Egg Tectonics and Oreo Subduction
4th Grade

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References:

- **http://www.consrv.ca.gov/cgs/information/kids_geozone/egg_tectonics.htm**
- **http://www.exploratorium.edu/faultline/activezone/cookie.html**

Benchmarks & Objectives:

ES-10: Describe evidence of changes on the earth's surface in terms of slow processes (including mountain building) and rapid processes.

Materials:

- Hard boiled eggs (enough for 1 per group of 4)
- Oreos

Initial Demonstration:

Hold up an egg and ask the students what are the three layers of an egg. Then draw the earth in 3 layers (simple version). (The crust- egg shell, the mantle- egg white, and the core).

Target Observations:

- The crust is only a small fraction of the earth, but it floats on the mantle.
- The crust moves in plates.
- The crust may move converge or diverge creating characteristic features.
- The movement of plates builds mountains and moves the continents.

Procedure:

Break students into groups, having each group create their own unique plates. Students should move their plates apart and push them together (point out mountains). Talking to them about Mt. Everest is good because many of the students have heard of it before. Have the students compare the thickness of the mantle to the thickness of the crust. Tell them the core would be much smaller in a real model and denser (made of metal). Students should measure the mantle thickness in several places and take an average if they have learned this.

After the egg discussion, draw what happened when some eggshell (plate) went underneath another plate. Talk about subduction. (Mention Mount St. Helens as a good example.) This may be hard to see so you will tell the students you have another model of the earth's crust for them.

Give each student one Oreo and tell them it is a model for ocean crust. Ask them what will happen when they push the cream filling up against their teeth and eat the bottom layer. (The cream will build on their teeth like part of the ocean crust builds against the

continental crust during subduction). Draw a picture of subduction again and ask them where the ocean crust will build up against the continent.

Discussion/Summary:

Students should understand that the earth's crust is broken into plates that are moving. This movement leads to the building of mountains (and some volcanic activity). Much of the west coast has been formed from the subduction of ocean crust under continental crust (with accretionary terranes- a.k.a. oreo filling).