Grade 2, Unit 2, Erosion & Earth's Surface

Content Area: **Science**
Course(s): **Science K**
Time Period: **January**
Length: **Trimester 2**
Status: **Published**

Unit Overview

In this unit of study, students use information and models to identify and represent the shapes and kinds of land and bodies of water in an area and where water is found on Earth. Students will also apply their understanding of the idea that wind and water can change the shape of land to compare design solutions to slow or prevent such change. The crosscutting concept of patterns; stability and change; structure and function; and the influence of engineering, technology, and science on society and the natural world is called out as an organizing concept for these disciplinary core ideas. Students demonstrate grade-appropriate proficiency in developing and using models; obtaining, evaluating, and communicating information; asking questions and defining problems; and constructing explanations and designing solutions. Students are also expected to use these practices to demonstrate understanding of the core ideas.

NJ Student Learning Standards - Science

K-2-ETS1-1	Ask questions, make observations, and gather information about a situation people want to change (e.g., climate change) to define a simple problem that can be solved through the development of a new or improved object or tool.
9.4.2.CT.1	Gather information about an issue, such as climate change, and collaboratively brainstorm ways to solve the problem (e.g., K-2-ETS1-1, 6.3.2.GeoGI.2).
9.4.2.CT.2	Identify possible approaches and resources to execute a plan (e.g., 1.2.2.CR1b, 8.2.2.ED.3).
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.
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.
2-ESS1-1	Use information from several sources to provide evidence that Earth events can occur quickly or slowly.
	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.
2-ESS2-1	Compare multiple solutions designed to slow or prevent wind or water from changing the shape of the land.
2-ESS2-2	Develop a model to represent the shapes and kinds of land and bodies of water in an area.
2-ESS2-3	Obtain information to identify where water is found on Earth and that it can be solid or liquid.

Disciplinary Core Ideas

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)

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)

Science and Engineering Practices

Developing and Using Models

Develop a model to represent patterns in the natural world. (2-ESS2-2)

Obtaining, Evaluating, and Communicating 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)

Crosscutting Concepts

Patterns

Patterns in the natural world can be observed. (2-ESS2-2, 2-ESS2-3)

Learning Targets (Student Language)

- I can analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs .
- I can ask questions, make observations, and gather information about a situation people want to change (e.g. climate change) to define a simple problem that can be solved through the development of a new or improved object or tool.
- I can compare multiple solutions designed to slow or prevent wind or water from changing the shape of the land.
- I can develop a model to represent the shapes and kinds of land and bodies of water in an area
- I can 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.
- I can use information from several sources to provide evidence that Earth events can occur quickly or

slowly.

Essential Questions

- How can we identify where water is found on Earth and if it is solid or liquid?
- In what ways can you represent the shapes and kinds of land and bodies of water in an area?

Materials and Resources

Mystery Science Lessons

Read Alouds

Cross Cut Weather Reading Activities

Mystery Labs

Additional Hands on Activities

Mystery Science Assessments

Barinpop Jr.

Philadelphia Zoo Unless Contest

Learning Plan (Pacing Guide)

Grade 2 - Unit 2		
Topic	# of Days (30 min Sessions)	NJ Standards
Anchor Phenomenon: Strange River	1	2-ESS2-2. Develop a model to represent the shapes and kinds of land and bodies of water in an area.
Lesson 1: If you floated down a river, where would you end up?	4	2-ESS2-2. Develop a model to represent the shapes and kinds of land and bodies of water in an area. 2-ESS2-3. Obtain information to identify where water is found on Earth and that it can be solid or liquid.

Lesson 2: Why is there sand at the beach?	4	2-ESS2-2. Develop a model to represent the shapes and kinds of land and bodies of water in an area.
Lesson 3: Where do flash floods happen?	3	2-ESS1-1. Use information from several sources to provide evidence that Earth events can occur quickly or slowly. 2-ESS2-2. Develop a model to represent the shapes and kinds of land and bodies of water in an area.
Lesson 4: What's strong enough to make a canyon?	4	2-ESS1-1. Use information from several sources to provide evidence that Earth events can occur quickly or slowly.
Lesson 5: How can you stop a landslide?	4	2-ESS2-1. Compare multiple solutions designed to slow or prevent wind or water from changing the shape of the land. 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. 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. 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.

Unit Assessment	1	
Performance Task: How long is the shortest river?	1	2-ESS1-1. Use information from several sources to provide evidence that Earth events can occur quickly or slowly. 2-ESS2-2. Develop a model to represent the shapes and kinds of land and bodies of water in an area.

Assessments

- Erosion Project (rocks)
- Graphic Organizers
- Mystery Science Formative Assessments
- Mystery Science Summative Assessments

Interdisciplinary Connections

NJSLS ELA

W.2.6 With guidance and support from adults, use a variety of digital tools to produce and publish writing, including in collaboration with peers. (2-ESS2-3)
W.2.8 Recall information from experiences or gather information from provided sources to answer a question. (2-ESS2-3)
SL.2.5 Create audio recordings of stories or poems; add drawings or other visual displays to stories or recounts of experiences when appropriate to clarify ideas, thoughts, and feelings. (2-ESS2-2)

NJSLS Mathematics

MP.2 Reason abstractly and quantitatively. (2-ESS2-2)

MP.4 Model with mathematics. (2-ESS2-2)

2.NBT.A.3 Read and write numbers to 1000 using base-ten numerals, number names, and expanded form. (2-ESS2-2)

English Language Arts

Students gather information about the types of landforms and bodies of water from experiences or from text and digital resources. They can use this information to answer questions such as, “Where can water be found as solid ice or snow year round?” Students should also have the opportunity to use their research to publish a

writing piece, with guidance and support from adults or collaboratively with peers, based on their findings about various landforms and bodies of water. Diagrams, drawings, photographs, audio or video recordings, poems, dioramas, models, or other visual displays can accompany students' writing to help recount experiences or clarify thoughts and ideas

Mathematics

As students collect data about the size of landforms and bodies of water, these numbers can be used to answer questions, make comparisons, or solve problems. For example, If students know that a mountain is 996 feet in height, a lake is 550 feet deep, a river is 687 miles long, and a forest began growing about 200 years ago, have students show each number in three ways using base-ten blocks, number words, and expanded form. A stream was 17 inches deep before a rainstorm and 33 inches deep after a rainstorm. How much deeper did it get during the rainstorm? As students engage in these types of mathematical connections, they are also modeling with mathematics and reasoning abstractly and quantitatively. When modeling with mathematics, students diagram situations mathematically (using equations, for example) and/or solve addition or subtraction word problems. When students reason abstractly and quantitatively, they manipulate symbols (numbers and other math symbols) abstractly and attend to the meaning of those symbols while doing so.

Climate Change

Students will continue participation in the Philadelphia Zoo UNLESS contest.

Accommodations and Modifications (Interventions. Special Education, ELL, Enrichment)

- Collaborate with after-school programs or clubs to extend learning opportunities.
- Engage students with a variety of Science and Engineering practices to provide students with multiple entry points and multiple ways to demonstrate their understanding.
- Follow all modifications and accommodations as outlined in IEPs and 504s.
- Provide ELL students with multiple literacy strategies.
- Provide multiple grouping opportunities for students to share their ideas and to encourage work among various backgrounds and cultures
- Provide opportunities for students to connect with people of similar backgrounds (e.g. conversations via digital tools such as Zoom/Google Meets, experts from the community helping with a project, journal articles, and biographies).
- Provide students with multiple choices for how they can represent their understandings (e.g. multisensory techniques-auditory/visual aids; pictures, illustrations, graphs, charts, data tables, multimedia, modeling).
- Structure lessons around questions that are authentic, relate to students' interests, social/family background and knowledge of their community.
- Structure the learning around explaining or solving a social or community-based issue.
- Use project-based science learning to connect science with observable phenomena.

Career Reading, Life Literacies, and Key Skills

9.4.2.CT	Critical Thinking and Problem-solving
9.4.2.CT.1	Gather information about an issue, such as climate change, and collaboratively brainstorm ways to solve the problem (e.g., K-2-ETS1-1, 6.3.2.GeoGI.2).
9.4.2.CT.2	Identify possible approaches and resources to execute a plan (e.g., 1.2.2.CR1b, 8.2.2.ED.3).
9.4.2.CT.3	Use a variety of types of thinking to solve problems (e.g., inductive, deductive).
8.1.2.DA.3	Identify and describe patterns in data visualizations.
8.1.2.DA.4	Make predictions based on data using charts or graphs.
9.4.2.IML.1	Identify a simple search term to find information in a search engine or digital resource.
CAEP.9.2.4.A.2	Identify various life roles and civic and work related activities in the school, home, and community.
CAEP.9.2.4.A.4	Explain why knowledge and skills acquired in the elementary grades lay the foundation for future academic and career success.