



Classroom Teacher Preparation

Earth Science 2: Intro to Tectonics

Description:

This lesson is an introduction to plate tectonics and the structure of the earth. Students will first think about how mountains can be formed. They will then work in pairs to construct a puzzle model of Pangea. After having time to build and revise their model, students will analyze a modern-day map of the tectonic plates, model the plate boundaries using putty and tiles, and then return to the opening question about mountain formation.

Lesson Objectives – SWBAT (“Students Will Be Able To...”):

3rd-5th

- Construct a model of a supercontinent using geology and the fossil record
- Analyze a tectonic plate map and use models to explain map features

Disciplinary Core Idea (DCI)

ESS1.C The history of planet Earth

- (3rd-5th) Certain features on Earth can be used to order events that have occurred in a landscape.

ESS2.B Plate tectonics and large-scale system interactions

- (3rd-5th) Earth's physical features occur in patterns, as do earthquakes and volcanoes. Maps can be used to locate features and determine patterns in those events.

Science & Engineering Practice (SEP)

Constructing Explanations and Designing Solutions

- (3rd-5th) Construct an explanation of observed relationships (e.g., the distribution of plants in the backyard).

Crosscutting Concept (CCC)

Stability and Change

- (3rd-5th) Some systems appear stable, but over long periods of time will eventually change.

Preparation:

This lesson works best as an introduction to plate tectonics for students with no-to-little background.

Room Set Up for Activities:

Students will work in pairs or trios at their desks to construct models of the Earth at different time periods.

Safety:

There are no safety concerns for this module.



Related Modules:

This lesson may be taught as part of a sequence or group of related modules on Earth Science. Modules include:

Earth Science 9: Rock Cycle - Students will examine rock samples, note similarities, classify them by rock type (igneous, metamorphic, sedimentary), and identify them.

Earth Science 18: Modeling the Mantle – Students use Silly Putty and oobleck to explore the viscoelastic properties of the asthenosphere.

Engineering 7: Earthquake Resistant Buildings - Students will be introduced to the problem—damage due to seismic waves—and will build and test different block configurations to determine which model provides the best solution.

For other module sequences and groups, look here: www.sciencefromscientists.org/sequences

Standards Covered:

Please click the following link to our website to review the standards covered by this lesson, listed by state: www.sciencefromscientists.org/standards/

Lessons are matched to both national NGSS and local state standards.

After Our Visit:

Extend this lesson by building and testing homemade seismographs.

Access this Extension activity by visiting the Classroom Post found on our website at sciencefromscientists.org/cohorts. Use the name of your school/cohort and password to log in.

To help Evaluate, check out our Open Response questions online at sciencefromscientists.org/open-response-questions. They are freely available for all of our lessons for current teachers. Use the password supplied by your instructor to log in.

Additional Resources:

Include any useful links to videos or websites can be listed here with general descriptions of what they are.

- Structure of the Earth: https://www.teachengineering.org/view_lesson.php?url=collection/cub_/lessons/cub_natdis/cub_natdis_lesson02.xml
- Mountain formation (4:00): <http://www.teachertube.com/video/how-mountains-are-formed-34049>
- A study of earthquakes and plate tectonics: <http://www.k12science.org/curriculum/musicalplates3/en/index.shtml>