



**International Center  
for Leadership  
in Education**



**Gold Seal:**

Copernicus Education Gateway

<b>Author(s):</b> Thomas Venezia			<b>Lesson Title:</b> Soil Percolation			
<i>Grade Span</i>			<i>ICLE Application Model</i>			
<b>K-4</b>	<b>5-8</b> X	<b>9-12</b>	<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b> X

**Instructional Focus:**

**Science and Technology**

Students develop skills in using technology and recognize the relationship between technology and science, including its potential and limits.

**Unifying Concepts and Processes**

Students recognize patterns and processes, making connections in terms of systems and subsystems that explain the interrelationships of the natural and designed world.

**Measurement**

Students use a variety of tools and techniques of measurement in a problem-solving situation. Students communicate the reasoning used in solving these problems.

**Tools and Technology**

Students use appropriate tools and technologies to model, measure, and apply the results in a problem-solving situation. Students communicate the reasoning used in solving these problems.

**Performance Task**

In this activity students will collect data related to soil percolation. Simple tools can be used to collect soil data from around the school grounds. If possible, areas of the grounds with different types of soils should be used. Students should be assigned to teams. Three team members works very well, with one serving as the timer, another as the recorder and the third as the tester.

Tools include: #10 tin cans (This is the large cans that are typically used in the school cafeterias.) with both ends cut out; a stop watch; a five gallon and water.

Students should take one of the tin cans and push it about 1/2" into the ground. This needs to be done carefully so as not to get cut (gloves may be a good idea).

The bucket is then filled with water and the stopwatch should be used to time how long the water takes to be absorbed into the ground. The recorder should record the time, the location and the type of soil.

Once the team has collected the data, each student in the group should put their information into a spreadsheet and then generate graphs from the spreadsheet.

Finally, students should be asked to identify those soils that would be most suitable for building a home on and why. This is good time to discuss he need for good drainage for building and also to accommodate septic systems. This may lead to a discussion of ground water pollution, also.

### ICLE Essential Skills

Make observations using senses and instruments. Inferences and interpretations are arrived at based on observations. Classify observable properties and organize observations in a meaningful and logical way. (s5)

Know the processes involved in the water cycle, (i.e., evaporation, condensation, precipitation, surface runoff, percolation) and their effects on climate patterns. (s7)

Understand the human impact on the environment through pollution (air, water, and soil), and ways to improve it through education, research, laws, and conservation. (s10)

Understand the best procedures for statistical **data collection, organization, and display** including making estimates and predictions and drawing inferences. (m5)

### Scoring Guide:

Score each of the following characteristics on a scale of 4 to 0, where 4 = surpasses expectations; 3 = high quality performance; 2 = satisfactory quality performance; 1 = minimum quality performance; 0 = does not meet expectations.

CHARACTERISTIC	CRITERIA	SCORE
<ul style="list-style-type: none"> <li><b>Data Collection</b></li> </ul>	<ul style="list-style-type: none"> <li>Works well in the team</li> <li>Conducts experimentation correctly and accurately</li> <li>Data is shared with all team members</li> </ul>	_____
<ul style="list-style-type: none"> <li><b>Technology Integration</b></li> </ul>	<ul style="list-style-type: none"> <li>Correctly formats the spreadsheet with all pertinent data</li> <li>Accurately inputs all needed data</li> <li>Generates appropriate graphs from the data collected</li> </ul>	_____
<ul style="list-style-type: none"> <li><b>Data Analysis</b></li> </ul>	<ul style="list-style-type: none"> <li>Identifies the soil which provides the best drainage</li> <li>Supports conclusions with data</li> </ul>	_____
<ul style="list-style-type: none"> <li><b>Application</b></li> </ul>	<ul style="list-style-type: none"> <li>Identifies the best building soil based on the findings</li> <li>Accurately defends the proposal</li> </ul>	_____

### Keywords

English Language Arts	Mathematics	Science
Reading	Algebra	Earth Science
Writing	Geometry	Life Science Water Soils Technology Integration
Communications	Statistics Data collection Data Analysis Charts	Chemistry

	Graphs	
Literature	Calculus	Physics
Other	Trigonometry	Other
	Other	

## SOIL PERCOLATION - Table and Graph

