Geology

GENERAL INFORMATION

OBJECTIVES
Students will discover the local geology. They will understand the rock cycle and determine that the rocks they find in Dry Creek are sedimentary. They will observe the mineral components of some rocks and the different forms that rocks can take when under different forces of the earth.

VOCABULARY
Igneous, sedimentary, metamorphic, minerals, core, mantle, crust

ACTIVITY MATERIALS
Rocks from Dry Creek, magnifying lenses, minerals, rock identification tables, quartz, sand, sandstone rock, gneiss rock, granite rock, data sheets, clipboards, pencils

METHODS

INTRODUCTION
Introduce yourself and state the title of the activity. Preview the main points of the activity and give students an idea of what they will be doing. Begin by asking students the following questions: **What is the rock cycle and what processes change rock** (A geologic process that forms the three basic types of rock over time)? **What are the three basic types of rocks** (Igneous, metamorphic, and sedimentary)? **What are the layers of the Earth** (Crust, mantle, and core)? **Which layer of the earth are we observing in the Dry Creek bed** (Crust)? **What layers are below it** (The next layer is the upper mantle, then the mantle, outer core, and at the middle is the inner core)? **How did the Eastern Highland Rim region for**m? **How does it differ from the Cumberland Plateau? What minerals make up common rocks in the Dry Creek area** (Limestone)? **What rocks do we use from this region for human consumption** (Limestone)? **How has that affected the area?**

Explain that Dry Creek provides excellent opportunities to investigate local geology. Evidence of a shallow, tropical sea covering the area can be observed from the various fossils collected along the Dry Creek bed. Rock layers along the bluffs show layers of limestone and shale, both rich in fossils.

Note the rock layers that can be seen along the bluff across from the Snow house. It shows various layers of limestone and Chattanooga shale. Limestone was created by the deposition of marine

Teacher's Corner

Grade Level(s)
7th Grade

State Performance Indicators
SPI 0707
-7.1: Use a table of physical properties to classify minerals.
-7.2: Label a diagram that depicts the three different rock types.
-7.3: Identify the major processes that drive the rock cycle.
-7.4: Differentiate among the characteristics of the earth's three layers.
-7.7: Analyze and evaluate the impact of man's use of earth's land, water, and atmospheric resources.

INTRODUCTION (cont.)
organisms' shells, evidence that a shallow tropical sea once covered the area. Shale layers were created from mud at the end of the Devonian era, indicating a stagnant, methane-rich environment. Pass around examples of different types of rocks and fossils. For example, show them sand, quartz, a sandstone rock, a gneiss rock, and a granite rock. Sand and all the rocks contain quartz. The sand glues together to form sedimentary sandstone. Sandstone under extreme pressure and heat can form gneiss. Gneiss can melt to form igneous granite.

ACTIVITY
Put students in teams and provide each team with a data sheet, clip board, and pencil. Allow students to wander in the dry creek bed of Dry Creek. Allow them to collect different rocks and identify them based on examples and charts. Instruct them to complete their datasheets as they go along. Discuss uses of these particular rocks. Discuss how rocks and rock layers change over time. Discuss how we use rocks and why they are considered non-renewable resources. Discuss what process formed the topography of the region and the creek bed in which they are standing. Ask the students what types of rocks they are observing and why? Have them identify the minerals that compose the rocks they have found and discuss the part of the rock cycle that formed them.

Other common findings:

1) Cephalopods (Sea mollusks like octopi and squid. Ranged from 1 inch to 17 feet long. Big predators of the sea).
2) Corals (Soft-bodied sea animals, mainly solitary. Used their many arms to grab food).
3) Chattanooga Shale (Black color results from large amounts of carbon. Source of naturally-occurring oil. Pioneers of the area may have used for heating).
4) Chert (Similar to quartz due to silicon dioxide content. Variety of colors. In limestone, Chert presents as oval nodules).

DISCUSSION
Bring the group back together and have each team present their findings. Note any interesting artifacts or fossils that students have located

WRAP-UP
Allow students to replace anything they have collected. Let the group know that the activity is coming to an end. Conversationally review the theme and sub themes. Collect the data sheets.

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- Local geology information derived from Dr. Michael Gibson, 2007.