

Teacher's Guide

- **Food Waste Recycling Lesson**
- **Food Waste Recycling Lesson Bolt-On**



Before You Start

This lesson should only be delivered in schools whose Council area collects food waste. You should check that food waste can be recycled by using the **Recycling Locator**:

- 1** Click to open the [Recycling Locator](#)
- 2** Click **How to Recycle at home**
- 3** Enter your school's town or postcode
- 4** Find out if food waste can be recycled in your school's council area

It would also be useful for the teacher to know information about recycling food waste in the school's Council area. To find out where to get a food waste caddy, where to get caddy liners (there may be a charge for these) and which outdoor container food waste goes in, please contact your school's Council.

Introduction

This Teacher's Guide contains background information to help you deliver the Food Waste Recycling Lesson (with optional bolt-on) to your class. This lesson is intended for primary school pupils in Scotland aged 7 – 11. The Food Waste Recycling Lesson has been designed to take approximately 35 minutes and the optional bolt-on to take up to an additional 25 minutes to deliver.

The aim of this lesson is to educate pupils on food waste recycling. It intends to inform children of Zero Waste Scotland's relevant key messages which include: why we should recycle food waste, what food waste can be recycled and the food waste recycling journey (including statistics about food waste recycling). To support you in the delivery of this lesson, this guide covers the information in order to give you confidence in the material and should be used alongside the other resources in this pack. The information in this guide follows the same order in which the lesson is designed to be delivered along with supplementary information. The sections include:

- 1** Food Waste Recycling Lesson
- 2** Food Waste Recycling Lesson Bolt-On
- 3** Lesson Links with Curriculum for Excellence
- 4** Potential Links with Curriculum for Excellence
- 5** Additional Zero Waste Ideas for Your School

Food Waste Recycling Lesson

Aspects in this lesson

- Food waste facts
- Why recycle food waste
- What types of food waste can I recycle?
- Food Waste Recycling Journey
- Food Waste Recycling Quiz (including a suggested marking scheme)

Activities in the lesson are generally self-explanatory.

Class settles, topic is introduced, and learning intentions & success criteria are covered

Learning intentions and success criteria should be covered by displaying them to pupils using the Food Waste Recycling Lesson PowerPoint slide 2 and having the teacher read them to the class. Alternatively, these could be read out by pupils if they are able.

Think-Pair-Share

Think-Pair-Share is a simple cooperative learning activity that helps to assess prior knowledge on a topic. This three-step technique is delivered as follows:

- 1) Pupils work individually to answer the three food waste recycling questions writing their answers on their mini-whiteboards with whiteboard pens. – 1 minute**
To encourage participation, pupils may be invited to hold up their mini-whiteboards for the teacher at the end of the minute. This step allows pupils to form their own ideas.
- 2) Pupils work with a partner to share their answers with one another; pupils can add to their own answers on their mini-whiteboards. – 1 minute**
This step allows pupils to articulate their thoughts and consider others' ideas.
- 3) The teacher invites pupils to share their ideas with the class. – 1 minute**
Having rehearsed their answers with a partner, pupils should be more comfortable sharing their refined ideas with the class.

Education Scotland considers Cooperative Learning to be an effective approach to learning. To read more about cooperative learning please click [here](#).

Why Recycle Food Waste

This section involves a teacher-led discussion on why we should recycle food waste.

Recycling food waste reduces landfill

There are over 1,500 landfill sites in the UK, and in 2001, these sites produced a quarter of the UK's emissions of methane, a powerful greenhouse gas. When we recycle food waste, we stop food from entering landfill sites where it rots and releases greenhouse gases like methane. This means that we contribute less to climate change.¹

Recycling and reducing food waste saves resources

Food waste can be recycled into energy or fertiliser. This will be covered in more detail in the Food Waste Recycling Journey.

In addition, the amount of food we throw away is a waste of resources. Just think about all the energy, water and packaging used in food production, transportation and storage. Food is transported to shops and markets, including the local supermarket; it is also sent around the world in planes, ships, trains and lorries. This all goes to waste when we throw away food.

If we all stopped wasting the food which could have been eaten, it would have the same CO₂ impact as taking 1 in 4 cars off UK roads.

Cheese is a good example – feeding and milking the cows, cooling and transporting the milk, processing it into cheese, packing it, getting it to the shops, keeping it at the right temperature all the time. If it then gets thrown away it will most likely end up in a landfill site, where, rather than harmlessly decomposing as many people think, it rots and actually releases methane, a powerful greenhouse gas.²

Recycling and reducing food waste saves money

It costs money to send food waste to landfill. Money is saved when food waste is recycled instead.

In addition, over a year the average family throws away around £700 of food shopping – equivalent to an annual utility bill. Reducing food waste could save £60 a month.³

What types of food waste can I recycle?

The teacher may wish to prompt pupils to remember the types of food waste for the activity to follow. In general cooked, uncooked and out of date food, as well as peelings, can all be recycled.

1 www.recycleforscotland.com (2016)

2 www.recycleforscotland.com (2016)

3 www.recycleforscotland.com (2016)

The following types of food waste can be recycled by councils that collect food waste:

- Dairy (cheese, yogurt, etc.)
- Fruit (fruit peelings, fruit that has gone off, cores, etc.)
- Chicken and bones (cooked or uncooked)
- Rice and pasta (cooked and uncooked as well as other grains and pulses)
- Fish (including bones)
- Plate scrapings and leftovers from meals (although children are encouraged to eat as much as they can or ask for less)
- Teabags and coffee grounds
- Cakes, pastries, biscuits and other baked goods
- Leftovers from preparation (egg shells, vegetable peelings, etc.)
- Bread, crackers, oatcakes, etc.
- Vegetables
- Meat (lamb, beef, etc. cooked and uncooked)

The following items cannot be recycled with food waste:

- Food packaging
- Liquids
- Oils
- Litter or household waste
- Dog waste or cat litter

Activity: Food Waste Diary

This section is intended to make pupils aware of the food waste they are producing and what they are doing with this waste.

Split the class into groups of three. As a group pupils can write the answers to the questions on their mini-whiteboards, or alternatively on paper to keep a record. Questions with prompts for pupils are:

- 1)** What did you eat yesterday? For breakfast, lunch, dinner, snacks.
- 2)** What food did you leave? Sandwich crusts, banana skin, plate scrapings etc.
- 3)** How did you get rid of your food waste? Put it in the rubbish bin, food waste caddy etc.
- 4)** Are you surprised by how much food you waste?

Pupils can discuss the answers with their group members. This should be followed by a class discussion on pupil answers including asking pupils if they are surprised by how much food they waste.

The teacher may wish to extend the questions to ask what stopped pupils eating food (didn't like it, served too much, etc.) and what they could do differently if food waste was put in the rubbish bin (ask their parent/carer if they could use a food waste caddy, etc.).

How Do I Recycle Food Waste?

This section involves a video and a teacher-led discussion on how to recycle food waste at home.

Food Recycling Tip Video (1m:48s)

This video covers themes of food waste recycling, healthy eating and how to get children involved in food waste recycling at home.

Steps to Recycle Food Waste at Home

The following steps should be followed:

- **Step 1** - At home, put a new liner into your caddy
- **Step 2** - Put food waste into your caddy
- **Step 3** - When the liner is nearly full, tie and remove it
- **Step 4** - Empty the full liner into your outdoor container regularly

Food Waste Recycling Journey

Pupils to watch the 'Food waste – how is it recycled' video (1m:21s) and learn what happens to food waste when it is recycled.

Video Transcript

Waste food has a big impact on climate change as most of it ends up in landfill sites where it rots and releases methane into the environment.

The best thing we can do with our food is enjoy it but some waste like egg shells, banana skins and tea bags is inevitable.

Many Councils now collect food waste which can be recycled in one of two ways. The first, In-vessel composting, involves mixing food waste with garden waste - shredding it and then composting it in a tunnel for around 2-4 weeks (temperatures of up to 70°C speed up the process and kill off any harmful microbes) - which is then left for a further one to three months with regular turning and checks to ensure quality before being used as soil conditioner.

The second method, Anaerobic Digestion, uses microorganisms called methanogens to break down food waste, animal manure and energy crops in the absence of oxygen inside an enclosed tank. As it breaks down it gives off Biogas which is collected and used to generate electricity, heat or transport fuels. It also creates bio fertiliser that can be used in farming and land regeneration.

Ask your council if they recycle food waste and which foods you can include. Visit recyclenow.com for tips on recycling more of your waste.

Activity

The three steps of the food waste recycling journey are given in the incorrect order:

- **A** Food waste is recycled into energy or fertiliser
- **B** Food waste is collected at the kerbside
- **C** Food waste is taken to a recycling facility

Pupils are to study the steps and try to rearrange the pictures with the words into the correct order. Pupils will then write the associated letter (of the pictures with the words) in the correct sequence on their mini-whiteboards. The correct sequence is:

- **B** Food waste is collected at the kerbside
- **C** Food waste is taken to a recycling facility
- **A** Food waste is recycled into energy or fertiliser

Food Waste Recycling Action

This task is to encourage pupils to help recycle more food waste at home. Each pupil will complete an action card by writing at least one action. Pupil responses could be: keep peelings aside when they help to prepare food, scrape anything left on their plate into the caddy after dinner, place their apple cores into the caddy etc.

Pupils should be encouraged to take these cards home to their parent(s)/carer(s). To follow up pupils should be encouraged to discuss in class the following week how they are getting on with their actions.

Food Waste Recycling Quiz

This short quiz will help to reinforce the key food waste recycling messages. The quiz may be carried out as formative assessment by pupils writing their answers on their mini-whiteboards or as summative assessment by pupils writing their answers on paper so that a record may be kept. The quiz is out of a total of 5 marks.

1) Give a reason why we should recycle food waste. – 1 mark

[Pupils to list one of the following for 1 mark.]

- i) Recycling food waste reduces landfill
- ii) Recycling food waste saves resources
- iii) Recycling food waste saves money

2) Name 3 types of food waste that you can recycle in your home. – 5 marks

[Pupils to list any 3 of the following for 1 mark each.]

- Dairy (cheese, yogurt, etc.)
- Fruit (fruit peelings, fruit that has gone off, cores, etc.)
- Chicken and bones (cooked or uncooked)
- Rice and pasta (cooked and uncooked as well as other grains and pulses)
- Fish (including bones)
- Plate scrapings and leftovers from meals
- Teabags and coffee grounds
- Cakes, pastries, biscuits and other baked goods
- Leftovers from preparation (egg shells, vegetable peelings, etc.)
- Bread, crackers, oatcakes, etc.
- Vegetables
- Meat (lamb, beef, etc. cooked and uncooked)

3) When food waste is recycled, what can it be recycled into? – 1 mark

[Pupils to list one of the following for 1 mark.]

- i) Food waste can be recycled into fertiliser
- ii) Food waste can be recycled into energy or biogas (to generate electricity, heat or transport fuels)

Recycling Lesson Bolt-On

This optional bolt-on is designed to be delivered in 25 minutes and contains additional activities to support pupil learning of the Food Waste Recycling Lesson. If the Food Waste Recycling Lesson Bolt-On is to be used, insert the additional activities after the 'Food Waste Recycling Journey Activity' and before the 'Food Waste Recycling Quiz'.

Food Waste Facts

This section involves a teacher-led discussion on food waste recycling facts.

Almost half of the total amount of food we throw away in Scotland comes from our homes. We throw away 630,000 tonnes of food and drink every year and more than half of this could have been eaten.

It costs Scotland £1 billion a year, it costs the average home about £470 per year.¹

Pupils may be keen to share what they know about food waste recycling: about how much food is wasted in Scotland or the UK, about types of food that are wasted or about how much it costs; pupils may wish to discuss what could be done with this money instead.

The foods we waste the most are fresh vegetables and salad, drink, fresh fruit, and bakery items such as bread and cakes.

Older pupils who are more involved in meal preparation at home may wish to discuss reasons why we throw away good food – there are two main reasons: we cook or prepare too much or we don't use it in time.

Food Waste Top Tips

Love Food Hate Waste has lots of hints and tips to help you and your family better plan, portion and store your food, as well as lots of great recipes to help you use up your leftovers. For older pupils that may be involved in cooking/shopping etc. at home, you may wish to discuss how to reduce food waste.

The most relevant Love Food Hate Waste tips for pupils are as follows:

1) It pays to plan

- Eat seasonal food. Try apples, pears and root vegetables in winter and salads, strawberries and other soft fruit in the summer months.

¹ scotland.lovefoodhatewaste.com (2016)

2) Know your dates

- The 'use by' date is key in terms of food safety. Never eat food after this date. 'Best before' dates refer to quality rather than food safety.

3) Smart storage

- Storing fresh fruit and veg in the fridge in the original packaging keeps them fresher for longer, up to two weeks longer in fact.

4) Perfect portions

- Make sure you use the right portions – only make or ask for what you are going to eat.

5) Lovely leftovers

- Leftovers and forgotten foods are too good to end up in the bin.

To discover other top tips to reduce food waste please visit scotland.lovefoodhatewaste.com.

Activity: Food Waste Recycling Facts

This activity is designed to allow pupils to be creative and artistic. Pupils will be numbered off 1 – 4 by the teacher. Four food waste recycling facts will appear on the screen: a pupil that has been designated '1' will be assigned Food Waste Recycling Fact 1. Pupils may use their mini-whiteboards to draw a picture that describes their fact and they will have 5 minutes to complete this task. If the teacher wishes to extend this activity further or to have a record of pupil work then paper and pens can be used instead. After 5 minutes, pupils will pair up, will show their picture and tell their fact to their partner.

Depending on the age and ability of the pupils, the teacher may wish to differentiate this task by assigning more complex facts to more able pupils. A selection of facts from the list below may be used:

- Wasting food costs the average household £470 a year, the equivalent of around £39 a month.
- If we all stop wasting food that could have been eaten, the benefit to the planet would be the equivalent of taking 1 in 4 cars off the road.
- We throw away £93 million of dairy waste every year – that's enough for everyone in Scotland to have milk on their cereal for the next 6 months.
- We throw away £90 million of bakery waste every year – that's enough to make everyone in Scotland a sandwich a day for the next 6 months.
- We throw away £130 million fresh meat and fish waste every year – that's enough to make everyone in Scotland a bacon buttie every Saturday for the next year.

- £70 million of fresh fruit waste is thrown away every year – that's the same as an apple a day for every school child and teacher in Scotland for a year and a half.
- We throw away an estimated 70 million litres of drinks every year – that would fill 175,000 bathtubs, right to the brim.
- Almost 50% of all food waste in Scotland comes from households.
- We throw away 630,000 tonnes of food and drink from our homes every year in Scotland, and more than half of this is food and drink we could have eaten.
- One-third of the world's food is wasted.
- Every year in Scotland we throw away 11 thousand loaves of bread.
- Every year in Scotland we throw away 165,000 cans of fizzy juice.
- Every year in Scotland we throw away milk from 1300 cows.²

This task may be extended to create artwork that shows pupil development in using visual elements and concepts (line, shape, texture, etc.).

This task may also be extended to develop pupil numeracy. Each food waste recycling fact could contain a number (or implied number) which could be used to make further calculations. For example, "Wasting this food costs the average household £470 a year, the equivalent of around £39 a month." could be used to help pupils calculate how much food waste costs the average household per week.

Game: What types of food waste can I recycle?

For this game split the class into four groups. Each group will use a mini-whiteboard and whiteboard pen to write down as many types of food waste as they can e.g. eggshells. The first group to correctly write ten types of food waste wins. The following types of food waste can be recycled:

- Dairy (cheese, yogurt, etc.)
- Fruit (fruit peelings, fruit that has gone off, cores, etc.)
- Chicken and bones (cooked or uncooked)
- Rice and pasta (cooked and uncooked as well as other grains and pulses)
- Fish (including bones)
- Plate scrapings and leftovers from meals
- Teabags and coffee grounds
- Cakes, pastries, biscuits and other baked goods
- Leftovers from preparation (egg shells, vegetable peelings, etc.)
- Bread, crackers, oatcakes, etc.
- Vegetables
- Meat (lamb, beef, etc. cooked and uncooked)
- Any other suitable answer

If pupils are struggling with this activity you may wish to use a time limit e.g. three minutes. In this case the group with the most correct answers at the end of the time limit wins.

Pupil Reflection on the Food Waste Recycling Lesson

The pupil reflection should be completed by each pupil in order that they can evaluate their learning and skills. This can be found in a separate document entitled: Pupil Reflection on Food Waste Recycling. Copies of the reflection can be printed for each pupil if the teacher would like to have a record kept and these could be included in pupil learning logs or similar. Otherwise, these may be completed using mini-whiteboards.

On completion of the reflection, the teacher may wish to discuss pupil answers with the class.

Lesson Links to Curriculum for Excellence

The Food Waste Recycling Lesson is interdisciplinary and covers themes for global citizenship such as education for citizenship and sustainable development education.

When this lesson is delivered in a primary school, all learners will have the opportunity to develop in the four capacities of Curriculum for Excellence (CfE). Pupils will be able to: use literacy and numeracy skills to develop as successful learners; achieve in different areas of activity to become confident individuals; evaluate environmental issues as responsible citizens; and communicate in different ways as well as work in partnership showing that they are effective contributors. In accordance with CfE's framework for assessment, appropriate learning intentions and success criteria have been included.

The pack incorporates the topic of food waste recycling into curriculum areas including:

- Expressive Arts;
- Health and Wellbeing;
- Languages (Literacy and English);
- Mathematics;
- Sciences;
- Social Studies; and
- Technologies.

The teaching resources in the food waste recycling pack are intended for pupils aged 7 to 11 and have been linked to applicable CfE experiences and outcomes at the second level. These resources could be tailored for younger pupils and the outcomes adapted for the first level. Some or all of the outcomes may be covered depending on how each resource is used/ extended (e.g. to what depth) and the ability level of the pupils. This pack has been linked to the following curriculum areas and associated outcomes:

Curriculum Area	Outcome
Expressive Arts – Art and design	I can create and present work that shows developing skill in using the visual elements and concepts. EXA 2-03a
Health and wellbeing – Mental, emotional, social and physical wellbeing	(Social wellbeing) I value the opportunities I am given to make friends and be part of a group in a range of situations. HWPB 2-14a
Languages – Literacy and English	(Finding and using information) As I listen or watch, I can identify and discuss the purpose, main ideas and supporting detail contained within the text, and use this information for different purposes. LIT 2-04a

Curriculum Area	Outcome
Mathematics – Number and number processes	Having determined which calculations are needed, I can solve problems involving whole numbers using a range of methods, sharing my approaches and solutions with others. MNU 2-03a
Sciences – Topical Science	I can report and comment on current scientific news items to develop my knowledge and understanding of topical science. SCN 2-20b
Social studies – People, place and environment	I can discuss the environmental impact of human activity and suggest ways in which we can live in a more environmentally-responsible way. SOC 2-08a
Technologies – Technological developments in society	Having analysed how lifestyle can impact on the environment and Earth's resources, I can make suggestions about how to live in a more sustainable way. TCH 2-02a

Potential Links with Curriculum for Excellence

In addition to the links with Curriculum for Excellence listed, the following are curriculum areas that could link in with the topic of food waste recycling if developed:

Curriculum Area	Outcome
Health and wellbeing – Food and Health	(Nutrition) I enjoy eating a diversity of foods in a range of social situations. HWB 2-29a
Health and wellbeing – Food and Health	(Nutrition) By applying my knowledge and understanding of current healthy eating advice I can contribute to a healthy eating plan. HWB 2-30a
Health and wellbeing – Food and Health	(Safe and hygienic practices) Having learned about cleanliness, hygiene and safety, I can apply these principles to my everyday routines, understanding their importance to health and wellbeing. HWB 2-33a
Health and wellbeing – Food and Health	(Food and the consumer) Through exploration and discussion, I can understand that food practices and preferences are influenced by factors such as food sources, finance, culture and religion. HWB 2-34a
Health and wellbeing – Food and Health	(Food and the consumer) When preparing and cooking a variety of foods, I am becoming aware of the journeys which foods make from source to consumer, their seasonality, their local availability and their sustainability. HWB 2-35a

Additional Zero Waste Ideas for Your School

In addition to this Food Waste Recycling Lesson and Food Waste Recycling Lesson Bolt-On, there are additional ways that you can incorporate zero waste ideas into your school. These include:

- Delivery of the 'Recycle for Scotland' Recycling Lesson;
- Arranging a visit to your local recycling centre;
- Request a visit from your local waste officer/ recycling assistant;
- Organise a litter pick;
- Organise a waste audit;
- Make a recipe from the Love Food Hate Waste website as a class - please visit scotland.lovefoodhatewaste.com;
- Recycling at school; and
- Get involved with Recycle Week which takes place every year in June.

For further information please contact Jenny Fraser at Zero Waste Scotland's Local Authority Communications Team by emailing jenny.fraser@zerowastescotland.org.uk.