

Unit 2 Work of Water

Content Area: **Science**
Course(s): **Science 2**
Time Period: **MP2-3**
Length: **MP 2-3**
Status: **Published**

Essential Questions

- Where is water found on Earth?
- How can we find water on Earth?
- How does water cycle through its different forms?
- What are the effects of wind & water on the land?
- What are landforms that help prevent wind and water erosion?
- How can the effects of wind and water erosion be controlled or reduced?
- What types of events occur in cycles?
- What types of events on Earth happen very quickly or very slowly?

Big Ideas

- Maps show where things are located.
- One can map the shapes and kinds of land and water in any area.
- Water is found in many types of places and in different forms on earth.
- Wind and water change the shape of the land.

Cross-Curricular Integration

Integration Area: Language Arts

R1.MF.2 [6] Explain how specific illustrations and images (e.g. a diagram showing how a machine works) contribute to and clarify text.

Activity:

Students will be able to ask and answer questions to better understand the water cycle and weather. Students will be able to make predictions and add a nonfiction text feature to their pictures.

Science and Engineering Practices

Asking Questions and Defining Problems:

- Ask questions based on observations to find more information about the natural and/or designed world(s).
- Ask and/or identify questions that can be answered by an investigation.
- Define a simple problem that can be solved through the development of a new or improved object or tool.

Developing and Using Models:

- Develop and/or use a model to represent amounts, relationships, relative scales (bigger, smaller), and/or patterns in the natural and designed world(s).
- Develop a simple model based on evidence to represent a proposed object or tool.

Planning and Carrying Out Investigations:

- With guidance, plan and conduct an investigation in collaboration with peers (for K).
- Plan and conduct an investigation collaboratively to produce data to serve as the basis for evidence to answer a question.
- Evaluate different ways of observing and/or measuring a phenomenon to determine which way can answer a question.
- Make observations (firsthand or from media) and/or measurements to collect data that can be used to make comparisons.
- Make observations (firsthand or from media) and/or measurements of a proposed object or tool or solution to determine if it solves a problem or meets a goal.
- Make predictions based on prior experiences.

Analyzing and Interpreting Data:

- Use observations (firsthand or from media) to describe patterns and/or relationships in the natural and designed world(s) in order to answer scientific questions and solve problems.
- Compare predictions (based on prior experiences) to what occurred (observable events).

Constructing Explanations and Designing Solutions:

- Use information from observations (firsthand and from media) to construct an evidence-based account for natural phenomena.
- Use tools and/or materials to design and/or build a device that solves a specific problem or a solution to a specific problem.

Engaging in Argument from Evidence:

- Identify arguments that are supported by evidence.
- Distinguish between explanations that account for all gathered evidence and those that do not.
- Make a claim about the effectiveness of an object, tool, or solution that is supported by relevant evidence.

Obtaining, Evaluating, and Communicating Information:

- Describe how specific images (e.g., a diagram showing how a machine works) support a scientific or engineering idea.
- Communicate information or design ideas and/or solutions with others in oral and/or written forms

using models, drawings, writing, or numbers that provide detail about scientific ideas, practices, and/or design ideas.

CSDT Technology Integration

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

8.1.2.DA.4: Make predictions based on data using charts or graphs.

Activity:

Mystery Science lesson How Can You Stop a Landslide? This is a lab. The students will complete a lab using the guided video process to explore the mystery.

Enduring Understanding

Next Generation Science Standards

Plate Tectonics and Large-Scale System

2-ESS2.B Maps show where things are located. One can map the shapes and kinds of land and water in any area.

The Roles of Water in Earth's Surface

ESS2.C Water is found in the ocean, rivers, lakes, and ponds. Water exists as solid ice and in liquid form.

Earth Materials and Systems

2-ESS2.A Wind and water can change the shape of the land.

Optimizing the Design Solution

2-ESS2.C Because there is always more than one possible solution to a problem, it is useful to compare and test designs.

The History of Planet Earth

2-ESS1.C Some events happen very quickly; others occur very slowly, over a time period much longer than one can observe.

Student Learning Standards

Mathematics

2.NBT.A.3. Read and write numbers to 1000 using base-ten numerals, number names, and expanded form. Science example: Students write about a lake that is 550 feet deep, a river that is 687 miles long, a forest that began growing about 200 years ago, and soon.

MD.B.5. Use addition and subtraction within 100 to solve word problems involving lengths that are given in the same units, e.g., by using drawings (such as drawings of rulers) and equations with a symbol for the unknown number to represent the problem. Science example: A gulley is 17 inches deep before a rainstorm and 42 inches deep after a rainstorm. How much deeper did it get during the rainstorm?

NBT.A.11 Understand place value. Science example: As part of comprehending media to identify the varying timescales on which Earth events can occur, students understand that a period of thousands of years is much longer than a period of hundreds of years, which is in turn much longer than a period of tens of years.

Focus Areas

Knowledge

- Water is found in oceans, rivers, lakes, and ponds.
- We can use a map to find where water is located on Earth.
- Water exists in liquid or ice forms.
- Water cycles through its different forms via the water cycle.
- What the effects of wind and water are on the land.
- How wind erosion creates land forms
- How water erosion creates land forms
- Animals use land forms as homes.
- Be able to describe events occur in cycles, such as day and night.
- Identify events have a beginning and an end, like a volcanic eruption.
- Explain the impact of events can happen very quickly.
- Describe events can happen very slowly over a time period much longer than anyone can observe.

Skills

- Describe some of the distinguishing characteristics of oceans, rivers, lakes, and ponds.
- Recognize and name different bodies of water in pictures and on maps.
- Describe where water may exist as a liquid or as a solid (ice).
- Draw and discuss the steps of the water cycle.
- Explain how wind shapes the land.
- Explain how water shapes the land.
- Describe how wind erosion is reduced
- Describe how water erosion is reduced.
- Describe what a cycle is and give examples.
- Describe events that have a beginning and an end.
- Describe events that happen quickly.

- Describe events that happen very slowly.

Understandings

- Develop a model to represent the shapes and kinds of land and bodies of water in an area.
- Obtain information to identify where water is found on Earth and that it can be solid or liquid.
- Compare multiple solutions designed to slow or prevent wind or water from changing the shape of the land.
- Use information from several sources to provide evidence that Earth events can occur quickly or slowly.

Climate Change

Social Studies: Cross-Curricular

6.1.2.GeoPP.1: Explain the different physical and human characteristics that might make a location a good place to live (e.g., landforms, climate and weather, resource availability).

- Activity: In this lesson, students explore the phenomenon of flash floods and create an explanation of why these severe weather events are more or less likely in different regions. They specifically attempt to locate and explain a unique region in Texas known as Flash Flood Alley. In the activity, Find Flash Flood Alley, students develop a map to document how land and water interact across the state. Students then use that map to explain how different shapes and kinds of land increase or decrease the chances of rainfall causing a flash flood.

Resources

Primary Resources

- Mystery Science

Supplemental Resources

Scott Foresman Science, Pearson, 2008

- Chapter 5, lesson 1, Earth's Land, Air, and Water
- Oh Say Can You Say What's the Weather Today?, Rabe, 2004

Scientific Inquiry

Core

- How can you stop a landslide? Lab
- If you floated down a river, where would you end up? Lab
- Why is there sand at the beach? Lab
- What's strong enough to make a canyon? Lab
- Water Cycle Activity

Supplemental

- BrainPop Jr. Water Cycle Video, Land Changes Video
- Bodies of Water Interactive Notebook
- Magic School Bus "Wet All Over"
- Rock Cycle Activity
- Erosion Activity