

~ LPI EDUCATION/PUBLIC OUTREACH SCIENCE ACTIVITIES ~
EDIBLE LITHOSPHERE AND ASTHENOSPHERE

Ages:
10–18 years

Duration:
30 minutes

Materials:
Per classroom of 20 students

- 20 small paper plates
- 1 box of graham crackers
- 1 bag of butterscotch chips
- 2 cans of whipping cream
- 1 box of vanilla crème wafers
- 1 can of chocolate frosting-spray

OVERVIEW —

The students will create an edible model of the lithosphere and asthenosphere, moving them and using a variety of materials to model different characteristics of interacting plate boundaries.

OBJECTIVE —

The students will:

- Determine which characteristics of plate boundaries to model
- Discuss analogies for different types of volcanism
- Create a model for a type of plate interaction

BEFORE YOU START: *The students should be with the concepts of the lithosphere and asthenosphere, and the different types of plate tectonics interaction (subduction, divergent, convergent, and transform fault boundaries).*

ACTIVITY —

Invite the students to describe different types of plate interaction.

Share with the students that they are going to model these interactions with food. Hand out items as needed.

1. Each student should pick a particular type of plate boundary in advance to model.
2. Each student should take a paper plate and fill it with 2 centimeters of whipping cream.
3. Students will use vanilla crème wafers to model continental crust, and graham crackers to model oceanic crust.
4. Butterscotch chips will be used for volcanos in subduction zones.
5. Chocolate frosting will be used for volcanos at divergent boundaries and hot spots.
6. Students should position their materials to create their boundary, and then participate in a group or classroom discussion:

*In what ways does the graham cracker model ocean crust? [thinner and denser]
How does the vanilla crème wafer model continental crust? [thicker and less dense]
What happens when two ocean plates collide? When they diverge?
Which boundaries should have the volcanos? Where should they be?
Which boundaries might have chocolate frosting?*

In what ways do these models succeed? In what ways do they fail?

Time to eat!

TIES TO STANDARDS —

Scientific Processes — The student is expected to analyze, review, and critique scientific explanations, including hypotheses and theories, as to their strengths and weaknesses using scientific evidence and information; represent the natural world using models and identify their limitations.

Sixth Grade Scientific Concept TEKS

(10) Earth and space. The student understands the structure of Earth, the rock cycle, and plate tectonics. The student is expected to: (D) describe how plate tectonics causes major geological events such as ocean basins, earthquakes, volcanic eruptions, and mountain building.

Eighth Grade Scientific Concept TEKS

(9) Earth and space. The student knows that natural events can impact Earth systems. The student is expected to: (B) relate plate tectonics to the formation of crustal features