



## Fernbank Science Center

**Title:** Soil Sleuths (4313)

**Level:** 3

**Location:** At school (outside/garden preferred)

**Type:** Outreach

**Length:** 60 minutes

**Limit:** 1 class

### **Program Description**

Discover soil particles and their common characteristics, then apply your knowledge to identify the composition of local soils. Create hypotheses, conduct experiments, and practice volume measurements to observe the movement of water through different soil types. Students will graph their data to share results with one another and evaluate their hypotheses.

### **Standards**

#### **S3E1 – Students will investigate the physical attributes of rocks and soils**

- c. Use observation to compare the similarities and differences of texture, particle size, and color in top soils (such as clay, loam or potting soil, and sand)

#### **S3CS1. Students will be aware of the importance of curiosity, honesty, openness, and skepticism in science and will exhibit these traits in their own efforts to understand how the world works.**

- a. Keep records of investigations and observations and do not alter the records later.
- b. Offer reasons for findings and consider reasons suggested by others.

#### **S3CS4. Students will use ideas of system, model, change, and scale in exploring scientific and technological matters.**

- b. Use geometric figures, number sequences, graphs, diagrams, sketches, number lines, maps, and stories to represent corresponding features of objects, events, and processes in the real world.

#### **S3CS8. Students will understand important features of the process of scientific inquiry.**

Students will apply the following to inquiry learning practices:

- a. Scientific investigations may take many different forms, including observing what things are like or what is happening somewhere, collecting specimens for analysis, and doing experiments.

#### **MGSE3.MD.2** Measure and estimate liquid volumes and masses of objects using standard units of grams (g), kilograms (kg), and liters (l).

#### **MGSE3.MD.3** Draw a scaled picture graph and a scaled bar graph to represent a data set with several categories. Solve one- and two-step “how many more” and “how many less” problems using information presented in scaled bar graphs.

### **Vocabulary**

Sand  
Silt  
Clay

Soil  
Organic  
Inorganic

Particle

Observation  
Hypothesis  
Volume

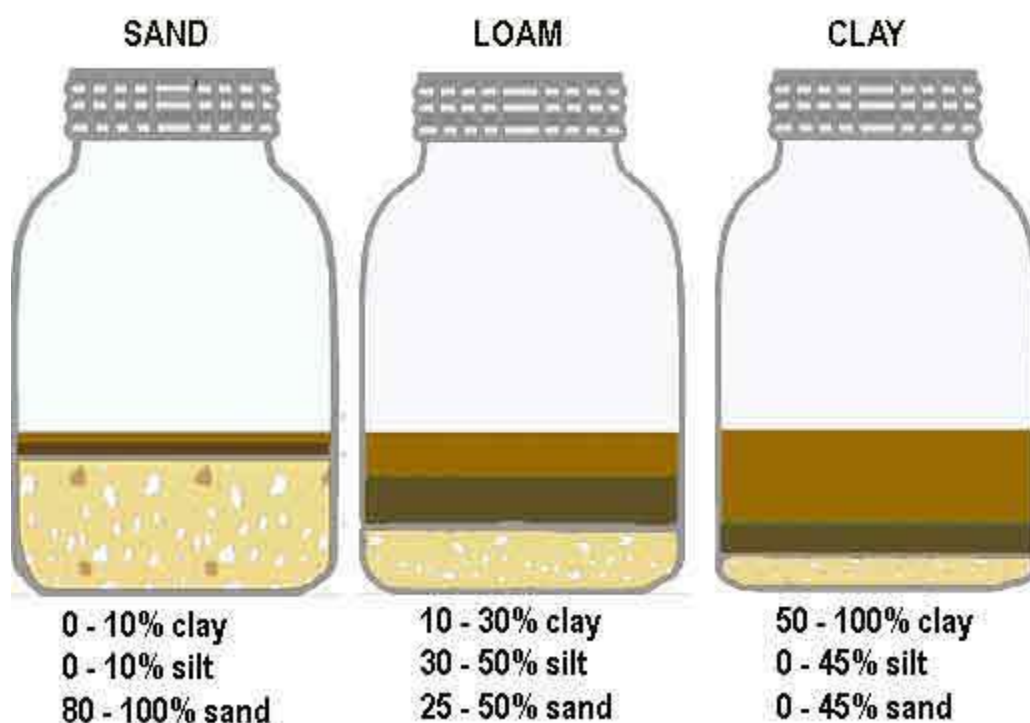
### **Pre-Visit Activities**

Have students bring soil samples from home or collect samples from around the school grounds. Put the samples in small clear plastic or glass jars. Have students observe and describe the soils using scientific language (e.g. color, texture, etc.)

### **Post-Visit Activity**

Using the samples students brought from home or collected at school, do the Jam Jar soil separation experiment ([http://www.soil-net.com/sm3objects/activities/Activity\\_JamJar.pdf](http://www.soil-net.com/sm3objects/activities/Activity_JamJar.pdf)). This experiment allows students to easily separate the particles of their soils by size. Students can then draw bar graphs showing the amount of each particle type in their soil, then present their findings to the rest of the class.

## **JAR TESTING FOR SOIL TYPE**



### **Resources:**

Soil Net (<http://www.soil-net.com/>) has great background reading on soils, as well as a large library of soil lessons, activities, and more.

### **Note:**

Activity will take place outdoors. Students should be prepared to be outside for an hour, possibly in mild inclement weather. Students will also be working with soils and will likely get dirty.