

Earth: Layer By Layer

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Grade Level 4
Duration 2 class periods

National Standards

GEOGRAPHY

Element 3: Physical Systems

7. The physical processes that shape the patterns of Earth's surface

AZ Standards

ELA

Reading Informational Vocabulary

4.RI.4 Determine the meaning of general academic and domain-specific words or phrases based on grade 4 topic or subject area
 4.RI.7 Interpret information presented visually, orally, or quantitatively (e.g., in charts, graphs, diagrams, timelines, animations, or interactive elements on Web pages) and explain how the information contributes to an understanding of the text in which it appears.

SCIENCE

Earth and Space Standards

4.E1U1.6 Plan and carry out an investigation to explore and explain the interactions between Earth's major systems and the impact on Earth's surface materials and processes.

Arizona Social Science Standards

Geography

The use of geographic representation and tools help individuals understand their world.

4.G1.1 Use and construct maps and graphs to represent changes in the Americas over time.

SIOP Elements

Preparation Adapting content Linking to background Linking to past learning Strategies used	Scaffolding Modeling Guided practice Independent practice Comprehensible input	Grouping Option Whole class Small groups Partners Independent
Integrating Processes Reading Writing Speaking Listening	Application Hands on Meaningful Linked to objectives Promotes engagement	Assessment Individual Group Written Oral

Arizona English Language Proficiency Standards

Grade 4 and 5
 Basic
 Listening and Reading

Standard 1 By the end of each language proficiency level, an English learner can construct meaning from oral presentations and literary and informational text through grade appropriate listening, reading, and viewing.

B-2: recount a text including specific details and information.

Speaking and Writing

Standard 5 By the end of each language proficiency level, an English learner can adapt language choices to purpose, task, and audience when speaking and writing.

B-1 demonstrate awareness of the need to adapt language choices according to purpose, task, and audience.

B-2: use grade-appropriate general academic and content specific words, phrases, and expressions with developing control.

Overview

Each day we learn more about how fragile our planet is. Since we depend on Earth's soil, air, and water to survive, it is important to understand how the Earth is constructed and how this can impact mankind.

Purpose

In this lesson, students will learn about the Earth's four layers: their structure and components. They will learn how these layers can cause hazardous geologic effects on the crust of the earth.

Key Vocabulary

crust - the outer part of Earth's surface

mantle - the part of Earth's interior that is between the crust and the core

magma - hot liquid rock below the surface of the Earth

molten - melted by heat into a liquid

core - the innermost part of Earth

Materials

- Egg and Apple
- Projection device, computer and Internet
- Layers of the Earth video for Kids | Inside Our Earth | Structure and Components YouTube Video (2.43 min)
https://www.youtube.com/watch?v=WjXSCumeq_xo
- Vocabulary Cards
- Index cards
- Vocabulary Test and Answer Key
- Science for Kids: Composition of the Earth
https://www.ducksters.com/science/composition_of_the_earth.php.is
- Layers of the Earth worksheet
- Earth's Layers YouTube Video (5.12 min)

<https://www.youtube.com/watch?v=kWWyy0m3MXE&t=29s>

- Different colors and sizes of construction paper circles (sizes given here allow for less use of construction paper—make larger if desired)
 - Blue (5 inches in diameter)
 - Brown (5 inches in diameter)
 - Yellow (4 inches in diameter)
 - Orange (2.5 inches in diameter)
 - Red (1.5 inches in diameter)
- Glue
- Layers of the Earth Assessment and Answer Key

Objectives

The student will be able to:

1. Identify the earth's layers.
2. Determine the effects of geologic events on the earth's surface.

Procedures

Prerequisite Knowledge: Students know about continental drift and tectonic plates.

SESSION ONE

1. Begin the lesson by reviewing continental drift. Then ask: Why do the tectonic plates move? Solicit student responses and write them on the whiteboard. Don't comment on right or wrong responses. (**Preparation: Linking to past learning**)
2. Show the class an egg. Ask students: What are the layers in an egg? (shell, white of the egg, yoke, thin layers between each of these) Then do the same with the apple. (edible part of the apple or white part, the core or the part that has the seeds). So just like an apple and an egg, the earth has layers too.
3. Project Layers of the Earth video for Kids | Inside Our Earth | Structure and Components YouTube Video (2.43 min).

Earth: Layer by Layer

<https://www.youtube.com/watch?v=WjXSCumeqxo> Discuss the major concepts. **(Integrating Processes: Listening)**

- Distribute 5 index cards to each student. Ask what they know about the word crust? Discuss how a loaf of bread has an outer part that is rougher than the rest of the bread. Tell them the topmost layer of the Earth is called crust. Project the Vocabulary Card for crust. Have students write the word on the top of one of their index cards with the definition below it. Have them repeat the word and then the definition in unison. Tell them to draw an image or picture of the vocabulary word on the bottom of the card. Repeat this process for all of the words—giving examples of how this word can be used to describe the layers of the Earth as well as alternate uses. **(Scaffolding: Comprehensible input, Application: Linked to objectives)**



- Have students practice with each other learning the words and their definitions. The Ticket Out the Door is the Vocabulary Test.

SESSION TWO

- Begin the session by distributing the Layers of the Earth worksheet, pairing up students, and projecting Science for Kids: Composition of the Earth https://www.ducksters.com/science/composition_of_the_earth.php.is
- Explain how they are expected to complete the worksheet by filling in the blanks after reading the information projected. Read aloud the information and have students work together. **(Scaffolding: Comprehensible input, Integrating Processes: Listening, Reading, Writing; Application: Linked to objectives, Grouping Option: Partners)**

- Distribute sets of the colored paper circles to each student along with glue. Project Earth's Layers YouTube Video (5.12 min) <https://www.youtube.com/watch?v=kWWyy0m3MXE&t=29s> Have students create their Earth's Layer model in their science notebooks or on plain paper. *Note: You may not want to go into convection currents, etc., and might want to stop the video earlier.* **(Application: Hands on, Meaningful; Scaffolding: Modeling)**
- End class by projecting Volcanoes 101/ National Geographic YouTube Video (4.58 min) which illustrates the effects of this molten core on the surface of the Earth. <https://www.youtube.com/watch?v=VNGUdObDoLk> **(Application: Linked to objectives)**

Assessment

Science and ELA

The index cards can be graded for completeness and accuracy. Mastery will be considered a score of 90% or higher.

The Vocabulary Test can be graded to measure language acquisition. Mastery will be considered a score of 80% or higher.

The Layers of the Earth worksheet can be graded for completeness and accuracy. Mastery will be considered a score of 90% or higher.

Science and Social Science

The Layers of the Earth Assessment can be graded using the Answer Key. Mastery will be considered a score of 80% or higher. **(Written: Individual)**

Extensions

Watch Information Earth 101/National Geographic YouTube Video <https://www.youtube.com/watch?v=HCDVN7DCzYE/>

Sources

Information about the Earth's Layers https://en.wikipedia.org/wiki/Structure_of_Earth