May Grade 2 Unit 5: Changes to the Earth's surface

Content Area: **Science**
Course(s):
Time Period: **May**
Length: **6-8 Weeks**
Status: **Published**

Unit Overview

In this unit, students will:

- use evidence to explain that some changes to Earth happen slowly;
- use evidence to explain that some changes to Earth happen quickly;
- find solutions to prevent wind from changing the land;
- find solutions to prevent water from changing the land.

Enduring Understandings

Changes in the earth happen slowly, but some happen quickly.

Wind is a force that changes the land.

Water is a force that changes the land.

We can engineer ways to protect land from the changes of wind and water.

Essential Questions

How does water and wind erosion change the land on earth?

What can we do to minimize the damage of wind and rain?

Instructional Strategies & Learning Activities

- Unit 5: Changes to Earth's Surface

  Student Edition

  Changes to Earth's Surface: Unit Opener

  The Unit Opener for "Changes to Earth's Surface" introduces the unit project, Make a Windbreak. During this unit project, children will:
  - Design and test a windbreak.

- Collect data to use as evidence to answer a question.
- Construct an argument using evidence to support a claim.

- Unit 5: Changes to Earth's Surface

  Teacher eBook

  Changes to Earth's Surface: Unit Project: Make a Windbreak

  During the unit project "Make a Windbreak," children will:
  - Design and test a windbreak.
  - Collect data to use as evidence to answer a question.
  - Construct an argument using evidence to support a claim.

- Unit 5: Changes to Earth's Surface

  Home Letter

  Changes to Earth's Surface: Home Letter

  This is the home letter for the unit "Changes to Earth's Surface."

- Unit 5: Changes to Earth's Surface

  Assessment Guide

  Changes to Earth's Surface: Unit Pretest (Editable)

  The Unit Pretest for "Changes to Earth's Surface" focuses on prerequisite knowledge. The test is composed primarily of DOK 1 items that evaluate student preparedness for the upcoming content.

- Unit 5: Changes to Earth's Surface

  Assessment Guide

  Changes to Earth's Surface: Unit Test (Editable)

  The Unit Test for "Changes to Earth's Surface" assesses students' ability to apply knowledge to solve problems and explain phenomena in relation to the Performance Expectations associated with the unit. In this unit, children:
  - use evidence to explain that some changes to Earth happen slowly;
  - use evidence to explain that some changes to Earth happen quickly;
  - find solutions to prevent wind from changing the land;
  - find solutions to prevent water from changing the land.

- Unit 5: Changes to Earth's Surface

  Teacher Edition

  Changes to Earth's Surface: Unit At a Glance

  Unit at a Glance for "Changes to Earth's Surface" includes the unit table of contents, unit vocabulary words, and the vocabulary game, Make a Match. In this unit, children will:
  - use evidence to explain that some changes to Earth happen slowly;
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- Unit 5: Changes to Earth's Surface

  Teacher Edition

  Changes to Earth's Surface: Connecting with NGSS

  These opportunities for informal science learning provide local context and extend and enhance concepts from the unit "Changes to Earth's Surface."

- Unit 5: Changes to Earth's Surface

  Teacher Edition

  Changes to Earth's Surface: 3D Unit Planning

  Planning resources are available for each lesson and hands-on activity in the unit "Changes to Earth's Surface."

- Unit 5: Changes to Earth's Surface

  Student Edition

  Changes to Earth's Surface: Unit At a Glance

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Unit 5: Changes to Earth's Surface

Online Assessment

Changes to Earth's Surface: Unit Pretest

The interactive Unit Pretest for "Changes to Earth's Surface" focuses on prerequisite knowledge. The test is composed primarily of DOK 1 items that evaluate student preparedness for the upcoming content.

- Unit 5: Changes to Earth's Surface

  Student eBook

  Changes to Earth's Surface: Unit Opener

  The Unit Opener for "Changes to Earth's Surface" introduces the unit project, Make a Windbreak. During this unit project, children will:
  - Design and test a windbreak.
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  - Construct an argument using evidence to support a claim.

- Unit 5: Changes to Earth's Surface

  Online Assessment

  Changes to Earth's Surface: Unit Test

  The interactive Unit Test for "Changes to Earth's Surface" assesses students' ability to apply knowledge to solve problems and explain phenomena in relation to the Performance Expectations associated with the unit. In this unit, children:
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- Unit 5: Changes to Earth's Surface

  Teacher eBook

  Changes to Earth's Surface: Unit Opener

  The Unit Opener introduces the unit "Changes to Earth's Surface" and the unit project, Make a Windbreak.
  Launch

Unit 5: Changes to Earth's Surface

Assessment Guide

Changes to Earth's Surface: Unit Pretest

The Unit Pretest for "Changes to Earth's Surface" focuses on prerequisite knowledge. The test is composed primarily of DOK 1 items that evaluate student preparedness for the upcoming content.

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  Unit 5: Changes to Earth's Surface

  Assessment Guide

  Changes to Earth's Surface: Unit Test

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  - Unit 5: Changes to Earth's Surface

    Teacher Edition

    Changes to Earth's Surface: Unit Opener

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    Unit 5: Changes to Earth's Surface

    Teacher Edition

    Changes to Earth's Surface: Integrating the NGSS* Three Dimensions of Learning

    This section details the Performance Expectations covered in the unit "Changes to Earth's Surface."

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    Unit 5: Changes to Earth's Surface

    Teacher Edition

Changes to Earth's Surface: Unit Project: Make a Windbreak

During the unit project "Make a Windbreak," children will:

- Design and test a windbreak.
- Collect data to use as evidence to answer a question.
- Construct an argument using evidence to support a claim.

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Unit 5: Changes to Earth's Surface

Teacher Edition

Changes to Earth's Surface: Differentiate Instruction

This page provides differentiated support for this unit's Science & Engineering Leveled Readers, "Why Are Resources Important ?" and "All About Rocks."

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Unit 5: Changes to Earth's Surface

Unit Performance Task Worksheet

Changes to Earth's Surface: Unit Performance Task: Engineer It - Build an Earthquake-Proof Structure

This is the Unit Performance Task worksheet for "Engineer It - Build an Earthquake-Proof Structure." During this task, children will plan and design a solution to a problem in order to compare and test possible designs of an earthquake-proof structure that will impact the natural world.

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Unit 5: Changes to Earth's Surface

Unit Performance Task Worksheet

Changes to Earth's Surface: Unit Performance Task: Engineer It - Build an Earthquake-Proof Structure (Editable)

This is the editable Unit Performance Task worksheet for "Engineer It - Build an Earthquake-Proof Structure." During this task, children will plan and design a solution to a problem in order to compare and test possible designs of an earthquake-proof structure that will impact the natural world.

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Unit 5: Changes to Earth's Surface

Leveled Readers Teacher's Guide

Topic 5: Earth and Its Resources

The Leveled Readers Teachers Guide provides teaching strategies and support (as well as reproducible English and Spanish worksheets) for the Unit 5 readers "Why Are Resources Important?" and "All About Rocks." On-Level and Extra-Support worksheets focus on vocabulary development, while Enrichment worksheets reinforce and enrich content.

- Unit 5: Changes to Earth's Surface

  Leveled Readers - Red

  Extra-Support: Why Are Resources Important?

  The leveled reader "Why Are Resources Important?" is designed for below-level readers and can be used to reinforce key concepts from the unit "Changes to Earth's Surface."

- Unit 5: Changes to Earth's Surface

  Teacher eBook

  Changes to Earth's Surface: Unit Review

  The Unit Review assesses student understanding of key ideas and concepts from the unit "Changes to Earth's Surface."

- Unit 5: Changes to Earth's Surface

  You Solve It

  Preventing Wind Erosion (Teacher)

  Teacher support materials are available for "Preventing Wind Erosion." During this activity, students will perform field studies of a beach and a farm and simulate the effects of different speeds of wind on the land. They test and evaluate various methods used to prevent wind erosion.

- Unit 5: Changes to Earth's Surface

  Leveled Readers - Blue

  On-Level: Why Are Resources Important?

  The leveled reader "Why Are Resources Important?" is designed for on-level readers and can be used to enrich key concepts from the unit "Changes to Earth's Surface."

- Unit 5: Changes to Earth's Surface

  You Solve It

  Preventing Wind Erosion

  In Preventing Wind Erosion, students perform field studies of a beach and a farm and simulate the effects of different speeds of wind on the land. They test and evaluate various methods used to prevent wind erosion.

- Unit 5: Changes to Earth's Surface

  Teacher Edition

  Changes to Earth's Surface: Unit Performance Task: Engineer It - Build an Earthquake-Proof Structure

  During the Performance Task "Engineer It - Build an Earthquake-Proof Structure," children will plan and design a solution to a problem in order to compare and test possible designs of an earthquake-proof structure that will impact the natural world.

- Unit 5: Changes to Earth's Surface

  Student Edition

  Changes to Earth's Surface: Unit Review

  The Unit Review assesses student understanding of key ideas and concepts from the unit "Changes to Earth's Surface."

- Unit 5: Changes to Earth's Surface

  Student eBook

  Changes to Earth's Surface: Unit Review

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    - Unit 5: Changes to Earth's Surface

      Leveled Readers - Green

Enrichment: All About Rocks

The leveled reader "All About Rocks" is designed for above-level readers and can be used to extend key concepts from the unit "Changes to Earth's Surface."

- Unit 5: Changes to Earth's Surface

  Teacher eBook

  Changes to Earth's Surface: Unit Performance Task: Engineer It - Build an Earthquake-Proof Structure

  During the Performance Task "Engineer It - Build an Earthquake-Proof Structure," children will plan and design a solution to a problem in order to compare and test possible designs of an earthquake-proof structure that will impact the natural world.

- Unit 5: Changes to Earth's Surface

  Unit Project Worksheet

  Changes to Earth's Surface: Unit Project: Make a Windbreak

  This is the Unit Project worksheet for "Make a Windbreak." During this project, children will:
  - Design and test a windbreak.
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  During the Performance Task "Engineer It - Build an Earthquake-Proof Structure," children will plan and design a solution to a problem in order to compare and test possible designs of an earthquake-proof structure that will impact the natural world.

- Unit 5: Changes to Earth's Surface

  Unit Project Worksheet

  Changes to Earth's Surface: Unit Project: Make a Windbreak (Editable)

This is the editable Unit Project worksheet for "Make a Windbreak." During this project, children will:

- Design and test a windbreak.
- Collect data to use as evidence to answer a question.
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Unit 5: Changes to Earth's Surface

Teacher Edition

Changes to Earth's Surface: Unit Review

The Unit Review assesses student understanding of key ideas and concepts from the unit "Changes to Earth's Surface."

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Unit 5: Changes to Earth's Surface

Student eBook

Changes to Earth's Surface: Unit Performance Task: Engineer It - Build an Earthquake-Proof Structure

During the Performance Task "Engineer It - Build an Earthquake-Proof Structure," children will plan and design a solution to a problem in order to compare and test possible designs of an earthquake-proof structure that will impact the natural world.

Integration of 21st Century Themes and Career Exploration

CRP.K-12.CRP1	Act as a responsible and contributing citizen and employee.
CRP.K-12.CRP2	Apply appropriate academic and technical skills.
CRP.K-12.CRP4	Communicate clearly and effectively and with reason.
CRP.K-12.CRP5	Consider the environmental, social and economic impacts of decisions.
CRP.K-12.CRP6	Demonstrate creativity and innovation.
CRP.K-12.CRP7	Employ valid and reliable research strategies.
CRP.K-12.CRP8	Utilize critical thinking to make sense of problems and persevere in solving them.
CRP.K-12.CRP9	Model integrity, ethical leadership and effective management.
CRP.K-12.CRP12	Work productively in teams while using cultural global competence.

Technology and Design Integration

Students will interact with the SmartBoard, Ipads, chromebooks and document camera.

TECH.8.1.2	Educational Technology: All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaborate and to create and communicate knowledge.
TECH.8.1.2.A.CS1	Understand and use technology systems.
TECH.8.1.2.B	Creativity and Innovation: Students demonstrate creative thinking, construct knowledge and develop innovative products and process using technology.
TECH.8.1.2.C	Communication and Collaboration: Students use digital media and environments to communicate and work collaboratively, including at a distance, to support individual learning and contribute to the learning of others.
TECH.8.1.2.E.CS1	Plan strategies to guide inquiry
TECH.8.1.2.F	Critical thinking, problem solving, and decision making: Students use critical thinking skills to plan and conduct research, manage projects, solve problems, and make informed decisions using appropriate digital tools and resources.
TECH.8.1.2.F.CS1	Identify and define authentic problems and significant questions for investigation.

Interdisciplinary Connections

LA.RI.2	Reading Informational Text
LA.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.
LA.RI.2.2	Identify the main topic of a multiparagraph text as well as the focus of specific paragraphs within the text.
LA.RI.2.3	Describe the connection between a series of historical events, scientific ideas or concepts, or steps in technical procedures in a text.
LA.RI.2.4	Determine the meaning of words and phrases in a text relevant to a grade 2 topic or subject area.
LA.RI.2.5	Know and use various text features (e.g., captions, bold print, subheadings, glossaries, indexes, electronic menus, icons) to locate key facts or information in a text efficiently.
LA.RI.2.6	Identify the main purpose of a text, including what the author wants to answer, explain, or describe.
LA.RI.2.7	Explain how specific illustrations and images (e.g., a diagram showing how a machine works) contribute to and clarify a text.
LA.RI.2.8	Describe and identify the logical connections of how reasons support specific points the author makes in a text.
LA.RI.2.9	Compare and contrast the most important points presented by two texts on the same topic.
LA.RI.2.10	Read and comprehend informational texts, including history/social studies, science, and technical texts, at grade level text complexity proficiently with scaffolding as needed.

Differentiation

- Understand that gifted students, just like all students, come to school to learn and be challenged.

- Pre-assess your students. Find out their areas of strength as well as those areas you may need to address before students move on.
- Consider grouping gifted students together for at least part of the school day.
- Plan for differentiation. Consider pre-assessments, extension activities, and compacting the curriculum.
- Use phrases like "You've shown you don't need more practice" or "You need more practice" instead of words like "qualify" or "eligible" when referring to extension work.
- Encourage high-ability students to take on challenges. Because they're often used to getting good grades, gifted students may be risk averse.

- **Definitions of Differentiation Components**:

    - Content – the specific information that is to be taught in the lesson/unit/course of instruction.
    - Process – how the student will acquire the content information.
    - Product – how the student will demonstrate understanding of the content.
    - Learning Environment – the environment where learning is taking place including physical location and/or student grouping

Differentiation occurring in this unit:

See differentiation strategies suggested in the teacher's manual for struggling or advianced students.

Modifications & Accommodations

Refer to QSAC EXCEL SMALL SPED ACCOMMOCATIONS spreadsheet in this discipline.

Modifications and Accommodations used in this unit:

IEP and 504 plans will be utilized.

Benchmark Assessments

Benchmark Assessments are given periodically (e.g., at the end of every quarter or as frequently as once per month) throughout a school year to establish baseline achievement data and measure progress toward a standard or set of academic standards and goals.

Schoolwide Benchmark assessments:

Aimsweb benchmarks 3X a year

Linkit Benchmarks 3X a year

DRA

Additional Benchmarks used in this unit:

DRA

AIMSweb

Formative Assessments

Assessment allows both instructor and student to monitor progress towards achieving learning objectives, and can be approached in a variety of ways. **Formative assessment** refers to tools that identify misconceptions, struggles, and learning gaps along the way and assess how to close those gaps. It includes effective tools for helping to shape learning, and can even bolster students' abilities to take ownership of their learning when they understand that the goal is to improve learning, not apply final marks (Trumbull and Lash, 2013). It can include students assessing themselves, peers, or even the instructor, through writing, quizzes, conversation, and more. In short, formative assessment occurs throughout a class or course, and seeks to improve student achievement of learning objectives through approaches that can support specific student needs (Theal and Franklin, 2010, p. 151).

Formative Assessments used in this unit:

Unit Test

Performance Task

Summative Assessments

- **summative assessments** evaluate student learning, knowledge, proficiency, or success at the conclusion of an instructional period, like a unit, course, or program. Summative assessments are almost always formally graded and often heavily weighted (though they do not need to be). Summative assessment can be used to great effect in conjunction and alignment with formative assessment, and instructors can consider a variety of ways to combine these approaches.

  Summative assessments for this unit:

- Teacher observation
- Questioning
- Whiteboard Response
- Think-Pair Share
- Classroom discussion
- Workbook pages

- Writing/Performance rubrics included in lesson

Pretest

Instructional Materials

HMH Science Dimensions teaching materials

Various hands on materials for labs

Standards

2-ESS2-1	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, and different designs for using shrubs, grass, and trees to hold back the land. Constructing Explanations and Designing Solutions 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. Compare multiple solutions to a problem.
ESS2.A	Earth Materials and Systems Wind and water can change the shape of the land. Stability and Change Things may change slowly or rapidly.