

Unit 3: Inside the Earth

6th Grade Science

15 Class Meetings

Created July 2020

Essential Questions

- How do natural and manmade features affect the flow of water and erosion?
- How do Earth's rocks and other materials provide a record of Earth's history?
- How can rocks, minerals, and fossils tell us about the past, present, and future of Earth.

Enduring Understandings with Unit Goals

EU 1: Constructive and destructive natural processes shape Earth's surface.

- Examine how continents are pushed by a powerful force.
- Rocks and minerals emerge from the ever-changing Earth.

EU 2: Sediments are soil components that have been eroded and deposited by moving water.

- Explain how Earth's rocks and other materials provide a record of its history.
- Examine how water has helped shape the Earth.

Standards

Next Generation Science Standards:

- **MS-ESS1-4:** Construct a scientific explanation based on evidence from rock strata for how the geologic time scale is used to organize Earth's 4.6-billion-year-old history.
- **MS-ESS2-1:** Develop a model to describe the cycling of Earth's materials and the flow of energy that drives this process.
- **MS-ESS2-2:** Construct an explanation based on evidence for how geoscience processes have changed Earth's surface at varying time and spatial scales.
- **MS-ESS2-3:** Analyze and interpret data on the distribution of fossils and rocks, continental shapes, and seafloor structures to provide evidence of the past plate motions.

Common Core State Standards:

- **RST.6-8.:** Cite specific textual evidence to support analysis of science and technical texts.
- **RST.6-8.9:** Compare and contrast the information gained from experiments, simulations, video, or multimedia sources with that gained from reading a text on the same topic.
- **6.NS.C.5:** Understand that positive and negative numbers are used together to describe quantities having opposite directions or values (e.g., temperature above/below zero, elevation above/below sea level, credits/debits, positive/negative electric charge); use positive and negative numbers to represent quantities in real-world contexts, explaining the meaning of 0 in each situation.

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ISAAC Vision of the Graduate Competencies

Competency 1: Write effectively for a variety of purposes.

Competency 2: Speak to diverse audiences in an accountable manner.

Competency 3: Develop the behaviors needed to interact and contribute with others on a team.

Competency 4: Analyze and solve problems independently and collaboratively.

Competency 5: Be responsible, creative, and empathetic members of the community.

Unit Content Overview

1. Erosion

- Define the breakdown of organic matter and its process.
- Define the process of Earth changing over time.
- Examine how erosion transforms the landscape.
- Vocabulary: Sediment, erosion, weathering, silt, deposition.

2. Rocks and Minerals

- Show how rocks and minerals form
- Define how rocks and minerals tell a historical story of earth.
- Examine rock and fossil formations
- Vocabulary: Minerals, igneous, metamorphic, sedimentary, fossil fuels.

3. Earth's Shape

- Explain the flow of energy through the cycling of Earth's materials.
- Analyze continental shape and seafloor structures using past evidence.
- Compare and contrast Earth in its beginning and now
- Vocabulary: Cycle, magma, fossils, atmosphere, gravity.

Interdisciplinary Connection:

- Language Arts - Writing
- Math– Computation/Word Problems
- Art – Illustration of systems and creating maps

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Daily Learning Objectives with *Do Now Activities*

Students will be able to...

- Develop a model showing geological time scale is used to organize Earth's 4.6 billion-year-old history.**
- Create a timeline mapping the order of major changes in our planet's history. Highlight the key changes to our Earth's history using data.
- Identify the three main rock types, and how they form.
- Using scientific identification and analysis, list the characteristics of each of the three main rock types.
- Create a model describing how energy plays a role in changing the structure and layout of Earth. Examine what "energy" is?
- Outline how the everchanging landscape is determined by the inside of our planet.
- Analyze natural events that follow patterns of distribution that reflect geological cause and effect.
- Analyze how structures provide evidence of the past plate motions
- How does the distribution of fossils, continental shapes, and the seafloor show past plate motions?
- Analyze and interpret data to determine similarities and differences in fossil findings.
- Compare and contrast specific historical data in the development of Earth .
- Explain that many changes in biodiversity have occurred since life evolved on Earth.
- Create a presentation promoting traveling through time and the evolution of Earth.
- Organize, prepare, and discuss evidence that supports findings of biodiversity. Create a chart, timeline, or visual representation of findings.

Instructional/ ELL Strategies/Differentiated Instruction

- Power Point Lecture with notetaking
- Guided notetaking
- Warm up activities
- Flexible grouping
- Independent reading
- Lab activities
- Exit slips
- Graphic Organizers
- Creating authentic connections for students
- Vocabulary word bank
- Rephrasing and restatement of information and concepts
- Tiered instruction
- Alternative test settings
- Reading and accountable talk discussions of texts

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- Student-led instruction
- Homework assignments
- Hands-on activities
- SIOP strategies- Teachers implement SIOP strategies to introduce academic vocabulary and use multiple modes of representation including gestural, oral, pictorial, graphic and textural.

Assessments

FORMATIVE ASSESSMENTS:

- Guided notes
- Homework
- Daily Think-Write-Pair-Share (TWPS) Activities
- Accountable Talk Discussions
- Oral questioning
- Exit slips
- Warm Up activities
- Close reading and interpretation of text
- Performance Task – Rock it Out!
 - Future Rubrics Assessment in 2021-2022 school year

SUMMATIVE ASSESSMENTS:

- Quiz on EU 1
- Quiz on EU 2
- Performance Task – Rock it Out!
- Unit 2 Test

Unit Task

Unit Task Name: Rock it Out!

Description: Students will utilize nonfiction text, timelines, and physical samples of rocks and minerals (EU1) Student's will complete an investigation into how erosion shapes the land and how varying materials impact the length of time in which "change" takes place on Earth using wind and water as the driving forces of Earth's energy (EU2). Students'will then investigate and produce a visual presentation sharing their findings.

Evaluation: Summative Assessment and Future Rubric in 2021-2022 school year

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Unit Resources
<ul style="list-style-type: none">● Non-Fiction Text● Internet databases● Large format poster printer● Microsoft Power Point or Prezi● Laptops● NOAA website● Lab materials● https://pals.sri.com/tasks/5-8/ChangeRocks/