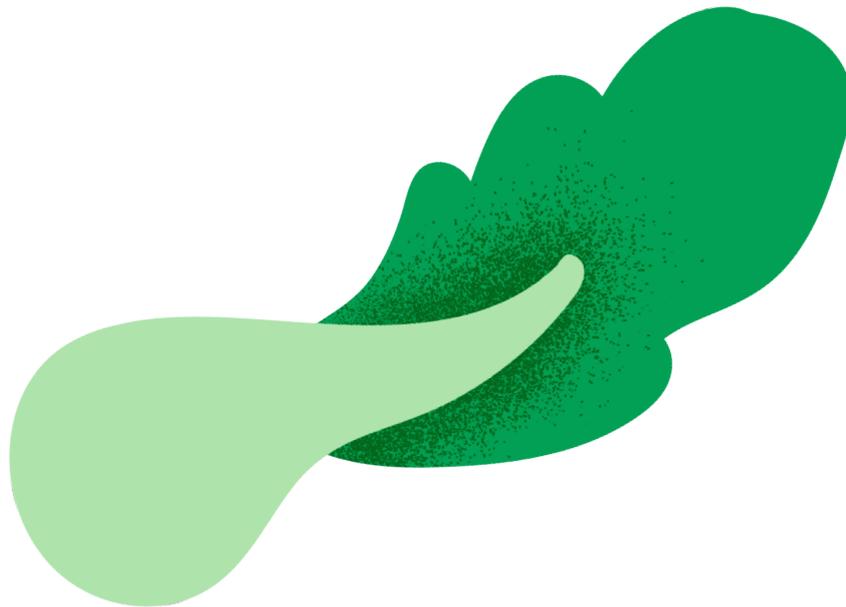# Grow Your Own

Year 5 — Science
Year 6 — Science

(Science; Yr 5, ACSSU043)
Living things have structural features and adaptations that help them to survive in their environment

(Science; Yr 5, ACSHE081)
Science involves testing predictions by gathering data and using evidence to develop explanations of events and phenomena and reflects historical and cultural contributions

(Science; Yr 5, ACSHE083)
Scientific knowledge is used to solve problems and inform personal and community decisions

(Science; Yr 6, ACSSU094)
The growth and survival of living things are affected by physical conditions of their environment

(Science; Yr 6, ACSHE098)
Science involves testing predictions by gathering data and using evidence to develop explanations of events and phenomena and reflects historical and cultural contributions

(Science; Yr 6, ACSHE100)
Scientific knowledge is used to solve problems and inform personal and community decisions

Cross–curriculum priority

Sustainability

Grow Your Own

Seeds, sprouts, germination and science

It's time for some super scientific sprouting. Let's set off some experiments to settle some seeds and test germination.

Equipment:

Seed varieties such as alfalfa, broccoli, fenugreek, cabbage, daikon, radish, and mustard (2 tablespoons of each)

Digital kitchen scales

Fine-meshed kitchen sieve

Bowl

Large jars (one per seed type)

Cotton muslin cloths to cover the jars (you'll need a fresh one for every day's worth of sprouting)

Elastic bands to fit around the jar openings

Thermometers

Magnifying glasses

Duration:

30–45 minutes to explain and set up the experiment, plus several short sessions to check and collect data

Location:

The classroom

Notes:

Seed Review


👁 Watch **The One with the Old Boot**

and/or

👁 Watch **The One with the Space Potato**

- Review what seeds need in order to germinate:

◇ Water to penetrate the seed coat.

◇ Warmth — the right temperature is necessary for germination to start.

◇ Air — water logged seeds will die.

❓ Ask: are these needs different from those of an older/more mature plant? How?

◇ After the first few days plants need light and air as well as water and soil. Adult plants also need nutrients in the soil.

❓ Discuss: what does this tell us about seeds?

◇ Seeds contain enough food to start the plant growing, so they don't need light or rich soil, just moisture and the right temperature.

✎ Starting Sprouts

- Show students the seeds you are going to germinate.

- Discuss how students have seen sprouts in recipes or in supermarkets. (A student could check online to find out how much a pack of sprouts costs.)

- Explain the best way to help seeds sprout:

1. Wash the seeds.

2. Soak the seeds to penetrate the seed coat.

3. Drain the seeds and keep them in a moist environment, such as a jar with a holey lid.

4. Gently rinse the seeds each day.

5. After 3–5 days, they should be ready to eat. (When, exactly is up to you!)

- Discuss: what sort of environment are we creating? (A warm, moist environment.) What else grows a little too well in this environment? (Bacteria!)

- This is why we need to wash and dry our jars, seeds (and hands!) very carefully at the start. We'll also need to change the cloth covering each day.

- Provide students with the data collection sheet on the next page.

- Weigh the seeds, record the weights, then place the seeds in the separate jars.

- Cover each seed with about 3cm of water.

- Use the elastic bands to hold the muslin over the mouths of the jars.

- Rinse and drain the sprouts the following day. Set the jar with its wet sprouts on its side.

- Rinse and drain two more times during the day at regular intervals. Students fill in their observation sheets once during the day.

- Repeat each day for 3–5 days.
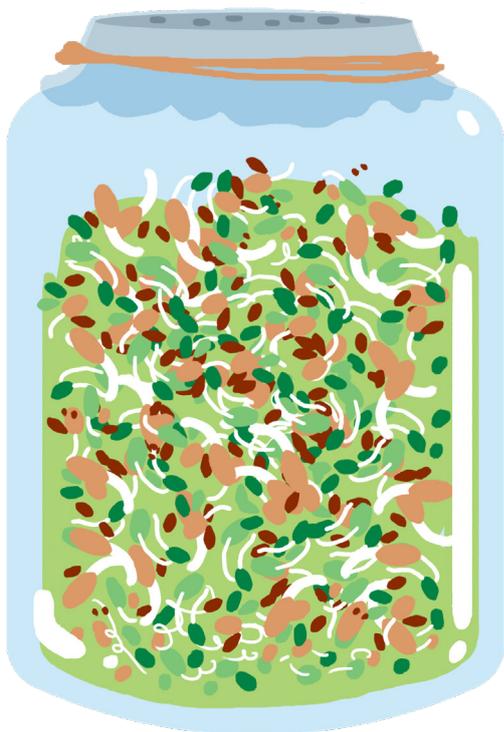
✒ Sprout Science

- Have students observe seed anatomy through magnifying glasses. For further research they can ask: what is inside a seed? Then they can draw a diagram of seed anatomy, along with a drawing of their own sprouting seeds. Have them label the parts of the emerging plant (e.g. root, stem, seed leaf).

- Check the temperature of the air inside the seed jar each day and record this data. Students devise a second sprouting experiment in which they alter the temperature of the environment (such as by placing one sprout jar in a fridge), and record how long the sprouts are after 3, 4 and 5 days, and any other observations (such as estimating the percentage of seeds that failed to germinate at all.) Tables can be found that show how seeds germinate at different temperatures — see Resources.

Note

We understand that it can be hard to keep a school environment clean. You can do this activity even if you're not comfortable with students eating the sprouts. Just treat the sprouted seeds like a science experiment, dissect or observe them, then compost or plant some of them when the 3–5 days are up.

Resources

- ◇ Biology of Plants — Starting to Grow: http://www.mbgnet.net/bioplants/grow.html

- ◇ Green Harvest —Sprouting Guide: http://greenharvest.com.au/Sprouting AndMicrogreens/SproutsGrowing Information.html

- ◇ Vegetable Garden Seed Storage and Germination (there is a handy chart showing germination temperatures on page 3): https://www.slideshare.net/S7w4X/zwv274

Steps:	1. Wash first, then cover them with water:	2: Rinse gently and drain:	3: Rinse one last time and they're ready in:
Alfalfa	Soak 3–6 hours	3 times a day	3–5 days
Broccoli	Soak 4–8 hours		3–6 days
Cabbage — red or white	Soak 4–8 hours		3–6 days
Daikon	Soak 6–12 hours		3–6 days
Fenugreek	Soak 8–10 hours		2–5 days
Mustard	Soak 8 hours		3–6 days
Quinoa	Soak 20–30 minutes		1–2 days
Radish	Soak 6–12 hours		3–6 days

SOS! (Sprout Observation Sheet)

We are sprouting these seeds: _____ _____
Day we started: _____

	Before we started (dry seeds) on DAY 1	**After we drained them on DAY 2**	**After we drained them on DAY 3**
Temperature in the jar:			
How much volume do they take up?	*Start with 2 level tablespoons of seeds.*		
How much do they weigh?			
What colour are they?			
How big are they?			

Other Observations: