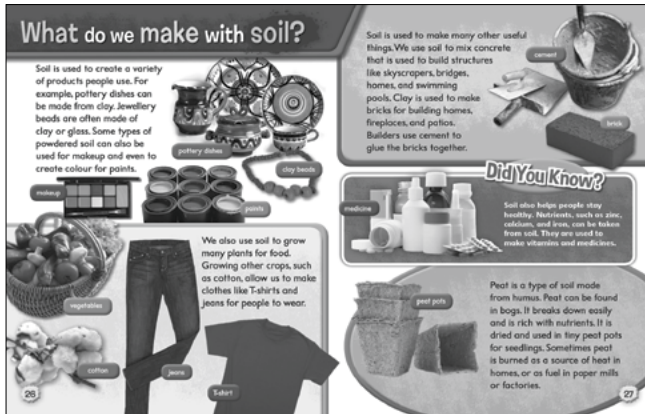


How Do Humans Use Soil?



Focus: Students will explore the many ways in which soil is used to enrich our everyday lives. They will conduct research, create and complete a chart, share information, discuss their ideas, and communicate their findings.

Specific Curriculum Outcomes

Students will be expected to:

- 12.0 use a variety of sources of science information and ideas [GCO 2]
- 18.0 demonstrate and describe ways humans use soils to make useful objects [GCO 1/3]

Performance Indicators

Students who achieve these outcomes will be able to:

- select reputable sources for factual information
- create a detailed poster that highlights one of the key uses of soil

NOTES:

Attitude Outcome Statements

Encourage students to:

- work with others in exploring and investigating [GCO 4]

Cross-Curricular Connections

English Language Arts

Students will be expected to:

- interact with sensitivity and respect, considering the situation, audience, and purpose [GCO 3]
- interpret, select, and combine information using a variety of strategies, resources, and technologies [GCO 5]

Art

Students will be expected to:

- create art for a variety of purposes and recognize there are many kinds of visual art [2.3.1]
- respectfully view their own and others' artwork and discuss the artists' intentions [4.3.2]

Getting Organized

Components	Materials	Before You Begin	Vocabulary
• Student Magazine, pages 26–29 • IWB Activity 6	• variety of small objects made from soil (e.g., pottery vase or bowl, clay flowerpot, empty medicine container, brick, tile, glass jar, a traditional Indigenous item made from soil such as a vessel for food, picture of fruits and vegetables or some “play” foods made of wood or plastic, pair of cotton socks, potted plant, peat pots/pellets) • students' Science Journals • old magazines or pictures from the Internet • digital camera or tablet (optional) • coloured pencils or markers • tactile items, such as small samples of string, yarn, fabric, pottery and jewellery, tape, or small snack bags (optional) • paintbrushes • soil samples (sand, silty loam, clay loam, potting soil, humus, or organic materials) • water and white glue (or other binder) • art paper	• Collect books about soil to display in your classroom Reading Centre (optional). • Gather some printed handouts from reputable sources on the Internet with information about soil.	

Safety

- Follow school protocol for Internet safety while researching.
- Ensure students wear protective goggles and take precautions when using fine pigments or powders that could irritate eyes.

Science Background

- Soil is a medium for growing crops that provide us with food and trees that provide us with wood and paper. Clay is used to make pottery dishes and clay beads for jewellery. Powdered soil is mixed with water to make paint and makeup. Cotton and hemp are harvested from fields and used to make thread that is woven to create fabric to make clothing. Sand, gravel, and other soils are used to create concrete, cement, and glass—building materials used for construction projects and art. Nutrients such as zinc, calcium, and iron can be extracted from soil and used in the production of vitamins. Soil is also the source for nearly all of our antibiotics. Kitty litter is made from clay.
- The Beothuk people, who inhabited Newfoundland from 5500–1000 BCE, used red ochre—a natural pigment containing iron oxide—to decorate artifacts, paint their canoes, and adorn the dead. They also used red ochre to paint their bodies. They are known as “Newfoundland’s Red Ochre People.”

Possible Misconceptions

- At the grade three level, many students may think that soil is only used to grow plants and crops for food. Without a doubt, crop production is an important use of soil, but there are many others. Help students to recognize that soil is used in pottery dishes, stoneware dishes, jewellery, paints, peat pots, peat pellets, makeup, clothing, medicine, and building materials (e.g., brick, concrete, glass) for construction.

ACTIVATE



Soil in Our Daily Lives

Ask students to think about how we use soil in our daily life. Begin a list on the board with students’ ideas. Then have students look at pages 26–27 of the Student Magazine. Read the title question: *What do we make with soil?* Then, point out the different text features, including photos, labels, and the *Did You Know?* information.

Set up a table or shelf with small objects made from soil or direct students to the objects at the Curiosity Centre. You might include a pottery vase or bowl, a clay flowerpot, an empty medicine container, a brick, a tile, a glass jar, a traditional Indigenous item made from soil such as a vessel for food, a picture of fruits and vegetables or some “play” foods made of wood or plastic, and a pair of cotton socks. Include a potted plant to complete the display. After reading the spread, and looking at the pictures, direct students to examine (and touch!) the objects you’ve collected in the classroom.



Explain that these items represent objects made from soil. Encourage students to brainstorm and suggest other items that could be included.

Make an Organizer Chart

Have small groups of students create an organizer in their Science Journals such as a two-column chart to organize and show the information they have gathered about the different ways in which people use soil. Students can add to this organizer as they work through the activities in this teaching plan.

Sample two-column chart:

Topic (Area of Use)	Examples of Use
Farming	- potatoes, carrots, cabbage, turnips - blueberries, cranberries, strawberries - hay, oats - herbs
Building	- clay used in construction to make adobe brick (mudbrick) - clay used to make adobe plaster to cover walls - sand used to make glass for windows

CONNECT



Research How People Use Soil

Tell students they will be working in small groups to research one area in which people use soil. Have them look back at pages 26–27 of the Student Magazine to see the variety of ways in which people use soil. On the board, display questions such as the following to prompt group discussion:

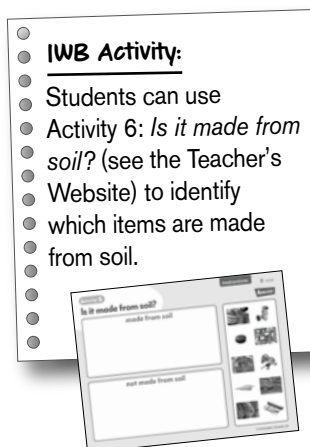
- What types of things are made from soil?
- Which ones are the most useful? Why do you think so?
- Do different types of soil have different uses?

Encourage each group to choose a different topic (area of use). This may require some negotiating between groups. If possible, allow students to resolve topic disputes themselves.

Have students work together in their group asking questions and then conducting research using books and the Internet. You might arrange a trip to the school or public library to find suitable resources. Circulate among the groups as they work, asking questions as necessary to prompt thinking.

Stay and Stray

After students have analyzed the information they gathered by researching, have them record their information on the organizer chart showing the topic and examples of use. Then have one student stay with a copy of the chart while the other members stray and visit other groups. Students can move throughout the classroom and engage actively with one another, sharing information and ideas. Continue until each group has gathered information



from all the other groups, and everyone has added the new information to their organizer charts.

CONSOLIDATE



Made From Soil

Introduce pages 28–29 of the Student Magazine and challenge students to work in pairs to find as many of the products made from soil as they can. Encourage students to keep a list of the products found to discuss as a group at the end of the activity. Read the Answer Key provided in the inside back cover of the magazine to confirm responses.

Poster Perfect

Have students work independently to create a poster that highlights one of the key uses of soil: agriculture, building, pottery/dishes, medicine, clothing, artwork, jewellery. Students can cut out pictures from old magazines, print pictures from the Internet, draw pictures, or take photos with a digital camera or tablet. Have students include some text and labels on their posters. Some students may wish to make their posters tactile, by including small samples of string, yarn, fabric, pottery, and jewellery, taped in place or enclosed in small snack bags and affixed to the poster.

Art Show

Invite students to paint their own artwork using natural pigments by adding a combination of water and white glue (or another binder such as egg white—ensure there are no egg allergies—linseed oil, or even milk) to dry soil samples of different colours. Make sure students wear protective goggles to keep their eyes safe from blowing powders or fine grains.

Once the artwork is completed, hold a Gallery Walk where students move through the classroom, viewing other students' artwork, asking questions, and providing descriptive feedback. Prompts for discussion could include:

- Which colour is your favourite?
- How did you make it?
- Which soil sample was the easiest to make into paint?
- How much water did you add?

Then, display the artwork in the hallway so that other students can see all the colours and textures that are possible when painting with soil.

EXPLORE MORE

Family Survey

Students can conduct a survey at home of their family's many uses of soil.

Community Interview—Uses of Soil

Invite students to interview a community member or family friend about how this person uses soil on a regular or daily basis. For example, students could interview a vegetable or grain farmer, pottery artist, tailor, window

installer, landscaper, gardener, horticultural club member, sod business representative, biologist, geologist, soil scientist, environmentalist, bulldozer operator, mine worker, plant nursery employee, plasterer, brick layer, T-shirt salesperson, fence installer, pharmacist, or medical doctor. Have students prepare a list of questions before the interview, and then have them record detailed notes during the interview. After, students can prepare a one-page report (written or oral) to present to the class.