TRB 4:3 - Investigation 2 - Classifying Rocks

Summary

Students will identify basic properties of minerals and rocks.

Group Size

Small Groups

Materials

- Set of rocks for each group of students (sedimentary: sandstone, conglomerate, shale; igneous: obsidian, granite, pumice, basalt; metamorphic: marble, gneiss, schist)
- Hand lens
- Background Info sheet: Classifying Rocks (pdf)
- Background Info sheet: How Rocks are Made (pdf)
- Rock chart
- Rock poster or rock field guides

Additional Resources

Books:

- Geology Rocks by Cindy Blobaum (Williamson Publishing Co.), 1999
- Rocks and Minerals Alfred A. Knof, Inc. (Eyewitness Books), 1988
- Rocks and Soil by R. Sneddon (Raintree Steck-Vaughn Company), 1999
- Rocks and Minerals Reader's Digest Children's Publishing, Inc. (Weldon Own, Inc.), 1999

Videos:

- Rocks and Minerals. Series in Real World Science, Science in the Real World.M1541: Mazzarella Communications, 1999. Footage of various rock formations and a "field trip" to a quarry, mine and cave will give students the ability to recognize specific rocks and minerals. Colorful graphics and animation show the layers of the earth and how rocks are formed.

Background for Teachers

Rocks are combinations of minerals found naturally on or in the Earth. Rocks record the history of the Earth in their structures. Rocks can be identified by properties such as color, crystal size or texture, banding patterns, presence of pores, and other characteristics (see student rock identification background sheet).

Intended Learning Outcomes

1. Use a Science Process and Thinking Skills
3. Understand Science Concepts and Principles

Instructional Procedures

Pre-Assessment/Invitation to Learn

Show students a rock such as a piece of granite. Ask them to describe the rock. Ask them what happened to make the rock look the way it does. Explain to students that the rock has a "story" and it can be told if you know about rocks. For example, if you chose to show them a piece of granite (igneous rock), the story might go like this: "I started life as a hot, hot liquid. Slowly I rose toward Earth's surface and started to cool. As I cooled, minerals I was made of started to "find" each other and form crystals. I started to look speckled and very pretty. I cooled completely off and rose a little higher in Earth's crust. Soon, rain, water and even a glacier scraped off the rock on top of me. I was exposed to the light for the first time!"

Instructional Procedures

Have the students read the background material about the three types of rocks.

Give each group a set of ten rock samples and a hand lens. Give them time to explore and study the rocks. Have them sort the rocks by appearance according to the descriptions they have read (sedimentary, igneous, metamorphic). They should record their observations in their log.

Have the students classify each rock as sedimentary, igneous, or sedimentary. Use a rock poster or field guide to check.

Extensions

Math-

Describe and identify geometric shapes in the rocks. *(Standard III, Objective 1)*

Science-

Make a sedimentary rock. Fill a clear jar with pebbles, sand, twigs, and leaves. Add 1/4 cup (50 ml) Epsom Salt (available at a drugstore). A jar with straight sides work best. Add water until there are only about two inches (five cm) of space left at the top. Put the lid on the jar and shake. When thoroughly mixed, place jar on a flat surface. Check the jar every hour or so. You will be able to see the heavier layers settle to the bottom first. When everything has settled, carefully pour the water out and let the layers dry completely. You will have a homemade sedimentary rock. The Epsom salts (magnesium and sulfur) act as glue to hold the rock together. *(ILOs 1, 4)*

Homework & Family Connections

Start a rock collection at home. Use an egg carton to sort and store them. Use separate egg cartons for the three types of rocks.

Assessment Plan

Have each student pick one of the ten rocks and write its "story" (see Invitation to Learn). Stories could be bound into a class rock book and used for review.

Authors

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