

# 2nd Grade Unit 4 - Changes to Earth's Land

Content Area: **Science**  
Course(s): **Science Grade 2**  
Time Period: **MP4**  
Length: **22 days**  
Status: **Published**

## Summative Assessments

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- Mystery Science Works of Water Performance Task
- [Mystery Science Works of Water Unit Assessment](#)
- Tests/Quizzes
- [Grade 2 Science Benchmark 3](#)

## NJSLS - Science

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SCI.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.
SCI.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.
SCI.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.
SCI.2-ESS1-1	Use information from several sources to provide evidence that Earth events can occur quickly or slowly.
SCI.2-ESS2-1	Compare multiple solutions designed to slow or prevent wind or water from changing the shape of the land.

## Science and Engineering Practices

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### Constructing Explanations and Designing Solutions

Make observations from several sources to construct an evidence-based account for natural phenomena. (2-ESS1-1)

Compare multiple solutions to a problem. (2-ESS2-1)

### Asking Questions and Defining Problems

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)

### **Developing and Using Models**

Develop a simple model based on evidence to represent a proposed object or tool. (K-2-ETS1-2)

### **Analyzing and Interpreting Data**

Analyze data from tests of an object or tool to determine if it works as intended. (K-2-ETS1-3)

## **Disciplinary Core Ideas**

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### **ESS1.C: The History of Planet Earth**

Some events happen very quickly; others occur very slowly, over a time period much longer than one can observe. (2-ESS1-1)

### **ESS2.A: Earth Materials and Systems**

Wind and water can change the shape of the land. (2-ESS2-1)

### **ETS1.A: Defining and Delimiting Engineering Problems**

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)

## **ETS1.B: Developing Possible Solutions**

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)

## **ETS1.C: Optimizing the Design Solution**

Because there is always more than one possible solution to a problem, it is useful to compare and test designs. (K-2-ETS1-3)

## **Crosscutting Concepts**

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### **Stability and Change**

Things may change slowly or rapidly. (2-ESS1-1, 2-ESS2-1)

### **Structure and Function**

The shape and stability of structures of natural and designed objects are related to their function(s). (K-2-ETS1-2)

### **Influence of Engineering, Technology, and Science on Society and the Natural World**

Developing and using technology has impacts on the natural world. (2-ESS2-1)

### **Science Addresses Questions About the Natural and Material World**

Scientists study the natural and material world. (2-ESS2-1)

## **Rationale and Transfer Goals**

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In what ways do humans slow or prevent wind or water from changing the shape of the land?

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. The crosscutting concept of patterns is called out as an organizing concept for these disciplinary core ideas. Students demonstrate grade-appropriate proficiency in developing and using models and obtaining, evaluating, and communicating information.

Students are also expected to use these practices to demonstrate an understanding of the core ideas.

## **Enduring Understandings**

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

## **Essential Questions**

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What evidence can we find to prove that Earth events can occur quickly or slowly?

In what ways do humans slow or prevent wind or water from changing the shape of the land?

## **Content - What will students know?**

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- Some events happen very quickly; others occur very slowly over a time period much longer than one can observe.
- Things may change slowly or rapidly.
- Developing and using technology has impacts on the natural world.
- Scientists study the natural and material world.
- The shape and stability of structures of natural and designed objects are related to their function(s).
- Wind and water can change the shape of the land.
- Because there is always more than one possible solution to a problem, it is useful to compare and test designs.

- A situation that people want to change or create can be approached as a problem to be solved through engineering.
- Asking questions, making observations, and gathering information are helpful in thinking about problems.
- Before beginning to design a solution, it is important to clearly understand the problem.
- 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.

### **Skills - What will students be able to do?**

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- Make observations from several sources to construct an evidence-based account for natural phenomena.
- Use information from several sources to provide evidence that Earth events can occur quickly or slowly. (Assessment does not include quantitative measurements of timescales.) Some examples of these events include: Volcanic explosions, earthquakes, and erosion of rocks.
- Compare multiple solutions to a problem.
- Compare multiple solutions designed to slow or prevent wind or water from changing the shape of the land. Examples of solutions could include: Different designs of dikes and windbreaks to hold back wind and water or different designs for using shrubs, grass, and trees to hold back the land.
- Ask questions based on observations to find more information about the natural and/or designed world.
- 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.
- Define a simple problem that can be solved through the development of a new or improved object or tool.
- Develop a simple model based on evidence to represent a proposed object or tool.
- 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.

### **Activities - How will we teach the content and skills?**

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- Mystery Science Works of Water Lesson 3
- Mystery Science Works of Water Lesson 4

- Mystery Science Works of Water Lesson 5
- Mystery Science Works of Water Lesson 6
- Whole group instruction and discussion.
- Read Alouds
- Group and Individual Projects
- Hands-on discovery when possible; creating models
- Webquests/Internet “field trips”

### **Formative Assessments**

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- Mystery Science Works of Water Lesson 3 Assessment
- Mystery Science Works of Water Lesson 4 Assessment
- Mystery Science Works of Water Lesson 5 Assessment
- Mystery Science Works of Water Lesson 6 Assessment
- Teacher Observation
- Student projects/models
- Exit Tickets

### **Spiraling for Mastery**

<b>Content or Skill for this Unit</b>	<b>Spiral Focus from Previous Unit</b>	<b>Instructional Activity</b>
N/A	<p>Kindergarten: A situation that people want to change or create can be approached as a problem to be solved through engineering.</p> <p>Kindergarten: Asking questions, making observations, and gathering information are helpful in thinking about problems.</p>	<p><a href="#">K-2-ETS1-1 Activities</a></p> <p><a href="#">K-2-ETS1-2 Activities</a></p>

	<p>Kindergarten: Before beginning to design a solution, it is important to clearly understand the problem.</p> <p>Kindergarten: 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.</p> <p>Kindergarten: Because there is always more than one possible solution to a problem, it is useful to compare and test design.</p>	
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## **Career Readiness, Life Literacies, & Key Skills**

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PFL.9.1.2.CR.1	Recognize ways to volunteer in the classroom, school and community.
PFL.9.1.2.CR.2	List ways to give back, including making donations, volunteering, and starting a business.
WRK.9.1.2.CAP.1	Make a list of different types of jobs and describe the skills associated with each job.
TECH.9.4.2.CI.1	Demonstrate openness to new ideas and perspectives (e.g., 1.1.2.CR1a, 2.1.2.EH.1, 6.1.2.CivicsCM.2).
TECH.9.4.2.CI.2	Demonstrate originality and inventiveness in work (e.g., 1.3A.2CR1a).
TECH.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).
TECH.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).
TECH.9.4.2.CT.3	Use a variety of types of thinking to solve problems (e.g., inductive, deductive).
TECH.9.4.2.IML.3	Use a variety of sources including multimedia sources to find information about topics such as climate change, with guidance and support from adults (e.g., 6.3.2.GeoGI.2, 6.1.2.HistorySE.3, W.2.6, 1-LSI-2).

## **Interdisciplinary Connections**

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### **NJSLS ELA**

RI.CR.2.1. Ask and answer questions to demonstrate understanding of key details in an informational text, referring explicitly to the text as the basis for the answers. (2-ESS1-1, K-2-ETS1-1)

RI.IT.2.3. Describe the connection between a series of historical events, scientific ideas or concepts, or steps in a sequence within a text. (2-ESS1-1, 2-ESS2-1)

RI.CT.2.8. Compare and contrast two informational versions of the same idea or topic by different authors or authors from different cultures. (2-ESS2-1)

W.WR.2.5. Generate questions about a topic and locate related information from a reference source to obtain information on that topic through shared and independent research. (2-ESS1-1)

W.SE.2.6. Prioritize information provided by different sources on the same topic while gathering ideas and planning to write about a topic. (2-ESS1-1, K-2-ETS1-1, K-2-ETS1-3)

SL.UM.2.5. Use multimedia; add drawings or other visual displays to stories or recounts of experiences when appropriate to clarify ideas, thoughts, and feelings. (K-2-ETS1-2)

## **NJSLS Mathematics**

MP.2 Reason abstractly and quantitatively. (2-ESS1-1, 2-ESS2-1, K-2-ETS1-1, K-2-ETS1-3)

MP.4 Model with mathematics. (2-ESS1-1, 2-ESS2-1, K-2-ETS1-1, K-2-ETS1-3)

MP.5 Use appropriate tools strategically. (2-ESS2-1, K-2-ETS1-1, K-2-ETS1-3)

2.NBT.A Understand place value. (2-ESS1-1)

2.M.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. (2-ESS2-1)

2.DL.B.4 Draw a picture graph and a bar graph (with single-unit scale) to represent a data set with up to four categories. Solve simple put together, take-apart, and compare problems using information presented in a bar graph. (K-2-ETS1-1, K-2-ETS1-3)

