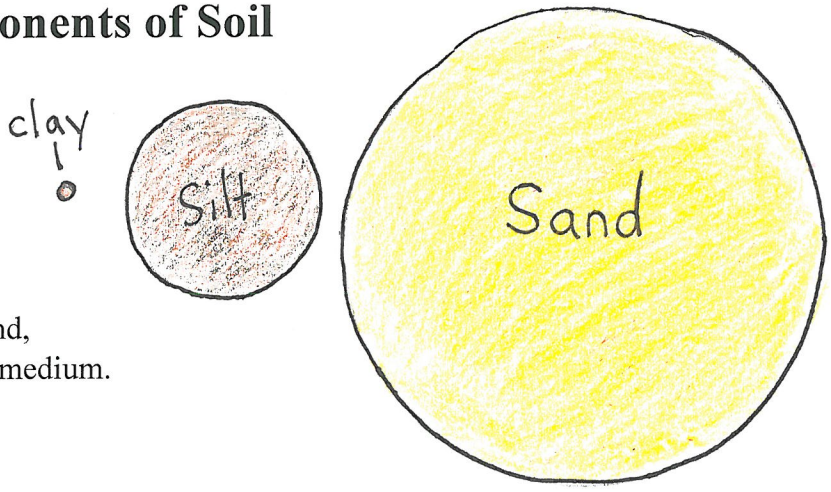
Components of Soil



Lesson Summary
In this lesson students will learn about the three primary components of soil: sand, silt, and clay. Students will discover the properties of each component and what percentages of sand, silt, and clay makes the best gardening medium.

Lesson Objectives
Students will be able to:

1. Identify sand, silt, and clay in a soil sample.
2. Explain the physical properties of the three soil components.
3. Describe the make-up of healthy garden soil.
4. Explain two simple methods for determining the makeup of a soil sample.

Assessments
Students will:

1. Name the soil components.
2. Describe the properties of each component
3. Use samples of soil to identify the amount of sand, silt, and clay in each, using simple methods.

Materials
1. Quart mason jars (2 per sample location).
2. *Soil composition diagram*
3. Proportional sand, silt, and clay, paper cut outs

Before You Begin

1. 24 hours or more before class fill a quart mason jar 2/3 full with water and 1/3 full with the soil from your garden. Shake well for a couple of minutes and leave in a place that it will not be disturbed. Repeat for multiple samples in order to compare soil in different places. Label location of each sample.

Procedures

1. Ask students if they have any idea what soil is made of.
2. Narrow down the answers to the three most basic components: sand, silt, and clay.
3. Show students three circular cut-outs of varying sizes, representing particle sizes of sand (largest), silt (medium), and clay (smallest).
4. Discuss with students how each type of particle fits together with others, and the range of space in between the different sized particles (lots of air and water can

get in between large sand particles, not as much air and water can get through silt particles, almost no air and water an get through clay particles)

5. Ask students to decide how these three types of particles will settle in a jar when a soil sample is taken, and why.
6. Collect soil samples from different parts of the garden, and have students shake them for two minutes.
7. Pass out soil component chart and use soil samples collected the day before to determine soil composition of each sample.
8. Discuss what type of soil is ideal for growing plants and why. Talk about how to change the composition of soil to make it healthier (adding compost or soil ammendments).

Resources

Shelburne Farms Project Seasons Activity Book by Deborah Parrella

New York State Standards

Science Standard 6—Interconnectedness: Common Themes

Students will understand the relationships and common themes that connect mathematics, science, and technology and apply the themes to these and other areas of learning.

Key Idea 1: Through systems thinking, people can recognize the commonalities that exist among all systems and how parts of a system interrelate and combine to perform specific functions.

Common Core Standards

English Language Arts Standards- Science

RST.6-8.3. Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.