

The “Dirt-y” Truth (about soil and rocks)

Program Description: Appropriate for ages 8-10 (3rd - 5th grade)

What makes up dirt and why? What are the kinds of rocks and why? Learn about soil composition. Take a soil sample. Make a filter to find out soil density and explore how pollutants can enter the ecosystem. Use a soil sieve and discover what living and non-living things are in the soil. Discuss ecology and conservation and their vocations.

Key Small Group Activities:

Soil Sample - Have a 1 cup size soil sample ready for the group to observe and handle. Place a chart like the one pictured below at their activity center with a box of crayons. Have the students study the sample, and then find the matching colors in the crayon box to color in the corresponding blocks on the chart. After the chart is filled in, have each group talk about their sample in terms of their chart. For example: they will explain what colors are in their sample and how that related to how wet or dry their sample is.

Soil Filter - Talk about how soil acts as a filter that keeps pollutants from getting into the ground water. Give each group two coffee filters, a see-through container, a rubber band, a packet of pepper and a squeeze bottle of clean water. Instruct them on how to build the filter and then pour in the water. Observe the results. Have each group talk about their results and ask each group a specific question about the experiment, such as:

1. What does the filter represent in this activity?
2. What does the pepper represent?
3. What happened to the water?
4. What happened to the pepper?
5. If the pepper were a pollutant, would it have been a good or bad situation for it to get into the ground water?

Next, repeat the experiment using a filter with a hole already in it. Ask the same questions to different groups and compare the results.

Soil Sieve - Combine small groups into a couple of larger groups. Each group will be presented with another prepared soil sample and a set of sieves. Explain that the group will use the sieves to filter the soil and observe what they find. Discuss what living things are in soil and what non-living things are in soil. Have the students compare what comes out of each sample and why samples are different.

Presenter:

Someone from TWRA or from the UT Ag Extension office can be contacted to come and do a short presentation to the group.

Hike:

The hiking trail is available for groups to traverse in short or longer distances, depending on the size and ability level of participants. A portion of the trail is handicapped accessible.

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Rocks - What are they?

Rocks are a mixture of solid chemicals called minerals that are pressed together very tightly. Minerals are inorganic (not from living things) solids that occur naturally. Some examples of minerals are ice, salt and gold. Crystals are solid chemicals with regular, geometric shapes that look shiny and glassy. We walk on land that is made up mostly of rocks. Rocks are divided into three types. Sedimentary rock is made up of sand and mud that has settled on the sea floor and become “glued” together by water. Metamorphic rock is deep underground, usually in the mountains, that is formed from intense heat and pressure. Igneous rock is formed from molten rock (magma) that has cooled. A form of magma is the lava from a volcano. Rock is recycled. Underground rock is moved to the surface and back underground by the movement of the tectonic plates - the pieces of the Earth’s crust that push together. Geologists study rocks and their properties to figure out how rocks change and what that means.



Crystals



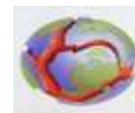
Minerals



Rock Cycle



Volcanic lava



Tectonic Plates

Fill in the blanks using the words in the Word Bank below:

The ground we walk on is mostly made up of _____. Rocks are all different, but are made up of a mixture of _____. Some examples of minerals are _____ and _____ that occur in nature. There are _____ types of rock known as _____, _____, and _____. _____ rock can be formed from cooled lava from a volcano. Sand and mud that is pressed together and “glued” by water forms _____ rock. _____ rock is usually formed in mountains because of the high pressure levels found there. The Earth’s crust is made up of _____ plates. The _____ is the process by which rock is moved from underground to the surface by the movement of the Earth’s crust. It’s a kind of rock recycling. People whose job it is to study rocks are called _____.

Word Bank

geologists igneous minerals rocks salt
three ice tectonic
rock cycle sedimentary metamorphic

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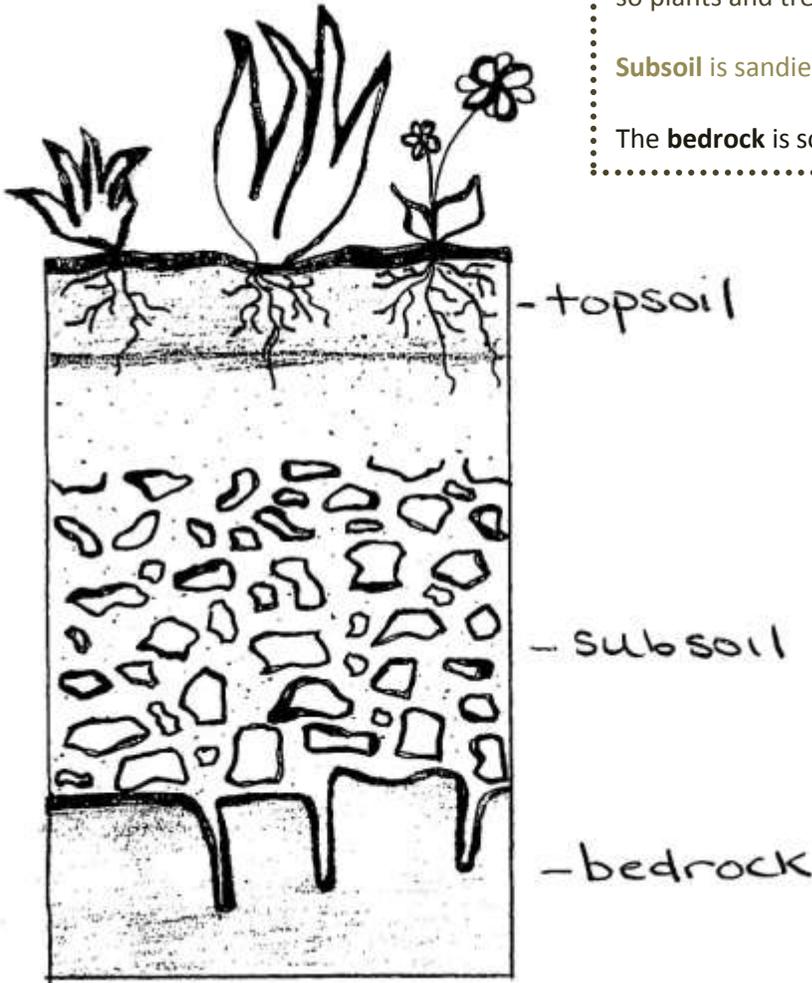
Where does soil come from?

When rock crumbles, the particles build up on the ground and mix with rotting organic material, like dead animals and plants, to form soil. So, the kind of soil that is in an area is because of the kinds of rocks that are there.

Topsoil is the upper layer of soil that holds the most nutrients, so plants and trees can grow.

Subsoil is sandier and contains more rocks.

The **bedrock** is solid rock.



Who lives in the soil?

Can you think of three animals or insects that live in or make their homes in the ground?

Rocks don't seem like they are important, but they are!

Name two ways that rocks are important to people, animals and plants:

| People | Animals | Plants |
|--------|---------|--------|
| | | |
| | | |

Additional Resources

Books are available at Maury County Public Library

A Look at Minerals: From Galena to Gold by Jo S. Kittinger

A good reference book that describes the composition, formation, appearance, and uses of certain minerals, including some gemstones.

<http://www.atozkidsstuff.com/rocks.html>

A website with lots of print outs, activity ideas and games suited for preschool through elementary school.

<http://www.brainpopjr.com/science/land/soil/grownups.weml>

An educator's website that has lots of ideas for hands-on activities as well as a movie for the kids to watch.

Crystal & Gem by R.F. Symes

A reference book perfect for classroom use that goes into detail with information and illustrations.

<http://school.discoveryeducation.com/schooladventures/soil/>

A great website for kids to explore the underground with informational games and pictorial field guides.

Nature With Children of All Ages by Edith Sisson

This is a good resource for educators and parents who wish to incorporate easy to do nature activities and experiments.

Rock and Fossil Hunter by Ben Morgan

A paperback reference with detailed pictures and activities and experiments just for kids aged 8 and up.

Secrets in Stones by Rose Wyler and Gerald Ames

A good informative resource for beginning readers, but with only black and white pictures.

Stone Soup by Marcia Brown

An old tale told in a picture book that would make a great supplement to this subject.

Wildlife, Wildflowers, and Wild Activities: Exploring Southern Appalachia by Jennifer Bauer

This is another good resource for educators and parents who wish to incorporate easy to do nature activities and experiments.

Curriculum Standards Addressed

English

Std. 2 - Communication

Std. 4 - Research *

optional for 4th-5th grades - topic given out

Std. 5 - Logic

Std. 6 - Informational Text

Reading

1.0 - Development of Reading & Listening Skills

Science

Std. 1 - Embedded Inquiry

Std. 2 - Interdependence

Std. 7 - The Earth

Std. 9 - Matter

Social Studies

6.0 - Individuals, Groups & Interactions

Survey

Using a scale of 1-10, with 1 being “terrible” and 10 being “excellent,”
how would you rate the following aspects of the packet?

Overall organization of packet? _____

Material covered in packet? _____

What was your favorite part of the packet and why?

What was your least favorite part of the packet and why? _____

Did you find the available handouts helpful? Why or why not? _____

What could be done to improve future environmental education endeavors? (special topics,
other types of programs, facilities, etc.)

Other comments:
