



Grand Canyon National Park

Lesson Plan

Essential Question: What can rock layers tell us about the Earth's history?

Objective: Students will be able to explain past events by analyzing rocks, rock layers, and fossils.

Ohio Standards:

- 6.ESS.2 Igneous, metamorphic, and sedimentary rocks have unique characteristics that can be used for identification or classification.
- 6.ESS.3 Igneous, metamorphic, and sedimentary rocks form in different ways.
- 8.ESS.4 Evidence of the dynamic changes of Earth's surface through time is found in the geologic record.

NGSS:

- MS-ESS1-4 Construct a scientific explanation based on evidence from rock strata for how the geologic time scale is used to organize Earth's 4.6-billion-year-old history.
- HS-ESS1-5 Evaluate evidence of the past and current movements of continental and oceanic crust and the theory of plate tectonics to explain the ages of crustal rocks.
- HS-ESS1-6 Apply scientific reasoning and evidence from ancient Earth materials, meteorites, and other planetary surfaces to construct an account of Earth's formation and early history.

Agenda:

1. Engage - Students watch "[Grand Canyon - Laws of Stratigraphy](#)" and complete the discussion guide.
 - a. [YouTube Link](#)
 - b. [Student sheet](#)
 - c. Estimated time: 30-40 minutes
2. Explore - Students analyze Grand Canyon rock layers to interpret geologic history.
 - a. [Student sheet](#)
 - b. Estimated time: 50 minutes
3. Explain - Students model relative dating and the Laws of Stratigraphy.
 - a. [Student sheet](#)
 - b. Estimated time: 50 minutes
4. Elaborate - Students use absolute dating to age rocks and fossils and compare it to relative dating.
 - a. [Student sheet](#)
 - b. Estimated time: 50 minutes
5. Evaluate - Students create a museum display based on the geologic history of their community.
 - a. [Student sheet](#)
 - b. Estimated time: 250 minutes
6. **Assessment:**
 - a. [Museum Display Rubric](#)

Materials:

- Colored pencils
- Five different colored containers of modeling clay
- Clear drinking straws
- Plastic wrap
- Paper plate
- Computer or laptop with internet access and updated Java plugin
- Museum display objects (will vary by location and group of students)