

Carey Camille Roberts
Best Lesson

Georgia Performance Standard:

S6E5. Students will investigate the scientific view of how the earth's surface is formed.

- e. Recognize that lithospheric plates constantly move and cause major geological events on the earth's surface.
- f. Explain the effects of physical processes (**plate tectonics**, erosion, deposition, volcanic eruption, gravity) on geological features including oceans (composition, currents, and tides).

Target Grade Level: Grade 6

Materials:

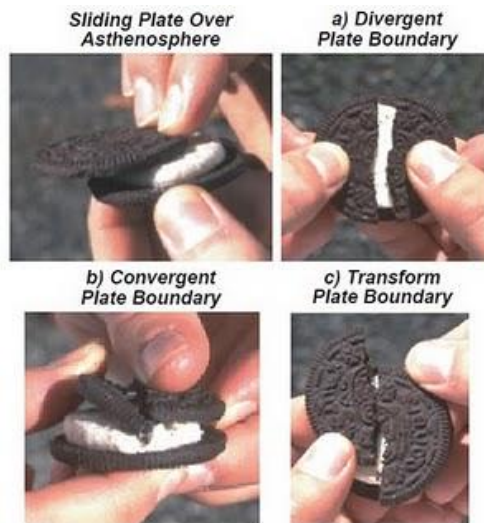
- Double-stuff Oreos
- Paper for handouts to be printed
- Computer to access videos

Safety concerns: None

How to facilitate the lesson:

PART I:

We began the class by reviewing the Georgia Performance Standards S6E5e and S6E5f. The day before, the students had been given homework to read about types of boundaries that plates form: divergent boundaries, convergent boundaries and transform boundaries. Using the Oreos, we were able to illustrate the 3 types of boundaries with the white cream posing as "magma" from the earth's lithosphere. I used the SmartBoard to put up the picture below for a model as the student's broke apart their Oreos into "two plates" and modeled the boundaries.



I used the text below to assist me in explaining to the students how to model each boundary.

a) Divergent plate boundary, push down on the two broken cookie halves and slide them apart.

Notice that the creamy filling between the two broken “plates” may tend to flow upward, similar to the rising, decompression, and partial melting of hot asthenosphere at mid-ocean ridges and continental rift zones. (*Ex: Iceland*)

b) Convergent plate boundary, push one cookie piece beneath the other. This is the only situation where the cold, brittle lithosphere extends to great depths, and hence the only place where deep earthquakes occur. The very largest earthquakes are at subduction zones where two plates get stuck together for centuries, then suddenly let go. (*Ex: Western Oregon*)

c) Transform plate boundary, slide the two cookie pieces laterally past one another, over the creamy filling. You can feel and hear that the “plates” do not slide smoothly past one another, but rather stick then let go, stick then let go. (*Ex: San Andreas Fault in California*)

PART II:

My teacher asked me to focus on **subduction** for the second half of the lesson. Subduction is a process that occurs at **divergent boundaries** in which one plate slides beneath the other plate causing a **deep-ocean trench** to form. I began by showing a YouTube video to help the students understand the process of subduction. We referred back to our divergent boundaries of Oreos to model subduction.

<http://www.youtube.com/watch?v=ogWivjL2SZg>

With my teacher’s help, we taught the following bullet points to teach subduction allowing us to tie in the concept of density. Bullet points density, collision and crust were all review from previous lessons.

–Subduction is a process by which ocean floor sinks beneath a deep ocean-trench and back into the mantle

–Density: The more dense plate dives under the less dense plate

–Collision: As two plates collide, the density determines which plate comes out on top of the other

–Two types of crust: oceanic crust (more dense, ocean) and continental crust (less dense, land)

Lastly, I made a handout for the students to review all the terms we learned. They used the word bank to fill-in-the-blanks, and then we went over the handout after everyone had finished.

1. Subduction occurs at _____ boundaries when plates _____ to form deep-ocean _____.
2. One plates _____ beneath the other plate based on their _____.
3. The more dense plate _____ _____ the less dense plate.
4. If the plates are the same density and _____ crust, they collide to form _____ ranges.

1. CONVERGENT
COLLIDE
TRENCHES
2. SINKS
DENSITIES
3. SINKS BENEATH
4. CONTINENTAL
MOUNTAIN

NOTE: Answers are in order of numbers. Answers should be scrambled in the word bank.

What you would modify in doing the lesson again:

I think the lesson went very well in terms of both interaction/hands-on and conceptualizing with the statements in the handout. In the future, I would use a few more YouTube videos as these videos seemed to help the students visualize the processes occurring at plate boundaries. A few students asked me to replay the video I showed in order to model it with their Oreos and answer the handout questions. The handout was a great way to repeat all the information we had learned during class. The students were very successful in filling in the blanks.