and communicate information to identify where water is found on Earth and that it can be solid or liquid.
- 2-LS4-1*Biological Evolution: Unity and Diversity: Make observations of plants and animals to compare the diversity of life in different habitats.

Science and Engineering Practices

- Make observations and/or measurements to collect data that can be used to make comparisons.
- 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 and/or supporting a scientific claim.
- Construct an argument with evidence to support a claim.

Crosscutting Concepts

- Patterns in the natural and human designed world can be observed, used to describe phenomena, and used as evidence.
- Events have causes that generate observable patterns

Putting the Standards into Practice

Sample Anchor Phenomenon: Ngga Pulu was the highest mountain of New Guinea and also the highest summit of the Australia continent. In 1936, the summit was bigger than it is today.

Explore the anchor phenomenon

Resources: A number of resources for the anchor phenomenon are included below. Teachers should screen the resources and pull photos, quotes, and data that are appropriate to share with second grade students. These resources may not be appropriate to be given to students as they are due to the length, content, or accessibility of the content.

Ngga Pulu
National Geographic: Glacier National Park is Melting Away
All About Glaciers for Kids
Read Works: Nature in Iceland (article set)
Arctic Wildlife
National Geographic: Animals of the Arctic
National Geographic: Polar Bear Mom and Cubs
National Geographic: Polar Bear Survival
Read Works: A Cold Place to Live
Read Works: Animals of the Arctic
Animals in the Antarctic Ice

Questions students may pose that could be used for future learning or investigations:

Try to make sense of the anchor phenomenon

- What caused Ngga Pulu to get smaller?
- Where is Ngga Pulu located?
- What are glaciers? Where are glaciers located?
- Did glaciers cause Ngga Pulu to get smaller?
- Are glaciers big or small?
- How is the temperature of glaciers different from the temperature in my community?
- Do people and animals live on glaciers?
- What types of animals live on or near glaciers?
- How are animals and plants impacted by shrinking glaciers?
- Do the shape and size of glaciers change? What cause the shape and size of glaciers to change?
- How long does it take glaciers to melt or shrink?
- How do scientists monitor glaciers that are shrinking?
- Where does glacier water go when it melts?

Teachers should provide Investigative Phenomenon based on student observations, questions, and the Characteristics of Quality Investigative Phenomenon.

Sample Anchor Phenomenon Reflections

Communicate scientific reasoning around the anchor phenomenon

- Construct an argument with evidence that some changes caused by heating or cooling can be reversed and some cannot.
- Communicate information to identify where water is found on Earth and that it can be solid or liquid.
- Make observations of plants and animals to compare the diversity of life in different habitats. How are animals that live in Barataria-Terrebonne Estuary different from animals that live near glaciers?

Unit 5: Properties of Matter

About the Standards

Performance Expectations

- 2-PS1-1 Matter and Its Interactions: Plan and conduct an investigation to describe and classify different kinds of materials by their observable properties.
- 2-PS1-2 Matter and Its Interactions: Analyze data obtained from testing different materials to determine which materials have the properties that are best suited for an intended purpose.
- 2-PS1-3 Matter and Its Interactions: 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.

Science and Engineering Practices

- Make observations (firsthand or from media) to construct an evidence-based account for natural phenomena.
- Analyze data from tests of an object or tool to determine if it works as intended.
- Plan and conduct an investigation collaboratively to produce data to serve as the basis for evidence to answer a question.

Crosscutting Concepts

- Objects may break into smaller pieces, be put together into larger pieces, or change shapes.
- Simple tests can be designed to gather evidence to support or refute student ideas about causes.
- Patterns in the natural and human designed world can be observed, used to describe phenomena, and used as evidence.

Putting the Standards into Practice

Explore the anchor phenomenon

Sample Anchor Phenomenon: Rondavel homes are found in South Africa, whereas igloo homes are found in Greenland.

Resources: A number of resources for the anchor phenomenon are included below. Teachers should screen the resources and pull photos, quotes, and data that are appropriate to share with second grade students. These resources may not be appropriate to be given to students as they are due to the length, content, or accessibility of the content.

Read Works: Rondavels in Southern Africa
The Indigenous Rondavel
A Legacy of Rondavels and Rondavel Houses in the Northern Interior of South Africa
Traditional Style of Housing: Rondavel Pictures
A House of Snow and Ice

Questions students may pose that could be used for future learning or investigations:

Try to make sense of the anchor phenomenon

- How are rondavel homes different from igloo homes?
- Why are igloo homes not built in South Africa or Louisiana?
- How are igloo and rondavel homes different from homes in Louisiana?
- Why are different types of materials used to build homes in different areas?
- Can changes in temperature and weather impact homes?
- How are the properties of the materials used to build igloo and rondavel homes different from one another?

Teachers should provide Investigative Phenomenon based on student observations, questions, and the Characteristics of Quality Investigative Phenomenon.

Sample Anchor Phenomenon Reflections

Communicate scientific reasoning around the anchor phenomenon

- Describe and classify different kinds of building materials by their observable properties.
- Analyze data to determine which materials have properties that are best suited for an intended purpose.
- 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.