

than previously believed. From this study, the scientists learned that in a natural setting there was a different outcome than in a laboratory setting. In the natural setting, the scientists found that when soil was frozen, microbe activity did not increase. However, in the laboratory setting, scientists found that soil microbe activity increased. Scientists think that it may not have gotten as cold outside as it did in the laboratory setting and therefore they got different results.

This study shows why it is important to conduct a scientific study in an area that is as similar as possible to the environment the scientist is interested in studying. This study also shows why it is important that studies are repeated several times by different scientists before any conclusions are made.



➡ If you were the scientist, how would you explore whether higher average temperatures affect soil activity over the entire winter?

➡ Why do you think scientists first tested soil microbe activity in a laboratory setting?

FACTivity



Soil Investi-gators

In this **FACTivity**, students will investigate the soil in their school yard and some soil from home. You will need at least five empty plastic bins, five small hand trowels, magnifying lens, plastic spoons, plastic sandwich bags, permanent markers, rulers, plastic containers or sinks with water, and science journals.

Divide students into small groups of three or four students. Give each group a plastic bin and a hand trowel. Take students outside to collect two samples of the soil. Before students collect samples of soil, have student note-takers write down a description of the area from which each soil sample will be taken. The soil sample from the student's neighborhood should be brought back with the student the next day.

After each group has collected its soil samples, bring the samples to an area where students can sift through the soil and make notes about what they find in their soil sample. Students will use the chart provided to make their notes.

Student Procedure:

1. Using your spoon and plastic bags, you will collect three different looking types of soil to investigate. Choose at least one from your neighborhood and two from the school grounds. The one from your neighborhood should be brought back with you tomorrow. Be sure to label the plastic bag with information about where you collected the soil.

Observations	Sample 1	Sample 2	Sample 3
Where did you collect this sample?			
Describe the sample site (i.e., sunny, moist, dry, shaded, forested-you don't have to use these terms)			
How deep did you dig to get your sample?			
What color is the sample?			
What does the sample smell like?			
What does the sample feel like?			
Is there any evidence of living or dead plants or animals? Describe.			
Does the sample contain iron? How could you check?			
Describe the particles. What about their size? Shape? Color?			

2. Complete the chart above.

3. After students have filled in their charts and had time to examine the soil, have a class discussion about the different types of soil the students found. As a class, you can create a soil chart of the different soils that were found.

*This FACTivity was adapted from "Scoop, There it is!" by Todd R. Nickelsen.



If you are a PLT-trained educator, you may use PLT Activity #24, "Nature's Recyclers," as an additional resource.

Useful Web Links:

To learn more about soil microbes, visit <http://rivenrock.com/soilmicrobes.htm>.

Underground Virtual Adventure— The Field Museum

http://www.fieldmuseum.org/undergroundadventure/virtual_tour/index.shtml#

Discovery Education Soil Safari

http://school.discoveryeducation.com/schooladventures/soil/soil_safari.html

Bureau of Land Management Just For Kids Soil Biological Communities

<http://www.blm.gov/nstc/soil/Kids/soilcrus.html>

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