

Plotting Plates

Instructor: Sara Brassler

Workshop: World Oceans

Targeted Grade Level(s): grades 6-8 (could be modified for older students)

Content Area(s) Covered: Earth Space Science, Physical Science, and Plate Tectonics

Anticipated Duration: 1 or 2 – 50 minute class periods

Rationale:

- Students can investigate plate tectonics and their correlation with natural phenomena like earthquakes and volcanoes.

Objectives:

1. Students should use internet technology to see real-time data about earthquakes and volcanoes.
2. Students will plot latitude and longitude points on a world map.
3. Students will understand the relationship between tectonic plate boundaries and earthquakes/volcanoes.

Sunshine State Standards:

SC.C.1.3.2.3 – knows some causes and effects of waves.

SC.D.1.3.3.1 – knows that different events on the Earth change features on Earth (for example, hurricanes, earthquakes, volcanoes).

SC.H.2.3.1.1 – understands the importance for looking for patterns in natural events.

Resources/Materials Needed:

1. Copy of world map for each student
2. Transparency of world map and tectonic plate map
3. Computer/Projector with internet access
4. Overhead Transparency (with markers – 2 colors)
5. Colored Pencils (2 colors)
6. Current Earthquake Activity Website
http://earthquake.usgs.gov/eqcenter/recenteqsww/Quakes/quakes_all.php
7. Current Volcano Activity Website
http://volcano.und.nodak.edu/vwdocs/current_volcs/current.html

Procedures:

1. Pass out the world maps and colored pencils to the students.
2. Access the Earthquake internet site. (Note: Students may either work at computers in small groups or the websites may be projected on a LCD projector for the class to work together.)
3. Have students plot the earthquakes that were of magnitude 4.0 and higher over the last week on their maps using the color of their choice. The teacher may also plot these points on the overhead transparency along with students. (Note: this would be a great time to discuss maps as graphics (FCAT Skill), latitude, longitude, and legends/keys.)

4. Have the students (and teacher) plot on the map the volcanoes that have erupted within the past month or two (teacher discretion) in the other color. Remind students to create a key or legend to determine the difference between volcano and earthquake.
5. Ask the students if they notice anything about the patterns of the points on their maps. Have students answer these questions on the back side of their maps:
 - a. Do earthquakes appear all over the earth's surface or in isolated regions?
 - b. Is there a visible pattern where the earthquakes occur? If a pattern exists, could you use it to determine where earthquake zones are located?
 - c. Do earthquakes and volcanoes often appear in the same locations? Give specific examples from the map.
6. Now, show the teacher world map on the overhead. Overlay the tectonic plate map on top of the teacher world map and see if the students notice any patterns. Students (and teacher) should notice that the majority of the earthquakes and volcanoes will occur on the fault lines. Discussion regarding the location of earthquakes and volcanoes can be had. Ask students if they think scientists could predict areas of the earth that are more likely to have earthquakes or volcanoes based on their findings.

Informal/Formal Assessments:

1. Students were assessed based on their ability to work cooperatively with classmates.
2. Students were assessed on their ability to plot points on a map.
3. Students were assessed on their ability to infer meaning from the patterns of the earth.
4. Students were graded on the completion of the map and questions.

Evaluation/Reflection:

- I think this lesson went well. This is a small part of a larger unit we worked on to try to prepare students for FCAT success. We incorporated this earthquake and volcano world map into a book foldable with other information about processes that shape the earth.
- This could be challenging if technology were limited and students did not have access to the Internet.