



Stamp Collecting Month Overview

Stamp Collecting Month (SCM) provides an exciting way for middle and upper primary school students and teachers to engage with interesting learning areas through stamps. This year's SCM stamp issue, In the Garden, focuses on themes highlighted by primary school teachers as appealing to students and providing learning opportunities that are linked to both the curriculum and real life. SCM 2019 encourages learning about sustainable living, kitchen gardening, biodiversity, plant and animal behaviours, and minimising our environmental impact.

Lesson Overview

This lesson will explore how the worms in our garden keep the soil in good health by tunnelling, recycling waste and fertilising the soil around them. In this project students will look at how worms support sustainability in our gardens and discover the symbiotic relationship between worms and the soil. They will design, make and appraise individual worm farms to observe decomposition in situ, and then develop a class worm farm to contribute to the health of the soil in the school garden.

Learning intentions

Students will understand:

- The impact that worms have on our environment
- The symbiotic relationships between worms and the soil
- How worms support sustainability
- How we can harness the power of worms to help decrease the environmental impact of the school

Resources

- Activity sheets
- Interactive whiteboard (IWB) and accompanying resources
- Recycled timber or polystyrene boxes
- Construction equipment (if using timber) such as, wood saws, wood glue, hammers, nails
- Shade cloth or similar (to allow liquid to pass through the farm layers, but keep the worms in)
- Appropriate devices for research such as laptops or iPads
- Information texts about worms and sustainable gardening
- Large paper for posters (A3 or A2)
- Felt tip pens, pencils

Assessment

There are a number of informal assessment opportunities throughout this lesson including:

- Class discussion
- Student questioning
- Work samples
- Observation
- Student reflection
- A summative assessment of the finished resource

Curriculum links

Science

AACSSU073 Living things depend on each other and the environment to survive ([AACSSU073 - Scootle](#))

Geography

ACHASSK088 The importance of environments, including natural vegetation, to animals and people ([ACHASSK088 - Scootle](#))

ACHASSK090 The use and management of natural resources and waste, and the different views on how to do this sustainably ([ACHASSK090 - Scootle](#))

Introduction

Activity 1






1. Show students the picture of the *landfill* site (<https://www.environmentalleader.com/2016/10/landfill-free-dont-just-say-it-prove-it/>) on the IWB.
2. Invite a discussion about what the picture shows and what it means for our world.
3. Challenge the students to work in pairs and think about ways to combat landfill and generate alternative ways to manage our waste.
4. Invite each pair to share their ideas and create a class list.
5. If the idea of using worms to break down food waste to produce fertiliser and promote soil health has not been generated, direct the students' attention to this possibility. Explain that worms do a great job of digesting organic matter left behind by plants of other animals and produce mineral-rich fertiliser for the soil from their excrement.

Differentiation



As with all of our lesson plans, we encourage teachers to differentiate the activities by making any necessary modifications in order to cater for diverse student learning needs.

Note: the suggested duration of the activities found within this module may require adjustment to cater for the needs of your students.

General capabilities

-  Literacy
-  Numeracy
-  Critical and Creative Thinking
-  Personal and Social Capability
-  Ethical Understanding

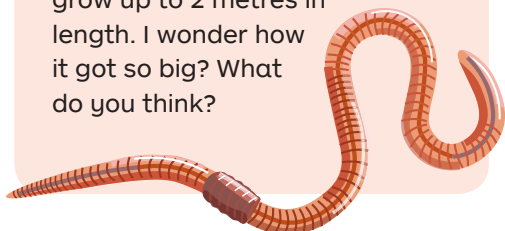
Cross curriculum priorities

-  Sustainability
-  Aboriginal and Torres Strait Islander Histories and Cultures



Fun fact:

Australia is home to the one of the world's biggest worms! The Giant Gippsland Earthworm can grow up to 2 metres in length. I wonder how it got so big? What do you think?



Activity 2

1. Explain to the students that this project will be all about worms!
2. Start a discussion to determine what the students already know about worms.
3. Record their ideas on the IWB as a 'can, have, are' graph ([hyperlink](#)).
4. Explain to the students that this project will be about exploring the purpose of and creating a worm farm. Specify that the worms that can live in worm farms are different to the worms that live in garden soil (earth worms) because of the different temperatures and food available.

Activity 1

Teacher note: For the following activity you will need to explore the school grounds (or a nearby natural area) after or during a rainy day to collect worms. If the chance of a rainy day is low, you can water a particular area for a few days and dig there.

The following activity instructs students to make worm farms in jars. Please note that these are only temporary habitats. Please ensure that students do not put lids on the jars, and that jars are kept out of direct sunlight. Worms should be released back to their natural habitat or into a purposefully built worm farm after a maximum of 3 days.

1. Divide the class into groups of 3 or 4. Explain that they will be conducting observations of worms by creating their own mini worm farm in a jar.
2. Give each group a glass jar.
3. Fill the jar with approximately 2-3 centimetres of small rocks.
4. Provide buckets of rich soil mixed with dead leaves, grass and sand. Groups fill their jars alternatively with bands of soil and sand, until it is approximately three quarters full. This will enable the students to view the movements of the worms more easily.
5. On the top of the jar put a few scraps of food waste, such as fruit and veg scraps, broken up egg shells or even shredded old newspaper.
6. Add a few worms to the jars, being mindful to ensure the worms come from the same area as the soil in the jars. Worms put into foreign soil environments often do not survive.
7. Cover the jars with black paper and secure with an elastic band. Groups can write their names on the outside of the paper.
8. Over the next few days (no more than 3) groups observe the worms and what happens to the food scraps and other waste.
9. Groups record their observation on the *Worm-observation* sheets.
10. After 3 days, put the worms back into the ground where they were found. You may wish to add the soil mixture in the jars to the school veggie patch as this will make a great fertiliser.
11. Invite a class discussion about what they observed in their worm jars. Introduce the term *decomposition* and how it has changed the soil. What does this mean for the future of waste management?



Fun fact:

The study of worms is called Oligochaetology (ol-IG-oh-keet-ology), the students are being Oligochaetologists.



Activity 2

1. Explain to the class that they will be making a worm farm for the school to help with the management of food waste and to support the health of the soil in the school grounds (this is a great opportunity to also set up a veggie patch in the school grounds if you do not already have one).

Teacher note: In this activity students may need to use construction tools such as hand saws, hammers, nails or wood glue. Please ensure that you follow your school's safety policies and procedures, and provide adequate supervision for this activity

2. You will need three boxes made from recycled timber pallets or old polystyrene fruit boxes. You will also need a lid (which is where fruit boxes can be very useful).
3. Using a safety knife, cut some holes in the bottoms of two of the boxes. These will be your top two levels.
4. Cover the holes with shade cloth to stop the worms falling through the holes.
5. In the top two boxes, fill them about halfway with a mixture of soil and shredded newspaper or dead leaves and grass.



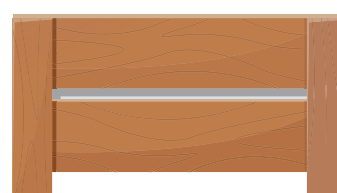
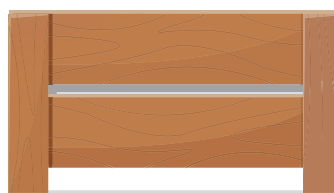
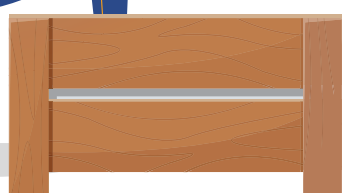
Fun fact:

Worms breathe through their skin and need to be kept moist at all times to dissolve and absorb the oxygen around them.

6. Add the worms. Worms that will be happy in this worm farm include Tiger Worms (*Eisenia fetida*) or Blue Worms (*Perionyx excavatus*)

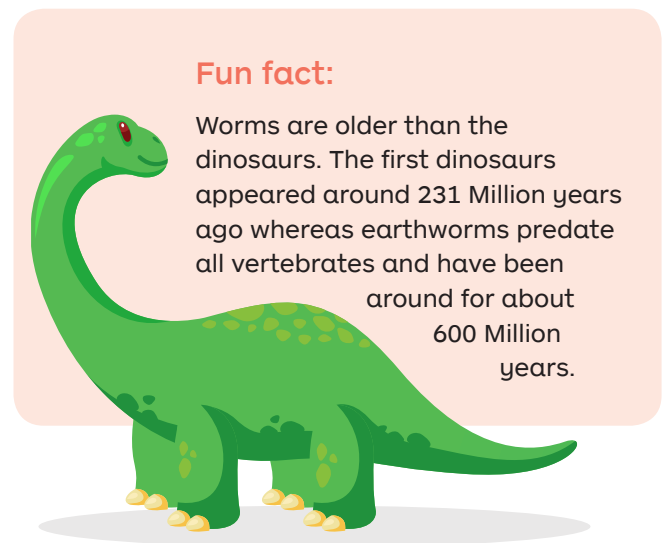
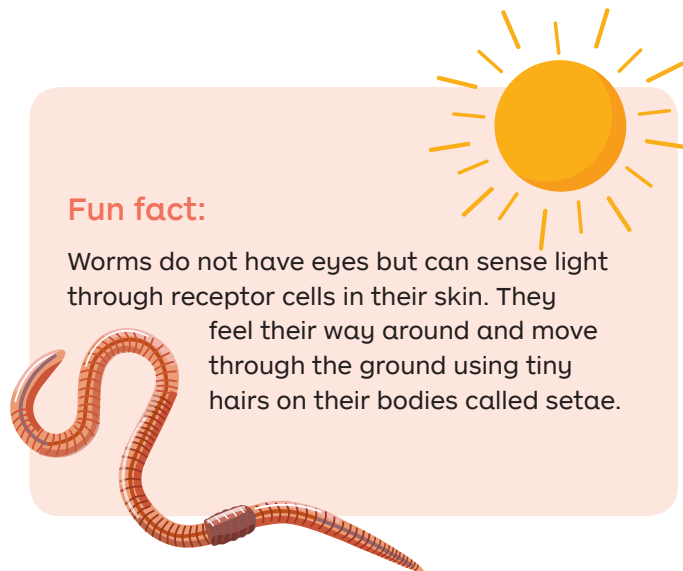
Teacher note: You can order appropriate worms for your worm farm online. Try Kookaburra Worm Farms (<https://www.kookaburrawormfarms.com.au/compost-worms/>) or Worm Tech (<https://www.wormtech.com.au/live-compost-worms/>).

7. Regularly feed the worms with well chopped food scraps. There is a great list of what food worms enjoy at the following link: <https://www.sgaonline.org.au/worms/>
8. In a few months, the worms will produce a concentrated worm tea, a brown liquid that will drip into the bottom box. This is a fantastic fertiliser for your school's veggie patch. Dilute it down to a weak tea colour before using it to water your veggies.
9. Ensure your worm farm is protected from extreme temperatures! It will need to be kept shaded in the summer and kept warmer in the winter.



Activity 3

1. Challenge groups to make posters about worms and the benefits of having a worm farm at school. They should be able to use appropriate devices such as school laptops or iPads or library information books to research information. Use the accompanying teacher resource pack to learn more about what worms can and cannot eat.
2. Explain that these posters will be displayed around the school to encourage all students to recycle their food waste into the worm farm.
3. Provide an appropriate length of time for groups to research and make their posters.
4. Provide each group an opportunity to present their poster to the class.



Plenary

1. Observe the use of the worm farm in supporting the school to recycle its food scraps. Evaluate the usefulness of the worm farm as part of the school's sustainability plan. Is it helping the school reduce the amount of waste it produces?
2. Continue to collect the 'worm juice' from the bottom box and spread it on your veggie patch. Monitor how the fertiliser affects the growth of your vegetables.
3. Invite a discussion about how this technology could be used to help other communities.

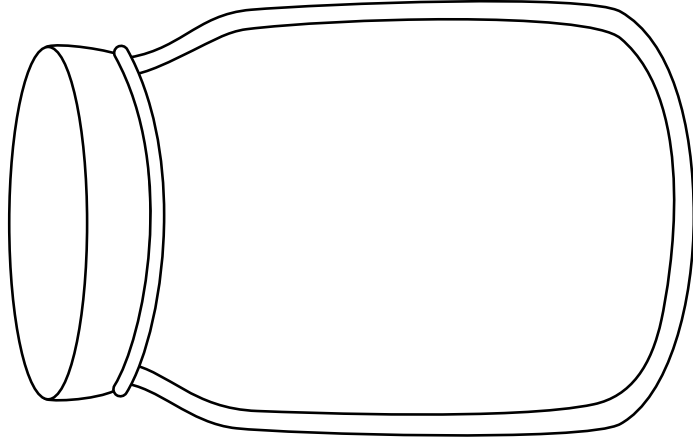
Further Reading

- <https://www.kookaburrawormfarms.com.au/compost-worms/>
- <https://www.sgaonline.org.au/worms/>
- <https://www.wormtech.com.au/live-compost-worms/>
- <http://working-worms.com/how-to-make-your-own-worm-farm/>
- <https://www.wiggleroom.org/start-your-own-worm-bin.html>
- <https://wormfarmguru.com/amazing-worm-facts/>
- <https://www.wormfarmingrevealed.com/fun-facts.html>

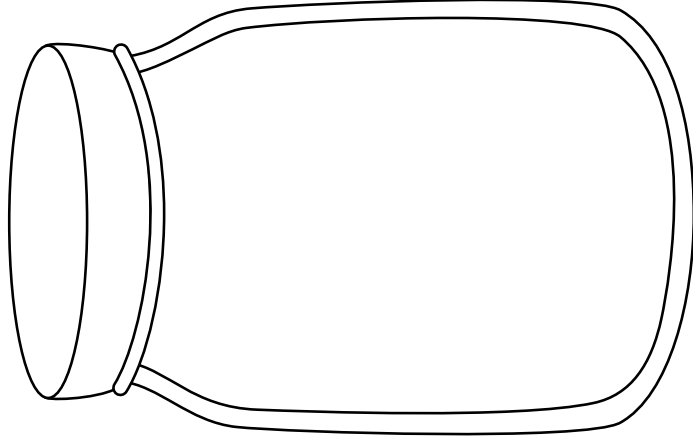


Worm-servations

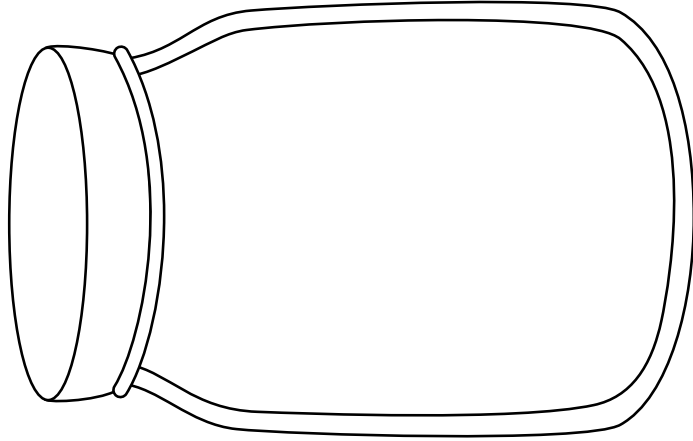
Each day observe and draw a diagram of what your worm jar looks like. Note any changes you see.



Day 1



Day 2



Day 3