Wonder Project

Plant Challenge

Module 2: Grow

Dig deeper into the science behind plant growth, hydroponics, and the environmental conditions that plants need to thrive. Then, students will harness their new plant knowledge by sowing the seeds of their first microgreens trial and starting to collect daily data.

Use this overview as a reference as you go through Module 2 in the student Learning Hub with your class.

Week 2: 2 hours

Activity sequence

How do plants grow?

- Photosynthesis
- What is hydroponics?

Introducing microgreens

- Video: The microgreen lowdown

Let's grow

- Lab 2.1: Microgreen trial one
- Lab 2.2: Daily data

Module outcomes

- Discover what plants need to grow and the science behind photosynthesis
- Learn about microgreens
- Plant your first batch of microgreens
- Understand how to monitor plant growth

Resources

From your plant kit:

- Lab book (1 per rōpū of 4)
- Poster: From seed to harvest

Lab 2.1: Microgreen trial one resources

- 5 x seed packets (1–2 teaspoons of seeds per rōpū of 4)
- Hemp grow mat (1 per rōpū of 4)
- Spray bottle (1 per rōpū of 4)
- Funnel (1 per rōpū of 4)

Lab 2.2: Daily data resources

- Sensor kit

School to supply:

Lab 2.1: Microgreen trial one resources

- Container with lid (1 per rōpū of 4)
- Classroom resources including scissors and pens

Activity overview	What students will do	Teacher role	Ambassador role
How do plants grow? Summarises the basic science of plant growth to prepare students for their own microgreen trials. Explores: • Photosynthesis; and • What is hydroponics?	Learn the basic conditions for plant growth and the science behind photosynthesis. Understand the hydroponic growing method and the part it plays in sustainable food practices. *Use the 'from seed to harvest poster' as a reference.*	Introduce students to the conditions that plants need to grow and photosynthesis. Lead a discussion on hydroponics and the part it plays in sustainable food practices. Use the 'from seed to harvest poster' to facilitate discussions on how this relates to microgreens.	Support the class if they wish to explore the science behind plant growth in more depth. Contribute to the discussion on hydroponics and how it supports sustainable food practices. **Ask**: *If they can't grow in soil, what do you think the plants grow in? Why do you think hydroponics is a sustainable way to grow food?*
Introducing microgreens Explains what microgreens are, how to look after them, and gives step by step instructions on how to plant the first trial. Video: The microgreen lowdown.	Learn more about microgreens and how to grow them successfully. Watch the microgreen lowdown video and take notes on how to plant their first trial.	Watch the microgreen lowdown video with students. Encourage them to take notes that will help them plant their first trial.	Get students excited about planting their first microgreen trial. Discuss the STEM skills students may need to grow microgreens and relate to own world of work. When planting the trials, help students figure out which seeds they'd like to grow. Then figure out the best seed density for growth – this will be different for each seed variety.
Let's grow			
Lab 2.1 Microgreen trial one Students plant their first microgreen trial supported by the video instructions and a summary of the steps in their lab book.	Get into their rōpū of four. Pick their microgreen seed variety. Follow the steps in their lab book to sow their seeds. Name and label trays with rōpū name and date. Place them in a sunny spot in the classroom – each seed variety needs sunlight once they germinate.	Get students into their rōpū. Help distribute the seeds, grow mat, spray bottle and funnel. Support the rōpū to plant their first trial according to the instructions in Lab 2.1. Remind them to mist their trays every day and always last thing on a Friday. *Refer to teaching notes and 'from seed to harvest' poster.*	Help distribute the seeds, grow mat, spray bottle and funnel to each rōpū. Circulate the class and support them to plant their first trial. **Ask**: *What do you think you'll discover in the first trial?* Encourage students to use their observation skills to take note of how well their plants are growing and how they could improve their yield. Explain what yield is. **Ask**: *Why are we using this hemp mat? Why are we putting a hole in the side of the container? Why do we soak our seeds? Why do we need to mist them every day?*

Activity overview

Lab 2.2: Daily data!

Get students into the habit of checking their plants and measuring their microgreen growing conditions daily.

What students will do

Rōpū gather qualitative and quantitative data from microgreen trial one.

To gather qualitative data, rōpū use their 5 senses to observe their microgreens and how they're changing each day.

To gather quantitative data, rōpū take turns to use each sensor to record the temperature, light and humidity levels of their microgreens, and whether the growing environment is conductive.

Write down the results in their lab book daily.

Teacher role

Distribute the sensors to each rōpū and support them to gather readings.

Discuss the difference between qualitative and quantitative data and why it's important to measure both.

Ambassador role

Encourage students to think about why it's important to continuously monitor the growing conditions of their microgreens.

Give students an example of how you might collect data at work, and why? How do you record your data and then display/present it for your boss/clients?

You could bring in one piece of equipment/ technology to demonstrate how you collect data.

Discuss when it's important to bring in qualitative research to a project. For example, consulting with Iwi, or end users for a project.

Remember: Bring in your recyclable materials and ingredients to make compost tea! You'll need them for the next module.