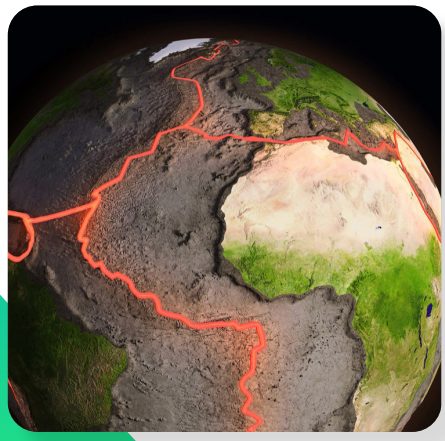
Terraforming Earth

3-5



15- 35 minutes | School / Home

Essential Questions

- Do Earth events happen quickly or slowly?
- How do tectonic plates cause earthquakes?
- How do tectonic plates cause volcanoes?

This lesson and additional resources can be found at **www.MergeEDU.com/activities**

Activity

1. Earth is our home planet - a giant ball of rock and metal floating in space. What does the ground look like on Earth? If we could drill a big hole down into Earth's center, what do you think we would see? Today, we are going to explore Earth's layers – the different parts inside of Earth. We will also learn how the biosphere, hydrosphere, and atmosphere interact with Earth's layers. We will learn about volcanoes and earthquakes, too. Let's go on a journey together!

2. Open the "Terraforming Earth" topic card inside the Merge Explorer app. Look at the image at the very top and read the Introduction, or press the "Audio" button so the app reads it out loud. What do you think the red lines in that image are showing? You will need your Merge Cube for all of the activities in this topic card.

3. Look at Activity One, called "Journey to the Core!" to view Earth's layers. We live on the crust, the outermost layer. Tap on each layer to see what it looks like by itself, then use the slider to separate each layer to see how they fit together. Can you identify the innermost and outermost layers? Think about the geosphere, or the solid parts of Earth. How do they interact with the liquid part of Earth, or the hydrosphere? The oceans and crust meet at the seafloor and shorelines. What about the atmosphere, where does it touch Earth's surface? The atmosphere, or gases surrounding Earth, wraps around all of Earth.

Terraforming Earth

4. Now, read about tectonic plates in Activity Two. Where do you think tectonic plates are located? In Activity Two, you can see that the plates are located in Earth's mantle. Tap on each plate to see it alone from all the others. Do these plates look similar or different from Earth's continents? Below the cube, you will see buttons to view volcanoes and earthquakes. Look at each one, then think about where earthquakes and volcanoes tend to occur – on the inside of plates or on the edges? Why do you think that is?

5. Activity Three describes how the plates in Earth's mantle move. Can you name all three ways? What happens as the plates slide over and under each other? As one plate slides under the other, what happens to the land? What is a subduction zone? Look at the subduction zone from all angles to get a better understanding, and see if you can speed up the rate of subduction!

6. In Activity Four, you'll read about how volcanoes occur and you will interact with a model of an erupting volcano. Where does the lava come from? How can lava get from inside Earth to the surface? Can you name all of the parts of a volcano?

7. When you've completed all four activities, complete one of the assessments below.

Assessment

Video Recording: Create a video where you model or describe Earth's layers, volcanoes, and earthquakes by giving a pretend news show.

Class Notebook: Answer the Essential Questions in your science notebook.

Quiz: Take the "3rd - 5th Grade" quiz inside this topic card. Keep trying, until you answer all the questions correctly!

Extension Ideas

- Build a clay model, or a detailed drawing, of one of the following: Earth's layers, an earthquake, an erupting volcano, or tectonic plates.

Performance Expectations:

- PE 5-ESS1-2 Develop a model using an example to describe ways the geosphere, biosphere, hydrosphere, and/or atmosphere interact.