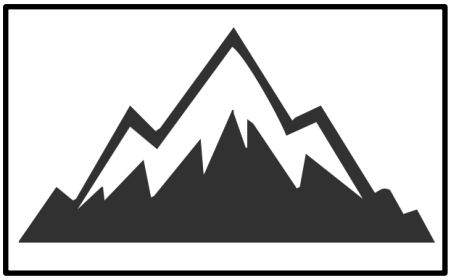
# Birth from the Earth



## Purpose:

The purpose of this activity is to teach students about how some geologic formations such as mountains and volcanoes are formed and how long that process takes. It is also meant to introduce the concept and scale of geologic time.

## Objectives:

- Students will create a visual model of the formation process of their mountain/formation as a result of the mountain group collaboration activity.
- After participating in the mountain group collaboration activity, students will create a timeline depicting the ages of the mountain ranges and certain land formations in Southern Oregon.

**Time Required:** 60 minutes
**Appropriate grades:** Middle School
**NGSS and Common Core Standards:** MS-ESS2-2: Construct an explanation based on evidence for how geoscience processes have changed Earth's surface at varying time and spatial scales.

## Materials:

- Provided in the kit:
  - Mountain cards (4)
  - Rock cards (11)
- Not Provided:
  - Dry erase markers
  - Paper and writing utensil

ENVIRONMENTAL EDUCATION GRADUATE PROGRAM
SOUTHERN OREGON UNIVERSITY

U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

# Activity:

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| **Introduction** | 1. Ask students what they consider to be “old” and “young”. Generate a list on the board with student ideas. If certain geological formations, such as mountains, have not been brought up, ask students if they consider mountains or other land formations to be “old” or “young”. Are some mountains older than others?<br>*Note*: Do not introduce the ages yet of the mountains or bring up geologic time scale. Just gauge the students thoughts about the matter.<br>2. Have the students make general guesses as to how old they think certain mountain ranges may be. At the end of the lesson they will guess again and be told the answer.<br>3. Explain to students that they are going to learn about local geological formations and determine the known age of each formation. |
| **Body** | 1. Introduce how land formations such as mountains and volcanoes are formed.<br>2. Split the class into 5 groups. Assign each group a mountain/formation from the following: Mount Ashland (Klamath range), Grizzly Peak (Western Cascades), Mount McLoughlin (High Cascades), Payne Cliffs, and the Hornbrook Formation.<br>3. Each group will receive a Mountain Card (from the kit) that shows them a picture of the mountain and some facts about that mountain.<br>4. From looking at the Mountain Cards, the students will determine what rocks their mountain is formed from and will go find their corresponding Rock Cards (also found in the kit).<br>5. Using the Mountain Cards and the Rock Cards, students will create a model as a group of how they believed their mountain/formation was formed on a large piece of paper.<br>*This is intended to be done as a drawing, but if the teacher has the time and materials it could potentially be a cool project to physically build a model showing the formation.*<br>6. After the groups are done with their model, each group will select 1 student to show the rest of the class their group’s model and briefly explain what they drew and why. After each presentation, a representative from each group will also make a new guess as to how old they believe their mountain/formation is based on what they learned in the beginning of the lesson about formation times. Draw a general geologic timeline on the board and put each group’s guesses on the timeline. |

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| **Closure** | 1. Based on each group's age guesses, introduce the concept and scale of geologic time. Give the class the actual answers for how old the mountains and their ranges are and see how close each group was.<br>2. Discussions about perspective and how understanding geologic time can affect current, short-term thinking. |

# Modifications:

- **Elementary:** For elementary students, only have the students match their rock card to the geologic formation cards and discuss with other students in a think-pair-share. Don't worry about the details of their formation.
- **High School:** Add a field trip to one of the formation sites discussed in the activity.