

Soak It Up

Objective

Students will conduct experiments with sand, silt and clay soil.

Materials

- clean, plastic pop bottles—three per group of four or five students
- scissors
- cheesecloth, paper towels or coffee filters
- dry sand
- dry garden soil
- clay soil
- organic matter (decomposed leaves, grass clippings, shredded paper, etc.)
- quart jars
- nonsudsing detergent (dishwasher)
- clean cardboard milk cartons
- dried beans for planting

Procedures

1. Enlist the help of parents or your county Extension agent in gathering soil that is mostly sand, mostly silt and mostly clay.
 - Students will inspect different kinds of soil by looking, feeling and smelling them.
 - Students will examine the different kinds of soils through a magnifying glass and compare the particle size in each.
 - Students will record their observations.
2. Divide students into groups of four or five.
 - Help students cut off the top halves of their pop bottles to serve as funnels.
 - Students place the tops of the bottles upside down in the bottom parts of the bottles.
 - Provide each group with cheesecloth, paper towels or coffee filters and equal portions of dry sand, dry clay and dry garden soil.
 - Students in each group will line their funnels with the cloth or towels and place sand in one, clay in one and garden soil in the other.
 - Students will measure one cup of water and slowly pour it into the funnel holding the sand.
 - Students will measure the water in the bottom half of the pop bottle and determine how much water stayed in the sand and how much ran through.
 - Students will repeat the experiment with the other funnels.
 - Students will mix organic material half and half with another portion of dry sand and repeat the experiment.
 - Discuss the results.

Oklahoma Academic Standards

GRADE 3

Life Science: 4-3,4. Earth Science: 3-1

GRADE 4

Earth's Systems: 2-1; 3-1

GRADE 5

Matter: 1-1,3. Ecosystems: 2-1,2; 3-1

3. Provide each group with a quart jar, water, garden soil and nonsudsing detergent (dishwasher detergent).
 - Students will pour water into quart jars until they are two-thirds full and add one cup of finely crushed garden soil and three tablespoons of detergent.
 - Students will cover the jars tightly and take turns shaking hard, at intervals, for a least five to ten minutes, or until the soil particles are broken apart.
 - Place the jars where they will not be disturbed for 24 hours.
4. The coarse particles will settle rapidly. (You may need to add some sand to silt or silty clay loams if all the particles are small.)
 - After 24 hours students will hold white paper next to the jars and carefully mark the thickness of each layer of coarse material “sand,” the middle layer “silt” and the top material “clay.”
5. Students will use the different kinds of soil from their experiments to sprout bean plants or some other sturdy seedlings.
 - Students will cut clean cardboard milk cartons in half and fill them with different kinds of soil.
 - Students will determine if the soil used is mostly sand, mostly silt, mostly clay, or a good mix and label the containers.
 - Students will to give their plants equal amounts of water and sunshine.
 - Students will chart the growth of the plants.