

Sorting Out Soils Activity Pack

Key stage: 2

Year: Year 3

Curriculum link:

- Science: nutrients are required by plants for growth, soils are made from rocks/organic matter, investigation, observation
- Literacy; note taking
- Art; observational drawing

Learning Outcomes:

Pupils will learn more about soil - making observations, gathering and recording information (data).

Pupils will identify what different types of soil are made of.

Pupils will investigate the impact of humans on the environment – positive and negative

They will also learn that soil is the source for food.

Finally, in a **cooking** session pupils will make a 'soil layers salad' out of grains and vegetables.

Activity 1: Comparing Soils

Activity Length: 45 -60 minutes

Resources

- Trowel (1)
- Containers (4, shoebox-sized)
- Hand lenses or other magnifying tools
- "[Sensory Soil](#)" worksheet

Teaching Activity

1. Take a walk around the school to collect soil samples from three or four different areas that seem to have different soils (playground, garden bed, near a path, under a tree, etc).
2. When the class returns to the gathering place, divide students into four groups each with one of the soil samples. Provide each group with a hand lens (or other magnifying tool) and a "Sensory Soil" worksheet to record how their soil sample looks (colour, grain size, etc.), smells, and feels.
3. Allow students to rotate through the four stations (providing a new "Sensory Soil" sheet for each station), so they can record their observations of each.
4. Get students to compare the different samples – what differences, similarities or changes can they see?
5. Ask students to feedback to the group on what they have observed.

Sensory Soil Worksheet

How does the soil.....

Write down where the sample was taken from	Sample 1	Sample 2	Sample 3
Look? Draw what you can see. What colour are the grains? How big are the grains?			
Smell? How would you describe the smell?			
Feel? How would you describe the texture?			
What else did you find in your soil sample?			

Activity 2 - Investigate soil types using the water method

Activity Length: 10 minutes - 1 hour

Resources

- Some different soil samples – pupils could bring in some from home as well as from different places in your school grounds
- Some observation pots or jam jars with lids
- Water
- Tape measure/ruler
- 'Know your soil'

Teaching Activities

1. Ask students to half fill the jam jars with the soil they want to investigate, cover with water and put the lid back on tight. Shake for at least 5 minutes. Sit the jar down on a steady surface and leave to settle.
2. After at least an hour, look at the levels of the soil in the jars. Ask students to identify the clay, silt, sand and organic content of each jam jar.

Clay soils are heavy, high in nutrients, wet and cold in winter and baked dry in summer

Sandy soils are light, dry, warm, low in nutrients and often acidic

Silt soils are fertile, light but moisture-retentive, and easily compacted

Loams are mixtures of clay, sand and silt that avoid the extremes of each type

Peat soils are very high in organic matter and moisture

Chalky soils are very alkaline and may be light or heavy.

Extension Activity

How well do you think a plant would grow in this soil?

How could you improve it to help plants grow better?

Activity 3 - Investigate soil types using the hand method

Activity Length: 45 minutes

Resources

- A handful of different soil type for each person: clay soil, sandy soil, loamy soil and a reference soil
- The Soil Hand Texture Chart
- Paper, pencils, rulers for designing recording sheet

Teaching Activity

1. Take a handful of soil and add a little water until it is workable
2. Using the chart, follow the instructions to find out what type of soil you have.
3. Choose a way to record what you have found – What data do you need to collect? What observations have you made?
4. Ask students to share their findings with the class and explain how they recorded these.

Extension Activity

If you have carried out the water test did you get the same results? Why do you think this is?

Is the soil ideal for growing? Explain your reasoning for this.

Activity 4: Investigate soil types by digging a small trial hole

Activity Length: 45-60 mins

Resources

- A spade
- A ruler
- A carrier bag or piece of hessian
- The Soil Investigation - digging worksheet.

Teaching Activity

1. Take the spade and dig a small hole in some grass that has been compacted by foot traffic. The sides need to be the width of the spade and approximately 25-20cm deep [just over the depth of the spade].
2. As you dig, put the soil that you remove onto the bag or hessian, so that you can put it back in the right layers. Keep the surface, topsoil and any subsoil separate as you dig.
3. Record your observations on the worksheet.
4. Repeat the process in another area that has been mulched (had something added to improve it or keep it warm) for at least two years.
5. Discuss with the students the difference between the two holes

Remember to put back the soil in the right order once you have finished your observations to help the creatures and organisms that live in different layers of the soil.

Extension Activity

Discuss what the differences are and consider why this might be.

The Soil Investigation – Digging Worksheet

Soil organisms

Measure the animal life in your soil for 4 minutes. Note down every thing that you see in that time. Record it below:

	Compacted soil	Mulched soil
Earthworms		
Centipedes/millepedes		
Beetles		
Spiders		
Other bugs.		

Soil depth

Measure with a ruler the depth of the topsoil and any changes in soil types. Record it below:

	Compacted soil	Mulched soil
Surface depth		
Topsoil depth		
Subsoil depth		

Sensory observation

Observe the colour, texture, smell of the soils. Make notes to compare. Notice how the soil aggregates [stays in clumps] or if it is dusty, powdery, or muddy.

	Compacted soil	Mulched soil
Colour		
Texture		
Smell		
Moisture		
Other		

