



Introduction to Soils - Teacher's Notes

Soils are the product of rock weathering, erosion and deposition, modified by living things and their products.



Some Western Australian soils

From left to right

Top	Rockingham	Mingenew	Geraldton
Bottom	Esperance	Spearwood	Perth

The colour of soil depends on the nature of the original rock fragments and later modification by living things.

Some interesting soil facts

- One tablespoon of soil has more living organisms in it than there are people on Earth.
- It takes more than 200 years to create 1cm of fertile topsoil.
- Nearly all modern antibiotics used to fight infections are obtained from soil organisms.



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- Parts of coastal Western Australia arguably have the second worst soils in the World.

Soils are useful resources for:

- Growing food, wood, shelter and recreation areas.
- Making rammed earth buildings.
- Sheltering decomposers and other animals.
- Holding and filtering water.
- Burning for fuel (peat).

Soil Recipe - Teacher Demonstration



Materials

- Gravel/ pebbles/road metal
- Sand





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- Dried leaves/grass (crushed if large)
- Compost
- Water
- Mixing bowl

Method

1. Ask the students where they think each component comes from.
2. Gravel - broken/weathered rock
3. Sand even more broken/weathered rock
4. Leaves from trees and bushes
5. Compost from compost heap/bin or worm farm. If you don't have compost use potting mix.
6. Mix about half a handful of each into a larger container, add about 2 tablespoons of water and ask the students what they think you are trying to make. They may say "soils".
7. Ask the student what ingredient/thing is still missing. They may say the brown part or living things such as worms and slaters (woodlice). This mix also doesn't have fungi and bacteria that are needed to decompose dead plants and animals to make humus.
8. Discuss with the students how much of each component should be added to make a good soil for the garden. (Recipe for a good soil).
9. Ask the students why all soils are not the same. **The different sources of rock and percentage of components result in different soil types.**

If you have some good soil from your garden or the school garden, students can compare the soil you have mixed with the real thing.

This activity is based on an activity from Earth Learning Ideas web site www.earthlearningideas.com





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Senses and Soils - Student Activity

As science students, we use our senses to learn about the World.
Which senses can we use to study soils.

				
See/sight	Listen/hear	Feel	Taste	Smell
YES	YES (but no sound)	YES	NO	Soil can smell if it is wet and rich in humus

Materials per group

- Old newspaper to protect desks
- Some soil from the school garden
- Rubbish bin
- Access to somewhere to wash and dry hands

Method

1. Place a small heap of soil in front of each group.
2. Invite students to use their senses to describe the soil. (Alternately classes can be taken outside and examine soil in situ.)
3. Ask each group to report on what their soil was like using their best science words.
4. Board a consensus description for the students to copy





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Soil description words

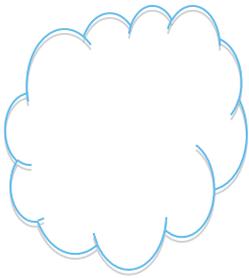
- Colours
- Coarse, medium, fine grained
- Living things visible or not
- Wet damp or dry
- Clay, sand and grit

Soils contain living things. What lives in soils in Australia?

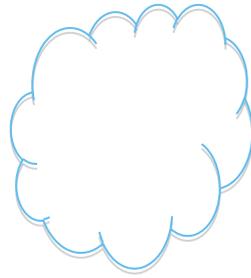
Worms, insects, roots from plants. Wombats, lizards and snakes live part of the time in burrows in soil as do some birds.

Soil is a resource. What is a resource? Something that is useful.

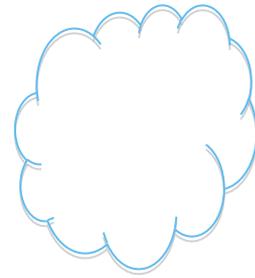
What Do We Use Soils For? - Student Brainstorm Activity



At Home



On the farm



In school

Materials per group

- Paper for rough copy of ideas of what we use soils for
- Worksheet
- Pencils



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Method

1. Brainstorm what soils are useful for.
2. Explain that these ideas need to be clumped into groups or classified as above
3. Ask the group to write down their ideas and classify them. This may take two steps, one to write down and another to put them into groups.

Suggestions

1. At home - Garden for food and flowers. Grow shade trees and bushes. Inside grow decorative pot plants.
2. On the farm - Grow crops for sale. Grow plants to feed animals. Plants for hedges. Plants for shelter for animals.
3. In school -? Garden to please the eye. Garden for learning how to grow food. Shade. Sports fields

