

**Project FOCUS
Best Lessons
FIFTH GRADE**

Title of Lesson: Volcanoes

Theme: Earth/Space Science

Unit Number: X **Unit Title:** Earth's Surface Features

Performance Standard(s) Covered (enter codes):

S5E1: Students will identify surface features of the Earth caused by constructive and destructive processes.

S5CS8. Students will understand important features of the process of scientific inquiry.

S5CS5. Students will communicate scientific ideas and activities clearly.

Enduring Standards (objectives of activity):

Habits of Mind

- Asks questions
- Uses numbers to quantify
- Works in a group
- Uses tools to measure and view
- Looks at how parts of things are needed
- Describes and compares using physical attributes
- Observes using senses
- Draws and describes observations

Content (key terms and topics covered):

Volcano
Tectonic plates
Composite volcano
Cinder Cone volcano
Shield volcano
Lava
Ash
Active
Dormant

Learning Activity (Description in Steps)

Abstract (limit 100 characters): This lesson teaches students about how volcanoes are formed and how they work .

Details: First, start off by asking the students to tell you what they know about volcanoes. Ask them if they know what they are made of and if they know of any examples (Vesuvius, Hawaii). Have a homemade volcano already set up at the beginning of class. To make the volcano, make a cone shape out of tin foil, secured at the bottom by a plate, large enough that it will cover a plastic bottle. Leave an opening at the top so that you can pour things into the bottle. Have the volcano sitting in a pan, and fill the bottle with warm water, 2 drops of red food coloring, 6 drops of dish detergent and

then 2 T baking soda right before the kids come in. Then have a volunteer come and SLOWLY pour vinegar into the top of the volcano and watch the volcano erupt! (Only administer a small amount of vinegar to the student who will be pouring it into the bottle.) Explain to the students that when the vinegar and baking soda react they release carbon dioxide as a product and when pressure is built up in the soda bottle it then overflows. The detergent makes it bubbly, and that is what is seen coming out of the top of the volcano. Explain to them how volcanoes are formed by the movement of tectonic plates and the melting of rock into magma, and explain the three different types of volcanoes: shield, cinder cone, and composite. Describe how a composite volcano is made up of layers of lava and are the most commonly known type. Cinder cone volcanoes consist of almost entirely of cinder ash, and shield volcanoes usually have a large crater at the top. Have the students draw in their notebook pictures of the three different types of volcanoes and make sure that they are clearly labeled. As a ticket out the door activity, have the students match three pictures with the correct type of volcano name.

Materials Needed (Type and Quantity):

Shallow baking pan (or anything that will collect water when volcano erupts), large enough for size of volcano

Plastic soda bottle, 20 fl. oz. bottle

Tin foil

Plate (to make volcano on)

Warm Water, to fill bottle 3/4 of the way full

Red Food Coloring, 2 drops

Dish detergent, 6 drops

Baking Soda, 2 tablespoons

Vinegar

Notes and Tips (suggested changes, alternative methods, cautions):

Source number 2 gives a recipe on how to build an actual volcano out of flour so it may be a more realistic and sturdy approach, however the tin foil worked great.

Give the students real-life examples of each of the three different types of volcanoes, i.e. Hawaii is made up of a chain of shield volcanoes.

Safety Concerns: This is a non-toxic approach to a homemade volcano, so there are no prevalent safety concerns. However, make sure that the students do not try to eat the baking soda because large amounts of consumption can lead to sickness.

Sources/References:

- 1) <http://www.cotf.edu/ete/modules/volcanoes/vtypesvolcan1.html>
- 2) <http://chemistry.about.com/cs/howtos/ht/buildavolcano.htm>
- 3) http://www.soest.hawaii.edu/GG/HCV/haw_volc.html