

Investigate

Essential

Why is clean water important?

Learning outcomes

- Students can recognise that plants need clean fresh water to survive, as do people and all other living creatures.
- Students can undertake a scientific experiment.

Materials

4 potted plants (same species and similar size)

5 teaspoons of salt

5 tablespoons of detergent

Fresh water 5 x 20mls (from tap)

Salty water 5 x 20mls (mix 1 teaspoon of salt to 20mls of fresh water)

Polluted water 5 x 20mls (mix

1 tablespoon of detergent to 20mls of fresh water)

Measuring and recording equipment

(ruler, teaspoon, measuring jug, camera)

Method

1. Students can design their own experiment or they could use the following experiment to investigate whether clean water is important or not.
2. Set a question: 'Is fresh water essential to life?'
3. Plant 4 plants of the same species (e.g. puha) into pots. Place these in a position where the conditions are the same for all. Number the plants.
 - No.1 should receive no water for five days. This is the control.
 - No.2 should receive 20mls of fresh water daily for five days.
 - No.3 should receive 20mls of salty water daily for five days.
 - No.4 should receive 20mls of 'polluted' water daily for five days.
4. Set up a roster for watering and recording any observable changes in the plants. Sketching, photographing or measuring are all systems of recording.
5. Analyse the results to see what you found. Is it important for plants to have clean fresh water? What effect does polluted or salty water have? What conclusions can you make?

Teachers' notes

This experiment will show that plants need clean fresh water to survive, and that they cannot survive when they have been given salt water, polluted water or no water.

Humans need water as much as plants do. Did you know that people can live for several weeks without food, but can only survive for about 3 days without water? We need to drink 2 to 3 litres of water per day to keep healthy.



Answer sheet

Essential

Number 1 will wither and eventually die. The reason it withers is because water helps to keep the plant cells rigid and without water the cells cannot maintain their form or strength, and the plant wilts. The reason it dies is because plants cannot survive without water. They need water to make food and oxygen.

Number 2 should survive well. It has enough water to keep it healthy.

Number 3 will wither and die. Plants that are not seaweed cannot survive in salty water. Salty water causes the plants to dehydrate (become too dry). Can people drink salty water? (No).

Number 4 may also wither and die. The detergents are poisonous to the plant. The detergent is a pollutant.

Our bodies need water

We know that we cannot survive without water very long. But do we know what our bodies use water for?

We use water in our bodies to:

- grow and renew the body (water in the cells of bones, fat, muscle, etc)
- transport oxygen via our blood (83% of our blood is water)
- digest and transport food (water in gut and blood)
- discharge toxins (water in urine, sweat and mucus)
- lubricate the body (water in fluid around the joints)
- express emotion (water in tears)

Can you spot any similarities between the way water is used in our bodies and the functions rivers perform in nature? To find out more, go to page 19. Remember, we need to drink 2-3 litres of clean fresh water a day to stay healthy. If your class would like to visit a water treatment plant to see how our water is made safe to drink, call the Water Group, at Greater Wellington on (04) 384 5708. (This would be an additional field trip).

