

EARTH'S STRUCTURE

Section

This activity aims to teach the structure of the Earth while also gently supporting students' emotional resilience. It combines scientific learning with awareness of natural events like earthquakes and volcanic eruptions in a safe and age-appropriate way.

What to Keep in Mind:

Set a calm and supportive tone. Let students know it's okay to feel curious, confused, or even a bit anxious.

Focus on exploration and creativity. The play dough model helps make abstract ideas more concrete and fun.

Avoid sharing distressing disaster stories; use general and positive language.

Watch students' reactions—if someone feels uncomfortable, let them focus only on the Earth model.

Encourage reflection on how people can stay safe and support each other during natural events. This activity is also a chance to promote empathy, cooperation, and a sense of safety while learning science.

Lesson

Science

Grade

4-5

Learning Objectives

Students will explore the properties of materials and Earth's structure through hands-on experiments and geographic inquiry using simple investigative methods to develop an understanding of scientific concepts.

Duration

1 class (40 Minutes)

Required Materials

Worksheet (one for each student)
Play dough or modeling clay (various colors; at least 4 colors if possible)
Plastic knives or craft sticks (for cutting/shaping dough)
toothpicks.
(Optional) Printed cross-sectional diagrams of Earth for reference or video
Board or large paper for whole-class discussions
Colored pencils(enough for the students)

Preparation and Implementation

Prepare Materials: Duplicate the worksheet (Table 1: Selecting the Colors for Each Layer & Diagram 1: Coloring the Layers) for each student. Have colored pencils, and other materials ready to use in class. Set out different-colored play dough. Ensure you have enough for small groups (3–4 students). Consider briefly introducing the main layers of the Earth prior to class (e.g., short video, diagram).

ACTIVITY DESCRIPTION

1 INTRODUCTION (10 Minutes)

Ask students following questions:

- What are you going to see if you dive into the Earth?
- What do you think the inside of our planet looks like?
- Is it possible to travel to the center of the Earth? Why or why not?
- How do we know about these layers if we've never drilled to the center of the Earth?"

Provide a brief summary of the 4 main layers (crust, mantle, outer core, and inner core.) of the Earth by using videos or cross-sectional diagrams of the Earth.

2 DISCUSSION (5 Minutes)

- A brief explanation is given to students based on the information note below.

Information Note: The teacher can use the analogy as the similarity between peach and the layers of the Earth. The Earth is like a giant “layer cake,” but made of rock and metal. Each layer is unique in temperature, density, and composition. Layers of the Earth can be a complex and challenging topic for children and require careful discussion since it is impossible to observe the layers directly.

However, this activity aims to raise awareness of the main layers with a positive and supportive approach, away from traumatizing elements. Understanding Earth’s structure helps students learn about phenomena like earthquakes, volcanic activity, and continental drift. By creating a play dough model, students can visualize and remember these layers more effectively.

Suggestion : “Let students know that learning about the Earth's structure and natural events can sometimes bring up strong feelings. Reassure them that it's normal to feel curious, confused, or even a little anxious — and that this class is a safe space to ask questions and express emotions.”

Local & Cultural Connection (Optional Sub-Section, If Desired):

“Did you know Türkiye has many geological wonders shaped by the Earth’s internal processes?”

- **Cappadocia:** Created from volcanic ash and tuff.



- **Pamukkale Travertine:** Calcium deposits from geothermal springs.



- **Marble Quarries in Western Türkiye:** Formed by heat and pressure in the crust.



- Briefly discuss how these local sites demonstrate volcanic, tectonic, or thermal processes.

IMPLEMENTATION (20 Minutes)

Main Activity

A. Working in Groups (10 Minutes)

1. Divide the class into small groups:
2. Assign each group to create a cross-section model of the Earth using different colored play dough:
 - List the basic aspects of the layers
 - Inner Core: Start with a small ball (red)
 - Outer Core: Flatten a second color (orange) into a disc. Wrap it around the inner core ball.
 - Mantle: Flatten a third color (yellow) into a disc. Wrap it around the outer core ball.
 - Crust: Use a thin layer of a fourth color (blue) on the outside to represent Earth's crust.
 - Carefully cut the sphere in half (use a plastic knife or craft stick). Students see the layers in cross-section.
 - Label each layer on the cross-section with small flags with toothpicks.
 - Think about at which levels earthquakes, volcanic activities happen and how people can handle and be least affected in a disaster and what can be done to protect them. Additionally, consider how awareness and preparedness for disasters can make a difference at both individual and societal levels, and evaluate the measures that can be taken before, during, and after a disaster.
3. Have groups prepare their model by coloring and naming the "Earth's layers diagram" on the worksheet. They can use crayons for writing and drawing activities.

B. Presentation and Discussion (10 Minutes)

1. Each group presents their work to the class.
2. They give brief and basic explanations for each of the layers.
 - crust:** Describes the outermost shell of the planet that living beings live on.
 - mantle:** The mantle is the second layer beneath the Earth's crust and is made up of rocks that are mostly in a semi-liquid state.
 - outer core:** Located between the mantle and the inner core. It is a liquid mix of the elements.
 - inner core:** It is a dense and hot ball of iron. The inner core is the Earth's innermost layer, made up of iron and nickel in a solid state due to the extreme temperatures and high pressure.

Discuss the following questions during presentations:

- Why is the crust so thin?
- Which layer are we living on?
- How does the Earth's core affect our planet? (e.g., magnetic field)
- What surprised you most about the Earth's layers?

3. Connection to Natural Disasters

- Earthquakes often occur in the lithosphere (crust and the upper part of the mantle), especially at plate boundaries.
- Volcanic eruptions occur where magma (molten rock in the mantle) finds a path to the surface.
- Reflection: Why do earthquakes and volcanic eruptions mainly involve the crust and upper mantle rather than the inner core?

FEEDBACK

Duration: 5 minutes

Information Note: Encourage students to also reflect on how people help each other during such events and how communities support one another to feel safe and recover together. Discuss how kindness, cooperation, and staying connected with trusted adults can make a big difference.

- **Duration: 5 Minutes**

1. Distribute a worksheet to students. On the worksheet:
 - Students draw and label Earth's layers and note key facts (solid vs. liquid, approximate thickness, composition-these additional details can be included for students older than Grade 4).
2. Students are expected to address the following questions during their model presentations and demonstrate their understanding:

Is Traveling to the Core Possible?

- Why or why not? Mention heat, pressure, and technology limits.

Most Interesting Discovery

- What did you find most surprising about Earth's internal structure or about how earthquakes/volcanoes occur?

Preparedness & Emotions

- Did learning about natural disasters make you feel worried, curious, or something else?
- How might feeling more prepared change our perspective on these events?
- What are some ways we can take care of ourselves and others emotionally during or after a natural event?
- Who can we talk to if we feel scared or overwhelmed?

RECOMMENDATIONS

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Use general and positive language instead of local disaster examples.

- Take a sensitive approach by paying attention to students' emotional states.
- Make sure that all students actively participate in class discussions.
- Remind students to cut the dough gently and share tools responsibly.
- If a student is uncomfortable discussing disasters, let them focus on the Earth's layers and a simpler preparedness message.
- Examples from Students' Own Regions: If you have a multinational or culturally diverse classroom, encourage learners to share local geological or cultural examples from their own countries (e.g., famous volcanoes, mineral springs, or unique rock formations). This broadens global awareness and helps each student feel their cultural background is valued.

ANNEX

Table 1: Selecting the Colors for Each Layer

Diagram 1: Coloring the Layers of the Earth

6.1) WORKSHEET

Table 1: Selecting the Colors for Each Layer

Write the color of dough you used for each layer for your model.

Layers	Color
Crust	
Mantle	
Outer Core	
Inner Core	

Diagram 1: Coloring the Layers

Below is a basic cross-sectional diagram of the Earth with **four rings** labeled as crust, mantle, outer core, and inner core. Please color each layer to match your play dough model.

The Layers of the Earth

