



Earth Exploration

Class Outline

Brief Synopsis: Get ready to explore our earth! Journey to the center of the earth through it's layers, transform into a rock for 10,000 years, learn about geologic time through major events in the earth's history, and become a fossil hunter searching for ancient life along the rocky banks of the Root River. Get to know the Earth in this introduction to geologic concepts.

Outcomes:

1. Students will demonstrate the differences between the earth's layers, connecting the action of the layers to the theory of Plate Tectonics.
2. Students will demonstrate the three rock types and the processes rocks undergo in the rock cycle.
3. Students will explain fossil formation and how fossils contribute to the understanding of geologic time and history.
4. Students will create a geologic time scale to express the vastness of geologic time as compared to the human time scale.

Outline:

I. The Earth's Structure: The Layers Within (20 min.)

Many geologic processes occur because of the layers that make up the earth. Students will use themselves to create a model of the Earth's layers and illustrate their structure. Sounds and actions will reinforce the physical make-up and the action of each layer.

II. The Earth's Structure: Plate Tectonic Theory (20 min.)

The theory of plate tectonics states that the earth's top layer is divided into plates that move, changing the earth's surface. Students will piece together puzzle examples of the earth's plates in order to see the plates as they were once connected and how they look today.

III. Rocks: Rock Cycle Ruckus (30 min.)

Rocks are the building blocks of the Earth and are found in all of its layers. Over time, they are continually made and remade into other types of rocks. Students will play a game in which they become a part of the rock cycle in order to explore the mechanisms that drives this natural process.

IV. Fossils: Finding Fossils (45 min)

Fossils contained within the Earth's rock layers create a valuable record to geologists because they provide evidence of the plant and animal life. Students will explore and collect fossils along the Root River in order to find evidence of prehistoric life. Students will identify fossils and piece together what the landscape would have looked like during the fossil's lifetime.

IV. Geologic Time: It's About Time! (30 min.)

Geologists can use fossil records to create a calendar of the Earth's history. Humans understand time in a scale relative to our lifetimes, however, time on earth is thought of in vast scales, called geologic time. Students will incorporate their fossil evidence, along with major earth events, to build a timeline of geologic history.

Quick Facts

Class Length: 3 hours

Ages: Designed for 4-6th grade

Season offered: Year round

Time outside: Weather depend.

Minimum: 45 minutes

Maximum: 2 hours, 25 min.

Hike length/physical activity:

3/4 mile, low physical level

Pre-requisite/prior knowledge: No special skills required.

Minnesota Academic Standards:

Science: 7.IV.E.2, 8.III.A.1-5,
9-12.III.A.4-7

Math: 4.V.B.1

Language Arts: 4.I.A.1&2, 4.I.B.1&2,
4.I.C.1, 4.III.A.1&2,
5.I.A.1&2, 5.I.B.1, 5.I.C.1,
5.III.A.1&2, 6.I.A.2&3,
6.I.B.4, 6.III.A.1&3, 7.I.A.1-3,
7.I.B.1&5, 7.III.A.1&7