



K-2 Earth Science

Southern Nevada Regional Professional Development Program

What is soil?

INTRODUCTION

There are approximately 21,000 different kinds of soil found in the United States today. Soil is made up of broken down rocks, decayed plant and animal life called organic material, and air and water. There are three main components to soil: sand, silt and clay.

WHERE'S THE SCIENCE?

Soil is the solid material on the Earth's surface. Soil is caused by weathering and biological activities. Soil varies from place to place and has both biological and mineral components (NSS E5C5 Grades 3-5).

MATERIALS

(Student materials)

- Small plastic bag (sandwich size)
- Plastic spoon
- Hand lens
- Paper plate
- Small glass jar or plastic vial
- Science notebook

Teacher materials:

(For outside)

- Sharpie pen
- Colored pencils
- Pencils
- Roll of scotch tape
- 3-5 small index cards

- Pitcher of Water
- (For classroom)
- Chart paper
 - Large school map including grounds

PROCEDURES

Lesson One

1. Ask the students what they think the term “soil” means?
Chart answers
2. Using their thoughts from the chart above introduce the term soil to the students.
For example: “Boys and girls, David said that he thinks soil is the dirt found outside. Today we are going to go outside and look for soil around our school. Soil is the solid layer of Earth material found on the ground.”
3. Give each student a plastic bag with a plastic spoon and hand lens inside.
4. Tell the students that today they will be investigating the soil found around the school.
5. Each student should also take their science notebook.
6. Once outside search for soil in various locations around the school.
7. Pass out pencils and colored pencils. Have the students record observations in their science notebooks, such as a simple sketch of the location and a close up of the soil found in this location. Remind them to look closely at the soil using their hand lenses.
8. As students finish recording their observations, move around the group and pass out a small piece of scotch tape to each child. Instruct the students on how to place the middle section of the tape on the soil to collect a sample that can then be placed in their science notebooks. You should also collect a soil sample using the tape and tape it to one of the small index cards. Don’t forget to label the location!

9. Instruct a few students to use their plastic spoon to dig up a sample of the soil to take back to the classroom. Label the location by writing on the bags with a sharpie pen along with the student's name. Don't forget to gather your own sample.
10. Repeat steps 7-9 at three to five locations, making sure every child collects a soil sample.
11. When you return to the classroom mark the school map with the locations where the soils was collected and discuss student observations. Place the index cards and plastic bags of the soil samples you collected on the large school map.
12. Ask students to record what they learned about soil today in their science notebooks. Collect plastic bags for tomorrow's lesson.

Accommodations: For kindergarten take photos of the various locations and collect samples as a whole group. Record observations students make in a class science notebook (Big Book). Include the school map in the class science notebook and tape samples in it.

Lesson Two

1. Set up three to five stations (depends on how many samples you collected) with the soil samples that were collected yesterday.
2. Explain to students that today they will look at the soil samples more closely.
3. Demonstrate how to pour a small amount of the soil onto the paper plate and then using the plastic spoon spread the soil out. Next show the students how to use the hand lens to observe the soil particles. Students can sketch these observations in their science notebooks.
4. Rotate the students through all the stations. As students work ask them what they are noticing about the soils? Are they the same? Different? How?

Lesson Three

1. Begin by calling the students to the carpet area and discussing what they learned about the various soil samples that were collected by them. Make sure they bring their science notebooks to the discussion area.
2. Tell the students that today they will be investigating the soil samples again. Demonstrate how they will begin by pouring the soil sample into a jar and sketching what they see.
3. Next you will come around and add water. They will continue to observe what happens and sketch what they observe.
4. Instruct the students to hold the jar securing the lid and shake the soil samples for 30 seconds. Again observe what they see.
5. Collect samples and let them set overnight.
6. The next day pass samples back to the students and have them record observations.
7. Pass out chart paper and colored pencils and markers to each table, instruct students to discuss their observations as a group and then create a group chart showing the four observations they made of their soil sample.
8. Have students share their charts with the entire class and post.

Homework:

Have the students collect a soil sample from their yard or a local park. Students should study their sample repeating steps in lessons 1-3 and then share what they learned about their soil with the entire class. Don't forget to have them include observations, samples and sketches in their science notebook.

Additional Resources

Dig In! Hands-On Soil Investigations NSTA (National Science Teachers Association) press, Copyright 2001, www.nsta.org

Soil Science www.delta-education.com

How We Use Soil ISBN 141090606x www.heinemannlibrary.com

Using Soil ISBN 1403493138 www.heinemannlibrary.com

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

Without Soil ISBN-10: 1-59821-491-8

<http://www.seedsoflearning.org>

Into the Soil ISBN-10: 1-59821-483-7

<http://www.seedsoflearning.org>

Nevada State Standards

E2C1 Students know Earth is composed of different kinds of materials (e.g. rocks, soils, and water) E/S

E2C3 Students know soils have different colors and textures depending on their composition. E/S

N2A1 Students know how to make observations and give descriptions using words, numbers and drawings. E/S

N2A2 Students know tools can be used safely to gather data and extend the senses. I/L

N2B2 Students know that, in science it is helpful to work in a team and share findings with others. E/L

Safety Reminder:

As students collect soil closely observe to make sure they don't collect anything extraneous. Make sure to inform parents to also observe their child when collecting soil samples for homework.