SCIENCE

Lesson 6

Prep

Topic: The needs of living things

Identifying the needs of plants

Lesson concepts

- A Living things have basic needs
- A Science involves exploring and observing the world
- A Questions can obtain responses
- O Observations can be made using the senses
- A Observations can be discussed and ideas can be represented
- A Observations and ideas can be shared

Learning alerts

Be aware of:

- students not realising that plants are living things with needs
- students thinking that plants do not need water, food and air because they do not have mouths.

Suggested next steps for learning

- Explain that plants are living things and that all living things have basic needs.
- Explain that plants take in water, air and nutrients through their roots and leaves.

Aboriginal and Torres Strait Islander histories and cultures

Students are made aware that some plant species have strong significance to Indigenous peoples of Australia. An example of this is how the Wakka Wakka Aboriginal peoples of South-East Queensland protect and celebrate the bunya pine.

Sheet — Significance of the bunya pine

There is much to know and learn about Aboriginal peoples' and Torres Strait Islander peoples' histories and cultures. This will be a journey of discovery in new ways of learning, new knowledge and new and interesting texts. https://det-school.eq.edu.au/schools/implementing-c2c/atsi-cross-curriculum.php.

Today students will:

- recognise that plants have needs that are affected by their environment.

Resources

Digital

Image — Plant bending towards light source

Video — Germination timelapse (1:30)

Find and prepare

Sheet — Observations of a plant

Sheet — Do plants need shelter?

Sheet — Significance of the bunya pine

Sheet — Example of a scientific drawing

Key terms

needs, environment

For definitions and explanations of terms, please see the Glossary.

Lesson

Explore the needs of plants

Say to students

> We have been learning about the basic 'needs' of living things, which include food and water. Scientists tell us if the needs of living things are not met, they cannot survive.
>
> In this lesson, we are going to talk about plants.

Focus questions

Q: *Do you think plants are living things? Why do you think this?*
A: For example: Yes, because they grow when you water them; no, because they don't eat food.

Q: *Do you think they have the same needs as animals that is food, water, air and shelter?*
A: Personal response required.

Q: *How do you think scientists would prove that plants are living things with basic needs?*
A: For example: They would observe them, grow them, make notes about them, take photos, measure them.

Say to students

Sometimes it is hard to make observations of plants to determine if they are living and whether their needs are being met. This is because plants do grow slowly and some of this growth happens under the ground where it is hard to observe.

One way to find out about the needs of plants is to conduct investigations. Look at this picture of a plant.

Display **Image —** Plant bending towards light.

Focus questions

Q: *What do you notice about how the plant is growing?*
A: For example: It is growing towards the window.

Q: *Why do you think this is happening?*
A: For example: It needs the sunshine so it is growing towards the window where the sun comes in.

Q: *What do you think might happen if the pot was turned so the plant was facing away from the window?*
A: For example: The plant would grow back to the window again.

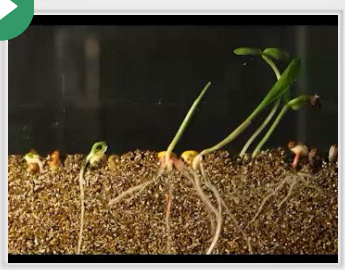
Q: *What might a scientist say this was showing us?*
A: For example: That plants have needs and one of those needs is the sun, which gives warmth and light.

Say to students

Scientists can also use cameras to observe plants over a long time and make the photos into a short video to show how plants grow when their needs are being met. This is called time lapse photography.

We are going to watch a time lapse video of some seeds growing into plants.

Click on the picture to view the **Video — Germination timelapse**.



Kladnik A 2012, Germination timelapse (Vimeo) (1:30)
http://vimeo.com/30074251

This video shows seeds germinating and sending out roots and shoots. The video is a time lapse that shows the growth of the seedlings over one week. Photographs were taken every five minutes then joined together to make the video.

Focus questions

Q: *Why do you think the plants are growing?*
A: For example: They are getting water and sunlight.

Q: *What would happen if the plants' needs were not being met?*
A: For example: They would not grow, they would start to die.

Q: *Could the seeds climb out of the container in the video and find a better place to grow if their needs weren't being met?*
A: Personal response required.

Q: *What would happen if we just put a seed on a table without anything else?*
A: For example: It might not grow, as it would not be able to have its needs met.

Say to students

"All living things need a place to live where their needs are being met. If a bird is in a tree and it eats all the food in that tree or needs a drink, it can fly to another tree or a place where there is water. But plants can't do this. Plants need a space to grow and that space needs to provide for its needs. Some animals are the same. A fish in a fish tank cannot swim away to find a new fish tank if its needs are not being met.

Remember that animals need shelter to keep them safe from other animals, protect them from the weather and let them rest if they need it. I wonder if plants need shelter?"

Display and discuss the **Sheet —** Do plants need shelter?


Do plants need shelter?

Most plants can grow outdoors without any special shelter.

In the wild, some plants need shelter. For example, soft leaved ferns grow under the shade of big trees.

Consider where plants grow

Say to students

Where a plant lives is called its 'environment'. The environment is everything including the air, other plants, the ground, animals, weather, buildings. A plant's environment could be a pot, a garden, a farm or a pond. It doesn't matter what sort of plant it is, it will only survive if its environment (where it is growing) is providing for its needs.

Explore how needs of plants are met

Say to students

We are going to collect our hats and observe a nearby environment with plants. Remember that science involves using our senses to make observations. We need to be careful of spikes, prickles and of course any animals in the plants. We are looking at how the environment provides for the needs of the plant. On your field walk, choose a plant to observe. You will record your observations when we get back.

While making the field observations, focus student attention on:

- places where plants are growing (both planted and opportunistic spots)
- different types of plants, for example: big trees, weeds, grass, shrubs
- the health of different plants and why this is.

Return indoors.

Represent how to care for plants

Say to students

You have now chosen a plant and made field observations. Now you are going to do a scientific drawing of the plant in its environment. Your drawing will need to show how the environment meets the needs of the plant. Label your drawing to show this.

Record your observations on **Sheet — Observations of a plant**.

Have students refer to **Sheet — Example of a scientific drawing**, if required.

Note

Encourage students to share what they have understood so far. Limit prompting and ask open-ended questions rather than *questions requiring a yes or no answer*.

Recognise the significance of plants to Australian Indigenous peoples

Say to students

Even though people generally do not provide for the needs of plants that grow wild in the bush or rainforest or outback, the actions of people can affect whether plants survive. For example, cutting down trees and polluting rivers and oceans directly affects whether some plants and animals survive. We need to think carefully before we do things. Some scientists work very hard to protect animals, plants and their environments.

The Aboriginal peoples and Torres Strait Islander peoples have thought about the effects of their actions for a very, very long time. Plants and animals are considered a very important part of where they live so they protected them carefully.

Display and read through the **Sheet —** Significance of the bunya pine to consider the actions of the Wakka Wakka Aboriginal peoples of South-East Queensland, including the feasts to celebrate the ripening of the fruit.