



4th Grade: Journey to the Center of The Earth

Course description: By the end of this lesson, students will have visually grasped the different layers of the earth and further explored tectonic plates and their formations, both oceanic and continental. Students will walk away with 3D diagrams, tactile involvement in being tectonic plates themselves, and understand vastly more about the very Earth they live on!

Day 1: Students will learn about the earth's layers divided into the lithosphere, asthenosphere, mesospheric mantle, outer core, and inner core. They will visually explore how thick each layer is and in which order they are layered through a hand-made 3D diagram.

Demonstration: Students will learn about a burrowing species to engage them in discussing the different layers of the Earth. Students assemble their own Earth out of layers of clay. The Earth has several layers, and we can use varying colors to represent those layers. After the sphere is complete and each layer is explained, the sphere will be cut in half to expose the inner layers and a diagram. Students will also have a chance to make a bar of soap representing those same layers to take home. In their soap, they will be using: Yellow for the Inner Core, Orange for the Outer Core, Red for the Lower Mantle, Brown for the Upper Mantle, and a Blue/Green blend for the Crust.

Day 2: Tectonic plates conquer Earth's crust creating convergent, divergent, and transform boundaries that influence different types of land formations. Students will understand how tectonic plates move within Earth's crust.

Demonstration: The educator will review different tectonic plate movements and then go outside for a fun activity where students play a game to move like tectonic plates, further understanding their motion. Students will move like tectonic plates in giant hamster balls, mimicking the motions at each boundary. Students that are not in giant hamster balls will be tossing their balls in the direction the tectonic plates are moving.

Day 3: Continental plates form valleys, mountains, and ridges on land. Through interactive activities, students will observe real-life examples of these features to visualize how they are formed and create examples of these different land features.

Demonstration: Students will discuss how mountains are formed and then view images on Google map discovery using the terrain function to see Earth's great features. Students will then create their own diagrams out of clay, cardboard, and paper with valleys, ridges, and mountains to understand how different landforms occur due to these different boundaries. We will bring some insects that live on mountains for students to observe!

Day 4: On this day students will focus on oceanic plates that create islands, currents, and trenches. Students will do a deep dive on water pressures and lack of light in ocean trenches!

Demonstration: Students will observe and question a demonstration on volcanoes erupting to make an island and how the heat rises to the surface of the water. Students will also participate in a demonstration on water pressure and how it increases as you descend into a trench. After understanding the immense pressure, students will also learn about the decreasing amount of



sunlight the more you descend into a trench. Students will then create ocean zones with different liquid materials that separate into colors/densities and become increasingly dark the deeper you go. Lastly, students will learn which animals would survive these conditions and how vastly unexplored the depths of the ocean are!