

Look Out, Below

Wyoming Science

Objectives:

- Students will demonstrate knowledge of the soil profile by reconstructing the soil layers on a worksheet.

Background:

When you dig into the ground under the grass in your yard, you'll find soil. But what happens if you keep digging? If you dug far enough, would you run out of soil? How far would you have to dig before you ran out? And what would you find there?

If you dug far enough, you would hit solid rock. This is called bedrock. But before you got there you would have to dig through three different layers of soil. The first layer would be nothing but dark-colored organic materials. That is the layer formed by plants and dead insects and leaves that have fallen. Just under that is the topsoil. The topsoil is the best place for plants to take root and grow. It is a mixture of air, water, organic materials, and minerals.

Minerals come from rocks. Minerals have several different ways of getting into the soil. Sometimes they come from the ashes of volcanoes that have erupted. Usually the minerals come from rocks that have broken apart. Rainwater flows into the cracks of rocks. When the water freezes, it expands and causes the cracks in the rocks to get bigger and little bits of the rock to break off. Sometimes the roots of plants will grow into the rocks and cause them to break. Many rocks are broken apart by lichens, tiny plants that live on rocks. Sometimes water just keeps running over the rock until tiny particles start to wash away. We call this process "weathering." Water and wind carry the tiny bits of rock along until they get trapped by the soil. It can take hundreds of years for rocks to break into pieces that are small enough to form soil. It takes between 200 and 500 years for just one inch of topsoil to form.

Materials Adapted from Oklahoma Agriculture in the Classroom



Standards

Science

Earth, Space, and Physical Systems: 1.4

Materials

- Worksheet "Look Out Below" (copied on heavy construction paper)
- Glue
- Items to represent soil layers (cloth, small pebbles, grass clippings)



Estimated Time

45 Minutes

Grades 3-4

vocabulary:

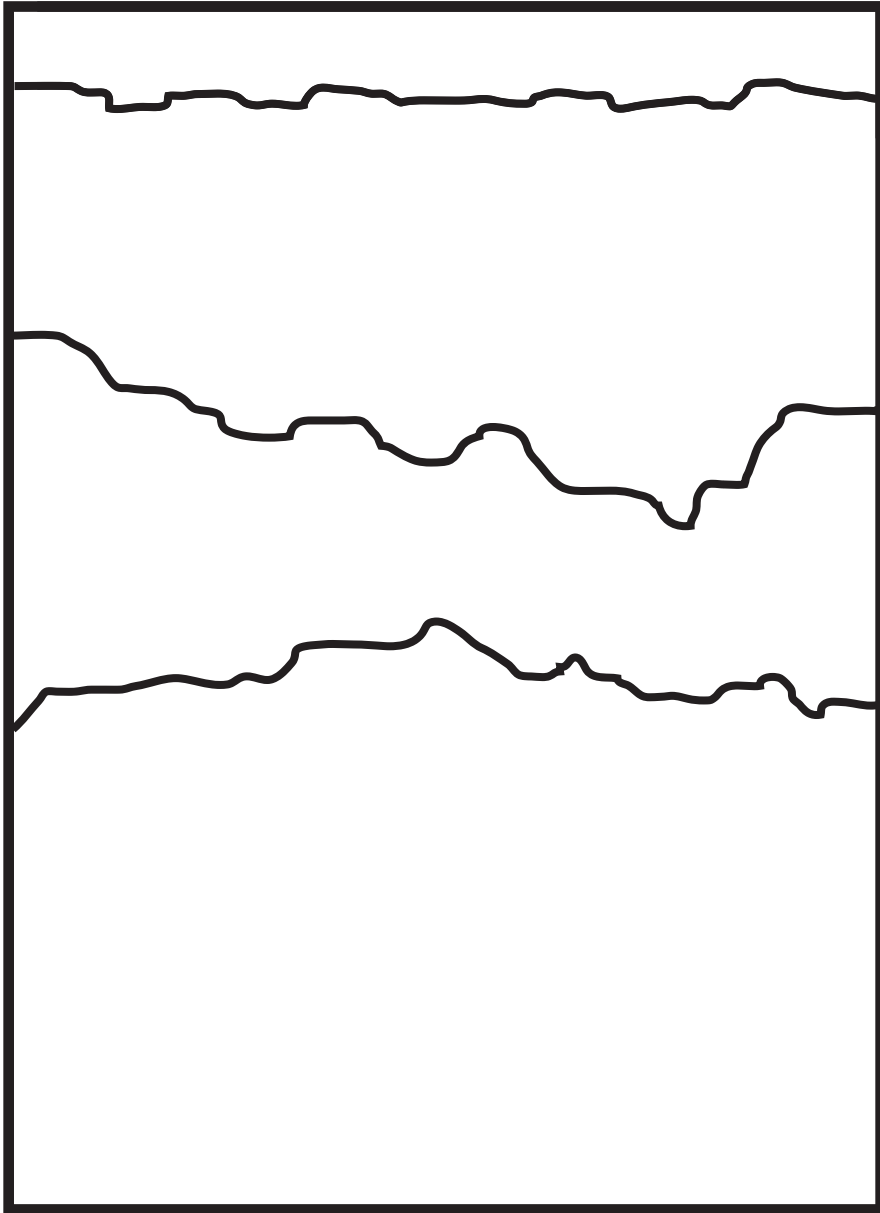
- *topsoil*
- *organic*
- *minerals*
- *bedrock*
- *ash*
- *weathering*

Activity Procedures:

1. Share background materials.
2. As a class, have students build a soil model in an aquarium or large jar. Divide students into groups and assign each group responsibility for one of the soil levels described in the background information. Have each group research the soil layer for which it is responsible before gathering the necessary materials. Students may gather their own materials or use materials you provide, shredded dry leaves or grass clippings, a bowl of gravel or small pebbles, sand, and potting or garden soil.
3. Photocopy student worksheets on heavy construction paper and hand them to your students. Provide students with a variety of media found in the classroom or the home to represent layers of soil. For example, actual grass clippings and leaves may be used for the organic layer; shavings from the pencil sharpener might represent topsoil; a mixture of cinnamon and sugar or salt and paprika can represent subsoil, and rough textured cloth can represent bedrock. Encourage students to come up with their own ideas for representing the different layers.
4. Have students paste down their materials on the appropriate soil layer.



Look Out! Below



Label the four layers of soil and then create them using different types of materials.

