Soil Types
5th Grade

Natalie Anderson

Benchmark:

SLC 12: Students will explain factors that determine different soil types.

Objectives:

Students will recognize that sand and rock fragments in soil are products of erosion or weathering of rocks. Students will also recognize that soil and sand are evidence of changes taking place over a long time.

Materials:

For each student:

- Science Notebook pages A and B

For each group of students:

- Group recording sheet
- Granite sample
- Coarse quartz sand
- Hand lens
- Toothpicks
- 1 cup of soil that includes organic matter (humus)
- Glue
- Newspaper to cover desk
- 8 plain pieces of paper
- Additional sand and soil samples

Initial Demonstration:

Read the book "Sand" by Ellen J. Prager and ask these questions when finished: What is sand? Where does sand come from? How does sand get on a beach or form a sand dune?

Target Observations:

- Sand is small grain of rock. It comes from rocks, shells, coral, and lava. It is moved by wind, water and ice.

Target Model:

-Sand has many colors
-Sand is a grain size: bigger than mud but smaller than gravel
-Sand is made of rock, coral, shells and lava through the process of erosion.
-Water, wind and ice can break rocks into smaller pieces or move them to new places

Procedure:

Discuss the possible answers to the questions asked after reading the book. Divide the class into groups and have one group member collect all the necessary materials and the quartz sand sample. Hand Notebook page A to everyone in the class.

Ask all the students to put a small amount of sand on a piece of paper and then use the hand lens to look closely at the sand. Have the students divide the sand grains into groups based on different characteristics the students observe.

After a few minutes have the class complete page A. Tell them to glue samples of the different kinds of sand grains to their Science Notebook page by placing a small dot of glue on the page and sprinkling the sand over top.

When everyone is done discuss the following questions:

How many different kinds of sand grains did you find?
What were some of the characteristics of each kind?
Where do you think the sand came from?
Why do you think there are different kinds of sand in one sample?

Next have a group member collect the second sample and hand out Notebook page B. Have the students repeat the separation of grains using their notebook page to describe and glue the samples.

Discuss this sand sample and compare with the quartz sand:

Do they have different or similar particles?
What are the characteristics of the different kinds?
What do you think makes this sand sample different?

Target Revised Model:

-Sand has many colors
-Sand is a grain size: bigger than mud but smaller than gravel
-Sand is made of rock, coral, shells and lava through the process of erosion.
-Water, wind and ice can break rocks into smaller pieces or move them to new places
-*There are different types of sand*.

Demonstration 2:

Read the book "Rocks and Soil" by Joy Richardson. Ask questions about how soil is different from sand.

Target Observations:

- Sand is more grainy than soil
- Soil can grow more plants then sand

Target Revised Model:

-Sand has many colors
-Sand is a grain size: bigger than mud but smaller than gravel
-Sand is made of rock, coral, shells and lava through the process of erosion.
-Water, wind and ice can break rocks into smaller pieces or move them to new places
-There are different types of sand.
-*Soil forms slowly*
-*Soil is mostly made of broken rock but also contains the remains of dead plants and animals*
-*Soil is broken up by worms and animals*

Procedure:

Remind students of their work with sand and tell them that in this session they will work with soil samples. Divide the class into groups and distribute the Group recording sheet.

Have a member of each group come up to collect the materials. After completing the sheet have the students share the results of their work.

Discuss the group's hypothesis about what soil is, where it comes from and why they think so. Ask some of the following questions:

Where do you think the components of the soil were before they were in the soil?
Why do you think samples were different from one another?
How many round rock fragments did you find in the soil?
Where did they come from?
Did the rock fragments in the soil resemble any of the sand particles?
What do you think the different components of the soil can tell you about different kinds of change?

Target Revised Model:

-Sand has many colors
-Sand is a grain size: bigger than mud but smaller than gravel
-Sand is made of rock, coral, shells and lava through the process of erosion.
-Water, wind and ice can break rocks into smaller pieces or move them to new places
-There are different types of sand.
-Soil forms slowly
-Soil is mostly made of broken rock but also contains the remains of dead plants and animals
-Soil is broken up by worms and animals
-*There are many different types of soil, which represents the different origins of soil*.