

Book 3A, Unit 4 Soil and Rocks

Lesson 1 Kinds of Soil

Science Objectives

By the end of this lesson, students will be able to:

- Describe the main components of soil.
- Separate soil using a water shaker.
- Understand that there are different kinds of soil.

Language Objectives

In this lesson, students will have the opportunity to use:

- Words relating to soil, stones and rocks: **soil, stone, sand**
- The sentence structure “I can see (plant material/sand).” to describe the composition of soil.

Materials

Unit Opener Activity Images of outdoor places where soil and rocks can be found (e.g. mountains, forest, beach)	Stimulus Activity <ul style="list-style-type: none">- a large tray of mud (simply mix soil and water)- a large sheet of white card- a pair of Wellies or other waterproof boots
Activity 1 <i>per group:</i> <ul style="list-style-type: none">- bags or containers (waterproof, in case the soil samples are damp)- a large wooden spoon OR <ul style="list-style-type: none">- a soil sample PLUS <ul style="list-style-type: none">- a large plastic sheet or tray- a pair of rubber gloves- a jar of water	Activity 2 <i>per group:</i> <ul style="list-style-type: none">- x2 different soil samples (both different from the sample used in Activity 1)

Teacher Tips

For this lesson, you will need to collect a large quantity of general soil. Take a bucket out to the school grounds. If there is time, you could invite students to join you in collecting their soil samples. Remember to use paper to protect tables or desks.

Unit Opener Activity

Books closed

- Display images of different outdoor places where you can find soil and rocks (e.g. the beach, a forest, in the mountains). Encourage students to describe the places and engage with the environment by asking questions such as: **What can you see? Have you been here? What is/are the forest floor/beach/mountains made of? How does it feel?**

Open your books

- Open the SB at p40 and draw students' attention to the riddle. Play the recording of the riddle, reinforcing students' understanding by doing actions:
 - *I can be round (圆的),* (make a round shape with your hands)
 - *I can be small.* (hold your thumb and forefinger close together)
 - *I can be sharp (尖的),* (make a pyramid shape with your hands)
 - *I can be tall.* (stretch your hands above your head)
 - *You can find me in a strong wall (墙).*
 - *What am I?*
- Encourage students to guess the answer (stones/rocks). Explain that stones are small rocks, usually with edges that have been rounded by water or wind.
- Say: **In this unit, we are going to find out about soil and rocks.**

Stimulus Activity

Open your books

- Open the SB at p41 and draw students' attention to the picture. Say: **Mary has muddy shoes.**
- Set the tray of mud and the large sheet of card on the floor. Ask for a volunteer to come to the front, step in the mud and make some footprints on the card.
- Ask: **Where does this mud come from? (students' own answers)** Students may mention muddy places such as parks and gardens, and should identify that mud is a mixture of soil and water.
- Say: **Today, we are going to find out about kinds of soil.**

Key Words

- Open the SB at p41 and draw students' attention to the key words.
- Write the key words on the board: **soil, stone, sand**
- Read or play the recording of the key words and ask students to repeat.
- Use pictures or gestures to help students understand their meanings.

Activity 1

Books closed!

- Put students into groups and take them outside to collect samples of soil.

Test 1

- In the classroom, tell each group to place their soil samples together in the middle of a table.
- Ask: **What is in the soil?** Tell students to separate the soil into different parts (e.g. stones, vegetation, any litter or other objects).
- Nominate a few groups to share their results.
- Ask: **Does soil have a smell?** (students' own answers) Explain that soil is often described as having an "earthy" smell, or the smell of leaves.
- Ask: **Can soil make a sound?** (students' own answers) Explain that although soil cannot make a sound, we can sometimes hear our footsteps when we walk on it as we crunch the stones, twigs and leaves.

Test 2

- Give each group a jar of water. Tell students to put their soil sample into the water, put the lid on the jar and shake it.
- Tell students to put their jar in the middle of the table and wait. When the mixture has settled, encourage students to identify how each part of the soil has separated by asking questions such as: **Where are the stones? What is on top of the stones? What has floated to the surface?** Students should find that stones sink to the bottom of the jar, sandy soil sits on the stones, and plant material floats to the surface.
- Tell students to leave their jar on the table and move to another group's table. Give groups time to look at as many different jars as possible and observe how they are similar and how they are different.

Teacher Tips

Remind students to not put their noses too close to the soil when smelling it, so that they do not breathe it in. They should also wash their hands thoroughly with soap and warm water after handling the soil.

Activity 2

Books closed!

- Put students into groups and give each group two different soil samples (both should be different from the soil sample used in Activity 1).

Test 1

- Tell students to repeat Activity 1, Test 1 for the new soil samples. Provide language support by asking questions such as: **What colour is the soil? Is it sandy, stony or rocky? Which soil contains more plant matter? Are there any animals, such as worms or insects, in the soil?**

Open your books

- Open the SB at p43 and tell student to complete the activity by drawing the results.

Test 2

- Tell students to repeat Activity 1, Test 2 for the new soil samples, and to draw the results on SB p43. (students' own answers)

Teacher Tips

Here are some good places to find different types of soil:

- Find clay soil near rivers.
- Find sandy soil on the coast.
- Find soil rich in vegetation in woodland.
- Find stony soil in mountainous areas.

Activity 3

Open your books

- Open the SB at p44 and read the song line by line for students to repeat.
- Say: **Let's go for a walk!** Play the recording of the song. Encourage students to sing along and walk around the classroom.

Extension

Ask students what is under the soil (e.g. layers of different rocks, tunnels and drains). Allow students to answer in Chinese and draw or write their ideas on the board.

Now I Know ...

Open your books

- Ask: **What can you see in the soil?** (students' own answers)
- Read and/or listen to the recording and ask students to repeat: *I can see stones, sand and plant material in the soil. There are different kinds of soil.*

Find Out More!

Open your books

- Open the SB at p45 and draw students' attention to the pictures. Ask: **What is under the soil?** Encourage students to think about how we can use the things in each picture by asking questions such as:
 - *bones*: **Whose bones are these? How can fossilized bones help scientists?**
 - *oil*: **Where does oil come from? What do we use it for?**
 - *rocks*: **Why do we dig up rocks? What do they contain?**
 - *water*: **Why do we need to get water from under the ground? What do we use it for?**
- Tell students to find out what else is under the soil and to complete the activity by drawing their findings.