

## LEARNING ACTIVITY:

# Dig Into Soil

Grade Level: K-4



Source: Wendy Greenberg,  
Soil Science Society of America.  
Adapted with permission.

Soil scientists often examine soils and record soil data outside. Soil is not just topsoil; it includes other horizons (soil layers) underneath the topsoil. So soil scientists use shovels or soil augers to get samples of many soil horizons. They record soil colors, textures, and types of living organisms for various soil horizons. They also record the location, vegetation, and topography of each soil. All this data helps soil scientists, farmers, builders, and others understand soils better in order to use the land appropriately.

### Materials

- Shovel with long straight blade
- Measuring tape or ruler
- Data sheet and pencil
- Water spray bottle
- Trowels (for those not using shovel)
- Plastic sandwich bags, markers, and newspaper for desks (if bringing samples inside)

### Procedure

1. Find a place outside to dig a small pit. Be sure to get permission!
2. Observe and write down information about the site.

**Location:** What building or road is it near?  
Whose property is it on?

**Vegetation:** What types of plants are growing or have grown there?

**Topography:** What is the general shape of the land (flat, hilly, etc.)?

3. Make a table on your data sheet that looks like this:

Horizon	Depth	Color	Texture	Living Organisms
Topsoil				
Subsoil				

4. Dig carefully until you reach the subsoil. How do you know? Something about the soil will change, most likely the color, and maybe also the texture. Dig into the subsoil for a sample of that too. (The term “subsoil” is used here to mean any soil beneath topsoil. Technically, what is under the topsoil might not be subsoil.)
5. Measure how deep the topsoil is, and write it down in the depth column of the table. Be sure to write down the units (centimeters or inches). Then measure how deep the pit is and write down that depth for the subsoil.
6. Get a good handful of topsoil. (If bringing samples inside, place topsoil in a plastic bag and label it.) Evaluate and write down these properties.

**Color:** Use words like dark brown, light brown, yellowish brown, or reddish brown. Some soil might also be black, gray, yellow, or orange.

**Texture:** Spray water on the soil to help you feel the texture. Pick sandy, clayey, or loamy. Sandy soil feels gritty and does not stick together well. Clayey soil is sticky. Loamy soil is between sandy



and clayey. (Loam is not related to amount of organic matter.)

**Living Organisms:** Did you find any worms, ants, or other organisms? Don't forget plant roots and seeds.

7. Get a good handful of subsoil. (If bringing samples inside, place subsoil in a labeled bag.) Write down subsoil color, texture, and living organisms as you did for topsoil.
8. Consider: How is topsoil different from subsoil? Which one has more organic matter? (Hint: Which one has a darker color?) Which one has more living organisms? How well do you think topsoil and subsoil hold water? How easy do you think it is for air, water, and plant roots to move through topsoil and subsoil? Does this soil get wet for a long time? (Hint: If the subsoil is gray, it probably stays wet for a long time.) And what do you think would be different if you dug somewhere else? Give it a try sometime.

*Note for teachers: If you dig a small pit in advance near the school, this approach can work well for a whole class. It's best to have a smooth vertical face on one side of the pit for measuring depths. It is also helpful to pile up some subsoil for student sampling. For soil science resources for teachers, see [www.soils.org/lessons](http://www.soils.org/lessons).*