

Grade Six: Plate Tectonics 6.8 Dynamic Planet

Lesson Concept	Evidence of movement of plates can be measured.
Link	Lesson 6.7 established that land changes and moves at plate boundaries. Lesson 6.8 provides evidence that plate movement can be measured.
Time	1 day
Materials	

Whole class

- 2 copies of USGS map “This Dynamic Planet” (more copies would be good)
- Teacher guide from <http://web.ics.purdue.edu/~braile/edumod/platepuzz/platepuzz.htm>
- Area in room to assemble large map (floor)

Individual

- Student journals

Advance preparation

- Purchase at least 2 “This Dynamic Planet” maps from USGS
- Download teacher guide from <http://web.ics.purdue.edu/~braile/edumod/platepuzz/platepuzz.htm>
- With black Sharpie, write velocity of plate motion, and draw arrow of movement direction (makes it easier to see)
- Cut 1 map along plate boundaries (18 pieces) Figure 6 in teacher guide
- Laminate the 18 pieces

Procedure:

Engage *(10 minutes) Plates are pieces of a puzzle that can be assembled to create a world map.*

1. Whole class chant Plate Boundary Chant.
2. Display Plate Tectonic map from the previous lesson. Ask students to name plates as teacher points to them.
3. Think back to when we did the newspaper puzzle: What clues did your group use to put the newspaper pieces together? What clues did Wegener use to put the continents back together?

Explore/Explain (20 minutes) Plates are pieces of a puzzle that can be assembled to create a world map.

4. Distribute the 18 pieces of the Dynamic Planet to students (some may need to share).
5. Students study their “own” plate (dots, numbers, arrows, etc) and become the expert for that plate.
6. Ask students to use non-verbal communication to assemble the puzzle of world map. (No talking) Discuss the assembled map:
 - a. The arrows and velocities (mm/year) that indicate motion of the plates.
 - b. Find highest and lowest velocities.
 - c. Comment on the speed of the plates $35\text{mm/yr} = 35\text{km/million years}$.
 - d. Plates moving at about speed fingernails grow.
 - e. Areas of earth associated with largest plate velocities.
7. Ask partner students to Think, Pair, Share to determine how individual plates move with respect to the surrounding plates. Ask partners to explain what their plate’s motion is and how it is interacting with adjacent plates. Chart.
8. Find locations on the map that are associated with:
 - a. Convergence Boundaries
 - b. Divergent Boundaries
 - c. Transform Boundaries
9. Ask partner groups to notice and describe landforms at the boundaries of plates.
10. Ask students to notice where volcanoes exist. How close are volcanoes to plate boundaries?
11. Reconnect with the “Seismic News” wall map in the classroom and make correlations to placement of current earthquakes. Where do earthquakes occur? What is happening at the plate boundaries?
12. Ask students to find any volcanoes not in the same pattern. Discuss possible reasons for Hawaii and island chain birth.
13. Using the dynamic planet floor map, move multiple plates as indicated by the direction arrows on the map to simulate actual plate movement. What might be happening at the plate boundaries as the plates move? How are the movements different? How are movements the same?

Extend (15 minutes and continue as homework) Tectonic Plates are in constant motion.

14. Students take individual plate sections to their desks.
15. Ask students to complete the following in their journal:
 - a. Draw plate outline with name, arrows, numbers and features.

- b. Students tell the story of their plate using personification describing: name, boundary types, direction of movement and speed, land formations and anything else student thinks would make for interesting reading.

Evaluate

19. Teacher collects and review journal entries.