WASTE
A Teaching Manual

Grade 5 – Food Waste

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An important aspect of using resources sustainably is managing waste, which is something that everyone can do, by reducing waste, re-using and recycling.

According to the EPA Tasmania Annual Report 2019-20, approximately 749,219 tonnes of waste is generated each year in Tasmania. Around 86,469 tonnes of this is being composted in large scale composting operations, and although Councils are increasingly implementing Food Organics and Garden Organics (FOGO) collections, there is also a large volume of organic waste which is not being captured for composting or re-use in some way.

There are no specific studies relating to food waste in Tasmania, however according to the Australian National Food Waste Strategy in 2017, over 5.3 million tonnes of food that is intended for human consumption is wasted on-farm and in commercial, industrial and domestic settings. Resources such as energy, water, land and fuel are used in food production, manufacture, packaging, transporting and preparing food.

If food is disposed of in landfill, it has the potential to significantly affect the climate due to the emission of methane, which is 25 times more powerful than carbon dioxide as a greenhouse gas.

In 2014-15, it is estimated that 7.6 million tonnes of carbon dioxide equivalent was created by disposing of food waste to landfill in Australia*. Globally, food waste contributes to 8% of global greenhouse gas emissions*.

Food waste arises from three main sources: 1. pre-farm gate such as crop waste, 2. post-farm gate e.g. manufacturing and processing wastes and retail and 3. from hospitality and households. Most of this teaching resource addresses the food waste derived from households and at school, which is something that students can have an impact upon.

Encouraging good waste practices at homes and at school is important. Research has shown that giving children positive experiences with nature, role modelling, encouraging personal actions which make a difference and keeping children focused on an optimistic future are the most effective ways to ensure that they stay engaged in environmental issues, rather than being overwhelmed by them. The future is ours!

EPA Tasmania (2020) Environment Protection Authority Annual Report 2019-20, Tasmania, Australia, viewed 21 February 2022,

https://epa.tas.gov.au/Documents/EPA%20Annual%20Report%202019-20.pdf

*Commonwealth of Australia (2017) National Food Waste Strategy, Halving Australia's Food Waste by 2030

About this resource

Waste – A Teaching Manual provides a sequence of hands-on waste-related teaching units for primary school teachers. The units outline enquiry orientated learning activities that can be used to develop awareness in students about waste in Tasmania while meeting requirements of the Australian Curriculum in various subject areas, including the cross-curriculum priority of sustainability. Through the activities, students explore how wastes are derived, how to reduce, re-use and recycle wastes and the connection between individual actions and broader environment impacts.

Through the *Waste – A Teaching Manual* series, most year levels are provided with a particular waste issue to tackle, both in an academic and a practical sense, in an attempt to deliver a comprehensive picture over an eight-year journey from K-6. To complement this, schools are encouraged to develop a School Waste Management Plan (SWMP) to manage wastes, with the help of Rethink Waste. This is to ensure that by its very infrastructure and procedures, the school reinforces the children's learnings. During the year, students should have the opportunity to suggest modifications or improvements to the SWMP, to improve waste management throughout the whole school.

In this series, in the early years there is a strong focus on nature play, developing good habits such as recycling, and establishing an appreciation of the environment. This is a great springboard into managing litter, paper and plastic waste in Grades 2, 3 and 4 respectively. Incrementally, students begin to make connections between their consumption and the impacts this has on the environment. For example, Grade 3 students investigate paper consumption and the affect this has on forests and the animals that use forest habitat. In this unit in Grade 5, students take on a new challenge, to investigate food waste in Australia, and in Grade 6, they look at general waste issues. Throughout each module, students will also be provided with hands-on opportunities to extend their skills to re-use and recycle their wastes where possible. The embedded philosophy of Reduce, Re-use, Recycle should stand the children in good stead for the future, at home, at work and in the community.

The activities within this unit take students on an active learning journey exploring food waste issues, deploying their prior knowledge and literacies as a setting for their subsequent academic and hands-on experiences. Most lessons are 45 minutes in duration.

Expected learning outcomes

After completing the Grade 5 food waste unit, students are expected to have learnt the following:

- How food production uses water, soil and energy/fossil fuels, and affects biodiversity
- How food is transported around the world
- How food waste in landfill can generate odours and methane, which affects the climate
- How food waste comes about
- How students can reduce their own food waste, at home and at school
- Ways that food waste can be composted

Curricular Links at a glance

The activities covered in the unit have been mapped to the Grade 5 Australian Curriculum and, in the most part, concurrently meet the sustainability cross curriculum priority. Extension activities are also included where teachers want to go beyond the 6-lesson unit. Each lesson or extension activity has corresponding Australian Curriculum code reference numbers.

			Lesson # and Extension #
Design and Technologies			
Knowledge and Understanding	Examine how people in design and technology occupations address competing considerations, including sustainability in the design of products, services, and environments for current and future use (ACTDEK019)		Lesson 3-Ext 2
	Investigate how and why food and fibre are produced in managed environments and prepared to enable people to grow and be healthy (ACTDEK021)		Lessons 1,2 Lesson 6-Ext 1
Design and Technologies Processes and Production Skills	Critique needs or opportunities for designing, and investigate materials, components, tools, equipment and processes to achieve intended designed solutions (ACTDEP024)		Lesson 6-Ext 1
	Generate, develop and communicate design ideas and processes for audiences using appropriate technical terms and graphical representation techniques (ACTDEP025)		Lesson 6-Ext 1
	Select appropriate materials, components, tools, equipment and techniques and apply safe procedures to make designed solutions (ACTDEP026)		Lesson 6-Ext 1
	Negotiate criteria for success that include sustainability to evaluate design ideas, processes and solutions (ACTDEP027)		Lesson 6-Ext 1
Health and Physical Activity			
Movement and Physical Activity	Learning through movement	Participate positively in groups and teams by encouraging others and negotiating roles and responsibilities (ACPMP067)	Lesson 2
The Arts			
Visual Arts	Develop and apply techniques and processes when making their artworks (ACAVAM115)		Lesson 5
Maths			
Number and Algebra	Number and Place Value	Identify and describe factors and multiples of whole numbers and use them to solve problems (ACMNA098)	Lessons 2,3
Statistics and Probability	Data Representation and Interpretation	Pose questions and collect categorical or numerical data by observation or survey (ACSMP118)	Lesson 3
		Construct displays, including column graphs, dot plots and tables, appropriate for data type, with and without the use of digital technologies (ACSMP119)	Lesson 3

			Lesson # and Extension #
HASS			
Knowledge and Understanding	Economics and Business	Types of resources (natural, human, capital) and the ways societies use them to satisfy the needs and wants of present and future generations (ACHASSK120)	Lessons 1,2,4,5
		Influences on consumer choices and methods that can be used to help make informed personal consumer and financial choices (ACHASSK121)	Lesson 1,2,4,5 Lesson 3-Ext 1
English			
Literacy	Creating Texts	Plan, draft and publish imaginative, informative and persuasive print and multimodal texts, choosing text structures, language features, images and sound appropriate to purpose and audience (ACELY 1704)	Lesson 3-Ext 2 Lesson 5-Ext 1
Science			
Science Understanding	Biological Sciences	Living things have structural features and adaptations that help them to survive in their environments (ACSSU043)	Lesson 3-Ext 2 Lesson 6 Lesson 6-Ext 1
	Chemical Sciences	Solids, liquids and gases have observable properties and behave in different ways (ACSSU077)	Lesson 6
Science as a Human Endeavour	Use and Influence of Science	Scientific knowledge is used to solve problems and inform personal and community decisions (ACSHE083)	Lesson 1 Lesson 3-Ext 2 Lesson 6
Science Inquiry Skills	Questioning and Predicting	With guidance, pose clarifying questions and make predictions about scientific investigations (ACSIS231)	Lesson 6
		Decide variables to be changed and measured in fair tests, and observe measure and record data with accuracy using digital technologies as appropriate (ACSIS087)	Lesson 6
Sustainability			
Systems	The biosphere is a dynamic system providing conditions that sustain life on Earth (OI.1)		Lessons 1,2 Lesson 3-Ext 2
	All life forms, including human life, are connected through ecosystems on which they depend for their wellbeing and survival (OI.2)		Lessons 1,2,3 Lesson 3-Ext 2
	Sustainable patterns of living rely on the interdependence of healthy social, economic and ecological systems (OI.3)		Lessons 1,2,3 Lesson 3-Ext 2
World Views	World views that recognise the dependence of living things on healthy ecosystems, and value diversity and social justice are essential for achieving sustainability (OI.4)		Lessons 1,2,3 Lesson 3-Ext 2
	World views are formed by experiences at personal, local, national and global levels, and are linked to individual and community actions for sustainability (OI.5)		Lessons 1,2,3,4,5,6 Lesson 3-Ext 1 Lesson 3-Ext 2 Lesson 5-Ext 1 Lesson 6-Ext 1

Learning Area in the Australian Curriculum (as at April 2021)		Lesson # and Extension #
Futures	The sustainability of ecological, social and economic systems is achieved through informed individual and community action that values local and global equity and fairness across generations into the future (OI.6)	Lessons 1,2,3,4,5,6 Lesson 3-Ext 1 Lesson 3-Ext 2 Lesson 5-Ext 1 Lesson 6-Ext 1
	Actions for a more sustainable future reflect values of care, respect and responsibility, and require us to explore and understand environments (OI.7)	Lessons 1,2,3,4,5,6 Lesson 3-Ext 1 Lesson 3-Ext 2 Lesson 5-Ext 1 Lesson 6-Ext 1
	Designing action for sustainability requires an evaluation of past practices, the assessment of scientific and technological developments, and balanced judgments based on projected future economic, social and environmental impacts (OI.8)	Lessons 1,2,3,4,5,6 Lesson 3-Ext 1 Lesson 3-Ext 2 Lesson 5-Ext 1 Lesson 6-Ext 1
	Sustainable futures result from actions designed to preserve and/or restore the quality and uniqueness of environments (OI.9)	Lessons 1,2,3,4,5,6 Lesson 3-Ext 1 Lesson 3-Ext 2 Lesson 5-Ext 1


LESSONS

Lesson 1 – The impacts of food production

In this lesson, students will learn how and where food is grown and how this affects biodiversity and the environment in different parts of the world.

Meets Design and Technologies ACTDEK021 Investigate how and why food and fibre are produced in managed environments and prepared to enable people to grow and be healthy

HASS ACHASSK120 Types of resources (natural, human, capital) and the ways societies use them to satisfy the needs and wants of present and future generations

HASS ACHASSK121 Influences on consumer choices and methods that can be used to help make informed personal consumer and financial choices

Science ACSHE083 Scientific knowledge is used to solve problems and inform personal and community decisions

Sustainability OI.1-OI.9 All life forms are interconnected and actions for sustainability require evaluation of past practices and balanced judgements based on future economic, social and environmental impacts

Teacher notes

Our consumption of food is one of the greatest ways that we, as humans, have an impact upon the earth. Up to 40% of each person's carbon footprint is made from growing, producing, transporting, manufacturing, packaging and retailing of food by the global, industrial food economy, which is usually powered by fossil fuels. Most of the food we eat every day has travelled some 1,500-2,000 kilometres to reach our plates, which is a significant amount of fuel just for transport. The growing of food in the industrial marketplace also requires large amounts of artificial fertilisers, pesticides, insecticides and other inputs like fossil fuels to generate the energy required for all stages of production and transport. In general, the more processed and packaged a food is, the greater the fossil fuel input.

You will need

- Access to computers and/or the use of descriptive atlases
- If you had a world map or globe in the classroom, this might be used to pinpoint where food is grown around the world, using map pins or sticky labels.

Method

On the board/smartboard, draw the chart on the page below.

Separate the class into 9 groups, allocating one food type to each group. Using computers and/or atlases, ask each group to investigate which country or region grows the greatest amount of the food their group has been tasked with. Ask each group to write their food and matching country/region on the board (*an example has been provided in the column next to rice, see China etc*).

In their groups or as a class, discuss how and where each food is grown and how this may affect the biodiversity of an area (*e.g. if Asia grows the most palm oil, these are from plantation palm trees, the plantations are grown in what was rainforest, which affects the habitat of rainforest animals including birds, primates, and insects*).

Discuss the need for animals to have fresh water to survive, and for plants to have fresh water to grow.

If water is used for agriculture, discuss how this might take some water from rivers and lakes, affecting the natural balance, or the use of water for other people's crops. Discuss how energy is used to produce food, such as in deep sea fishing or planting and harvesting crops, and in transporting food to processors, then to the supermarket, sometimes across the globe. Energy is used to package food, which does have an important role in preserving food to stop it from spoiling. However, we are left with a lot of packaging to deal with in our environment, and a lot of that is plastic.

Discuss how the knowledge of how food is produced, packaged and transported might influence our consumer choices.

Propose alternative ways that food can be produced and moved (or not) around the world, maybe with less dependence on packaging or simpler packaging which is more recyclable.

Added activity: Watch Birke Baehr, an 11 year old boy on TEDx, who provides a critique of our food system https://www.youtube.com/watch?v=F7Id9caYw-Y

Type of food	Country or region where most of it is grown	Approx how many kilometres is this country from Tasmania?	% of world prod-uction	Resources required e.g. water, soil, fuel	Environmental impacts
1. Rice	*e.g. China*	*9,500km*	*30%*	*Water, soil, fuel, human labour*	*Changing land form/use, loss of habitat for original plants and animals*
2. Wheat					
3. Beef					
4. Coconut					
5. Sugar					
6. Maize/corn					
7. Soy beans					
8. Palm oil					
9. Oats					
10. Potatoes					

Lesson 2 – 'Food Kilometres'

In this activity students will learn about the resources used, and the distances that food travels around the world, hence the importance of not wasting food.

Meets Maths AMCNA098 Identify and describe factors and multiples of whole numbers and use them to solve problems

Health and Physical Education ACPMP067 Participate positively in groups and teams by encouraging others and negotiating roles and responsibilities

Design and Technologies ACTDEK021 Investigate how and why food and fibre are produced in managed environments and prepared to enable people to grow and be healthy

HASS ACHASSK120 Types of resources (natural, human, capital) and the ways societies use them to satisfy the needs and wants of present and future generations

HASS ACHASSK121 Influences on consumer choices and methods that can be used to help make informed personal consumer and financial choices

Sustainability OI.1-OI.9 All life forms are interconnected and actions for sustainability require evaluation of past practices and balanced judgements based on future economic, social and environmental impacts

You will need

- A classroom with potential to 'spill out' to an outdoor area. Alternatively, a large room or school hall.
- Photocopies of Lesson 2 Worksheet (below), one copy for each five students.

Method

Divide the class into groups of 5 students.

Hand out the Lesson 2 Worksheet (below on page 16), one worksheet for each group.

By filling out only column 2, ask each group to prepare a realistic, healthy food budget for a week for a (fictitious) family of four people, choosing a selection of food items based on the ingredients in the worksheet. Encourage the students to only 'buy' what their 'family' needs. In column two, write the number of items (*e.g. write '2' for 2 bags of apples*).

Then, the teacher can read aloud the following script:

Up to 40% of each person's carbon footprint is made from growing, producing, transporting, manufacturing, packaging and retailing of food by the global, industrial food economy. Most of the food we eat every day has travelled some 1,500-2,000 kilometres to reach our plates, which uses an enormous amount of fossil fuel just for transport.

Also, the growing of food on an industrial scale requires huge amounts of artificial fertilisers, pesticides, insecticides and other inputs like petrol or diesel that run huge machines such as harvesters.

Pose some questions for the class, such as: How does food get to the supermarkets? (*e.g. by vehicles using oil, petrol, diesel*). What effect does the use of oil and petrol have on the environment? (*e.g. fossil fuel depletion, carbon emissions, greenhouse gas, leading to climate disruption*).

Read aloud the following script:

Research by Melbourne's CERES community environment park found that the average Australian shopping basket of 29 household food items travels a total of 70,803 kilometres. Of those, 21,073 kilometres (almost the distance around Australia's coastline) are travelled by road and the greenhouse gases generated on any given day are equivalent to 2,830 cars driving for an entire year. Approximately 80% of the energy used is in the production of food and 20% of the energy used is in transport.

https://ceres.org.au/wp-content/uploads/pdfs/Resources/CERES-Farm-Food-Miles-Report-2007.pdf

Ask the students to calculate (in column 4) of the Lesson 2 Worksheet the 'food kilometres' related to everything in their shopping list (*e.g 1 bag of apples x 2 per week = 112x2= 224*km). Students then add up all the kilometres to come up with a grand total.

Allowing 15 minutes, every group should collectively physically step out one pace/step for every kilometre that the group accumulated. For example, if the group total 'shopping list' was 63,000 kilometres, the group should collectively step out 63,000 steps. Allow a minute or two for the groups to work out how they are going to do this activity. (*Hints: some children might like to step out 1,000 then add this to total, counting in tens, then hundreds. One student might like to be a 'counter' for the team. Some students could step out the food kilometres of one food type at a time, such as carrots. As this could be a noisy activity, you may like the students to go to the oval or school hall to do this. HINT: Quick shuffling steps are good*).

After the 15 minutes has lapsed, stop the activity and discuss, as a class. What did the activity make the students realise? Was it hard to count and add all the steps? Look at the processed/packaged foods with many ingredients from around the world, like chocolate. Compare the 'food kilometres' of raw food versus processed food.

Ask the students the following questions, as a group.

1. How can we reduce food kilometres? (*e.g buy locally grown food, eat food in season, reduce processed and packaged food*)
2. If you go to your local food shop and buy local food, who benefits? (*e.g local producers, farmers*)
3. What are some foods we 'need' versus food we 'want'?
4. If there was political unrest, illness or natural disasters in other countries, what might happen to our food supply? (*e.g that could affect the food supply chain*)
5. Why should we reduce 'food kilometres'? (*e.g to reduce emissions of carbon dioxide and other greenhouse gases*)
6. What happens when we waste food? (*e.g. the energy and environmental impacts that went into growing, harvesting, processing and transporting the food are wasted*)
7. Have any students heard about the rotting of food in landfill and how it releases methane? Does anyone know the environmental impacts of methane? (*e.g. methane is 25 times more powerful as a greenhouse gas than carbon dioxide. So, food waste can contribute to global warming and climate change*)

Challenge your students to think of some of the fresh produce grown and made in Tasmania. The list could include:

- **Cherries**
- **Apples**
- **Meat (beef, lamb, pork, chicken)**
- **Pears**
- **Blueberries**
- **Raspberries**
- **Strawberries**
- **Potatoes**
- **Lettuce**
- **Peas**
- **Cabbage & Cauliflower**
- **Carrots**
- **Milk**
- **Cheese**
- **Grapes/Wine**
- **Honey**
- **Seafood**

These are grown for local, national and international markets.

Lesson 2 Worksheet

Adapted from Gaballa, S and Abraham, A (2007) Food Miles in Australia: A Preliminary Study of Melbourne, Victoria, CERES Environment Park https://ceres.org.au/wp-content/uploads/pdfs/Resources/CERES-Farm-Food-Miles-Report-2007.pdf

Food type	**No. of items per week (for 4 people)**	**Kilometres**	**Total = No of items x kilometres**
1 bag of 12 apples	*e.g. 2*	112	*e.g. 224*
1 bag of 12 oranges		567	
1 hand of 12 bananas		2,746	
1 bag of 12 carrots		311	
1 lettuce		54	
1 bag of 12 potatoes		155	
1 pack instant noodles (6 serves)		582	
1 loaf of bread		486	
1 chicken		93	
1 salami		25,165	
1 roast beef		298	
1 dozen eggs		134	
1 tin baked beans		3,132	
1 box cereal		886	
1 kg rolled oats		539	
Tea (25 tea bags)		8,259	
Orange juice 2 litres		2,024	
1 block chocolate 250g		13,174	
			Total 'food kilometres' **.....km**

Note: 'food kilometres' for salami and chocolate are correct: 25,165 km and 13,174 km respectively

Lesson 3 – How much food do we waste?

Students undertake a practical experiment and calculate how much food waste they generate at school (or at home). They extrapolate to calculate how much they generate over a year, then work out how much is wasted at school/in homes in Tasmania and Australia.

Meets Maths ACMNA098 Identify and describe factors and multiples of whole numbers and use them to solve problems

Maths ACSMP118 Pose questions and collect categorical or numerical data by observation or survey

Maths ACSMP119 Construct displays, including column graphs, dot plots and tables, appropriate for data type, with and without the use of digital technologies

Sustainability OI.6, OI.8, OI.9 All actions for sustainability require us to evaluate past practices and make balanced judgements based on projected future economic, social and environmental impacts

You will need

- A bucket or container for food waste
- Kitchen scales
- If students are undertaking this exercise at home, each student should find a container for each household, such as an ice-cream container or 2 litre container

Method

Investigate how much food waste is generated by the class from lunch at school one day. If this is to be conducted, it must be in a lesson after lunch. Do not let the children know about this in the day/s leading up to this, or it may influence what is brought to school. Just before lunch time, organise that the children in your class all sit together to eat lunch, then bring all waste derived from lunch to a given area, and put it in your designated container.

Based on what is collected, develop waste categories and record the numbers of items in each category, and the weight of each food type.

How much of it is food waste? How much is food packaging?

Note: some food waste, such as fruit peel/skins and apple cores are unavoidable, but some food waste is avoidable.

Graph your results, being the weight and main types of food waste.

Calculate how much food this equates to in one year for the class/for your school if every class wastes the same amount of food. There are 283 schools in Tasmania. So, how much food is wasted by children in schools around Tasmania every day/week/year, on average (considering there are small and large schools)?

Alternatively, or also, ask the children to source a container for the kitchen bench at home, in which all the food waste for the week is placed. Ask the child/ren to talk to all family members, instructing them to co-operate in collecting food waste for a week, including breakfast and lunch/preparation scraps. After dinner each night, the student could weigh and graph each type of food waste (*e.g. vegetables, bread, meat*) then empty the container as they normally would. Find out if the waste was due to be composted at home, given to chickens, put in a council Food Organics and Garden Organics (FOGO) collection bin, or whether it was destined for landfill.

Back at school, students could find out how many households there are in Tasmania and Australia, therefore how much food waste might be derived from homes, per year.

Class Discussion

Ask the students about their experience of collecting and weighing and recording food waste from school and/or home. Did the students note that there were probably some food wastes that were missed (*e.g. when someone throws out food waste at school or work?*)

From previous lessons, discuss the things that are 'lost' if we waste food (*e.g. we are disregarding the effort and environmental impact of growing, harvesting, processing and transporting that food, using water, land and energy*). Ask the students to describe what happens to food waste if it is buried in landfill (*e.g. food waste in landfills encourages pests such as silver gulls and creates odour for nearby residents, also methane is generated, which is a powerful greenhouse gas, contributing to climate change*).

Watch The Story of Food at
https://www.youtube.com/watch?v=PzGSHTP-U20

If there is time, ask the students to develop fliers or posters to encourage people to generate less food waste and/or compost the food waste that is generated, either at school or at home via the FOGO bin. The students could then write an article for the school magazine regarding what they have learnt about food waste.

At one Australian school, staff were concerned that students were wasting a lot of food – they found uneaten apples in the bins and other uneaten portions of school lunches. They interviewed children and found that the kids were so excited to play at lunchtime, they short-changed their eating time so that they could play instead. In response, the school changed the school routine so that the children played and THEN had lunch. Teachers found that children were more attentive after lunch than before – having enough food to get them through until the end of the day.

Lesson 3 – Extension 1 – Schoolyard waste and litter audit

Doing a waste and litter clean-up in the schoolyard can make children aware of how much waste is discarded by them and their peers. It could motivate students to approach the canteen managers about the types of food and packaging that is served there.

Meets HASS ACHASSK121 Influences on consumer choices and methods that can be used to help make informed personal consumer and financial choices

Sustainability OI.6, OI.8, OI.9 All actions for sustainability require us to evaluate past practices and make balanced judgements based on projected future economic, social and environmental impacts

You will need

- Gloves for each pair of students
- Bags, such as used bread bags, for the collection of waste and litter

Method

Do a rubbish audit of the school grounds after lunch one day. Give the children gloves and bags, such as used bread bags, and ask them to collect the litter and discarded food/waste in the school grounds (not in the bins) for 15 minutes, in zones around the school. Once collected, lie a tarp or groundsheet down in a sheltered area of the school yard, and sort the litter into categories. Discuss the food waste and packaging found in the school yard. If there are particular kinds of problematic packaging arising from the canteen, propose alternative food packaging to the canteen manager or school management (e.g. *muffins could be made and sold without packaging, food could be served on washable plates*). If there are particular types of food/waste/litter derived from home, discuss ways that this could be reduced (e.g. *instead of small yoghurt containers, yoghurt could be decanted into containers at home, from a larger container*).

The Tasmanian School Canteen Association promotes the provision of nutritious, safe and healthy food services in schools and a whole school approach to healthy eating. They run the Smartfood Award, an accreditation program (Platinum, Gold, Silver and Bronze) and member schools have access to extra resources to support their accreditation. See www.schoolfoodmatters.org.au/

Photo: Simon de Salis

If there is time, ask the students to develop fliers or posters to encourage people to generate less waste and litter, and/or prepare an article for the school magazine about what they found in the school yard.

Lesson 3 – Extension 2 – Is food packaging good or bad?

Writing a persuasive text can consolidate the students' understanding of the impact of both food waste and packaging.

Meets Science ACSSU043 Living things have structural features and adaptations that help them to survive in their environments

Design and Technologies ACTDEK019 Examine how people in design and technologies occupations address competing considerations, including sustainability in the design of products, services, and environments for current and future use

Science ACSHE083 Scientific knowledge is used to solve problems and inform personal and community decisions

English ACELY 1704 Plan, draft and publish imaginative, informative and persuasive print and multimodal texts, choosing text structures, language features, images and sound appropriate to purpose and audience

Sustainability OI.1-OI.9 All life forms are interconnected and actions for sustainability require evaluation of past practices and balanced judgements based on future economic, social and environmental impacts

Method

Explain to the students the important role that food packaging plays in protecting and preserving contents. In countries where there is no packaging or food preservation, a lot of food is 'lost'. Some people think that some things are 'overpackaged', but food packaging is usually designed for a purpose – to get food to the consumer without breakage or decay. Think of a biscuit – if it wasn't packaged properly, it might go stale or be crushed before it even gets on the supermarket shelf. This might be unacceptable to the consumer, and it might have to be discarded. Also, wrapping a cucumber in plastic film can extend its life from 3 days to 14 days. Food naturally wrapped in its own skin can be safely transported and consumed when it doesn't have to travel far, but when food is transported from further away, which is quite often, plastic can play an important role in preventing it from becoming waste.

However, there are devastating environmental impacts from the improper disposal of packaging, particularly plastic.

Ask the students to write a 100 word persuasive text.

Option A is to give half the class Statement 1 (below) and the other half should be given Statement 2. Allow 15 minutes for the students to prepare their 100 word argument about their statement. Students could work in pairs.

Statement 1
Packaging is good for the environment

Statement 2
Packaging is bad for the environment

Hint: Issues in line with Statement 1 could include that packaging preserves food and protects it from damage, hence reduces food waste, therefore saves energy, resources, water, carbon emissions and reduces pollution. Issues in line with Statement 2 could include that packaging, if it enters the ocean, can kill wildlife via entanglement or ingestion. Also packaging uses resources such as energy and materials to produce.

Ask one or two representatives from each 'camp' to present their persuasive argument to the class.

Option B is to present the question to each student "Is packaging good or bad for the environment?" This could be used as practice for NAPLAN testing.

Ask the students what they think about this question. Do they think packaging saves a lot of food from being wasted, therefore it is good for the environment, or packaging is bad because it ends up as litter the environment? Can the students see both sides of the issue? Ask them to write as if to persuade someone to agree with their opinions.

Students could think about:

- What their point of view is
- How to write an introduction to clearly state their perspective
- Their arguments, with reasons or examples
- How to be persuasive
- How to write a conclusion, summing up the main points

Students should try to

- Plan their writing
- Make it interesting
- Write in sentences
- Use correct spelling and punctuation
- Stay on the topic
- Use paragraphs for each new topic
- Edit their writing

Reference

Primary Connections, Australian Academy of Science (2022) Package it Better, viewed 21 February 2022, www.primaryconnections.org.au/curriculum-resource/package-it-better

At St Mary's College in Hobart, the students are passionate about their local environment and reducing their ecological footprint, one step at a time. Students formed the College's sustainability group, The Footprint Project.

Their school canteen plays an important role in the College's sustainability movement, which looks at positive ways that they can improve their waste management practices and reduce the amount of waste sent to landfill.

The canteen serves healthy, tasty meals while doing away with single-use products and packaging. The College has also introduced reusable plates, bowls, cups and cutlery for all staff and students to enjoy their meals before being returned to the canteen for washing and re-use. The school discontinued packaged drinks, instead offering tea and coffee in re-usable cups and encouraging students to drink tap water from their own drink bottles. Free-range eggs and locally sourced ingredients are also used.

These changes were implemented at the end of October 2019 and have led to a significant decrease in waste volume, with only one garbage bin of rubbish now coming from the canteen each day.

Lesson 4 – How do we waste food? What can we do?

Students learn the extent of food waste in Australia, investigate the ways that food is being wasted and suggest ways that food waste can be avoided.

Meets HASS ACHASSK120 Types of resources (natural, human, capital) and the ways societies use them to satisfy the needs and wants of present and future generations

HASS ACHASSK121 Influences on consumer choices and methods that can be used to help make informed personal consumer and financial choices

Meets Sustainability OI.5 OI.6 OI.7 OI.8 OI.9 The sustainability of ecological, social and economic systems is achieved through informed individual and community action that values local and global equity and fairness across generations into the future

Method

Explain to the children that in Australia, food waste arises from

1. On-farm losses
2. Losses in manufacture and processing
3. Households

Then Watch the ABC program War on Waste, about waste bananas.
https://vimeo.com/223234033

Discuss the show.

Also present the following facts:

According to the Food and Agriculture Organisation, "If global food waste was a country, it would be the third largest emitter of greenhouse gases in the world, behind the U.S. and China"[1]. On average Australians throw out 20 per cent of the food they buy, which is 3.1 million tonnes of edible food[2]. This generates 7.6 million tonnes of CO_2 just from our food waste, which is equivalent to 17,000 grounded jumbo jets[2]. Food waste costs households between $2,200 and $3,800 per year[2].

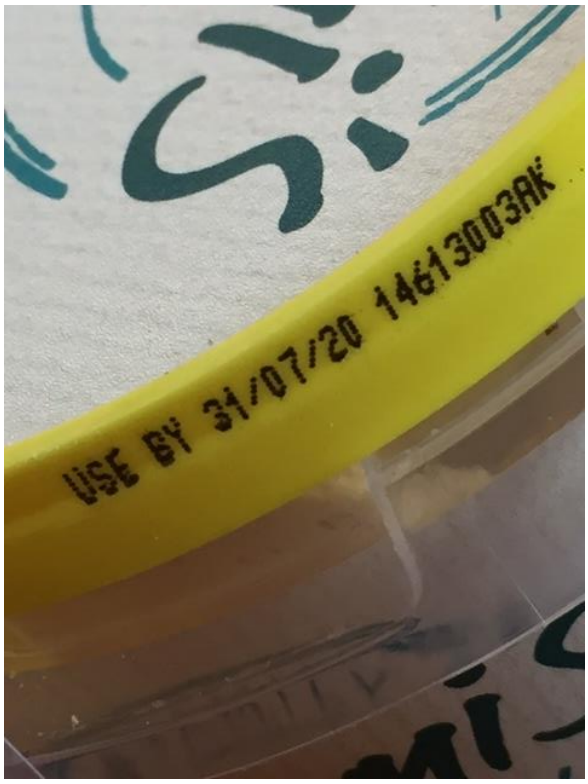
1. https://www.insidewaste.com.au/index.php/2020/04/16/where-to-with-food-waste/
2. Commonwealth of Australia (2017) National Food Waste Strategy, Halving Australia's Food Waste by 2030

According to the City of Hobart Waste Management Strategy 2015-2030, 60% of waste in household bins is organic material that could potentially be removed from the waste stream.

www.hobartcity.com.au/Council/Strategies-and-plans/City-of-Hobart-Waste-Management-Strategy-2015-2030

Ask the students what they, as individuals, can do about on-farm losses (*e.g. they could buy mis-shapen or 'ugly' fruits and vegetables, which would otherwise be thrown out before they get to the supermarket*). Can the students do anything about losses in manufacture and processing? (*e.g. probably not*). Can we, as individuals, do anything about household food waste? (*yes*). Let's focus on food waste generated from the home.

Can the children discern the difference between the terms 'use by' and 'best before' dates on food packaging? (*e.g. the term 'Use By' means that the food cannot be eaten after the date on the pack. However, a 'Best Before' date is only an indication of when the food is at its best. If it's been stored correctly, then it's still safe to eat even after the date. The only exception is eggs, which should not be eaten after the 'Best Before' date. People often throw out food when it reaches the 'Best Before' date, even though it's still ok to eat. If people are doing that, it is a waste of food and money*). You could watch Love Food Hate Waste date label tips at https://www.youtube.com/watch?v=SG_U5pvywxs



Brainstorm the ways that people could reduce food and food-related waste in and by their household.

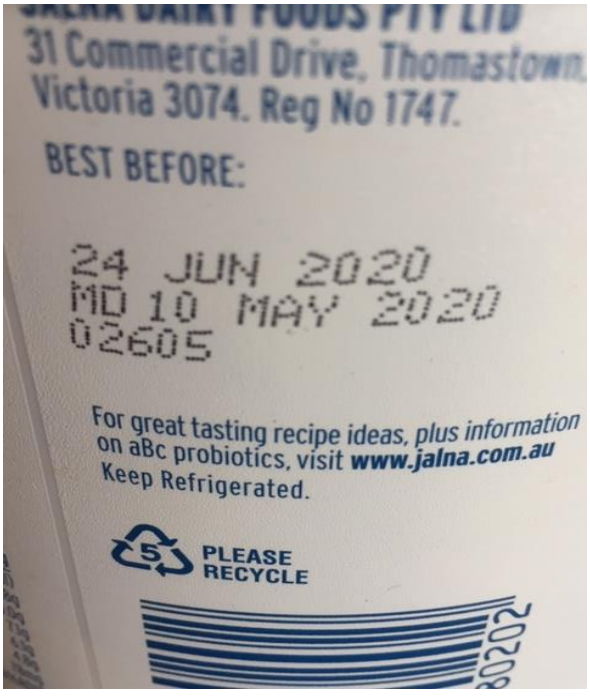
Write these ideas on the board. These could include:

1. Shopping wisely
2. Purchasing odd-shaped vegies and slightly blemished (but not damaged) fruit, encouraging the sale of food previously destined to be thrown out
3. Understanding the difference between 'use by' and 'best before'
4. Using the freezer, cleaning out food and using food at the back of the freezer occasionally
5. Cooking what you need, or make enough so there are leftovers for tomorrow's lunch
6. Eating what is prepared
7. Cooking and eating your favourite food, to ensure it gets eaten
8. Serving adequate proportions for everyone (not too much on each plate)
9. Finishing old packets before opening new ones
10. Creatively using leftovers
11. Looking in the fridge often, to ensure that the food near the 'use by' date is going to be used
12. Planning meals around what is in the fridge or garden
13. Composting or worm farming
14. Rearing chickens, to eat scraps
15. Growing food (so that it is valued)

Take a copy or a photo of these actions, for Lesson 5.

Imagine the children operate their kitchen at home – they must shop and cook. Divide the class into groups according to the number of ideas they have listed on the board. For example, if there are 15 ideas, make 15 groups. Each group is given one of the ideas developed.

Groups then have 3 minutes to devise a roleplay about how they will dramatically perform each of the topics. For example, for shopping wisely, the students in the group pretend they are at the supermarket, only buying what they need for the week, or what they can store or freeze. The children then, in turn, perform their roleplays for the class.



Lesson 5 – Food Waste Snakes and Ladders

In this activity, students will be asked to display their learnings about food waste by developing and playing a game modelled on the board game Snakes and Ladders.

Meets HASS ACHASSK120 Types of resources (natural, human, capital) and the ways societies use them to satisfy the needs and wants of present and future generations

HASS ACHASSK121 Types of resources (natural, human, capital) and the ways societies use them to satisfy the needs and wants of present and future generations

The Arts ACAVAM115 Develop and apply techniques and processes when making their artworks

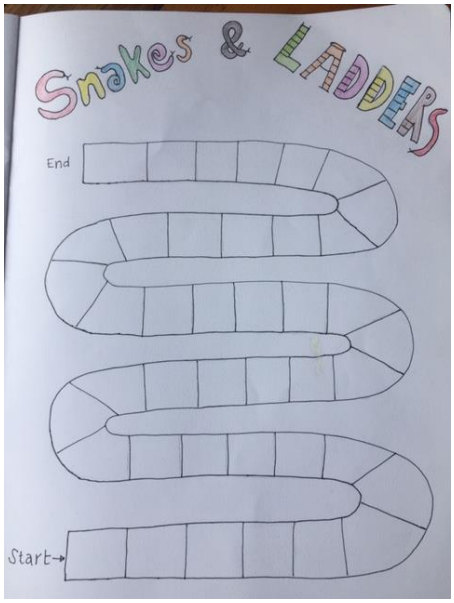
Sustainability OI.5 OI.6 OI.7 OI.8. OI.9 The sustainability of ecological, social and economic systems is achieved through informed individual and community actions that value equity and fairness across generations

You will need

- A3 paper (one piece per pair of students)
- Coloured pencils
- A pen
- Several dice, one for every pair or group of four students
- Small tokens or buttons, in an assortment of colours
- Scissors
- Glue sticks

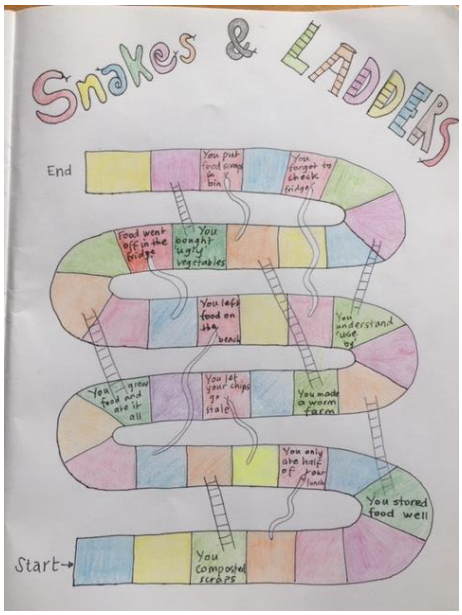
Method

Present this image of a blank Snakes and Ladders game. See photo below.



Ask one of the students in each pair to copy the outside edge of this image, by hand, onto an A3 page. The other child can draw approximately 40 'tiles' in this snake shape and each 'tile' in the snake shape should be approximately 3-4cm^2. Ask the children to intermittently populate some of the tiles with text, derived from the brainstorming done earlier in Lesson 4. In this version of the board game Snakes and Ladders, if the child's token lands on a 'positive' action relating to food waste, then a ladder will arise from that, and the child moves their counter up the ladder and progresses more quickly to a higher place towards the end of the game.

Conversely, the children can also invent 'negative' actions relating to food waste, and if a child's token lands on a 'negative' action at the forked tongue of a snake, the child moves the counter down the snake, to land at a lower position in the game. For example, if a child lands on 'You ate leftovers', a ladder will arise from that, elevating the person in the game. If a child lands on 'You let food go off in the fridge', then they go down the snake. See figure below for inspiration. Students could colour code the actions, for example positive actions could be green and negative actions could be red.



If there is insufficient time or students cannot recall positive and negative actions regarding household food waste, print ten copies of the table/s below and give a copy to each pair of students. Students can work together to cut out each square, as if it is to be placed on the A3 page. Each pair can construct a game on their A3 page, where intermittently the students glue a selection of these items in their tiles in their respective games, drawing snakes or ladders accordingly. It is best not to make either snakes or ladders too long.

You shopped wisely	You purchased 'ugly' vegetables	You stored food properly	You understand 'Use by' and 'Best before'	You ate the food at the back of the freezer
You cooked only what you needed	You served adequate portions	You finished an open packet of chips before opening a new one	You found a new recipe to use cooked potato	You cleaned out the fridge, so you know what to eat and cook next
You planned your meal based on what was in the fridge	You composted your food scraps	You made a worm farm	You made a chook yard and got some chickens	You grow your own food, so are keen to eat it all

And……

You forgot to check the fridge, and food went off	You put your food scraps in the rubbish bin	You left a lot of food on your plate	You let your chips get stale, so you threw them out	You only ate half of your school lunch
You left food on the bench and it went off	You opened a new jar of jam but there was already one open	You purchased too much lettuce and can't eat it all	You forgot to eat bread from home, and bought your lunch at school	You opened a box of crackers but there was a box already open

Each pair of students can play their Snakes and Ladders game, or they can invite other students to join in. Each child should find a different coloured token, and place these at the 'start'. The youngest child could roll the dice first, counting the number of spaces on the board accordingly. Remember, if they land on a tile at the base of a ladder, they go up to the top of the ladder, and at the head of a snake, they go down to the tail of the snake. Others take their turns in an agreed direction. The winner is the first student to reach the end.

In one Tasmanian classroom, the teacher supplied a microwave oven. Students brought in their leftovers from home, and tended to eat a heathier lunch than they would have otherwise done, while potentially reducing food waste.

Lesson 5 – Extension 1 – 'Leftover Makeover'

Students show a practical example of how they can act to re-use leftover food, then contribute their written recipe to a class 'Leftover Makeover' recipe book.

Meets English ACELY1704 Plan, draft and publish imaginative, informative and persuasive print and multimodal texts, choosing text structures, language features, images and sound appropriate to purpose and audience

Sustainability OI.5 OI.6 OI.7 OI.8. OI.9 In summary, the sustainability of ecological, social and economic systems is achieved through informed individual and community actions that value equity and fairness across generations

Method

Ask every student to present, invent or find a recipe for a food that might otherwise go to waste (*e.g. potato, excess fruit*) – and try their recipe at home, documenting it via text and photographs.

As a class, make a 'Leftover Makeover' recipe book and present this to the families of the students, for example, at Christmas, Mothers Day or Fathers Day.

There are so many ways to use leftovers – stale crackers can be crushed and used as a substitute for breadcrumbs, various vegetables can be used in soup, bananas can be frozen then used in banana smoothies or banana cake – so many possibilities!

The photo below provides an example of what to do with leftover pancake batter – add cabbage, grated carrot and spring onion, and it becomes a delicious savoury pancake.

Foodbank Tasmania is a non-for-profit organisation that supplies food to over 200 welfare agencies as well as school breakfast programs in 85 schools.

Loaves and Fishes is a Tasmanian 'food rescue' organisation producing a variety of gourmet foods, sauces and jams, and these are sold through retail outlets and online. The profits go into programs and services that directly benefit vulnerable Tasmanians, providing them with fresh produce and cooked meals.

Other such organisations working in Australia include SecondBite and OzHarvest.

Lesson 6 – Composting – Inside or outside the classroom

Once every attempt has been made to reduce food waste, composting is a way of dealing with unavoidable food wastes arising from homes, schools or in commercial or industrial settings. Learning the principles and the techniques of composting could be used as science lesson/s, either within or outside the classroom, and provides students with 'sustainability in action'.

Meets Science ACSSU043 Living things have structural features and adaptations that help them to survive in their environment

Science ACSHE083 Scientific knowledge is used to solve problems and inform personal and community decisions

Science ACSSU077 Solids, liquids and gases have observable properties and behave in different ways

Science ACSIS231 With guidance, pose clarifying questions and make predictions about scientific investigation

Science ACSIS087 Decide variables to be changed and measured in fair tests, and observe measure and record data with accuracy using digital technologies as appropriate

Sustainability OI.5 OI.6 OI.7 OI.8. OI.9 The sustainability of ecological, social and economic systems is achieved through informed individual and community actions that value equity and fairness across generations

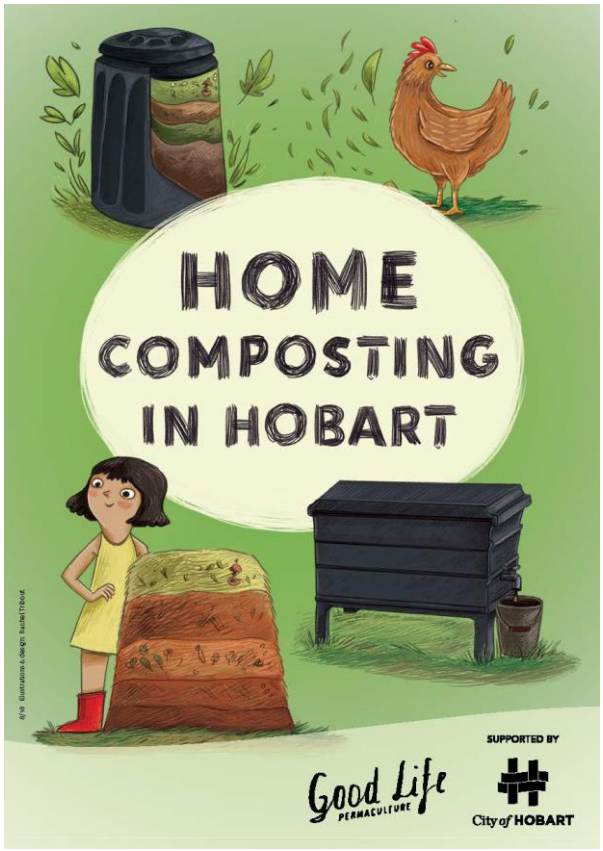
Teacher Notes

Composting is a method of decomposing waste organic material (food and garden waste) in a container or heap exposed to air. The decomposition occurs because of the action of naturally occurring bacteria, fungi and invertebrates. Composting saves valuable landfill space, reduces the incidence of pests such as rats and seagulls at landfills and reduces the production of methane, a greenhouse gas, in landfills. Compost also improves the condition of soil. Ideally, there could be a compost bin or pile installed or available at school, but if this is not possible or practical, there are various activities that can be done in the classroom to support learning about composting.

You will need

There are many types of compost aides available from hardware stores, such as worm farms, compost bins, tumblers or bokashi bins. You could even make your own worm tower from a recycled 20 litre bucket (see page 15 of the composting booklet shown below). Alternatively, a choice of many other configurations can be built, such as hot composting in a large compost bay, free-standing, or in a round of chicken wire supported by timber stakes. Tips for composting can be found in the booklet 'Home Composting in Hobart'.

https://www.hobartcity.com.au/Residents/Recycling-and-rubbish/FOGO-and-compost



To establish and maintain a compost pile, you will most likely need opportunities to maintain it during or after school, or to have a groundsperson or willing parent volunteer/s to oversee it, especially during school holidays. Maybe the school gardening teacher, if there is one, will be willing for your class to make some observations and/or to learn what makes a compost effective. It would be ideal to involve the Grade 5 students in having a role in maintaining the compost facility, or at least ensure that food waste from the school makes its way to the compost.

To invigorate the children about composting, see the video https://www.youtube.com/watch?v=kq3yfKCC9ok accompanied by an original rap song.

There are various ways of demonstrating the decomposition of food waste in the classroom. Below are ideas for four classroom activities, which will show the decomposition of food wastes over time, using such materials as milk cartons and plastic bottles. These activities have been adapted from 'Waste Matters' published in 1993 by the Gould League.

Decomposition in a milk carton

In this experiment, students compare the decomposition of waste food matter on top of soil, compared with that buried beneath the soil.

You will need

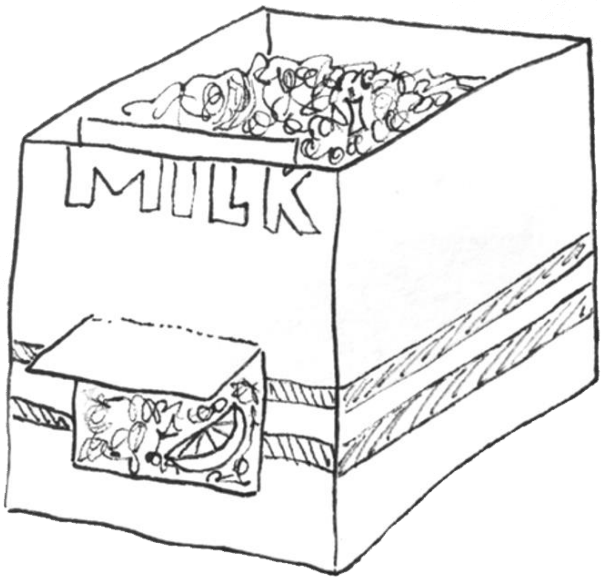
Every student will need

- A one litre milk carton
- A strip of firm, clear plastic, approx. 80mmx40mm
- Sticky tape
- Two identical pieces of fruit or vegetable approx. 20mmx20mmx2mm such as apple, orange or pumpkin
- Potting mix or garden soil
- A nail
- An atomizer of water (a few can be shared between students)
- A spoon
- A record sheet (see below)

(Prior to the class, the teacher should pre-cut each carton 70mm from the base, and discard the top section, or recycle it. With a blade or sharp knife, the teacher should also pre-cut a 'window' with a lift-up flap about 15mm from the base of the carton. Make the window about 30mmx35mm).

Method

1. Each student should hold or tape the plastic strip behind the 'window' and place enough soil into the carton so that it comes up to the bottom of the 'window'.
2. Slide one piece of the fruit or vegetable in so that it is next to the 'window', then add more soil so that it almost fills the carton. Place the second piece of fruit or vegetable on the surface of the soil.
3. Use the nail to punch two drainage holes in two sides at the bottom of the carton. Spray water over the surface of the soil. Lightly water every few days.
4. Over several weeks, observe the changes in the two pieces of fruit or vegetable (buried and not buried), such as changes in colour, smell, size. Record the changes on the following table. Note which of the two pieces of fruit or vegetable 'disappeared' first. Why?



Decomposition in a milk carton			
Name of student:			
Date experiment was started:			
Type of fruit or vegetable that was used:			
Type of soil: ☐ garden ☐ potting mix ☐ sand			
Week	Date	My observation of the fruit or vegetable	
		Buried	On top of the soil
1			
2			
3			
4			
5			

This exercise can be varied in many ways, but it is important to only change one variable at a time. Students can compare the use of soil or potting mix, or use sand. Between students, discuss how different vegetables or fruits decomposed at different rates, under different conditions. Maybe water one carton and not the other, and compare. Add worms or other invertebrates to one carton, and compare with the other carton. Punch holes in one carton but not the other, and compare. Add fertiliser to one carton, and compare with the other.

Mouldy Oldies

This activity enables students to compare the decomposition of five common food waste materials and the rate of decomposition of these materials with and without soil present.

You will need

- Ten glass jars with lids
- Five different, equally sized 'food waste' materials: apple cores, orange peel, bread, crackers, banana peel
- Rich garden soil
- Spray bottle of water
- Record sheet (see below)

Method

In Experiment A (No Soil) place one piece of the five materials into five separate jars. Spray each piece with a little water then screw on the lid. Label each jar with the food type (e.g. apple) and 'No Soil' and the date the experiment commenced.

Then for Experiment B (With Soil) place 30mm of soil on the bottom of each of the remaining five jars. Add the food waste. Spray each one with a little water. Label each jar with the food waste (e.g. apple) and 'With Soil' and the date the experiment commenced.

Observe the materials in the jars every two days for two school weeks. Look for changes in shape, colour, size and for the presence of mould. The students can write observations in the following Mouldy Oldies record sheets.

Mouldy Oldies – Experiment A – No Soil

Day	Orange peel	Apple core	Bread	Crackers	Banana Peel
Monday - Date	*Write observations…..*				
Wednesday					
Friday					
Monday					
Wednesday					
Friday					

Mouldy Oldies – Experiment B – With Soil

Day	Orange peel	Apple core	Bread	Crackers	Banana Peel
Monday –Date	*Write observations…..*				
Wednesday					
Friday					
Monday					
Wednesday					
Friday					

In both experiments, which materials changed the most over the two weeks? The materials in the jars show signs of decay because of the action of bacteria and moulds – where do these come from? What happened to the crackers in the jar without soil? If food waste is put in landfill where it could be buried dry and without soil nearby, how fast would it decompose compared to if it was properly composted?

Bottled compost

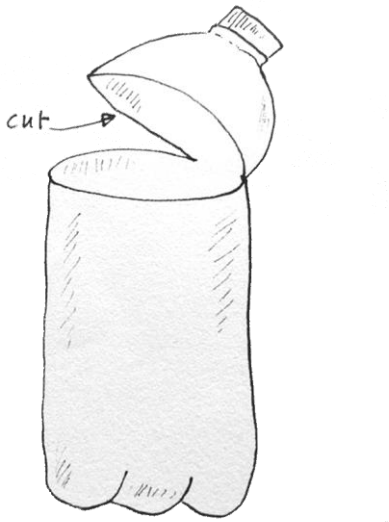
In this practical activity, students make compost in a clear plastic bottle and observe the process of composting.

Before the activity

Before this activity, each child will need to have provided an empty 1 or 2 litre plastic soft drink or juice bottle (without inbuilt handle) and lid. In preparation for the activity, using scissors or a knife, the teacher or aide should cut each bottle 30mm from the lid, leaving 20mm uncut, which will act as a hinge between the top and bottom sections of the bottle (see diagram below).

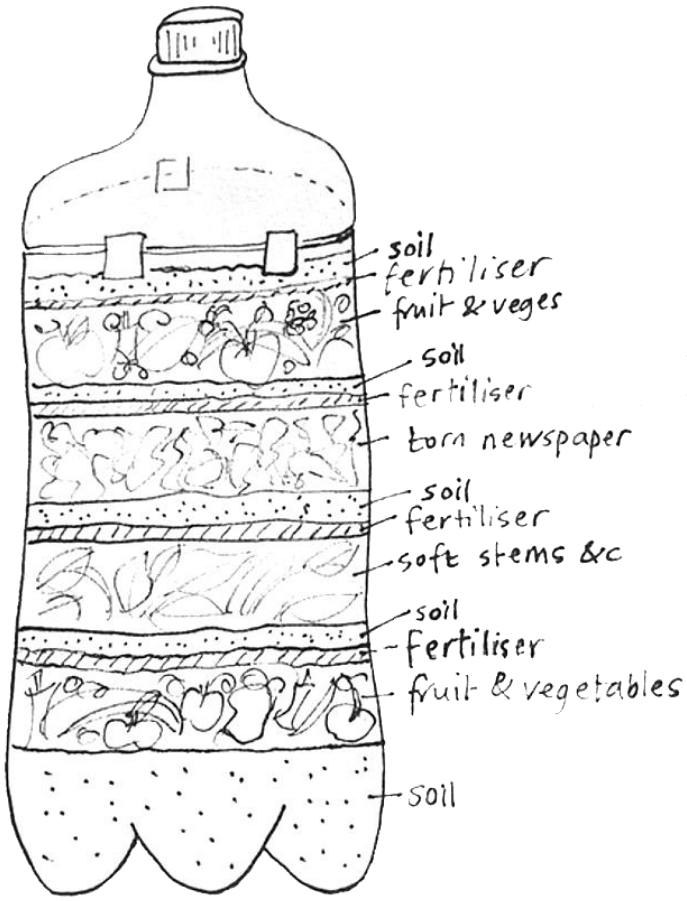
Each student will need

- A one or two litre plastic soft drink or juice bottle (without inbuilt handle) and lid, pre-cut
- Masking tape
- A spoon
- One cup of torn newspaper
- One cup of grass clippings, leaves or soft stems
- Two cups of well-chopped colourful fruits and vegetables (such as apples, orange and tomatoes)
- One cup of garden soil
- A dessertspoon of organic fertiliser such as blood and bone
- A spray bottle of water
- Two felt marking pens of different colours



Method

1. Push the top part of the bottle back to allow for filling of the bottle. Place 20-30mm of soil into the bottle, then add 20-30mm of fruit and vegetables and a sprinkle of fertiliser.
2. Continue to add soil, organic material, fertiliser, soft stems, newspaper as per the following diagram, until the bottle is almost two thirds full and below the cut. Spray the top of the surface with water.
3. Place the top over the base, then tape the top to the base using the masking tape. Make sure the lid is screwed onto the bottle.
4. With a felt pen, draw lines on the bottle to show the levels of organic material and soil. Write the starting date on the bottle, near the lid.
5. Make observations every day, or when possible, for a few weeks. Record any changes in size, shape and colour of the plant material, and observe any fungi or small creatures that may be living on the plant material.
6. After three weeks, with the different coloured marker, mark the new levels of soil layers and organic material on the bottle.



Observe how much the top of the soil changed in comparison to the mark on the bottle after three weeks and speculate as to how this happened. Later you could vary the same experiment (by one variable at a time) to see if there are differences in the resulting compost. Suggestions are:

- Finely chopped plant material versus coarsely chopped
- Dry conditions versus moist
- With and without the first layer of soil
- Garden soil versus sand
- Different types of plant material

Observe and explain the differences between the experiments. Remind students that under dry conditions in a landfill, food waste will rot very slowly.

Another variation of this experiment is to place a thermometer deep inside one of the bottles of freshly made compost, then measure the room temperature. Measure the temperature every two hours during school days, for two days and measure the results. It is possible that there will be a temperature difference of 5-6 °C between the compost and room. Alternatively keep the bottle in a soft Eski or insulated box and measure the difference in temperature between the bottle in the Eski and the room temperature – the difference could be even greater than having the bottle in the Eski versus not.

A large compost model in the classroom

Like the bottled compost, a large compost model could be set up in the classroom, to show decomposition. This should not cause any odours, unless it becomes too wet.

You will need

- A glass or plastic aquarium
- Organic material such as fruit and vegetable peelings, shredded newspaper, soft leaves
- Marker pen
- Spray bottle of water

Method

Add layers of organic material, fertiliser and soil to the aquarium, as per bottled compost. Mark the level of the top of the layers at the start of the experiment. Leave the compost aquarium undisturbed, except for spraying water over the heap if it dries out. Do not over-water, or it will smell. Photograph the experiment weekly.

After one month, mark the new levels of the layers of waste material. Ask the students to explain why.

Recall why unavoidable food waste is composted, and how composting can be done well to avoid food waste, odour, landfill and the generation of methane.

Increasingly, local councils around Tasmania are providing kerbside Food Organics and Garden Organics (FOGO) waste collection systems for householders. This waste is collected and sent to large scale composting operations.

Lesson 6 – Extension 1 – Keeping chickens

Keeping chickens is an excellent way of learning about animal husbandry, the biology of a farm animal and reducing unavoidable food waste. If students have a role in designing and constructing a 'chook house', this could also meet elements of the Design and Technologies curriculum.

Meets Design and Technologies ACTDEK021 Investigate how and why food and fibre are produced in managed environments and prepared to enable people to grow and be healthy

Design and Technologies ACTDEP024 Critique needs or opportunities for designing, and investigate materials, components, tools, equipment and processes to achieve intended designed solutions

Design and Technologies ACTDEP025 Generate, develop and communicate design ideas and processes for audiences using appropriate technical terms and graphical representation techniques

Design and Technologies ACTDEP026 Select appropriate materials, components, tools, equipment and techniques and apply safe procedures to make designed solutions

Design and Technologies ACTDEP027 Negotiate criteria for success that include sustainability to evaluate design ideas, processes and solutions

Science ACSSU043 Living things have structural features and adaptations that help them to survive in their environments

Sustainability OI.5-OI.9 In summary, the sustainability of ecological, social and economic systems is achieved through informed individual and community actions that value equity and fairness across generations

Teacher Notes

If you have the space, keeping a few chickens in your school can help the school to:

- get rid of unavoidable food scraps and reduce the amount of food waste going to landfill
- supply fresh eggs to those in need in the school community
- create a source of organic fertiliser for the school garden
- educate the students about caring for animals and where food comes from
- learn about the biology and reproduction of chickens

And students might enjoy observing the flock—chickens have lots of personality!

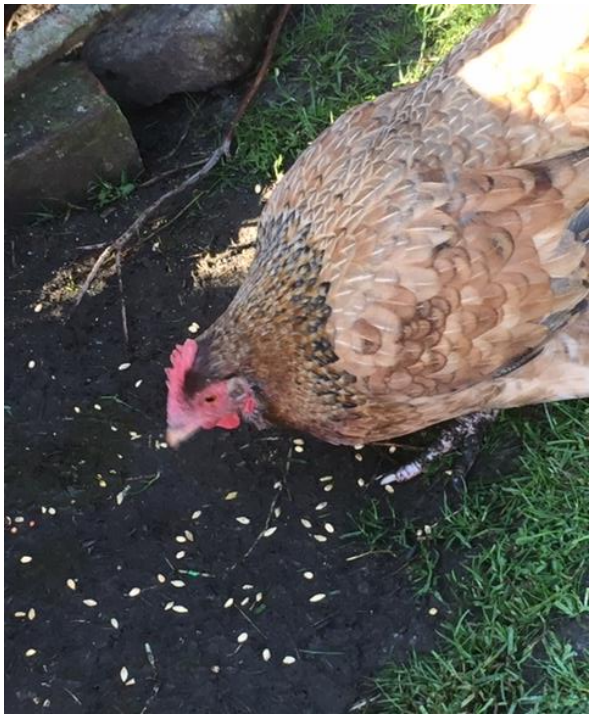
Keeping chickens at school would require infrastructure – a 'chook house', grain storage bins, a nearby water supply and an enclosed area for the chooks to forage. Designing and building the chook house and yard could be a project for Design and Technologies. Alternatively, there could be an opportunity for students to visit a household within walking distance of the school where chickens are kept, to see how they are cared for.

If the school was to have chickens, ensure that they could have self-feeders for the weekends and that in school holidays someone could care for the chickens, either at school or at their home.

Method

There are many online resources about keeping chickens, such as https://www.abc.net.au/news/2017-09-16/how-to-keep-backyard-chickens-healthy-and-happy/8940534 and many websites detailing how to build a chicken coop. Ask your students to design a chicken coop with the needs of chickens in mind. For example, a place to roost at night, safety from dogs and cats, shelter from the weather, a place to forage and a place to lay eggs.

Ensure that food scraps derived from each classroom and from the school canteen are given to the chickens.



The Tasmanian Department of Education has implemented the Tasmanian Agricultural Education Framework - Grow, Make, Protect, providing an overview of agricultural education from Kinder to Grade 12. This framework encourages and supports self-identified schools to become leaders in agricultural education. Those schools and others embed curriculum resources on food and fibre production, develop awareness and interest in agriculture and an awareness of local industry contexts.

Tasmanian Government