

Layers of the Earth

Podcast Length: 15:45
Character Value: Creativity
Health Message: Importance of a balanced diet

Synopsis

Today's Walking Classroom podcast focuses on the layers of the earth -- the differences between the crust, the mantle, and the inner and outer core. The inner core of the earth is thought to be the same temperature as the sun. The students also discuss how tectonic plates are formed and why their movement creates earthquakes.

Objectives

- Identify the key characteristics of the crust, mantle and core.
- Compare and contrast the three layers of the earth.
- Describe how the earth's layers contribute to earthquakes.

Procedure

If you want to compare student comprehension before and after listening, administer the Comprehension Quiz before doing anything related to the podcast. Retest after walking.

1. Review key vocabulary (included definitions are limited to the context of today's podcast).
 - **crust (noun):** the thinnest and outermost layer of the earth found beneath the land and oceans
*The earth's **crust** can be forty-four miles thick under land.*
 - **mantle (noun):** the middle and thickest layer of the earth
*The earth's **mantle** is divided into an upper and a lower section.*
 - **core (noun):** the innermost layer of the earth
*Scientists believe that the earth's **core** is the same temperature as the sun.*
2. Build background by asking students, "Have you ever seen a picture of the earth's many layers? What do you know about them?"
3. Allow time for discussion.
4. Podcast preview: "Did you ever peel an onion to reveal its many layers? Today we're going to learn more about the layers of the earth and how they resemble and differ from each other. Ready? Let's go!"
5. Walk!

Questions for Thought and Discussion

Upon return to the classroom, discuss the main ideas and content from the podcast using the questions and suggested answers below.

1. What were some of the big ideas of this podcast?

- ✓ *The crust is the thinnest layer of the earth, found under the land and oceans. It is made up of two parts: the continental crust and the oceanic crust. As it moves towards the center of the earth, the crust increases in temperature.*
- ✓ *The middle layer of the earth is the mantle and consists of an upper and lower section. The mantle is about 1,800 miles thick.*
- ✓ *The core is the innermost layer of the earth. It consists of an inner core, a solid ball made of iron and nickel, and an outer core made of liquid iron and nickel.*

2. What role do the layers of the earth play in creating earthquakes?

- ✓ *The uppermost part of the mantle, along with the lowest part of the crust, forms a layer of rock that is separated into seven different pieces that are called "tectonic plates." These plates can move and shift around very slowly over time. The moving of the plates is what causes earthquakes.*

3. Although scientists have never traveled to the center of the earth, they have used their intelligence and wisdom to understand the different layers.

a. Why is it important to attempt to explain the things we cannot prove or see directly?

- ✓ *Suggestion: Just because something can't be seen doesn't mean it doesn't directly impact our lives. Even if we don't see what's happening beneath the Earth's surface, volcanoes can still erupt. It helps us be prepared and have a better understanding of the world we live in.*

b. What role does creativity play in understanding things we cannot see?

- ✓ *Suggestion: You have to try and imagine what is going on even though you can't actually see it. It requires you to use your imagination as a starting point.*

Layers of the Earth Comprehension Quiz

Name: _____

Date: _____

1. The earth's core is
 - a. the center layer.
 - b. the middle layer.
 - c. the top layer.
2. The earth's crust is made up of two parts, which are
 - a. the upper crust and the lower crust.
 - b. the continental crust and the oceanic crust.
 - c. the liquid crust and the solid crust.
3. The temperature at the earth's core is closest to
 - a. an extremely hot summer day.
 - b. temperatures on Mars.
 - c. the temperature of the sun.
4. The mantle is
 - a. the outermost layer of the earth.
 - b. the thickest layer of the earth.
 - c. the hottest layer of the earth.
5. According to the podcast, what word would best describe the layers of the earth?
 - a. unchanging
 - b. alike
 - c. moving
6. Which of the following is a fact about the layers of the earth?
 - a. The earth's crust is always three miles deep.
 - b. The earth's core is made of nickel and iron.
 - c. Understanding the different layers within the earth is fascinating.
7. Number the events in the order in which they happen. (1, 2, 3)
____ The tectonic plates shift atop a melted, goopy layer of rock that flows beneath them.
____ The tectonic plates bang into one another, causing an earthquake.
____ The upper part of the mantle and the lower part of the crust combine to form seven tectonic plates.
8. Why do the layers of the earth appear and behave so differently from one another?
 - a. The earth rotates more quickly as you move closer to the core; faster spinning rock behaves differently than slowly spinning rock.
 - b. Each layer was formed during a different time period.
 - c. As you move closer to the core, temperature and pressure increase creating different types of rock.
9. Calcium is important for maintaining strong bones and teeth.
 - a. true
 - b. false
10. Plants absorb minerals they need from the soil.
 - a. true
 - b. false