

Unit 4: Earth's Evolution
6th Grade Science
10 Class Meetings

Created July 2020

Essential Questions

- How do natural disasters impact and effect our planet?
- What is the origin, function, and use of natural resources?
- What affects does Global Warming have on environments?

Enduring Understandings with Unit Goals

EU 1: Natural disasters impact human life and ecosystem structures.

- Examine how data can help guide weather scientists in making accurate predictions
- Explain how natural phenomena allow for reliable predictions, while others occur suddenly.

EU 2: The use of natural resources impact on Earth are driven by human consumption.

- Explain humans' use of fossil fuels and their effect on the environment.
- Examine fossil fuels and how and where they are formed.

EU 3: Global climate change and its impact on Earth is impacted by human actions.

- Compare and contrast fossil fuel usage with climate changes.
- Explain global warming and how humans' impact changes within their environments.

Standards

Next Generation Science Standards:

- **MS-ESS3-2:**Analyze and interpret data on natural hazards to forecast future catastrophic events and inform the development of technologies to mitigate their effects.
- **6-ESS3-4:**Construct an argument supported by evidence for how increases in human population and per-capita consumption of natural resources impact Earth's systems.
- **6-ESS3-5:**Ask questions to clarify evidence of the factors that have caused the rise in global temperatures over the past century.

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. Natural Disasters

- Outline a natural disaster of choice and how it develops.
- Define the process of how scientists identify and track natural disasters.
- Examine how technology helps identify natural disasters.
- Vocabulary: Earthquakes, volcanoes, hurricanes, tornados, tsunami.

2. Fossil Fuels

- Show how fossil fuels are formed.
- Define how fossil fuels are consumed and used by humans.
- Examine the use of fossil fuels and their impacts on Earth.
- Vocabulary: Trace fossils, fossil fuels, fossilization, decay.

3. Global Warming

- Explain the use of natural energy's impact on Earth's climate.
- Analyze temperature change and assess its relationship to fossil fuels.
- Compare and contrast variances in climate, weather, and temperature over Earth's history.
- Vocabulary: Climate change, global warming, ozone, carbon dioxide, carbon footprint, greenhouse effect.

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...

- Using scientific identification and analysis, list the characteristics of each natural disaster identified and explain its inherent markers.
- Create a model to describe a natural disaster and the process used by scientist to identify it.
- Evaluate how technology helps scientist warn people of impending disasters.
- Compare and contrast two natural disasters and explain their cause and effect.
- Analyze and explain how fossil fuels are utilized as energy consumed by humans.
- How does the use of fossil fuels impact the environment?
- Compare and contrast specific historical data in the development of Earth.
- Synthesize global warming data and explain the impact on local ecosystems.
- Create a presentation demonstrating global warming and how fossil fuels may lead to the “greenhouse effect”.
- Evaluate and defend human impact on global warming. Use scientific data and evidence collected.

Instructional/ ELL Strategies/Differentiated Instruction

- Power Point with notetaking
- Whole group instruction
- 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
- Student-led instruction
- Homework assignments
- Hands-on activities
- SIOP strategies

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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 – Man, It's Hot!
 - Future Rubrics Assessment in 2021-2022 school year

SUMMATIVE ASSESSMENTS:

- Quiz on EU 1
- Quiz on EU 2
- Performance Task – Man, It's Hot!
- Unit 3 Test

Unit Task

Unit Task Name: Man, It's Hot!

Description: The conversation about global warming is heating up and the topic at the coffee table is the weather. The question is, what does 'global warming' mean and we are really seeing climate change (EU3)? In this lesson the kids will do some investigation to determine for themselves if our climate is changing at all. Students will understand that climate varies over time analyzing how changes in climate can affect the organisms that live in the affected area. Student's will collect data and monitor climate variables in their own area and make comparisons with historical data.

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

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Unit Resources

- Non-Fiction Text
- Internet databases
- Large format poster printer
- Microsoft Power Point or Prezi
- Laptops
- NOAA website
- Lab materials
- <https://www.nps.gov/teachers/classrooms/man-its-hot.htm>