Hill Of Fire

(GPN # 23)

Author: Thomas P. Lewis
Illustrator: Joan Sandin
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Program Description: At Volcano National Park in Hawaii, LeVar is only 2,000 feet from a major eruption of Kilauea volcano. As he talks to volcanologists, he finds out what is inside the earth that causes volcanoes, and discovers how they are learning to predict eruptions. He also visits an artist who creates raku pottery.

Volcanic Crayons

Key Words: volcano, eruption, heat, pressure

Concept: Volcanoes are caused by heat and pressure under the surface of the earth.

LeVar seemed very excited watching Mount Kilauea erupt. It is a sight few people get to see in person. Volcanoes only erupt when melted rock from deep inside the earth is forced up to the surface. This is caused by the enormous heat and pressure created by gravity. Create a miniature model of a volcano erupting.

Materials: Paper cups, unwrapped red crayons that are about an inch shorter than the cup, plaster of Paris, water, table knives, aluminum foil, pan, stove or hot plate.

1. Mix up enough plaster of Paris so that each group of students will have about one cup of the mixture.

2. Have each group hold two crayons in the center of a paper cup with the crayon tips pointing straight down (make sure that the crayon tips are touching the bottom of the cup), and fill the cup with plaster of Paris so the crayons are completely covered.

3. A day or two later, after the plaster has completely dried, have students tear away the paper cup from around the plaster and turn it over so the small end is up. Use a table knife to scrape away the plaster from above the crayon tips, cautioning students to make only a small opening above the tips.

4. Have them set their plaster model on a piece of aluminum foil, and fold the foil loosely up around the sides, leaving the top of the model uncovered.

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5. Put the foil wrapped plaster model in a pan. Making sure water does not flow over the top of the foil, add water to about 1 inch below the top of the model. Set the pan over high heat, reminding students not to touch the pan or the heat source. Ask them to predict what will happen to the crayons. (As the crayons melt, which may take 10 minutes or more depending on the heat source, they will expand and simulate a slow volcanic eruption.) Then ask students to describe what happened to the crayons. (Because the crayons were sealed inside the plaster models, the liquid was forced out the top.) Explain that this action is similar in volcanoes. The heat and pressure inside the earth heats rocks near the surface. As the rocks melt, they expand and molten rock is forced out of the volcano.

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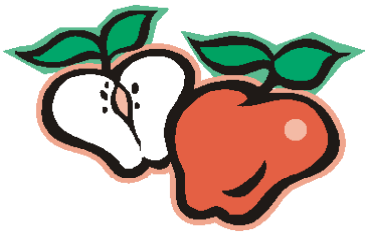
The Big Apple



Key Words: volcano, crust, mantle, core

Concept: Volcanoes help us understand the inside of the earth.

Because molten rock or lava travels up to the surface from deep inside the earth, volcanoes provide valuable information about the earth's interior.

Materials: Apples, large cutting knife, vegetable peelers or table knives, paper towels, tempera paint, paper, marking pens.

1. Use a large knife to cut apples in half (a single downward slice will insure that there is a flat, even surface). Make sure you cut through the center core of the apple.

2. One way geologists, scientists who study the earth, have learned about the inside of the earth is by studying volcanoes. Ask students what they know about the inside of the earth. Give pairs of students two apple halves, one half to use in the first part of this activity and the second half for later.

3. Have students look at the apple half as a cross section model of the earth beginning with the **crust**. (The peeling of an apple is similar to the crust, which is the thin, top layer of the earth that we live on. It is only about 20 miles deep and mostly made of granite.) Ask students to begin
to "dig" into their model of the earth using a vegetable peeler or table knife to cut away the earth's crust.

4. The next layer of the earth is called the **mantle**. (Volcanoes occur when magma from the mantle breaks through the crust. The mantle is much thicker than the crust; it is about 1,800 miles deep. It is made of rocks and minerals -mainly magnesium and iron silicates). Ask students to cut away the mantle layer, down to the center.

5. The layer in the center of the earth is called the **core**, just like the center of an apple. (The core of the earth is about 2,200 miles thick, just a bit thicker than the mantle. Geologists think that it is made of metals, mostly iron and some nickel.) Ask students why they think geologists might not know as much about this part of the earth. (It is very deep in the earth.)

6. With the other half of the apple have students make an apple print by dipping the cut surface in tempera paint and pressing it on a sheet of white paper. After the prints have dried, have them draw and label the print with the three layers of the earth.

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