



Overview

This Geoscape lesson contains three activities that introduce students to the world of sumptuous soils. A brainstorming activity acts as both an introductory and concluding exercise where students describe what they know, what they would like to know and what they have learned about soil. In small groups, students will apply the scientific method to answer the question "Is a soil sample a mixture of more than one component?" Each student will also read an information bulletin and answer guiding questions about soil formation, the potential of soil found in the Greater Toronto Area (GTA) for agricultural production, and the impact of urban development on agricultural land.

At the end of the lesson, students will be able to:

- Describe the different characteristics of soil
- Explain how the different characteristics of soil determine its use
- Apply the scientific method to answer a question related to the components of soil
- Describe how urban growth has affected soil and agriculture in the GTA

Specific Curriculum Expectations

Grade	Strand	Expectations
7	Earth and Space Systems	<ul style="list-style-type: none">• Explain how the characteristics of soil determine its use• Recognize and explain the importance of knowledge of the different types and characteristics of soil in determining its suitability for specific uses
9	Geography of Canada	<ul style="list-style-type: none">• Explain how the effects of urban growth alter the natural environment

Duration

- 80 minutes

Lesson Instructions

Activity 1

- Introduce students to the **Geoscape Toronto Poster** and use the **Overhead Geoscape Toronto Poster – The Plains Section**
- Find out what the students already know about soil and agriculture in the GTA by completing the **Overhead KWL Chart** (What I KNOW. What I WANT to know. What I LEARNED)

Activity 2

- Divide students into groups of four
- Distribute the **Worksheets Investigate the Components of Soil** and *The Components of Soil – Materials, Method and Results*

Activity 3

- Distribute the **Information Bulletin Sumptuous Soils**, and the **Worksheets Canada Land Inventory Map of the GTA** and *Map of Urban Expansion*
- Instruct students to read the **Information Bulletin** and complete the **Worksheet**
- To summarize and discuss what was learned in Activities 2 and 3, complete the **Overhead KWL Chart** that was used in Activity 1

Materials Required

Download lesson materials from the Geoscape Toronto Web site at - www.toronto.geoscape.nrcan.gc.ca (PDF format)	Materials and equipment from the classroom
Activity 1	
Overheads <ul style="list-style-type: none"> • <i>Geoscape Toronto Poster – The Plains Section</i> • <i>KWL Chart</i> 	<ul style="list-style-type: none"> • overhead projector • overhead markers
Activity 2	
Worksheets (photocopy one per group) <ul style="list-style-type: none"> • <i>Investigate the Components of Soil</i> • <i>The Components of Soil – Materials, Method and Results</i> 	(one per group) <ul style="list-style-type: none"> • 250 mL of potting soil • large clear plastic or glass jar with a lid • 500 mL water • ruler • 30 cm length of tube (for siphoning) • large syringe (for siphoning) • 5 cm x 5 cm square piece of nylon • masking tape • magnifying glass • measuring cup
Activity 3	
Information Bulletin (photocopy a class set) <ul style="list-style-type: none"> • <i>Sumptuous Soils</i> Worksheets (photocopy a class set) <ul style="list-style-type: none"> • <i>Sumptuous Soils</i> • <i>Canada Land Inventory Map of the GTA</i> • <i>Map of Urban Expansion</i> Overheads <ul style="list-style-type: none"> • <i>KWL Chart</i> (from Activity 1) 	<ul style="list-style-type: none"> • overhead projector

Glossary of Terms

The activities in this lesson introduce a number of new geologic terms. Teachers may wish to review the use of a glossary and discuss the meaning of the following terms with the students before commencing the activities. Definitions are provided in the **Glossary of Geologic Terms** found on the Geoscape Toronto Web site at www.toronto.geoscape.nrcan.gc.ca

New vocabulary in this lesson falls into a number of broad categories as follows:

Soil terms: A horizon, B horizon, C horizon, clay, humus, organic, parent material, sand, silt, soil, subsoil, top soil

Geological terms: bedrock, boulders, glaciers, till, weathering

Other: ecological, hydrological