2 Science Unit 2: Erosion & Earth's Surface (Work of Water)

Content Area: **Science**
Course(s):
Time Period: **Marking Period 2**
Length: **9 Weeks**
Status: **Published**

Unit Overview

In this unit, students explore how water shapes the Earth's surface. Students construct and use models of mountains to demonstrate that water flows downhill, and in the process, transforms huge rocks into the tiny grains of sand we find at the beach. Students also construct and use model hills to determine the causes of erosion, and to design solutions to problems caused by erosion.

Standards

Scientific & Engineering Practices

- Students develop a model of the earth's surface and carry out an investigation to discover how rivers flow. They construct an explanation about where on the earth's surface rivers start and end.
- Students conduct an investigation by modeling how rocks tumble through a river and break. Students construct an explanation for why there is sand at the beach.
- Students develop a model (a map) of Texas that displays the types of land, the distribution of clay soil, the location of major cities, and the occurrence of major rainstorms. They use this map to describe Flash Flood Alley's location in the state.
- Students conduct an investigation by modeling what happens to land when it rains over and over. Students construct an explanation for how the water changed the land.
- Students define the problem that landslides create. They design solutions to stabilize soil and prevent landslides. Students compare their solutions and engage in argument from this evidence to determine which designs are most effective.

Crosscutting Concepts

- Students identify patterns about where rivers start and end on earth's surface.
- Students reason about the cause and effect of rocks tumbling in a river (cause) and turning into sand (effect).
- Students begin to explore that changes to the earth's surface can happen slowly through the process of erosion.
- Students identify patterns of the types of land that are associated with the locations of where

flash floods occur.

- Students consider the cause and effect of how heavy rains (cause) create canyons on earth's surface (effect).
- Students begin to explore that changes to the earth's surface can happen slowly through the process of erosion.
- Students apply the concept that changes to earth's surface can happen rapidly during a landslide.
- Students mimic natural structures and their functions to create a design solution that lessens the impact of landslides.

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.
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.
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.

Materials

Core Materials:

- Mystery Science
    - If you floated down a river, where would you end up?
    - Why is there sand at the beach?
    - Where do flash floods happen?
    - What's strong enough to make a canyon?
    - How can you stop a landslide?
- Teacher Created Labs

Supplemental Materials:

- BrainPop resources
- NewsELA

- GRC Lessons
- TBSAID
- Nearpod Activities

Technology

Technology Literacy

• 9.4.2.TL.1: Identify the basic features of a digital tool and explain the purpose of the tool (e.g., 8.2.2.ED.1).

• 9.4.2.TL.2: Create a document using a word processing application.

• 9.4.2.TL.3: Enter information into a spreadsheet and sort the information.

• 9.4.2.TL.4: Navigate a virtual space to build context and describe the visual content.

• 9.4.2.TL.5: Describe the difference between real and virtual experiences.

• 9.4.2.TL.6: Illustrate and communicate ideas and stories using multiple digital tools (e.g., SL.2.5.).

Technology - Data & Analysis

8.1.2.DA.1: Collect and present data, including climate change data, in various visual formats.

• 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.

Technology - Effects on the Natural World

• 8.2.2.ETW.1: Classify products as resulting from nature or produced as a result of technology.

• 8.2.2.ETW.2: Identify the natural resources needed to create a product.

• 8.2.2.ETW.3: Describe or model the system used for recycling technology.

• 8.2.2.ETW.4: Explain how the disposal of or reusing a product affects the local and global

Evidence of Learning/Assessment

Formative Assessment

- Teacher Observation
- Quizzes
- Exit Tickets
- Labs

Summative Assessment

- Benchmark Tests
- Alternative Assessments: Performance Tasks & Projects

Accommodations & Modifications

Special Education

Follow IEP Plan which may contain some of the following examples…

- In class/pull out support with special ed teacher
- Additional time during intervention time
- Preferred seating
- Questions read aloud
- Extended time for completing tasks
- Graphic organizers
- Vocabulary support
- Mnemonic devices
- Songs/videos to reinforce concepts
- Study Guides
- Limit number of questions
- Scribe
- Newsela leveled reading passages

504

Follow 504 Plan which may contain some of the following examples…

- In class/pull out support with special ed teacher
- Additional time during intervention time
- Preferred seating
- Questions read aloud
- Extended time for completing tasks
- Graphic organizers
- Vocabulary support
- Mnemonic devices
- Songs/videos to reinforce concepts
- Study Guides
- Limit number of questions
- Scribe
- Newsela leveled reading passages

ELL

- Translation device/dictionary
- In class/pull out support with ESL teacher
- In class/pull out support with special ed teacher
- Additional time during intervention time
- Preferred seating
- Questions read aloud

- Extended time for completing tasks
- Graphic organizers
- Vocabulary support
- Mnemonic devices
- Songs/videos to reinforce concepts
- Study Guides
- Limit number of questions
- Scribe
- Newsela leveled reading passages

At-risk of Failure

- Extra time during intervention
- In class/pull out support with special ed teacher
- Additional time during intervention time
- Preferred seating
- Questions read aloud
- Extended time for completing tasks
- Graphic organizers
- Vocabulary support
- Mnemonic devices
- Songs/videos to reinforce concepts
- Study Guides
- Limit number of questions
- Scribe
- Newsela leveled reading passage

Gifted & Talented

- Independent projects
- STEM Projects
- Leveled Reading with Newsela

Interdisciplinary Connections

Connections to NJSLS - English Language Arts

- RI.2.1 Ask and answer such questions as who, what, where, when, why, and how to demonstrate understanding of key details in a text. (2-ESS1-1)
- RI.2.3 Describe the connection between a series of historical events, scientific ideas or concepts, or steps in technical procedures in a text. (2-ESS1-1)
- 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-ESS1-1)
- W.2.7 Participate in shared research and writing projects (e.g., read a number of books on a single topic to produce a report; record science observations). (2-ESS1-1)
- W.2.8 Recall information from experiences or gather information from provided sources to answer a question. (2-ESS1-1) New Jersey Department of Education December 2020 Page 42 of 200 Grade 2
- SL.2.2 Recount or describe key ideas or details from a text read aloud or information presented orally or through other media. (2-ESS1-1)

Connections to NJSLS – Mathematics

- MP.2 Reason abstractly and quantitatively. (2-ESS1-1)
- MP.4 Model with mathematics. (2-ESS1-1)
- 2.NBT.A Understand place value. (2-ESS1-1) New Jersey Department of Education December 2020 Page 43 of 200

Career Readiness, Life Literacies, and Key Skills

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).

Career Ready Practices

- CRP6. Demonstrate creativity and innovation.
- CRP8. Utilize critical thinking to make sense of problems and persevere in solving them.