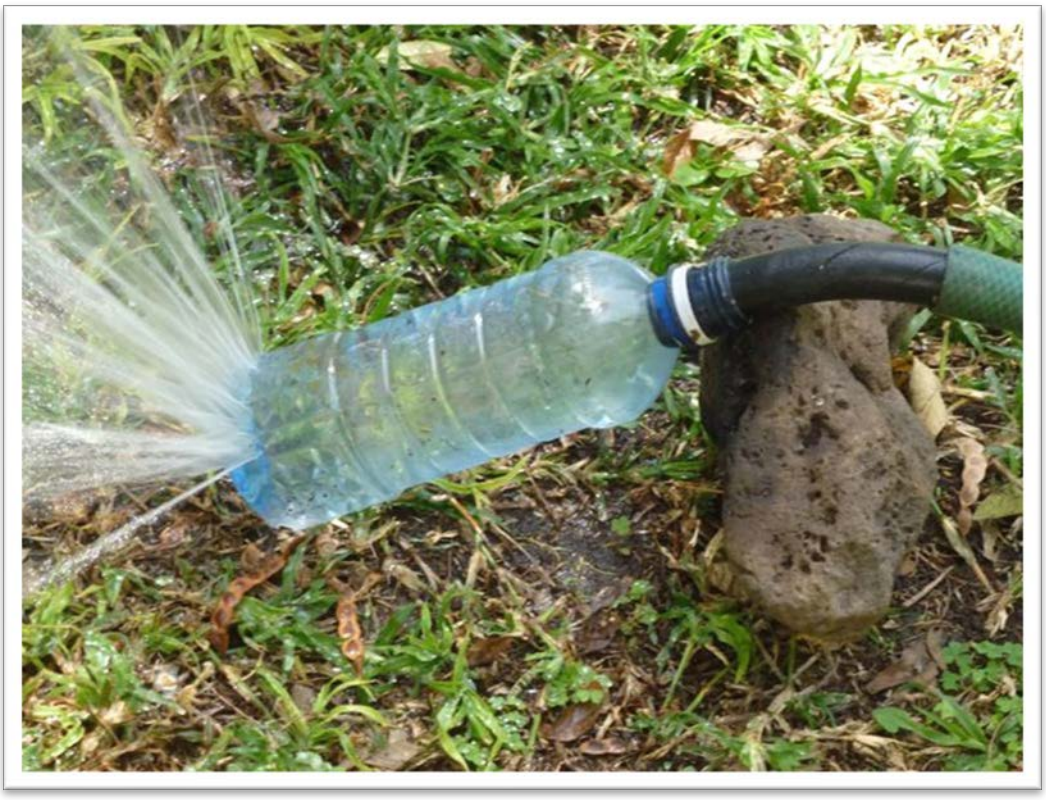
EON EDIBLE GARDENS KEY LEARNING AREA 9 LESSON PLANS

EON Edible Gardens

EON Key Message:	Garden recycling.
This PDF contains lesson plans for the EON Edible Gardens key learning area: "Recycling in the garden".	
Lesson Plans:	• Reusing household items in the garden • Make a sprinkler • Reusing newspaper and cardboard in the garden • Using coffee ground in the garden • Ice block sticks for labels • Create a worm farm from an old fridge • Worm farming 1010



LESSON GUIDE

Reusing household items in the garden

EON EDIBLE GARDENS

KEY MESSAGE:	Recycling saves money. Recycling reduces rubbish. Recycling helps "Country".
BACKGROUND:	Turning everyday rubbish into something useful. Reusing kitchen items in the garden.
LESSON FOCUS:	Instead of sending things to landfill we can use them in the garden.
RESOURCES/ EQUIPMENT:	*This activity will require some preparation* Kitchen containers Plastic bottles Glass jars Fruit and veggie punnets
OUTLINE:	Every day in the kitchen we throw away many items that can be reused. **Glass jars** are very handy to have for reuse. Be sure to give them a good wash after use, leave to air dry and then store with lid. Glass jars are great for. • Storing seeds • Making preserves like chutney and jam • Or to clean paint brushes **Strawberry and cherry tomato containers** can be reused again for just that, harvesting and sharing out strawberries and cherry tomatoes fresh from the garden. **Plastic bottles** are great to keep close by the worm farm to share precious worm juice. **Yoghurt tubs** are handy to keep and reuse for holding paint and other chemicals when in the garden or workshop.
REFLECTION ACTIVITY:	Can you think of other items we throw away every day that could be reused in the garden?
CLEAN UP:	Wash jars well and leave to air dry
APPROPRIATENESS:	☑ KK-Year 2 ☑ Years 3-6 ☑ Year 7 plus

LESSON GUIDE

Make a Sprinkler

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EON Foundation

Background:	Recycling saves money. Recycling reduces rubbish. Recycling helps "Country".
Lesson Focus:	Turning everyday rubbish into something useful. Making a sprinkler from a plastic water bottle.
Resources/Equipment:	*This activity will require some preparation.* Plastic bottles, a hose, duct tape, pocketknife or similar to punch holes in the bottle.
Outline:	Organise students into groups of 4 to 6 and supply them with plastic water bottles. Show them how to punch holes around the base of the bottle to allow the water to spray out. Attach a hose to the neck of the water bottle. Secure the hose with 'duct tape' ensuring it does not leak. Turn on the hose and sprinkle the garden.
	 
Reflection Activity:	What other 'rubbish' items could you use to make something useful?
Clean Up:	Allocate students to various jobs. Clean equipment as required. Discuss putting things away safely. (Correct storage) Wash hands, including cleaning nails using a nail brush.
Appropriateness:	☑ KK-Year 2 ☑ Years 3-6 ☑ Year 7 +
Extension Ideas:	Use the sprinkler at home to establish lawn around your house.

LESSON GUIDE

Reusing newspaper and cardboard in the garden

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KEY MESSAGE:	Recycling saves money. Recycling reduces rubbish. Recycling helps "Country".
BACKGROUND:	Turning everyday rubbish into something useful. Using newspaper and cardboard in the garden.
LESSON FOCUS:	Carbon is an organic substance that is usually derived from dried leaves and old branches. But cardboard and newspaper are also a great source of carbon and a valuable asset for gardens and compost bins. There are many ways to recycle cardboard and newspapers in the garden. In this lesson we look at different ways to do this and why.
RESOURCES / EQUIPMENT:	*This activity will require some preparation* Cardboard boxes Newspapers Hose Wheelbarrow Mulch
OUTLINE:	**Cardboard boxes** can be used to smother weeds, create garden paths and as a layer below mulch. Flatten the boxes and remove any plastic packing tape, labels and staples. Lay the cardboard over the weeds, where you want to create a path, or in other chosen location. Soak the cardboard well with water to help it 'soften' into the ground. Add mulch on top of the cardboard. **Newspapers** can be used as a layer below mulch in garden beds and beneath fruit trees. Use around 3 sheets to ensure the barrier on the soil is thick. Wet the sheets of newspaper as you go to avoid them blowing around in the wind. Mulch can then be added on top of the paper. Adding shredded newspaper and cardboard to the **compost bin** is a great way to recycle. Good compost needs equal amounts of

	green and brown components. Cardboard and newspapers are great for the brown component! Things to consider when adding newspaper and cardboard to the compost include: - ensure the paper is shredded and the cardboard is torn/cut into small pieces. This will help it break down more quickly in the compost - only use non-toxic newspaper. Avoid glossy magazines as they can leach chemicals into the surrounding compost. You can also add shredded newspaper, shopping dockets, tissues and small cardboard packaging to **the worm farm.** Adding this brown material creates a lovely bed for worms, insulates the farm from heat and cold, and builds structure for worm castings.
REFLECTION ACTIVITY:	What other types of paper do we use everyday that could be used in the garden and recycled? What are some other things that can be made from paper? E.g. paper mache planting pots.
CLEAN UP:	Make sure that all cardboard and paper has been covered to stop the wind blowing it around - using mulch is ideal. Hose everything in well. Pack up. Wash hands.
APPROPRIATENESS:	☑ KK-Year 2 ☑ Years 3-6 ☑ Year 7 plus

LESSON GUIDE

Using coffee grounds in the garden

EON Edible Gardens

EON Foundation

Key Message:	Recycling saves money. Recycling reduces rubbish. Recycling helps “Country”.
Background:	Turning everyday rubbish into something useful. Using coffee grounds in the garden.
Lesson Focus:	Don’t bin coffee grounds - they can be so useful in the vegetable garden!
Resources / Equipment:	*This activity will require some preparation* Coffee grounds from your kitchen or from your local coffee shop Compost bay Hose Garden hoe
Outline:	Coffee grounds are roasted and ground beans from the coffee plant. They can be a great organic addition to the garden. They increase microbes in the soil, help with water retention and can be a fantastic method to reduce weeds. Coffee is packed full of caffeine, which when consumed gives us a “buzz” (for adults only)! This is also true for the soil in our garden, but like with adults, too much coffee can do more harm than good in the garden. How to use coffee grounds in the garden • When starting a new garden bed, adding coffee grounds along with other organics such as manure and compost can help to kickstart the soil and aid in water retention. • As coffee is high in caffeine, overuse can stress plants. If you are wanting to kill weeds in certain areas of your garden, this can be a useful tactic. Sprinkle and hose-in the coffee grounds into patches of weeds and watch them slowly fade away.

Using coffee grounds in the garden

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	• Adding coffee grounds to the compost bin helps is speeding-up the decomposition of organics to break. The composting process helps to remove any toxins from the coffee and increases its benefits for your soil!
Reflection Activity:	Choose two easy-to-grow plants (e.g. sunflower, lettuce, or bok choy. Add coffee grounds to the soil for one of the plants. Otherwise treat the plants the same. After a week check which plant is doing better. Mushrooms love to grow in coffee, perhaps your class could grow some mushrooms?
Clean up:	Ensure the coffee grounds are worked into the soil, and water well. Water in Pack up tools and hose.
Appropriateness:	☑ KK-Year 2 ☑ Years 3-6 ☑ Year 7 plus

LESSON GUIDE

Use ice block sticks as plant labels

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Key Message:	Recycling saves money. Recycling reduces rubbish. Recycling helps “Country”.
Background:	Turning everyday rubbish into something useful. Reducing waste by reusing it – wooden paddle pop sticks.
Lesson Focus:	Reuse wooden ice block and paddle pop sticks as plant labels in the garden.
Resources / Equipment:	*This activity will require some preparation* Ice block and paddle pop sticks Dark colored crayons
Outline:	Ensure the paddle pop sticks are clean and dry. Choose a dark-coloured, water-proof crayon. Write the name of the plant or seed, and the date it was planted on the stick. Let the crayon dry. Put the stick in the soil near the plant or seeds. The sticks should be good for the growing season. After use, add them to your compost bin where they will break down over time. Crayons are also great markers for writing on plant pots. Once your plant has outgrown its pot, wipe the crayon marking off and the pots are ready again to reuse!
Reflection Activity:	What are some other household items we could use to label our plants in the nursery?
Clean up:	Pack crayons away Wash hands
Appropriateness:	☑ KK-Year 2 ☑ Years 3-6 ☑ Year 7 plus

LESSON GUIDE

Creating a worm farm from an old fridge

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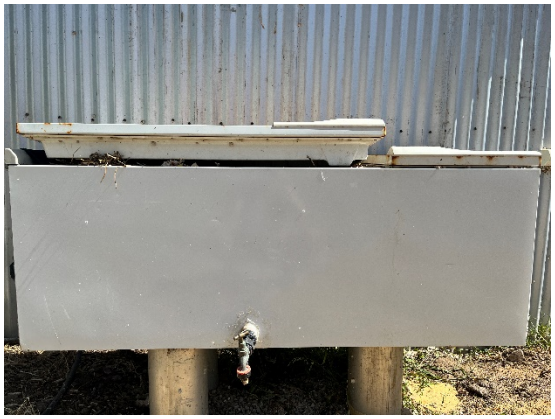
Key Message:	Recycling saves money. Recycling reduces rubbish. Recycling helps 'Country'.
Background:	Australian rubbish dumps and landfills are filled with old household appliances including old fridges. In this lesson we learn how to reuse an old fridge to create the perfect worm farm.
Lesson Focus:	Worm farm fridge
Resources/ Equipment:	*This activity will require some preparation* An old fridge A stand for the fridge Wire snips Garden tap to be used on fridge Agricultural pipe or hose suitable to connect to the tap Silicone and silicone gun Drill Pebbles, blue metal or similar for drainage Shade cloth/ weed matt/ porous material Soil and organics Worms Straw / shredded newspaper Food scraps
Outline:	Building a worm farm in a fridge requires some preparation and planning. However once it is established the benefits are well worth it! 1. Choose a location for your worm farm. It needs to be somewhere that has protection on hot summer days – worms are most comfortable in a dark and cool location. Pick a permanent spot as once the worm farm is established it will be heavy to move. And ensure it is on level ground. 2. Fridges have gas lines on the rear which work to keep our food cold. Before building our worm farm we need to cut the gas lines and bleed-out any excess gas. **This is very important and must be done properly.** Be sure to seek out advice. Research your brand of fridge online if you need assistance to locate the gas line. Once the line is severed, leave it sit for a day to allow any excess gas to

bleed-out.

3. Remove all interior items from the fridge - such as trays, drawers, shelves and door seals – so you are left with just the 'shell' of the fridge.

4. Now we need to consider the height of the worm farm fridge. There needs to be enough space left below the fridge for a container. Once the farm is established, the worm juice will drain into the container. A space of approximately 30-40cms should be sufficient. Options for creating the space might include a strong single bed base, besser blocks, bricks or pavers placed under each corner and in the middle for even support, a strong industrial bench, or nifty folk could even weld their own support. Whatever you choose, ensure it is strong and stable.

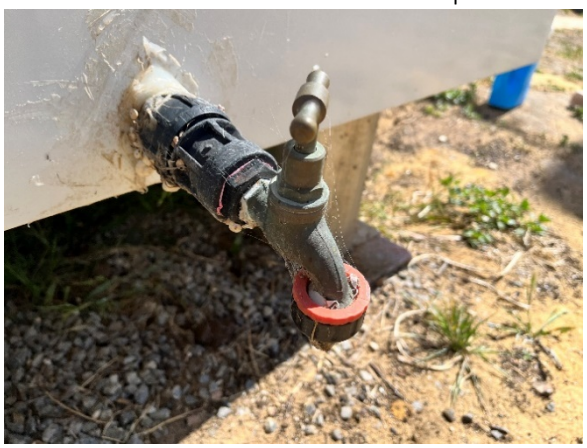


5. Put the fridge on the support on its side. The fridge door needs to open to the top.

6. The next step is to install a tap and some hose. This is what you will use to drain out the worm juice (or worm wee!) The lowest point of the fridge is the best location for the tap. Put a small amount of water in the fridge and note if there is a spot where the water pools – this will be the best drainage point. If the water sits evenly, choose the most convenient spot for the tap. The tap is installed on the outside of the fridge. The hose/pipe connects to the tap then runs into the fridge and along the bottom of the interior.

7. Ensure the hose is a suitable size to connect to the tap. Using your drill, make many drainage holes along the length of the hose. Different sized holes will assist with creating good drainage and minimize clogging. Loop the hose around the bottom of the fridge – in a similar way to laying out irrigation hose.

8. Cut or drill a hole the same size as the hose into the side of the fridge (at the lowest point determined earlier). Push the end of the hose through the hole and connect to the tap on the outside. If needed use silicone to secure both the tap and hose. Allow silicone



to dry.

Once the silicon is fully dry test out the tap and hose by putting some water inside the fridge. Does the tap work? Is there any leakage around the tap, or elsewhere from the fridge? Does the hose inside capture enough water? Adjust accordingly by adding more silicone or more holes in the hose etc. Inspect the inside of the fridge for any other holes or joins that may need securing with silicon. Test out silicone work by filling with water and watching for leaks.

Once you are confident that the fridge is leak proof and that the tap is well secured, it is time to start building your worm farm!

9. For the bottom layer add approximately 10cm of medium sized pebbles, river stones or blue metal. Avoid small pebbles that may block the drainage holes on the hose.

10. Put a layer of shade cloth on the top of the gravel. You can also use weed matting or other porous natural material that will separate the lower gravel level from the organic layer above.

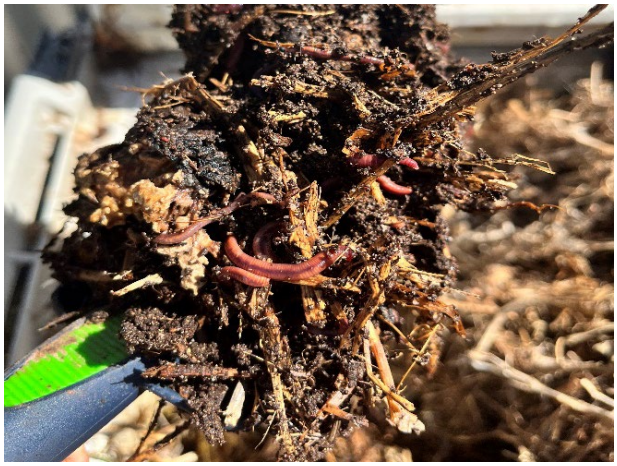
11. Next we add the organic matter. This will be where the worms live! Add organics such as fresh soil, well-aged manures, compost and potting mix. This layer needs to be around 20-30cm deep.

12. Add straw or shredded newspaper and work it well into the organic layer.

13. Allow it all to sit and settle for a few days – adding extra organics if the layer settles too much.

14. Once the soil has settled, its finally time to add your worms!! Do some research on local worm suppliers and select a reliable source. Start your farm with as many worms as possible. Approximately 1000 for a fridge worm farm would be great - or more if you have the budget.

15. Add the worms into the organic layer. Worms love protection so providing a layer of moist straw or shredded newspaper will give them a good start. Allow the worms to settle in for a few days before feeding them. Keep the fridge door closed but make sure there is a little gap for oxygen to enter the farm.



	16. After a few days start to provide the worms with food scraps – and feed regularly from then on. See the lesson plan 'Worm Farming 101' for further information on feeding your worms. 17. Keep an eye on the moisture levels in your farm. If the soil is dry, or if the weather is quite warm, water the soil lightly. Be careful not to over-water, as this may create a smelly and sodden environment that is harmful to the worms. 18. Drain and collect the worm wee through the tap at least once a week. This will help to keep a 'healthy' moisture level in the farm. 19. Remember to keep and reuse plastic bottles for wormy wee gifts! 20. Dilute worm wee with water before using on your gardens. You can used diluted worm wee often and liberally! 21. Remember that warm farming is a labor of love, and your farm will need regular attention and care.
REFLECTION ACTIVITY:	Who will be caring for your worm farm? How will you collect the food scraps? Do you need a feeding roster? Create an observation diary of which foods the worms love most!
CLEAN UP:	Tidy up and pack all tools away. Hose down any excess soil from area Give worm farm a light hose down Wash hands well
APPROPRIATENESS:	☑ KK-Year 2 ☑ Years 3-6 ☑ Year 7 plus
EXTENSION IDEAS:	What other items could you use to create a worm farm?

LESSON GUIDE

Worm farming 101

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Key Message:	Recycling saves money. Recycling reduces rubbish. Recycling helps 'Country'.
Background:	Now that we have built a worm farm, we must maintain it. This lesson is about how to properly care for your worms. (Refer to lesson plan – 'Create a worm farm from an old fridge')
Lesson Focus:	Worm farming
Resources/ Equipment:	*This activity will require some preparation* Household kitchen scraps Shredded cardboard, newspaper, egg cartons Pea straw or similar mulch Watering can
Outline:	Worm farming has very similar rules to that of the humble compost bin. There are things we definitely should not add to our worm farm. DO NOT ADD; meat, bones, dairy, bread, plastic, metal, glossy paper, animal droppings or any plants sprayed with chemicals. This is because it will attract vermin and other bugs that don't get along with worms. It may also lead to a smelly and rancid environment in which worms may not survive. There are, however, plenty of things we can add to our worm farm! This includes: kitchen scraps, coffee grounds, tea leaves and bags, small amounts of fresh green grass clippings, shredded paper (old letters, shopping lists), shredded small cardboard boxes (food packaging, toilet rolls) and handfuls of light straw mulch. 

Worm farming 101

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Worm farms should have equal amounts of green waste from scraps (nitrogen) and brown waste from paper and straw (carbon). The green waste is what the worms will eat and decompose. They slowly digest the green waste and turn it into worm castings (poop) and then finally worm juice – a golden elixir for your gardens! Brown waste gives the surrounding soil good structure and helps to insulate the temperature in the farm. Worms like cool and dark spaces to live.

One key rule of thumb with worm farming is 'everything in moderation'. It is best not to overload the worm farm with too much of any single item - especially onion, garlic, leek, or citrus fruit -rather keep a good balance of scraps.

Keep a container on your kitchen bench or in your classroom, adding suitable food scraps and small ripped up pieces of paper and cardboard (muesli bar boxes etc.).

Ideally worms should be fed every second day but ensure there are always some scraps in the farm for them to enjoy. Again don't add too many scraps at any one time as they may rot. Experiment and watch- it will take time to find the right balance.

Regular 'harvesting' of the worm juice helps prevent a buildup of moisture in the soil. It is recommended to drain the worm juice once a week. Once the worm farm is established and is in a healthy state the liquid produced should be clear and have a golden hue!

If the weather is particularly warm give the worm farm a light spray at the end of the day. You may need to add small amounts of water to the farm on occasions to maintain a good moisture balance. It is best to do this at the same time as adding food.

Remember to keep and reuse plastic bottles to fill with worm juice and gift to others.

You can use a watering-can to water your garden with worm juice. The ratio is 1 part worm juice to 10 parts water. Apply it regularly – your garden will thrive!

LESSON GUIDE

Worm farming 101

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	In very warm weather treat your worms to frozen fruits and veggies – they love it! In hot conditions it can provide relief and enjoyment. 
Reflection Activity:	Look at the life cycle of a worm. What do worms do in our garden?
Clean up:	Wash out your scrap container after use Wash hands after touching worm farm
Appropriateness:	☑ KK-Year 2 ☑ Years 3-6 ☑ Year 7 plus
Extension ideas:	Make mini worm farms for friends, or for the classrooms in your school.