



## Lesson 4, 2019-2020 The Scoop on Soil

Grade level: K-3rd

Objective: Children will learn about soil

Soil, like the air we breathe and the water we drink is an invaluable but often overlooked resource on our planet. In this lesson, students will learn about soil by reading a book, exploring the different components of soil, drawing and writing words describing the texture and appearance of several types of soil, and sharing observations with their peers. If there is time, students will sample soil in different parts of our garden as well. If the students have any questions about soil, please write them down on a piece of paper on the clipboard and we'll try to address them in a subsequent lesson.

### Materials:

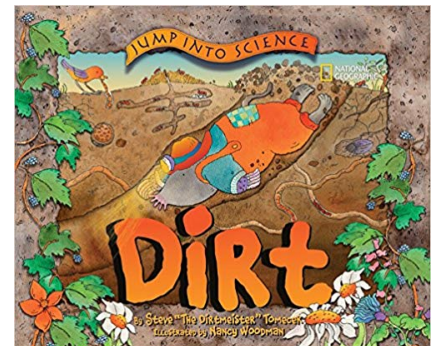
Book: Dirt by Steve Tomeck, Jar Soil Test (a jar of soil + water), jars of clay, silt, sand, and gravel, water infiltration test (clay + water, sand + water)

Activity: Clipboards (4), pencils, garden notebooks, samples of soil and soil components, magnifiers, samples of soil in paper bags (6), soil probe

### Read Dirt by Steve "The Dirtmeister" Tomecek (10 min)

(Page 9) Show students the different samples (humus, clay, silt, sand, rocks/gravel) as you read page 9.

(Page 10) Show students what happens when you pour water over a sample of clay or a sample of sand. Which sample does the water flow through faster?



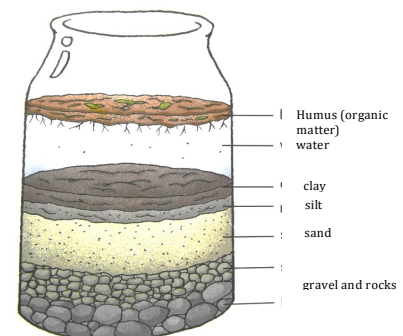
### After finishing the book, explain the The Jar Soil Test (5 min)

Turn back to page 9 and show students the jar. "Soil is made from a combination of humus (small bits of plant and animal matter), clay, silt, sand, and gravel. When soil is mixed with water, shaken and allowed to settle, the different sediments will separate. We can see the different sediments and organic matter as layers in the jar."

Point out the different layers in the jar (I have tried to label them). Please do not shake the jar as contents need to settle for several days.

Quickly review the different layers of sediment in the jar:

- Humus
- Clay
- Silt
- Sand
- Gravel: Large and heavy, they sink to the bottom



## Jar soil test cont'd...

**“Different soils contain different proportions (or amounts) of humus, clay, silt, sand, and rocks or pebbles.** The amount of these materials will change characteristics of the soil: the nutrients in the soil, how quickly water will flow through it, how well it will hold roots of trees or whether it will provide a good foundation for a house, how much it will expand when it is wet...etc.”

## Activities

### **Different Soils in Davis! (10 min)**

Place the 6 bags of soil in different places in the garden. Working in groups of 3 (or 2), have the students “investigate” the appearance, texture, and smell of each sample for 1 minute and write words in their garden journals that describe the soil samples they are investigating. Repeat process for all 6 samples. Ring the triangle or cow bell for each rotation.

### **Pioneer Garden Soil (5 min) (OPTIONAL)**

“Next we will investigate the soils in our own garden using a special tool called a soil probe. The soil probe allows us to take a closer look at what is going on underground!”

Divide into 2 groups (1 per volunteer parent)

Go around the garden and use soil probe to take different samples of the soil. You may place the samples on a brown tray. Students will discuss their observations, comparing the different locations. Ask students to describe differences in moisture in the soil, texture, composition, color, etc.

*Please be sure to push probe perpendicularly into the soil and remove perpendicularly. If you do not, you may bend the probe. PLEASE do not bend the probe. (I have 3 probes. Two are on loan and on of those came to me bent. The other probes are not bent. Probes are about \$80 each and you will be responsible for replacing if you bend the probe(s) that are not already bent.)*

### **Closing Circle (10 min)**

Return to the garden circle and ask groups to report their findings for the samples. Some samples were sandy, some were more clay-like, some were fluffy, and others were fine like powder. Why? Because they all contain different proportions of the basic sediments: clay, silt, sand, gravel AND humus.

“How many of you realized that soils could feel, smell and look so different? Scientists who study soil are called soil scientists.

Our human activities (as humans) have a significant impact on the quality of soils around the world. Can someone remember one way that human activity can affect soil? (refer to text in soil book – deforestation, fires (removal of plants that hold topsoil in place), gardening (caring for the soil by adding organic amendments) and providing habitats for the FBI (fungi, bacteria, invertebrates), pouring concrete over soil, etc.

When you go home today, go into your backyard or if you don't have a backyard, visit a little patch of soil at the park. Is it similar or different to the soil samples you saw today?”

## Decomposers (the F.B.I)

The FBI are a very important part of soil. They decompose large pieces of organic matter into very small particles that plants need in order to grow.



**F**  
**Fungi**



**B**  
**Bacteria**



**I**  
**Invertebrates**

