

Project FOCUS
Best Lessons
MIDDLE SCHOOL
6th Grade

Title of Lesson: Earthquake Shake Table

Theme: Earth/Space Science

Unit Number: [Click here to enter text.](#)

Unit Title: Earthquakes

Performance Standard(s) Covered (enter code):

S6E5e. Recognize that lithospheric plates constantly move and cause major geological events on the Earth's surface

S6E5f. Explain the effects of physical processes (plate tectonics, erosion, deposition, volcanic eruption, gravity) on geological features including oceans (composition, currents, and tides).

Enduring Standards (objectives of activity):

Habits of Mind

- Asks questions
- Uses numbers to quantify
- Works in a group
- Uses tools to measure and view
- Looks at how parts of things are needed
- Describes and compares using physical attributes
- Observes using senses
- Draws and describes observations

Content (key terms and topics covered):

Earthquakes, primary waves, faults, boundaries, infrastructures

Learning Activity (description in steps)

Abstract (limit 100 characters): Students will work in groups to construct a shake table and simulate their own mini-earthquake. Students will view the effects of earthquakes on infrastructures.

Details:

Divide the students into groups of 3 or 4. Each group will have 2 pieces of cardboard, 2 rubber bands, 4 rubber bouncy balls, and 20 pipe cleaners (or whatever material you choose to build the infrastructures out of). First, do a demonstration of how to create the shake table. Pull the 2 rubber bands over the 2 pieces of cardboard. Have each rubber band about 1 inch away from the left edge and right edge of the cardboard. Pry the cardboards apart and insert a rubber ball in each corner, 1 inch from the corner.

Students will work together to devise a structure made from the provided materials that should be able to withstand their shake table. Have them take into account the height of their structures and construction methods that could affect stability. To simulate the shaking of primary waves, hold down the bottom piece of cardboard and pull the top board and release.

Go over what type of wave they have created with their shake tables and what other types of waves do earthquakes make. Review with students at what faults and boundaries can earthquakes

happen. Ask about liquefaction and what it does to a building built on loose soil. What factors would be best to consider if they were real architects and wanted to create an earthquake-proof building?

Materials Needed (type and quantity):

same sized sturdy cardboard pieces (2 pieces per group)

rubber bouncy balls (4 per group)

large rubber bands (2 per group)

scissors

tape

POSSIBLE STRUCTURE MATERIALS:

pipe cleaners, straws & modeling clay, toothpicks & mini-marshmallows, paperclips, or popsicle sticks

Notes and Tips (general changes, alternative methods, cautions): I did the experiment with straws and modeling clay. The clay was not effective in holding/sticking the straws together. Best not to use these materials. The structures the kids build will not be secured on the shake table. Possibly use tape to hold them down. No safety concerns.

Sources/References:

1) <http://www.brighthubeducation.com/middle-school-science-lessons/57126-building-a-shake-table-earthquake-lesson/>

2) Click here to enter text.

3) Click here to enter text.