Make a Meal of It Mission

This resource pack will help your school/class make the most of your food and reduce food waste!

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Enhanced learning for all

Transition Bro Gwaun
a community initiative

With support from

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Waste less Save more

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Cronfa Amaethyddol Ewrop ar gyfer Datblygu Gwledig: Ewrop yn Buddsoddi mewn Ardaloedd Gwledig
European Agricultural Fund for Rural Development: Europe Investing in Rural Areas
Llywodraeth Cymru
Welsh Government

Cyngor Sir Penfro - Pembrokeshire County Council

Make a Meal of It Mission

Introduction

This resource aims to engage, educate and empower young people in order to make responsible choices about the food on their plates. This will:

- Save money at school and home (£60 every month for the average UK household)
- Minimise food waste which leads to local and global benefits (economic, social and environmental)

Through engaging education we can enable pupils and realise the huge benefits that small changes - to the way we buy our food, store it, cook it and dispose of it - can make.

Contents

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National Curriculum

This resource has been created in order to make food - and the reduction of waste – a relevant theme in the classroom. Embedded in each task are links to the National Curriculum, Literacy and Numeracy Framework, and Digital Competence Framework that develop skills and understanding in a cross curricula approach. Reading, writing and oracy skills are all practiced, along with problem solving and using ICT equipment (including simple programming and film making).

This resource is full of creative, easy to use activities that will have your pupils thinking more deeply, revising and extending their skills and knowledge whilst getting the opportunity to enjoy Science, Geography, History, Art and Music through the lens of Education for Sustainable Development – and all based on real life problems which pupils can make a real difference to. With simple to follow instructions, extension ideas, web links and photocopiable worksheets, it provides everything you need to deliver a rich learning experience.

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Make a Meal of It Mission

Classroom pack

In order to get the most out of the Make a Meal of It project, this pack offers ideas and activities for you to support your pupils in developing their skills through the cross curricula theme of food. The pack is divided into three sections. The worksheets are also available in a separate document for printing.

To start, the purple Baseline Data section gets pupils to begin the practical activities of recording data associated with the food wasted at your school – *it's important this is done **before** any teaching about the topic is undertaken*.

Next, the light blue Action Plan section is designed to set targets and provides helpful templates for you to use in your campaign to reduce food waste.

Finally, the dark blue Learning Tools section provides lesson plans and activities linked to the curriculum. This develops ideas to inspire change in your school and signposts routes to further learning.

This icon highlights points where children could be involved with the decision making and direction of investigations.

This icon highlights links to the Digital Competence Framework.

This icon indicates a separate worksheet and/or additional materials are available.

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Baseline data

It is important that food waste data is collected before the **Make a Meal of It Mission** is launched. This allows more accurate collection to be undertaken without pupils already thinking too much about what they are throwing away.

This section of the **Make a Meal of It Mission** pack provides worksheets which support this investigation (worksheets also available as Word documents). Pupils will be asked to record, analyse and evaluate data about kitchen waste. This information will then be used to set targets for their action plan in order to effectively reduce food waste, save money and make a positive impact on local and global environmental problems.

Collecting baseline data

Aim:
To gather baseline data about the food that is thrown away at school in order to use it in cross curricula learning later in the project.
NB Data for single classes or whole schools could be collected.

Instructions:
1. Pupils must decide how to collect data about the amount of food waste produced at lunch time at school.

They could:

- Weigh the total food waste at the end of the lunch period, and/or
- Separate out the food waste to be weighed into different food groups e.g. main and pudding, and/or
- Weigh each class/key stage food waste separately so that data between classes/key stages can be compared e.g. Infants (FS & KS1) vs Juniors (KS2).

2. Pupils weigh the food waste produced at lunch time over a week and record the data – see page 9 for 'The First Great Food Waste Weigh In' worksheet. This data could be input into a database.

Extension:
Use the 'What food is being thrown away?' worksheet on page 10 to think about what is being thrown away - the proportion of which foods. This will allow more precise consideration of 'how' to reduce food waste if pupils can identify particular trends of what is liked and disliked, or if food portions are too large.

The First Great Food Waste Weigh In

Date	What is on the menu today?	Infants (weight of food waste in Kg)	Juniors (weight of food waste in Kg)	Total (weight of food waste in Kg)

Mean weight =

Mode weight =

Median weight =

What food is being thrown away today? Date:

Food description	Estimated percentage of the waste	Notes/ diagram

Action Plan

Having got the baseline data it's now time to create an action plan – what are you going to do? See page 12 for lots of ideas for how you can try and reduce food waste. Page 13 provides an Action Plan template for you to fill out so you can keep track of what you are doing.

Top Tips for Action Plans:

- Use the results from your Baseline Data to set targets – what can you improve?
- Children and staff should write it together
- Make your plan achievable
- Try and spread the load – don't leave it to just one person to do everything.
- Spread out the activities over time
- Build in times where you can review how well you are doing and don't be frightened to change the plan if it's not working!

The writing and management of the Action Plan could be led by your School Council or Eco School Committee. For lots of great ideas take a look at the Fab Food Step 1 (or here).

If you wish to launch the learning in a school assembly, these videos could be shared - highlighting some of the problems:
https://www.youtube.com/watch?v=IoCVrkcaH6Q&feature=youtu.be
https://www.youtube.com/watch?v=7SqLz4O32vc&feature=youtu.be or have a look at the Fab Food assembly plan (or here).

We have also included:

- a template for a letter home in order to raise awareness with parents about the project,
- an example of a pupil questionnaire that you may wish to use / amend,
- instructions and resources required to help with the second food waste weighing activity. This data collection should come at the end of the project in order to find out how much food waste you are now saving.

What could you do to make a difference to food waste at your school? Here are some ideas for your Action Plan….

- prepare trendy name labels for fruit in Nursery and KS1 (eg 'X Men, See-In-The-Dark Carrots')
- design a certificate for the class or group with the least wasted food / fruit (linked to existing reward or house point systems)
- design a certificate for the class or group with the highest number who finish their school dinners (linked to existing reward or house point systems)
- create displays in the dining hall on food waste and how to eat healthily, based on that day's menu
- having talked about it with catering staff, send out a questionnaire to each class on likes and dislikes for fruit, drinks and school dinners
- create a survey for parents and children, to find out the most popular fruits
- set up a fruit tasting day
- have a themed day to try new food and celebrate different sorts of food
- cut fruit into smaller pieces for Nursery and Reception
- buy a smoothie maker and decide who gets offered the smoothies, when and where
- appoint fruit monitors to collect fruit that is almost over-ripe – they then share it out with other classes or it goes to the smoothie maker
- appoint monitors to collect up any unused milk for the smoothie maker (this can't be anything left in cartons)
- make a Bread Plan - freezing or refrigerating bread, using it as toast for the morning and so on
- agree with catering staff to give out second helpings to children
- agree with catering staff that students can ask for a small portion of foods they do not like or are new to them
- agree with catering staff to reduce portion sizes for some foods
- create a Composting Plan, possibly linked to a garden or eco club
- set up a School Dinners' Council to work with the Catering Manager to find out what the students like - and then adjust the menu
- set up a Cooking Club to encourage poor eaters and the ones who won't try new foods
- make a visit to a local restaurant, takeaway or supermarket to find out what they do with their waste food
- make an equipment list – fridges, smoothie makers, display materials, apple corers, cutting boards… what else?

Source: Sainsbury's Fab Food (or here)

Make a Meal of It Action Plan

What is the problem?	What are we going to do?	Who is involved?	When are we going to do it?	Have we been successful?
EXAMPLE Portions of mashed potato too large for Year 1	Talk to the cook to see if they could make portions smaller	School Council, Mrs Jones and Cook	Next week – Oct 23rd	Yes! Weight of mashed potato being thrown away has reduced by 1.2kg!

Example of a letter home

Dear Parent/Guardian

Children in year/class …… have been learning about food and the impact wasting food has. Did you know that most households in the UK could save about £60 every month on food if they ate everything they purchased. In fact, the food we throw away each year requires 250,000 billion litres of water to grow it and could have made hundreds of meals if it had been eaten, rather than thrown away!

This week children at our school have been involved in a project that aims to reduce the amount of food waste produced at lunch time in our school. Over the course of the week …… Kg of food were thrown away by children in our school canteen. We are working with everyone in our school, including catering staff, and hope that this will be reduced over the next 4 weeks. If you would like to take on the challenge to reduce your food waste at home here are our three top tips,

- Plan meals for the week and only buy ingredients you know you will use.
- Check your fridge is set between 3-5 °C as this is the most effective temperature to keep food fresher for longer!
- Keep any leftovers in sealed containers in the fridge and check out recipes for these delicious morsels.

We look forward to reporting on any changes we have made over the course of the term.

Many thanks for your support,

Year ….. / Class …..

Example of pupil survey for those having school meals

We would like to know what you think about our school dinners. Please answer these questions to help us.

1. How often do you have a school dinner?

Every day Most Days Once a week Occasionally

2. What is your favourite meal at school?

3. What is your favourite pudding at school?

4. What foods do you not like at school?

5. Do you think the portion sizes are:

Just right Too big Too small

6. How could the lunch time be improved at your school? (Think about the food, plates, eating hall arrangements, time allowed to eat, noise levels in the dining hall etc)

Collecting Comparative Data

Aim:

To gather data for comparison with base line data in order to find out whether food waste in school has reduced.

Instructions:

1.Pupils must collect data in the same way as the previous collection in order to make the investigation a fair test.

2. Pupils weigh the food waste produced at lunch time over a week and record the data – see page 17 for a worksheet.

3. Compare this data with the baseline data. Has there been a reduction in food waste? You could make graphs and charts to show the differences.

4. Celebrate your successes – tell pupils, staff and parents about what you have achieved.

Extension:

- Ask pupils to think about how food waste could be further reduced – which ideas could be used in a new action plan?
- Collect food waste data from around the school (compost bins from snack time) – use this to set further targets.

The Second Great Food Waste Weigh In

Date	What is on the menu today?	Infants (weight of food waste in Kg)	Juniors (weight of food waste in Kg)	Total (weight of food waste in Kg)

Mean weight =

Mode weight =

Median weight =

Learning Tools

Having collected baseline data and written your Action Plan you are now ready to raise awareness. The following resources have been designed to engage and enable pupils to think about food waste minimisation. You will find:

- Fascinating fact sheets to share - pages 20-23
- 6 lesson plans with associated resources and extension ideas for use in your classroom today:
    1. Getting connected - pages 24-26
    2. Where does our food come from? - pages 27-29
    3. Understanding food groups and choices (using simple algorithms) - page 30
    4. What is food waste? - pages 31-34
    5. Why do we throw it away? - pages 35-36
    6. Where does our food waste go? - page 37

•Welsh sentence openers and vocabulary associated with reducing food waste.

•Further ideas for projects in:

- •Literacy - pages 38-47
- •Numeracy - pages 48-49
- •Science - pages 50-54
- •ICT - page 55
- •History - page 56
- •Creative Arts - page 57

Your Catering Team are here to help...

At Pembrokeshire County Council, your School Catering Team can:

- help plan a visit from Lennie the Leek,
- work with you to prepare a lunch for parents / carers,
- provide information for parent evenings about schools meals,
- work with pupils to plan a menu that will be cooked as a school lunch option.

Remember your canteen staff are already working at reducing food waste and you can help! In your school,

- the cost of food is monitored termly
- your canteen staff will look at menu planning and portion control to help reduce waste and be more efficient.

Don't forget that as long as the Pembrokeshire County Council Catering Team have authorised a change to the planned menu, 'themed' days can be held whenever you like!

Fascinating Food Fact File #1

Around 5.3 million tonnes of food and drink is thrown away in homes every year!

To gather the ingredients for a processed pizza the food would have travelled 24, 598 miles – that's once around the world!

3 million slices of cheese are thrown away each year!

Out of every 4 carrots bought, 1 carrot is thrown away – that's a quarter of carrots ending up in the rubbish!

We spend £12 billion a year throwing away edible food – that's around £50 per family every month in the UK!

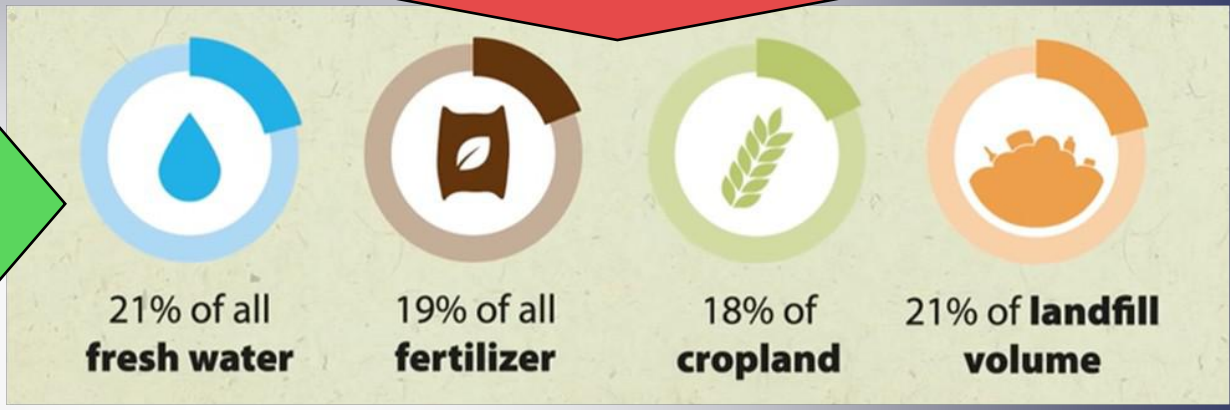
If you don't compost your food waste then it gets sent to landfill where it decomposes anaerobically (without any oxygen). This process produces methane – a gas that's 25 times more damaging to the environment than carbon dioxide and contributes to global climate change.

If we all stop throwing food away we could save the equivalent of 17 million tonnes of carbon dioxide a year – that's the same as taking 1 in 4 cars off the road.

Fascinating Food Fact File #2

Food loss and waste consumes...

Reducing food waste will have a global environmental impact



Food loss and waste come in different forms...

The way our shops buy and sell food needs to change. The way we use the food we buy needs to change!

Source: http://www.fao.org/documents/card/en/c/7e9dfc24-bba5-4c05-b75c-5a3073b2cfd3/

Fascinating Food Fact File #3

The top 15 wasted foods in the UK

(figures show portions wasted on average, daily)

- SLICES OF BREAD - 24,000,000
- GLASSES OF MILK - 5,900,000
- POTATOES - 5,800,000
- CARBONATED SOFT DRINKS ('Fizzy pop') - 4,200,000
- CHEESE - 3,300,000
- RICE AND PASTA - 2,000,000
- SLICES OF HAM - 1,900,000
- HOMEMADE MEALS - 1,500,000
- TOMATOES - 1,500,000
- SAUSAGES - 1,500,000
- BANANAS - 1,400,000
- APPLES - 1,300,000
- LOAVES OF BREAD - 1,300,000
- YOGHURTS - 1,200,000
- EGGS - 1,100,000

Source: Sainsbury's Fab Food (or here).

Great ways to reduce waste in the home…

- Make a shopping list and only buy what's on it.
- Don't throw away food just because it's past its 'Best Before' date – take a look, a sniff and if you think it's okay, a taste.
- Remember, it's only 'Use By' dates that you should keep to.
- Give smaller portions so less is left on the plate. Offer seconds!
- Wrap up any leftovers and keep it in the fridge – or freeze it for another time.
- Keep your fridge at 5 degrees Celsius – the most efficient temperature to keep food fresh.
- If you have a glut from a vegetable patch or fruit trees in the garden then freeze the food to use at a later date.
- Don't throw away the end of loaves of bread. Break them up and freeze them to use as breadcrumbs in lots of recipes!

Get inspired to use your leftovers…

Jamie Oliver's recipes http://www.jamieoliver.com/recipes/category/course/leftovers/

BBC Good Food Guide https://www.bbcgoodfood.com/recipes/collection/leftovers

Love Food Hate Waste https://www.lovefoodhatewaste.com/recipes

Fascinating Food Fact File #4

Many of the ingredients used in Pembrokeshire's school lunches comes from local producers and suppliers. Here is the list of the food providers for Pembrokeshire school lunches:

Food type	**Supplier**	**Location**
Fruit and vegetables	Jones and Davies	Carmarthen
Fresh frozen meat	Andrew Rees	Narberth
Meat products	Preseli Gold Sausage Co. Ltd	Feidr Castell, Fishguard
Groceries	Celtic Food Services	Pembroke Dock
Frozen food	Celtic Food Services	Pembroke Dock
Milk	Richard Mathias Dairies	Poyston Cross, Crundale
Bread	J.K. Lewis and Son	Preseli Stores, Crymych
Bottled water	Princes Gate	Narberth
Organic milk shakes	Daioni Ltd	Abercych, Boncath

Activity 1: Getting Connected

Aim:

To recognise that food is not just about the stuff we put on our plates. In fact the production, consumption and disposal of food is tied up with both local and global social, economic, political and environmental issues.

Instructions:

Provide pupils with a list of these 'Key Issues'; each on a separate slip of paper.

1. Ask pupils to imagine they are *President of the World*.
2. Read through the list of 'Key Issues' presented here and clarify any vocabulary.
3. Ask pupils to put the issues in order. Which would they tackle first and why? Do they see any links between the issues – by dealing with one issue will it simultaneously ease another? This activity allows pupils to develop their metacognition and gives the teacher an immediate AfL.

Discuss how the production, consumption and disposal of food may be able to alleviate some / many / all of these problems – see Key issues discussion ideas (page 25) for some details.

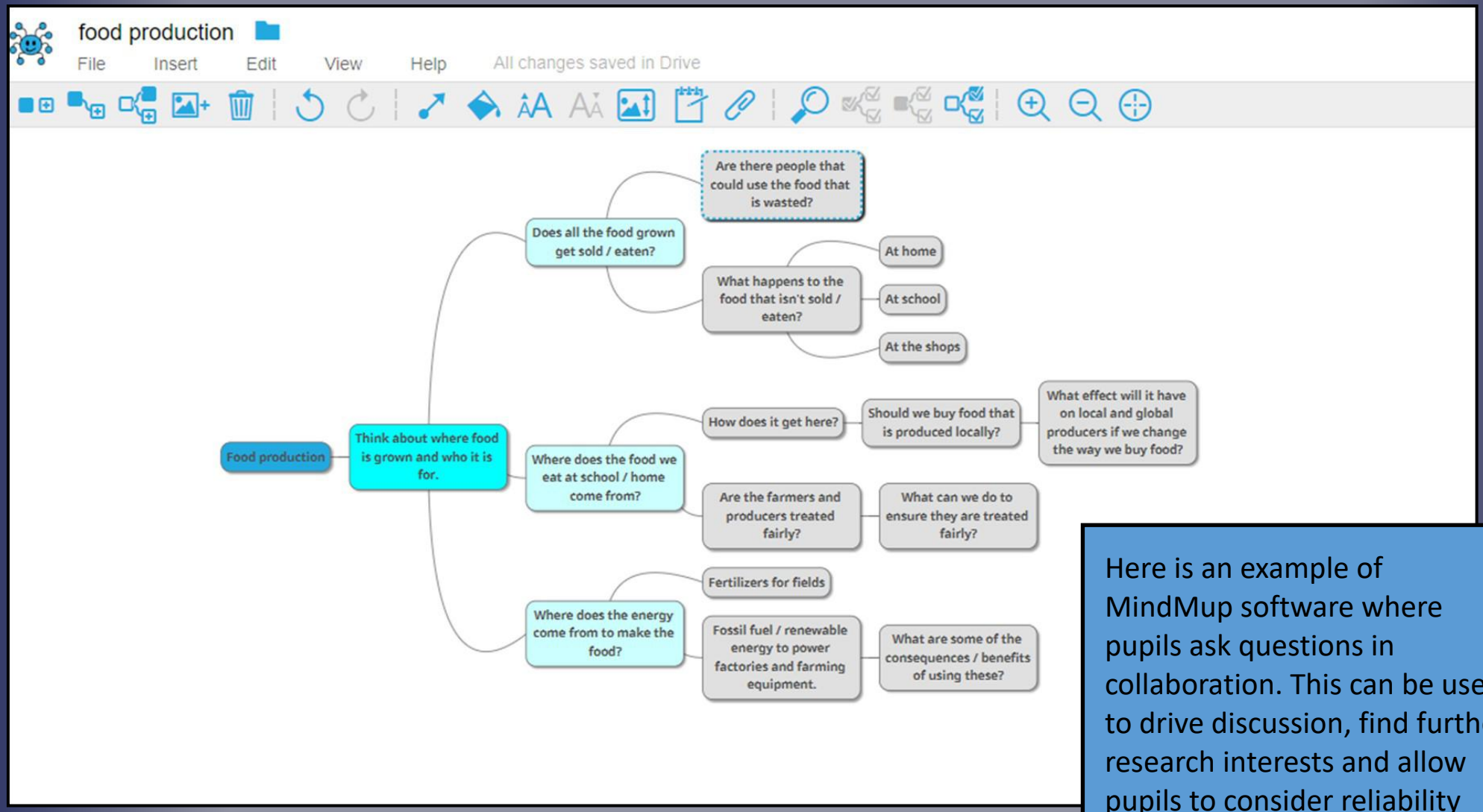
Extension ideas:

Ask pupils to mind map their thoughts and connections. The free mind mapping app MindMup works with Google Docs and allows multiple pupils to work on the same document simultaneously. See an example on page 26 and take a look at www.mindmup.com for the app.

Key issues:
Poverty
Starvation, famine and hunger
Lack of fresh water
Global climate change
Health problems such as obesity, diabetes and heart disease
Extinction of plant and animal species
Increase energy demand

Activity 1: Getting Connected—Key issues discussion ideas	
Poverty	On average households in the UK throw away around £60 worth of edible food every month [note: households in food poverty are unlikely to waste food]. Waste less, save money!
Starvation, famine and hunger	By redistributing and eating the 1/3 of food that is thrown away unnecessarily we would be able to feed the world's population currently suffering starvation, famine and hunger. Waste less, feed more!
Lack of fresh water	21% of all fresh water is used in the production of food that never ends up getting eaten! Waste less, save water!
Global climate change	Putting food waste in black bin bags sends it to landfill sites and fills 21% of these pits. Here, the food waste slowly breaks down under the ground without oxygen. Because of this is breaks down 'anaerobically' and emits methane (a greenhouse gas 25 times more damaging than carbon dioxide). Waste less, breath easier!
Health problems such as obesity, diabetes and heart disease	Lots of food is wasted because portion sizes are too large. Reduce the portion sizes and weight related health problems will reduce. Waste less, be healthier!
Extinction of plant and animal species	The growth of certain crops (eg, soya, palms for palm oil) sees the clearance of rain forests and other endangered ecosystems. If we reduce what we throw away, we reduce what we buy. With a reduced demand, less precious ecosystems will be damaged. Waste less, care for the environment more!
Increase energy demand	Growing all of this food that is just wasted uses up lots of energy in the form of factories and farm machinery. Waste less, save energy!

Activity 1: Getting Connected—MindMup example

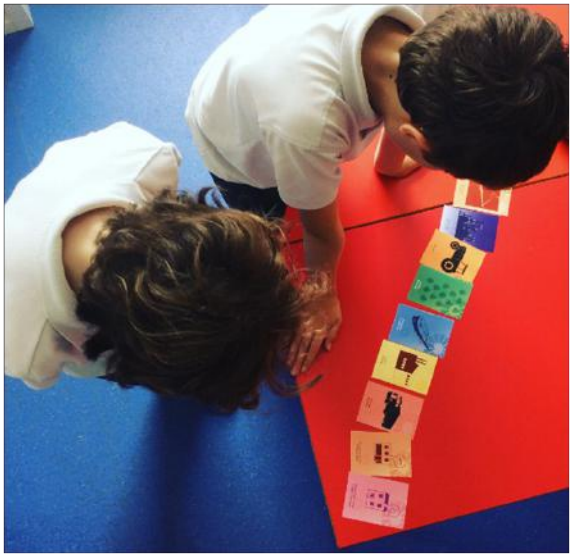


Here is an example of MindMup software where pupils ask questions in collaboration. This can be used to drive discussion, find further research interests and allow pupils to consider reliability when using electronic sources. See www.mindmup.com

Activity 2: Where does our food come from?

Aim:

To identify where our food comes from .



Instructions:

1. Ask pupils to find out where 8 items of food at home come from by looking at labels – or bring in food packaging to discuss in the classroom. Where possible note the cost.

2. Provide pupils with a blank world map and atlas .

3. Using the atlas and the information on labels, pupils plot where the food comes from.

4. Using scales in atlases pupils calculate the distance travelled (these could be converted from miles/ kilometres). See page 28 for a useful worksheet.

5. Calculate the average distance travelled/ cost of items.

6. Calculate the percentage of items produced in each destination.

Extensions:

What questions do pupils have about food production they would like to investigate?

Investigate the meaning behind some of the labelling – organic, fairtrade, sustainably sourced, dolphin friendly, porpoise friendly. Create posters to explain the terms.

Calculate how much it would cost to holiday where the food is produced. Is there a budget? What would you do when you got there?

Make a journey map for the food. Try using 'Where's the Impact?' cards from The Centre for Alternative Technology. Base fiction and non fiction writing on these journeys, the people and places involved.

Make Food Top Trumps with the data you have gathered and play your friends – see page 29.

Activity 2: Where does our food come from? - calculating the distance travelled

Product	Origin	Cost (£)	Distance travelled

Mean distance food travelled ……..

Mode distance food travelled ……..

Median distance food travelled ……..

Activity 2: Where does our food come from? - Food Top Trumps

Make your own Food Top Trumps with the template below. Use the information you have collected and the scores on the right. You will need to know:

- Food type/name
- Country of origin
- Distance travelled
- Type of packaging

Add a photo or picture of the food type and then challenge friends to a game!

Scoring—Distance travelled:

Home-grown = 0 points

0-350km = 10 points

350-5000km = 30 points

5000-10,000km = 40 points

Scoring—Packaging:

No packaging = 0 points

Recyclable packaging = 5 points per layer

Non-recyclable packaging = 10 points per layer

Type of food:	Type of food:	Type of food:	Type of food:
Country of origin	Country of origin	Country of origin	Country of origin
Distance travelled	Distance travelled	Distance travelled	Distance travelled
Packaging	Packaging	Packaging	Packaging
Total impact	Total impact	Total impact	Total impact

Activity 3: Understanding food groups and choices (using simple algorithms)

Aim:

Pupils can categorise food groups and choices.

Instruction:

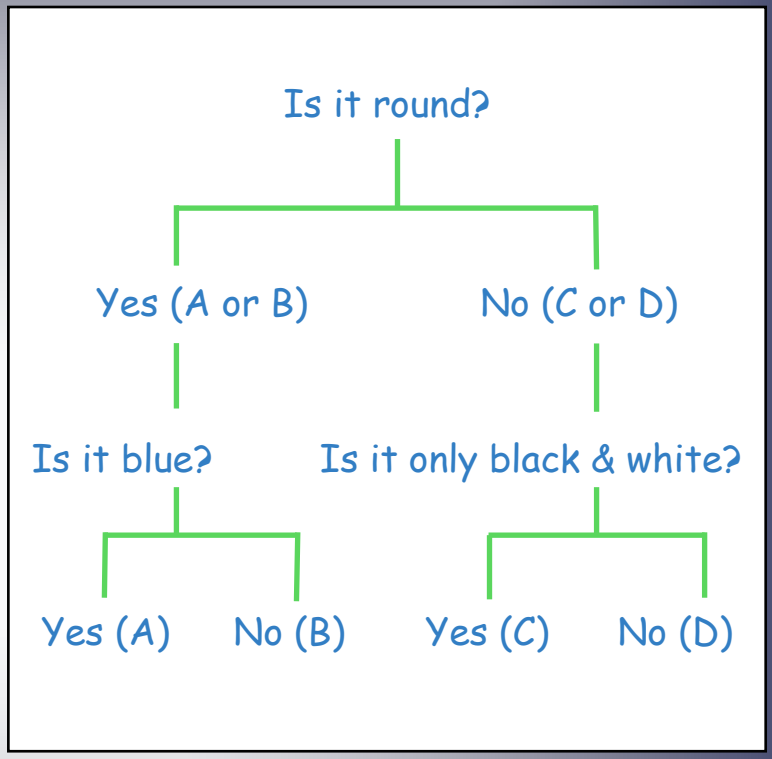
1. Discuss the different food groups required for a healthy diet and how food is categorised and identified – dairy, protein, carbohydrate, fruit and vegetables, fats and salts.

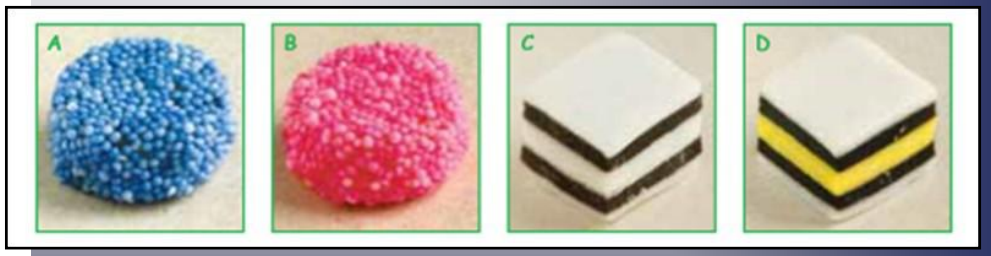
2. Provide examples of branch diagrams for pupils to discuss. Consider how the liquorice sweets have been categorised and ordered in the example – note that this is a simple algorithm; programming through yes/no answers.

3. Challenge pupils to devise similar diagrams for other foods. This could be based on colour, texture, amount of salt or fat.

Extension ideas:

- Use drama / music to create a healthy plate assembly – write scripts and act it out in English and Welsh
- Note down the foods eaten over the course of a week and create data sets about the proportion of different food groups consumed. Create charts and graphs to make comparisons. Are pupils making healthy choices?
- Compare diets through history and map where these foods would have been produced and consumed. Compare these to current maps of where our food comes from – how have things changed? Why?





Activity 4: What is food waste?

Aim:

Pupils can identify food waste and what can and can't be composted at home and through Pembrokeshire County Council's kerbside collection service.

Instruction:

1.Remind pupils how much food is thrown away each month (on average £60 / household across the UK).

2.Provide pupils with a list of items that are to be thrown away (see page 32 and worksheet pack for a photocopiable sheet) and ask them to sort them - which items can go into the compost bin at home?

3.Watch the video https://www.youtube.com/watch?v=cBkBwVFFEWw and discuss the difference between greens (nitrogen rich, fast to biodegrade) and browns (slower to biodegrade, carbon and fibre rich plants that bulk out the compost and provide air pockets for the microorganisms and insects). Discuss the sorting pupils did and whether they made appropriate choices. Share Crazy Composting Facts from page 33.

4.Ask pupils to now think about the composting food waste Pembrokeshire County Council collects. How is it different from home composting? Remember that you can put animal bones and cooked food in. See page 34 for information about the journey of food waste collected by the Council.

Extension ideas:

- Learn all about worms making black gold! https://www.youtube.com/watch?v=V8miLevRI_o Make your own worm farm: https://www.youtube.com/watch?v=JvUgdDZx66E and you could make a time-lapse film of the results: https://www.youtube.com/watch?v=n9Mnf9ysNSs
- Develop recipes that use leftovers – families could offer their best ideas and a school recipe book could be published.
- Note down the foods eaten over the course of a week and create data sets about the proportion of different food groups consumed and those that are left. Create charts and graphs to make comparisons. Are pupils making healthy choices?
- Compare diets through history and map where these foods would have been produced and consumed. Compare these to current maps of where our food comes from – how have things changed? Why? Think about how rationing reduced waste during WW2.
- Use Sainsbury's Fab Food (or here) resource, section 'The Cost of Food', to calculate how much money is really being wasted.

Activity 4: What is food waste? Which items can go in the compost bin?

Egg shells	Juice carton
Fish bones	Dog food
Tea bags	Cling film wrapping
Fruit peel	Hair
Cheese	Dust from the vacuum cleaner
Bread	Used nappy
Cereal packet	Vegetable peelings
Egg box	Used kitchen towel
Empty can	Meat bones
Crisp packet	Nuts
Cooking oil	Yoghurt

Activity 4: What is food waste? Crazy Composting Facts

Home Composting facts:

For a healthy compost bin in your garden you need to feed it a healthy diet – this means a good mix of greens and browns.

Greens – are high in nitrogen and break down quickly. They include, tea bags, uncooked fruit and vegetables and the contents of the vacuum cleaner.

Browns- are high in fibre and bulk out the compost bin. They create air pockets so there is plenty of room for the creepy crawlies that help decomposition. They include, cardboard, small twigs / branches and egg shells.

DO NOT put in any cooked food, meat, fish, oil or fat – these will attract vermin.

Kerbside Composting facts:

Pembrokeshire County Council will collect food waste from your home every week. You can put in:

- Meat and fish - raw and cooked including bones
- All dairy products such as eggs and cheese
- Vegetables and fruit - raw and cooked
- Bread, cakes and pastries
- Rice, pasta and beans
- Uneaten food from your plates and dishes
- Tea bags and coffee grounds

DO NOT put in liquids, oil or liquid fat or plastic wrappers

Activity 4: What is food waste?
From your kitchen waste to making energy.

Food waste is taken from Pembrokeshire to this Anaerobic Digestion facility in Bridgend. This massive food digester can process 48,000 tonnes of food waste each year and makes it into enough electricity for 5,000 homes and fertilizer to cover 3,000 acres of land.

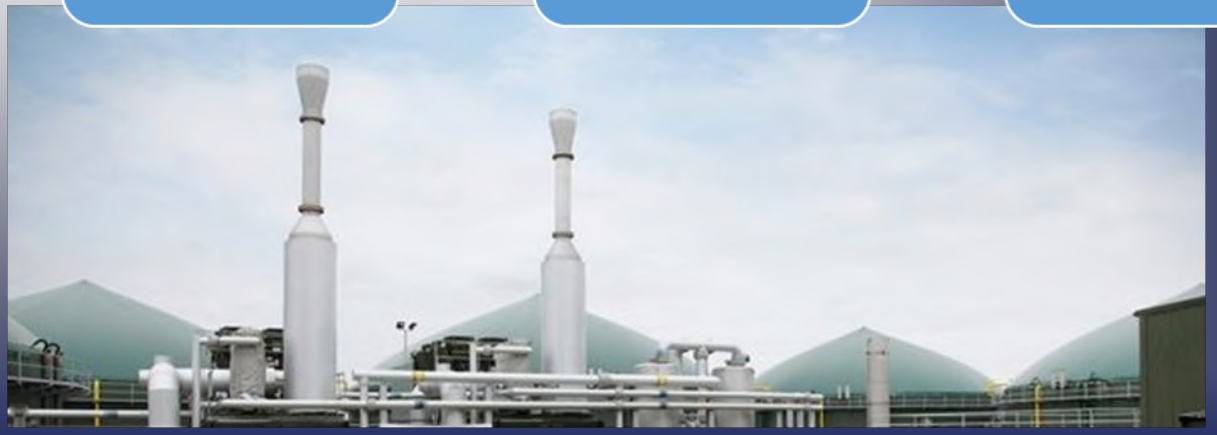
Food waste leaves your kitchen and is transported to Bridgend

Food is unloaded and pushed through a macerator and mixed with waste liquid to make 'soup'

The 'soup' is pasteurized to kill any bacteria

For 85 days the soup is held in a digester.

Methane gas is extracted to make energy, and the left over solids are used as fertilizer.



Activity 5: Why do we throw it away?

Aim:
To identify why some edible food is thrown away.

Instructions:
1. Ask pupils to think about the reasons they throw food away at home. This might include:
   - not finishing what's on the plate because they don't like it / it's too large a portion
   - throwing rotten / off / spoilt food away
   - throwing food away that has gone past its best before/use by/ sell by date – show packaging for examples.

2. Discuss the difference between 'best before' and 'use by' – for definitions see http://www.approvedfood.co.uk/page?name=best-before-dates. Remember it is only 'use by' dates that should be strictly adhered to for safety. Any other dates do not render the product inedible. Take a look, a sniff and if it's okay, have a taste to check.

3. If you have time, make a trip to the supermarket with the class to purchase a range of fresh produce with clear 'best before' dates. These can often be obtained in smaller shops or just scan the shelves in the larger supermarkets. Alternatively, bring in a selection of produce that has been kept in homes (in appropriate conditions) but is passed its dates (nothing that is passed its 'use by' date should be considered).

4. Taste the food. This can be undertaken in a number of ways
   - Try all food on the same day, (using a 1-5 rating of smell, feel, look and taste - see worksheet on p36)
   - Have a number of the same products and retry them over a number of consecutive days after their best before dates.
   - Compare the products with 'in date' products – do they taste any different?
   - Compare the taste of the same product but with different 'best before' dates – do they taste any different?

NOTE: Check your Risk Assessments and School Policies for tasting food. If at any time the product looks or smells 'off' DO NOT eat it.

5. Discuss understanding of food labelling and how this could reduce the amount of food that is thrown away.

Extensions:
Create posters/ pamphlets to circulate to parents about sell by / use by dates.

Prepare an assembly and invite parents to listen to pupil's messages about how to treat 'use by' dates.

Investigate the meaning behind some of the labelling – organic, fairtrade, sustainably sourced, dolphin friendly, porpoise friendly. Create posters to explain the terms.

Ask pupils to check their fridges and cupboards for food that is past their dates – bring it in to school and have a feast! Can pupils prepare the food in interesting and tasty ways?

Set the Sainsbury's Fab Food (or here) 'Food Waste Diary' for homework and collect more dates to interpret or see their 'Menu Planning' lesson plan.

Activity 5: Why do we throw it away?
Best before or still tasty after? Looking at the dates on food.

Product	Best Before date on product	Today's date	Look	Smell	Taste	Feel

Activity 6: Where does our waste go?

Aim:
To identify where the food from council food waste collections ends up.

Instructions:
1. Ask pupils to think about the different foods they throw away and what happens to them. In Pembrokeshire a vast majority of homes use the kerb side collection system. However, some households may throw their food waste away in the black bin, feed it to animals, compost etc.

2. Ask pupils to consider the journey they think that the food waste goes on once it leaves their kitchens. Create a flow chart for it.

3. Once pupils have considered the journey they think their food waste goes on share information from Pembrokeshire County Council. See also information from page 34. An article about the factory our food waste goes to be converted into energy is here http://www.walesonline.co.uk/news/local-news/food-waste-now-generating-electricity-12264369

4. Compare their imagined journeys with what really happens. What are the similarities and differences? What are they surprised at and what do they want to learn more about?

Extensions:
Can pupils design a food digester for school? How would it work? Let their imaginations run wild! Take a look at the Zera home digester that is in development https://wlabsinnovations.com/pages/zera

Pupils research other forms of renewable energy.

Visit the county's recycling plant – make a film of your visit (see the Making a Film workshop PPT). To see an example of this take a look at Roch School's entry film for the 2008 Pembrokeshire School's Film Festival all about recycling https://pembrokeshirefilmfestival.wordpress.com/featured-movies/roch-c-p-school/

1) Biodegradable waste

2) Depacking and pre-treatment

3) Anaerobic digestion

4a) Digestate storage

4b) Gas holder

5a) Biofertiliser

5b) Combined heat and power

6a) Converted for use as district/industrial/commercial heating

6b) Electricity

Literacy Projects These tasks provide opportunities to write using all non-fiction text purposes.

- Undertake further research on food, its production, consumption and disposal. Love Food Hate Waste run inspirational social media campaigns —such as #MakeToastNotWaste #SaveOurSpuds
- Write a letter to **persuade** local supermarkets to request for more to be done with their spoiled food.
- Write an **information** text that can be shared with other classes to communicate the problems of food waste locally or globally – make a class newspaper.
- Create a video on how to keep food fresh in the fridge for longer – see the Making a Film workshop PPT and take a look at https://www.youtube.com/watch?time_continue=2&v=PwB8xMY856w
- Write **instructions** on how to cook with leftovers.
- **Recount** a day in the life of a food producer. What happens? How do they feel when they throw away excess stock?
- **Explain** how food decomposes / is digested. Use a stop motion App such as I Can Animate to create a short film about it.
- Have a **discussion** – What are the advantages and disadvantages of composting over using landfill for food waste OR should everyone become a vegetarian?

Writing for a purpose…

- The Courtauld Commitment 2025 is an ambitious ten-year commitment creating partnerships across the entire food supply chain including hospitality and food service sector, retailers, food & drink manufacturers, farmers and local authorities. It aims to cut waste and greenhouse gas emissions associated with food and drink in the UK by at least one-fifth per capita in ten years, and reduce the impact of water use, with cumulative savings of around £20 billion. To find out more information visit: http://www.wrapcymru.org.uk/content/courtauld-commitment-2025-signatories

- Write to the companies on / not on the list and see what they are doing to reduce food wastage. Try using Twitter and email.

Writing for a purpose...

Aim:

To gather interesting and subject specific vocabulary to use in writing.

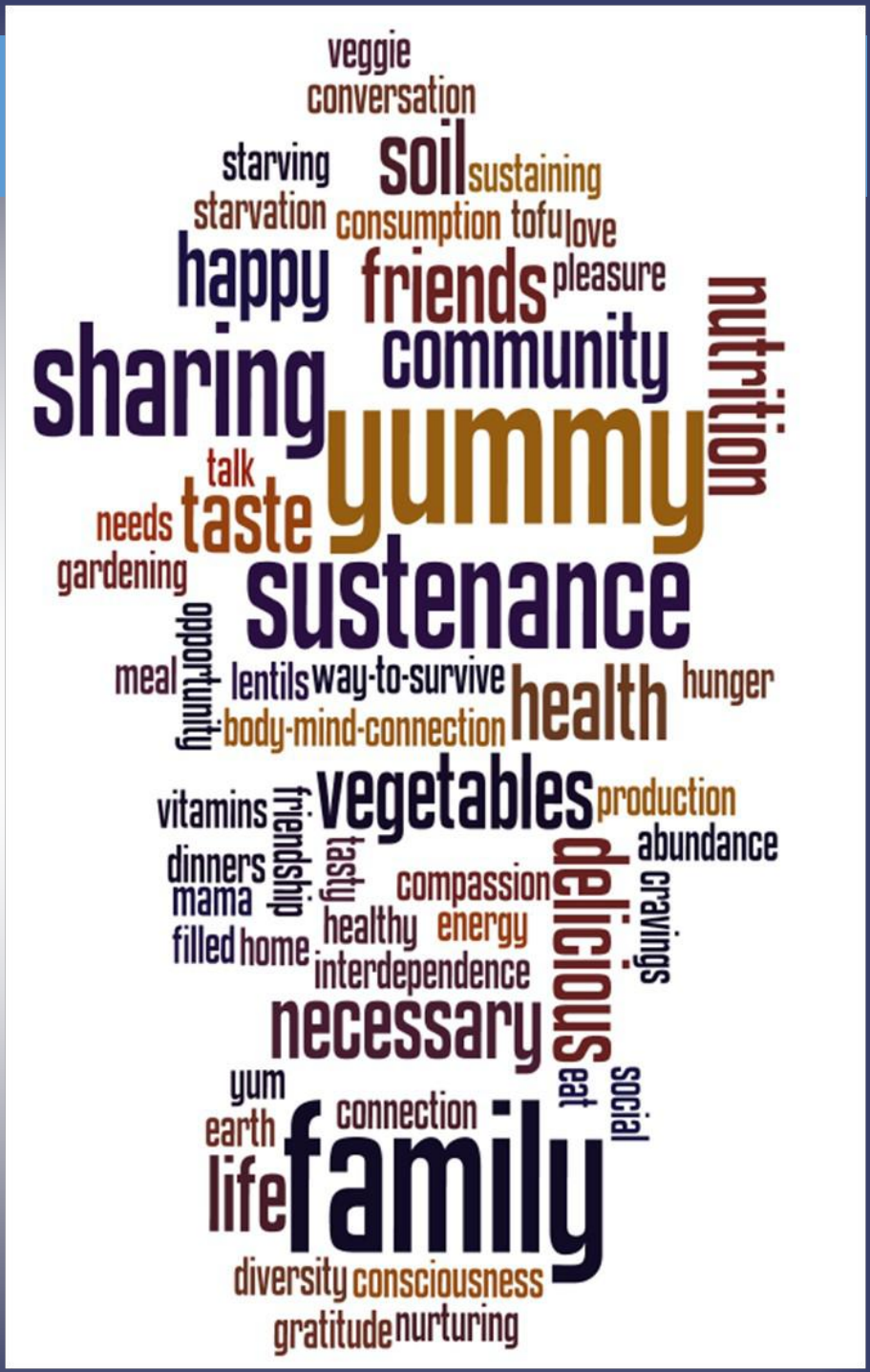
Instructions:

1. Provide pupils with the worksheet on page 41. During lunch time challenge them to fill in the sheet with words and phrases which help to describe the lunch time experience.

2. Share and review the language. Use thesauruses to extend vocabulary.

Extension:

Use words and phrases collected as the basis for writing – see page 38 for ideas for fiction and non-fiction writing.



Writing for a purpose… I can choose vocabulary to describe lunch time and what I am eating.

Nouns

Verbs

Adverbs

Adjectives

Onomatopoeia

What can I feel?

What can I smell?

What can I hear?

Poetry #1

BREAD
Don't get in a spin
it really is no teaser
clip half your bag in a bread bin
and the other half in the freezer.

CARROTS AND APPLES
Carrots and apples
can happily chillax
at the bottom of the fridge
in their packs.

POTATOES
SPID your spud.
Store Potatoes In the Dark
to keep your tatties good.

CHEESE
Easy peasy cheesy store,
Ziplock, Tupperware, fridge drawer.
Fridges and freezers
are good for hard cheeses.

Comedian Kate Fox wrote these short poems for the Fresher for Longer campaign. Challenge pupils to create their own little ditties, in Welsh or English, that help us remember how to keep food fresher for longer, or what to do with some tasty leftovers.

Poetry #2

Here are the first two stanzas of a poem. Pupils could...

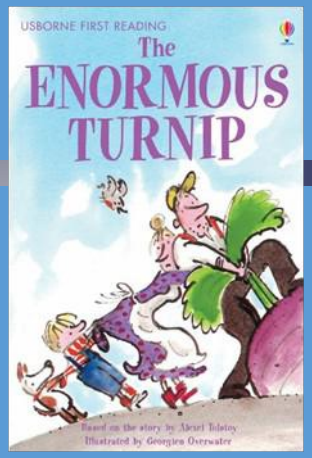
- Rehearse and perform the poem
- Investigate nonsense poetry
- Change the food types to create a different dress, or make something else unusual out of food, e.g. a car or house.
- Extend the recount; where did the man go to and what happened? – read the rest of the poem and compare your journeys.
- Create illustrations for the poem.
- Put the poem to music / animation.

Edward Lear's The New Vestments

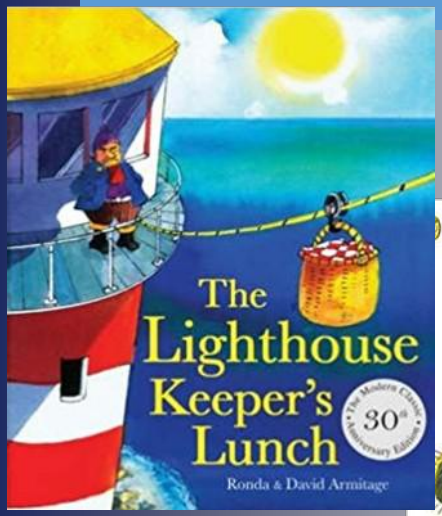
There lived an old man in the kingdom of Tess,
Who invented a purely original dress;
And when it was perfectly made and
complete,
He opened the door, and walked into the street.

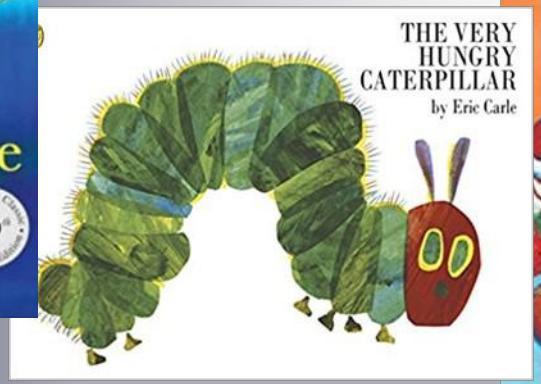
By way of a hat, he'd a loaf of Brown Bread,
In the middle of which he inserted his head;--
His Shirt was made up of no end of dead Mice,
The warmth of whose skins was quite fluffy and nice;--
His Drawers were of Rabit-skins, -- but it is not known whose;--
His Waistcoat and Trowsers were made of Pork Chops;--
His Buttons were Jujubes, and Chocolate Drops;--
His Coat was all Pancakes with Jam for a border,
And a girdle of Biscuits to keep it in order;
And he wore over all, as a screen from bad weather,
A Cloak of green Cabbage-leaves stitched all together.

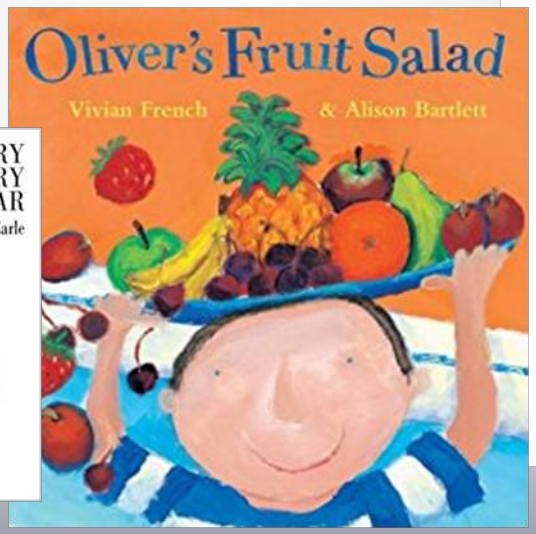
Create a book for younger readers

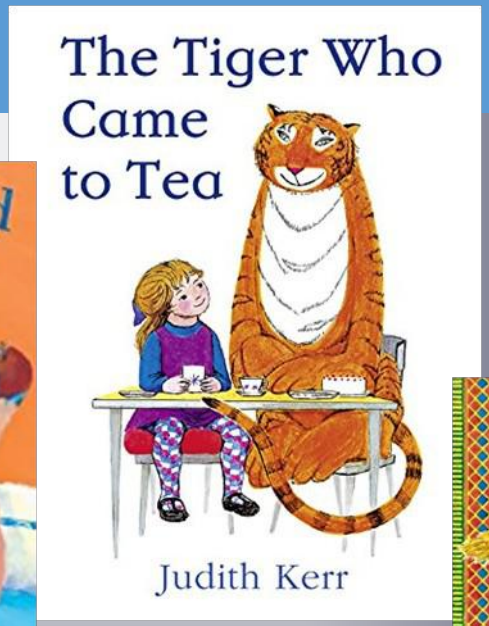


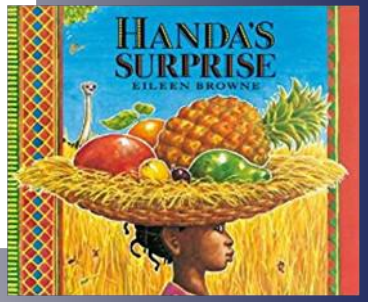
Use picture books to inspire children to write books for younger readers based on reducing food waste. What could happen to the leftovers from the Enormous Turnip? Could Oliver do something else with his fruit? How is the food the hungry caterpillar eats disposed of?





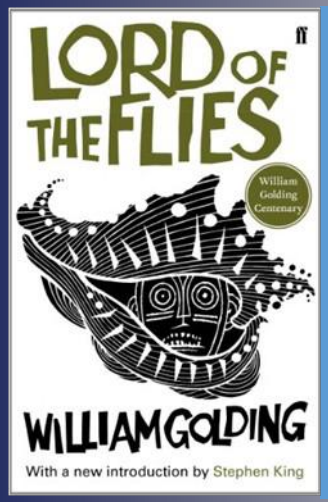




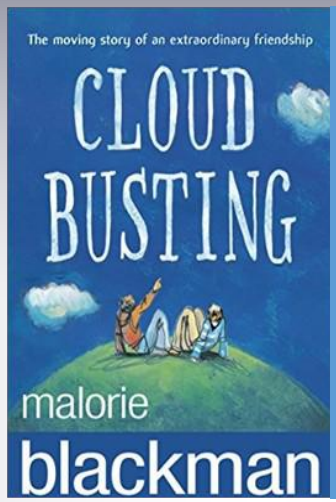


Invite children to develop counting style books that would help younger children to learn 1-10, or the timetables. Could they use the slices of pizza to help count in 5s?

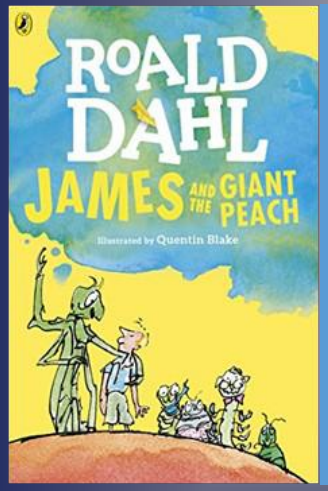
Books to inspire, with food themes to think about



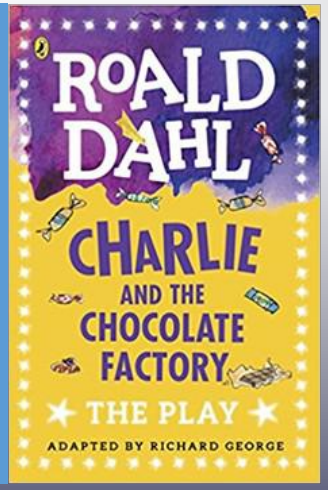
For more able readers consider Golding's modern classic. What would you eat on a deserted island? How would you survive on a reduced diet? What would be the benefits?

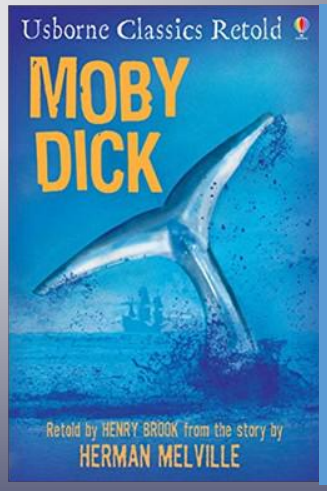


Use Blackman's novel in various poetic form to explore the difference between not liking a food (so not eating it) and being allergic to it. How much food is wasted because people 'don't like it'?
How do allergies effect people? Why are we allergic to certain foods? How can we prevent allergies and how should we protect those who are severely allergic? How can we overcome food dislikes and reduce food waste?



Compare and contrast how Dahl has used food as a basis for his stories. How does Augustus' and Charlie's families food intake differ in Charlie and the Chocolate Factory? What recipes do the Bucket's use to make food go further and waste little? Rewrite part of the story as a play and perform it - or read and develop the scripts.



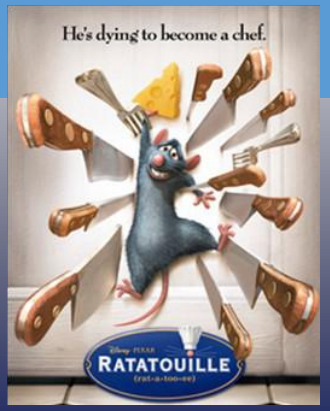


Consider the historical use of whale meat and hunting. Is hunting acceptable? How was each part of the whale used? Was there any waste?

Films with food themes

Why not have a season of food related films shown through school as part of Film Club, or study them within your classroom?

- Make Paddington's marmalade - or jam from berries gathered in hedgerows or unwanted fruit from pupils' gardens.
- Visit an apple orchard and press windfall fruit to make your own juice like farmers in Fantastic Mr Fox. Or ask families to bring in unused apples to make apple pies and crumbles.
- Investigate the spices of Asian food through The 100 Foot Journey and find out how they can be used to mask disliked flavours.
- Invent a food machine with better outcomes than Cloudy with a Chance of Meatballs – perhaps a fridge that gives you recipes for the food you have in it?
- Design a menu on a budget to feed the orphans living with Oliver Twist – making sure that you don't buy anything in excess and waste food!
- Investigate the problems of vermin with food waste – how can we keep rats out of our compost bins?
- Promotion for the Peter Rabbit film actively engaged with the issue of food waste, including a short film; '<u>Better Ate Than Never</u>'.



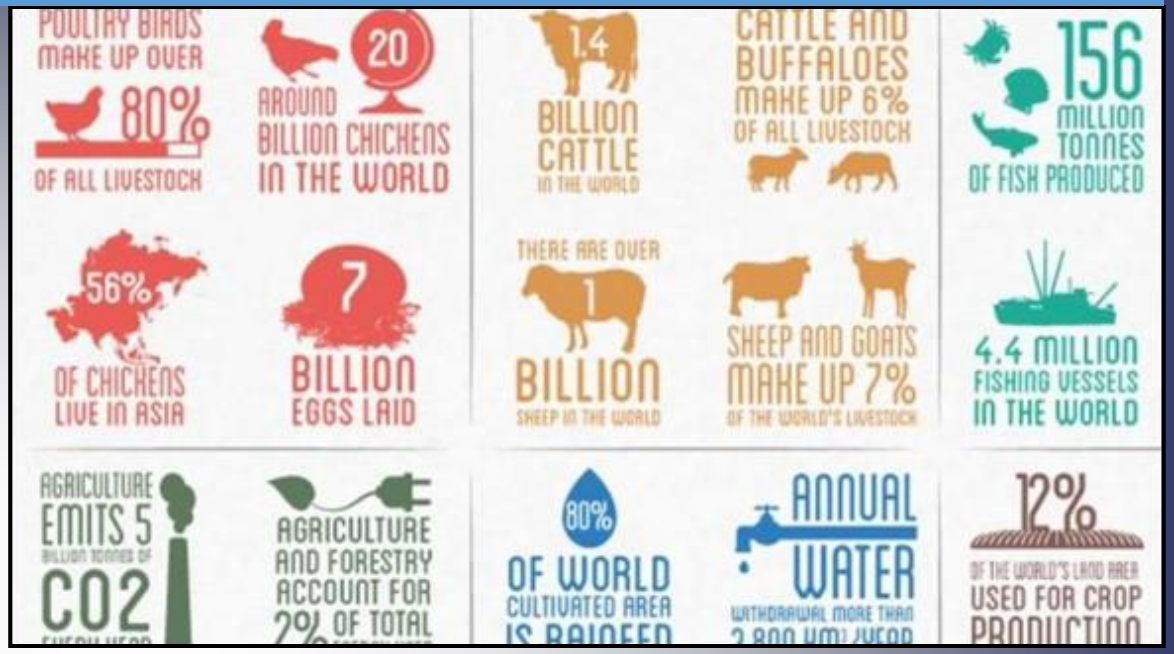
How many fascinating facts about food waste can you record – think about where you sourced this information and whether it is reliable?

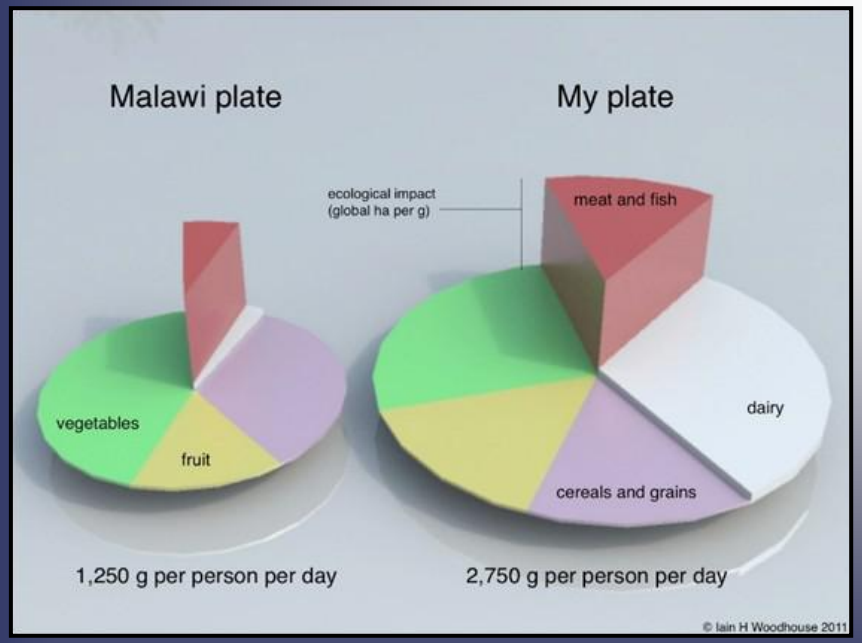
Numeracy Projects

- Sample reasoning papers have been devised by Welsh Government and a number of them have a food / eating theme in year 6:
  file:///C:/Users/verit/AppData/Local/Temp/Temp1_140227-buying-cakes.zip/Buying%20cakes.pdf
  file:///C:/Users/verit/AppData/Local/Temp/Temp1_140227-tons-of-teeth.zip/Tons%20of%20teeth.pdf
  A year 7 Reasoning paper about ice-cream could be used to stretch and challenge more able learners:
  file:///C:/Users/verit/AppData/Local/Temp/Temp1_140625-ice-cream.zip/Ice%20cream.pdf
- Design symmetrical patterned plates or foods. Create a pattern inspired by successful examples. Can you reflect the pattern? Can you rotate the pattern? Can you make it with recycled material? Can you use only foods that are usually left over?
- Develop an enterprise project to raise money for a charity that supports waste minimisation.
- Gather data about favourite muffin flavours in school. Pupils buy and weigh ingredients, cook, then sell products – ensuring there is no waste!
- Plan a trip to a waste recycling plant. How much would it cost to visit? Do you have a budget?
- Draw bar graphs, line graphs and scatter graphs to show food preferences found in individual groups, boys and girls, different classes etc.
- Use Carrol and Venn diagrams to order food choices in different ways e.g. by size, colour, amount of veg'.

Continued on page 49

Create and interpret different tables, charts and infographics to represent data.





Nutrition Facts
Serving size: 1/2 Pack (0.53oz / 15g)
Servings per Package: 2

Amount per serving
Calories 40 Calories from Fat 15

	% Daily Value*
Total Fat 2g	3%
Saturated 0g	0%
+ Trans 0g	
Cholesterol 0mg	0%
Sodium 85mg	4%
Carbohydrate 6g	2%
Dietary Fiber 0g	0%
Sugars <1g	
Protein 4g	
Vitamin A*	8%
Vitamin C*	6%
Calcium*	0%
Iron*	2%

* Percent Daily Values are based on a 2,000 calorie diet.

INGREDIENTS: Seaweed, Glutinous Rice Flour, Rice Bran Oil, Tapioca Starch, Sea Salt, Onion

Compare the nutritional value of different foods using seaweed or other unusual edibles.

Science Projects

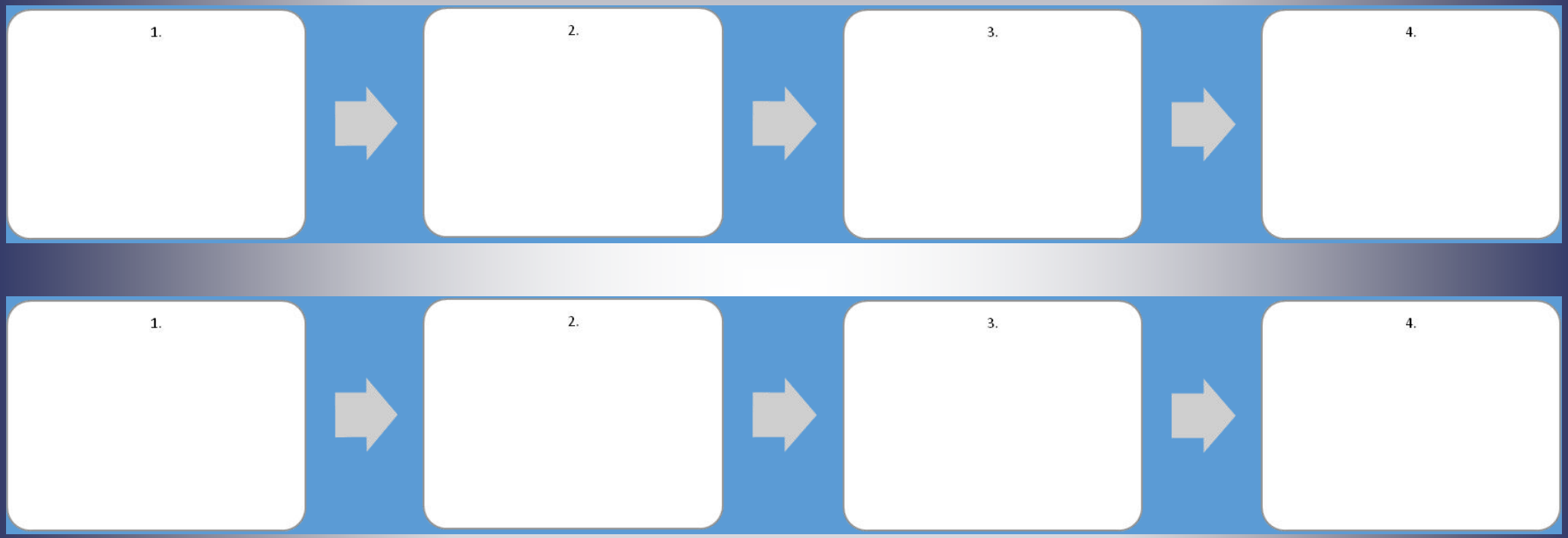
Food, its production, consumption and disposal are fascinating themes to follow within science.

- Make a lifecycle model of a plant, or an animal that is eaten, on a paper plate.

- Learn about the digestive system – starting with different teeth types and ending with what goes down the toilet!
- Create top trump cards for different edible species with information about lifecycles on (using blank cards on the Activity 2 Top Trumps worksheet).
- Make a quadrama to depict the different stages of lifecycles of edible species.
- Consider fact and opinion statements about lifecycles.

- Visit the Bug Farm in St David's and learn all about how bugs can feed the world - try a Bug Burger!
- Compare the processes of food digestion – in a human, a composter and at a landfill site. See pages 51 and 52 for ideas. For details of how a landfill works see: https://www.livescience.com/32786-what-happens-inside-a-landfill.html
- Compare decomposition to other familiar processes – see page 53 for some ideas to help pupils make connections.
- Plan and do investigations – see page 54 for some ideas.

Science Projects - Use explanation language and simple models to compare how food decomposes in composters and landfill sites.



Word bank: aerobic organic matter biodegradable compost

decomposers methane anaerobic

As a result Due to Because Therefore

Science Projects - What happens in home composters and landfill sites?

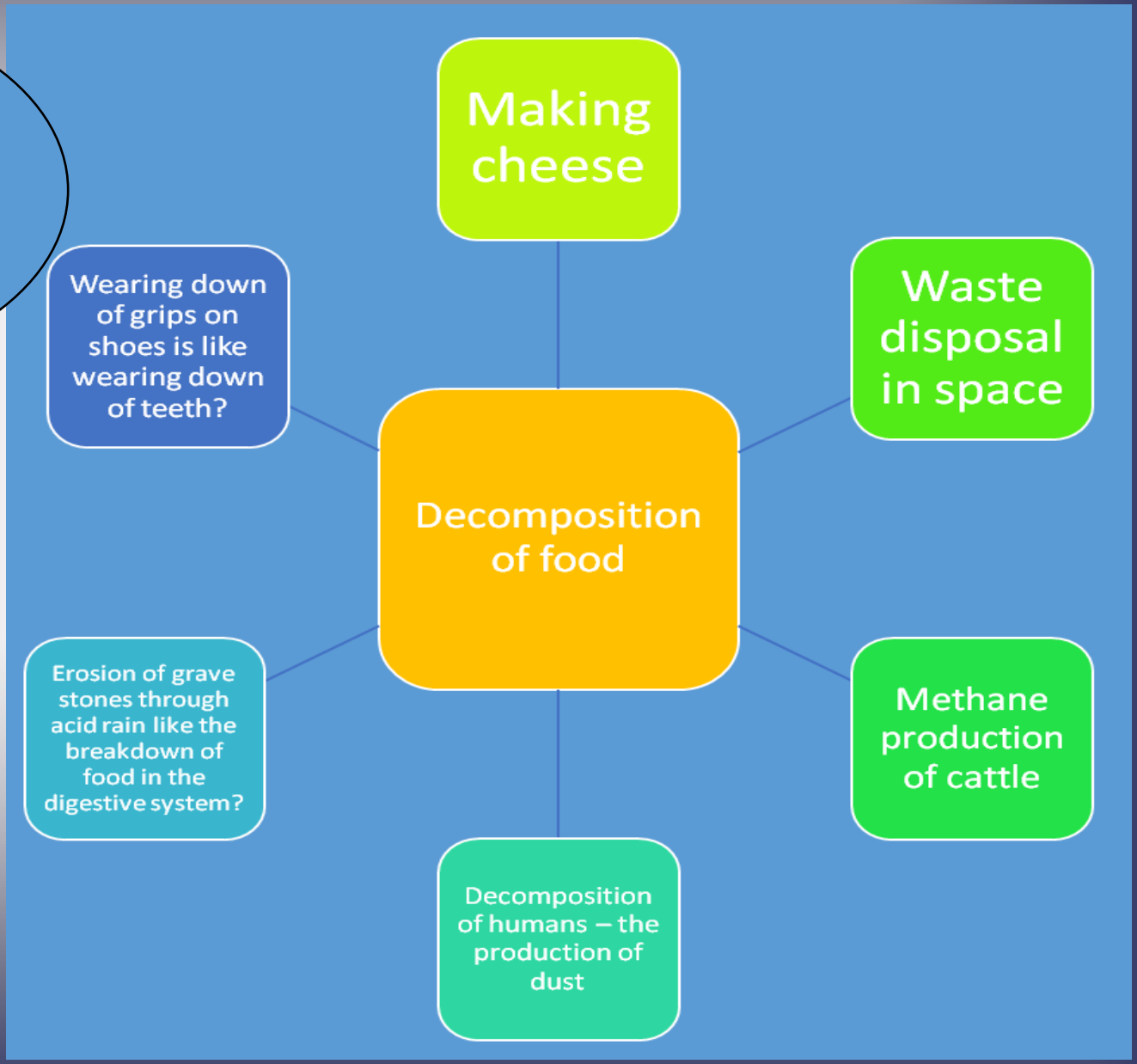
1. Food waste put in kitchen compost caddy.
2. Taken to garden compost bin where it is mixed with other organic matter.
3. Decomposers (creepy crawlies and microbes) break down the biodegradable food waste through aerobic decomposition.
4. Compost is made within 6 months and can be used to help bring nutrition into the garden.

1. Food waste is put into black bin bags.
2. Bin bags are collected in lorries and taken to landfill site.
3. Bin bags are buried with biodegradable and non-biodegradable material mixed up. A plastic liner covers everything to stop leaks. The landfill is not designed to break down the waste, just store it. However, organic matter does decay.
4. With no oxygen, waste decomposes anaerobically - releasing methane (a dangerous green house gas that contributes to global climate change).

Word bank: aerobic organic matter biodegradable compost decomposers methane anaerobic As a result Due to Because Therefore

Science Projects - Link the learning to similar and unfamiliar processes

What other processes involving decomposition can you think about? Is it a useful process or does it cause problems?



Science Investigations

- Does all food decompose at the same rate? – does the temperature or food type make a difference?
- Do salt and sugar help preserve food? What happens to slices of bread dipped in solutions of each one?
- How does surface area effect the speed jelly dissolves?
- How does temperature effect the rate yeast works?
- Can you stop cut apples from discolouring?
- How strong are egg shells?
- Does skimmed milk last longer than full fat milk?
- How much iron is in breakfast cereals? https://www.sciencebuddies.org/science-fair-projects/project-ideas/BioChem_p027/biotechnology-techniques/iron-in-breakfast-cereal#procedure
- Which washing up liquid / biscuit / squash is better value for money?
- Do different wrappings/packages affect the spoilage of an apple? https://www.sciencebuddies.org/science-fair-projects/project-ideas/FoodSci_p025/cooking-food-science/how-food-wrappings-affect-spoilage#procedure

ICT Projects

- Create a stop animation in a sand tray or with a light box at school. Be inspired by the life cycles of edible species or the journeys our food makes as discussed in this project. There are a variety of apps recommended here, https://www.mykidstime.com/things-to-do/10-handiest-apps-stop-motion-animation/
- Use Scratch to code an animation / game about decomposition and digestion, https://scratch.mit.edu/
- Use Lego Education WeDo to create moving models based on a food theme, https://education.lego.com/en-gb/product/wedo
- Use the MaMoI Making a Film workshop PPT to prepare your class for making a short film. Use iMovie to plan and record a news broadcast about the problems of food waste, https://itunes.apple.com/gb/app/imovie/id377298193?mt=8
- Write and record a speech about the problems with food wastage. Use the Morfo app to have a famous person 'deliver' it, https://itunes.apple.com/gb/app/morfo/id418900007?mt=8

History Projects

- Investigate rationing in the war:
  - Create maths problems related to how much food you can buy
  - Write and film a news broadcast about rationing or create news articles -try using clips from Teachers TV to introduce the topic http://archive.teachfind.com/ttv/www.teachers.tv/videos/history-living-with-rationing.html
- Investigate how meals have changed over time and research recipes through history - try making some in the classroom. A fantastic resource about the history of food (prehistoric to WW2) can also be downloaded at https://www.tes.com/teaching-resource/history-cookbook-6019487#files
- Scolton Manor offer educational resources, Discovery Boxes and Decade Suitcases covering different eras, they are free for schools to borrow, http://www.medwynsmuseums.co.uk/scolton/discovery-boxes.php Educational visits to Scolton Manor are also free.
- Book The History Chefs to deliver historical cookery workshops in your classroom! They offer a range of workshops from pre-history to the World Wars http://www.thehistorychefs.co.uk/
- Investigate how an improved diet has been linked to the changes in height and a taller population. For more information check out http://edition.cnn.com/2016/07/26/health/human-height-changes-century/index.html
- Investigate the history of food waste – EDF have a poster that considers this topic from 500BC to present day and provides a free poster for your classroom. See https://jointhepod.org/teachers/infographics/a-history-of-food-waste
- Spices have fascinating histories – the story of nutmeg offers some great journeys into the past https://www.theguardian.com/lifeandstyle/wordofmouth/2010/sep/14/consider-nutmeg. Other interesting spices include pepper, saffron, cinnamon, cumin, ginger and cloves.

Creative Art Projects

Inspired by Giuseppe Arcimboldo, do observational drawings of food in different arrangements and at different stages of decomposition.

Make a famous work of art on toast.

Create fruit peel sculptures

Design a t-towel about what to put in the compost – have it printed and sell to parents.

Sustainable Schools Award and Eco-Clubs

Sustainable Schools Award

The work you complete for this project may contribute to your Sustainable Schools themes:

- Waste Minimisation
- Transport
- Energy
- Community Citizenship
- Global Citizenship
- Healthy Living

For more guidance contact your school's Eco Club &/ Sustainable Schools Co-ordinator or Pembrokeshire Sustainable Schools Officer, Janie Pridham: pridhamj@hwbmail.net

Eco-Clubs

Your school Eco-Club could continue the **Make a Meal of It Mission** once your class have completed their work (your class may also be keen to continue!). Show your Eco-Club Co-ordinator what you have done and your results, there may be some actions which could continue to ensure your school maintains the reduction in food waste.

Make a Meal of It Mission

Thank you for taking part in the Make a Meal of it Mission!

Please share your work and the results of your food waste audit with us:

@TransitionBroG

@TransitionBroGwaun

#wastelesssavemore #makeamealofit #toogoodtowaste

Email: projectstbg@gmail.com & transitionbrogwaun@phonecoop.coop