Lesson Plan: The Layers of the Earth

Age Level: K – 3

Instructor: Kaye Hagler

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Chapter Inquiry Question: What does the Earth look like below its surface? Chapter Vocabulary/ Word Wall: core, crust, mantle

Supplies: Apple, knife (teacher use only), play dough in three colors: red, blue, green; dental floss

**Teacher Talk:**

*If you hike through a park, over a mountain, or across a playground, what lies beneath your feet?* (Responses will vary but may include grass, dirt, stones, etc.)

*What do you think you would find if you took a shovel and dug a big hole?* (more dirt)

*What would you find if you keep digging deeper and deeper?* (Responses will vary.)

*If we could dig all the way to the middle of the Earth, what do you think it would look like?* (Responses will vary.)

*Actually, no one has ever been able to do that. It’s far too deep. One of the deepest holes ever dug was in the country of Russia. It was 7.5 miles or 12 kilometers deep. To go all the way to the middle of the Earth, however, you would have to dig a hole that is 4,000 miles, or 6,000, kilometers deep!*

*But we do not have to dig deep to know what the inside of the Earth looks like. Thanks to scientists and their special tools, we know a lot about what is down there. We’re going to use this apple to demonstrate.*

**Activity I:**

**Objective:** Compare the layers of the Earth with an apple

First, there is the **crust,** or Earth’s outer layer, represented by the skin of our apple. The crust is the surface of Earth. If you were to plunge all the way to the bottom of the ocean, you would still find yourself standing on the Earth’s crust. Even though the crust is so thick we cannot dig through it, the crust is very thin compared with the rest of the Earth, as the skin of this apple is thin compared with the whole apple.

Below the crust is Earth’s second layer, the **mantle.** It is much thicker than the crust, like the white part of this apple. The mantle is so hot that the rocks all melt together. It’s like an ocean made of liquid rock. But the heat doesn’t stop there! Way below the mantle is the core, just like the core of this apple. The core is the middle of the Earth. At Earth’s core, it is as hot as the sun. The pressure is so great that it forms a heavy ball of iron and other metals.

**Activity II:**

**Objective**: To create a scale model of the layers of the earth

After a review of the Earth’s layers, students will create a scale model using the play dough. They will first create the small, dense core using red clay to symbolize the hot center. Over the core they will wrap a thick layer of orange to represent the mantle. To represent the Earth’s crust, they will use a thin layer of blue and green (blue for the oceans and green for the landforms). Using the globe as a model, they will need to use more blue than green (70% of the Earth’s surface is water).  After all the models are complete, students will use the fishing line to cut straight through their model, allowing them to observe the layers. Following this investigation, they will draw and label a diagram of Earth's layers in their Science Notebooks.

**Lesson Extensions:**

The video “Why Earth Science” provides an overview of the study of the Earth by geoscientists. The video, available at the American Geosciences website, helps connect the dots in the entire study of the planet Earth and is available online at http://www.agiweb.org/education/resource/

Specific work of early scientists in developing current models of Earth can be explored using the video “The Core of the Earth,” available on the Science Discovery website.

Share a journey with students in the book *The Hottest Places on Earth* by Jennifer M. Besel.

**NEXT Generation Science Standards:**

K-ESS3-1 – Science and Engineering Practices – Use a model to represent relationships in the natural world

ETS1.B Developing Possible Solutions Designs can be conveyed through sketches, drawings, or physical models.

PS1.A Structure and Properties of Matter - Different kinds of matter exist and many of them can be either solid or liquid, depending on temperature. Matter can be described and classified by its observable properties. A great variety of objects can be built up from a small set of pieces.