ACTIVITY 5

Worm Farming

Worm farming is a way of learning the features of worms, how to care for worms based on their need for food and water, and the important role that worms can play in breaking down wastes in the soil.

Maths ACMNA001 Establish understanding of the language and processes of counting by naming numbers in sequences, initially to and from 20, moving from any starting point

Maths ACMNA012 Develop confidence with number sequences to and from 100 by ones from any starting point. Skip count by twos, fives and tens starting from zero

Science ACSSU002 Living things have basic needs, including food and water

Science ACSSU017 Living things have a variety of external features

Science ACSSU211 Living things live in different places where their needs are met

Science ACSHE013 Science involves observing, asking questions about, and describing changes in, objects and events

Science ACSHE021 Science involves observing, asking questions about, and describing changes in, objects and events

Science ACSIS011 Participate in guided investigations and make observations using the senses

Science ACSIS 233 Engage in discussions about observations and represent ideas

Science ACSIS027 Use a range of methods to sort information, including drawings and provided tables and through discussion, compare observations with prediction

Sustainability OI.1, OI.2, OI.3, OI.4, OI.5, OI.7 All life forms are connected and interdependent, and actions for sustainability require us to value, care for and respect environments

Before the activity

Purchase a worm farm for the classroom from a hardware/garden store, and source a box of worms. Worm farms can be two or three tiered. Instructions are always provided with the worm farm. Newspaper can be used instead of purchasing 'worm blankets'.

Access some magnifying glasses or magnifying lamps for at least one day, so the children can see the worms up close, and study their features. Find or borrow a book about worms – there are many illustrated books for young children about earthworms.

You will need

- Playdough, clay or modelling wax
- Spaghetti
- Pink dye
- A large bowl
- Some trays, approx. A4-A3 size, and/or some newspaper
- Some tongs
- Paper and pencils/paint/brushes
- A few 2 litre plastic milk bottles, pre-washed, with lids
- Age appropriate, illustrated book about worms, such as Wonderful Worms by Linda Glaser

Method

Set up the worm farm with some or all of the children, or independently. Keep the worm farm at school, under a verandah, in the school yard or in a classroom, out of direct sunlight. Place a weight on the worm farm if you have the worm farm outside, to avoid pest animals getting in.

Just prior to this lesson, cook the spaghetti, drain it, cool it and add pink food dye, and put it in the bowl. Put this aside. This is 'pretend worms'. This may not be suitable for gluten-free children.

ENGAGE

Ask the children what they know of the features of the earthworm. They could include features such as:

1. It can be male and female at the same time
2. The body is basically one tube inside the other
3. It has a brain
4. It has 3, 4 or 5 pairs of hearts to pump blood around
5. Worms lay eggs (look for some of these clear eggs)
6. They can consume their own body weight in food every day (compare that to us humans!)
7. They do not have lungs: they breathe through their skin
8. They have no eyes, ears, arms or legs
9. They work very hard, eating things in the soil, making castings and worm wee which make the soil more fertile (it is good 'plant food').

You could copy/summarise this on a laminated sheet and pin it to the wall.

Read the book about worms to the children.

EXPLORE

Take some worms out of the worm farm and place them on trays or on newspaper. Let the children take turns to observe the worms and their activity. Leave some soil with the worms so they can hide, so the worms do not dry out. Swap the worms around to give some of them a rest! Let the children gently handle some of the worms, if the students are keen. Ensure the children do not harm the worms.

Particularly for the children who were reluctant to handle the worms, offer them the opportunity to immerse their hands in the cooked spaghetti: the 'pretend worms'.

Photo EPA Tasmania

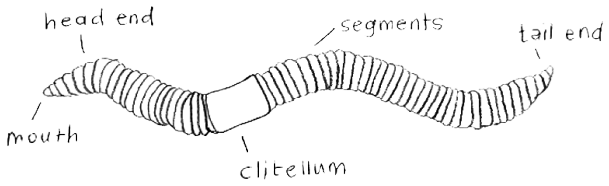
EXPLAIN

Ask the children what they know of the **work** of earthworms (*e.g. they eat food, digest it and make compost, which helps the plants to grow*).

With the whole class, discuss how to use the worm farm with the children. Explain what the worms like to eat, such as apple cores, and what they dislike eating, such as citrus and onion. Explain that the worms produce liquid ('worm wee') and castings, which are useful if we want to grow things in the soil.

Over the year, give the children the opportunity to have a role in maintaining the worms in the worm farm. Establish a 'feeding roster' for the children to take responsibility for the worms, feeding the worms chopped lunch scraps once per week, maybe with the teacher's aide. The worm farm needs water too. If there is very little 'worm wee' then the system is too dry. Add, say, a cup of water to the 'food layer' sporadically. If there are 'vinegar' flies, sprinkle powdered lime to the food layer (not in the presence of children) and leave the farm alone for a week. Explain that the worms are having a rest.

Describe and show a diagram of the anatomical features of the worm, using proper scientific terminology.



ELABORATE

Ask the children what would happen if we put orange peel, pesticide, large food items or plastic in the worm farm. Or we gave the worms inadequate water? Or if we didn't close the lid of the worm farm?

Select 2-3 student monitors on a new roster system to care for the worms. Ask them to do something **different** when they care for the worms (*e.g. introduce a new waste food type*), and report to the class on the results of this experiment during the time period of caring for the worms. If they had any difficulty caring for the worms, how did the students address it?

EVALUATE

Provide magnifying glasses or magnifying lamps for the students to observe worms and their eggs, again on the tray or on newspaper. With playdough, clay, air-dry clay or modelling wax, ask each child to sculpt a worm and/or its eggs. Alternatively ask the children to draw or paint a worm and indicate what a worm looks like or the food it eats, or how to care for worms or the important role that worms have in digesting food waste, which adds to the soil.

Use the castings ('worm poo') and water ('worm wee') on the school garden, with the agreement of the school gardener. Alternatively, allow children to take the castings and/or worm wee home for use on domestic gardens. Undiluted worm wee is too strong for plants. Dilute the worm wee: put 100ml in a 2 litre milk bottle, and add 19 more lots of 100ml. Use this as a maths exercise to count to nineteen. Alternatively put 100ml in the bottle and fill the rest with water from the tap. Some schools sell this as a fundraiser.

Also, or alternatively, undertake Activity 6.