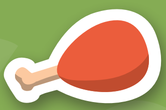
your body matters




Teacher Notes G: Food and the impact of waste on the environment

Nourishing Body & Mind for a Healthy Life

A Primary Health and Wellbeing Curriculum Pack

Revised Version 2023

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Teacher Notes G: Food and the impact of waste on the environment

Associated lesson plans		
Primary Stage	**Lesson**	**Title**
5	5.4 (1)	Waste Management and Health
5	5.4 (2)	Waste Management and Health
Useful websites	http://www.keepscotlandbeautiful.org/sustainable-development-education/eco-schools ***Eco-Schools is an international programme designed to encourage whole-school action on sustainable development education issues*** www.recyclezone.org.uk *Campaigning for reduce, reuse, recycle* https://www.zerowastescotland.org.uk/food-waste/teaching-resources ***Zero Waste Scotland Teaching Resources*** https://www.zerowastescotland.org.uk/food-waste/teaching-resources/primary *Zero Waste Scotland Primary School Resources* https://www.zerowastescotland.org.uk/food-waste/reduction-action-plan ***Zero Waste Scotland Food Waste Reduction Action Plan*** https://schoolgardening.rhs.org.uk/Resources/Info-Sheet/Composting-for-schools *Royal Horticultural Society Campaign for school gardening*	

What is waste?

Waste is what we dispose of because we perceive there is no inherent value, however, often materials still contain valuable resources and have not come to the end of their useful life. Scotland aims to be a zero-waste society with a circular economy therefore minimising the population’s demand on primary resources and maximising the reuse, recycling and recovery of resources, rather than treating them as waste.

Household waste is part of a larger waste production matrix, involving industrial and commercial waste products. The variety of waste produced in modern society includes items such as food, food packaging, white goods, packing used in the transport of consumable goods and industrial chemicals. The variety and large volume of waste produced poses a significant challenge for waste management. In addition, it is difficult to conceptualise such a vast quantity into a meaningful term, especially for domestic households.

Food waste is a global problem with an estimated 1.3 billion tonnes of food wasted every year, accounting for around one third of all that is produced for human consumption which is generating about 8% of the world’s greenhouse gas emissions.

In 2014, Scottish households threw away around 600,000 tonnes of food and drink waste, so as a nation, we wasted the resources which contributed to producing, transporting and buying that food. When food waste ends up in landfill, it produces methane gas that is many times more damaging to the environment than carbon dioxide. It also means that we are losing a potentially valuable resource that could be redistributed to humans, recycled as animal feeds, or even converted to fuel and energy.

Scotland is addressing its food waste problem with this ambitious Action Plan designed to: reduce unnecessary demand for food; improve how we produce, store and cook food so that we waste less; increase food recycling rates and; make better use of food waste as an organic resource. By tackling issues at every level in the food waste hierarchy, Scotland plans to meet its ambitious target to reduce its food waste by one third by 2025. This means that the country must prevent around 297,000 tonnes of food waste each year. Food is an important part of Scotland’s identity and of our economy therefore by valuing our food and wasting less of it, we can help to protect the environment, boost the Scottish food and drink sector, strengthen food security, and help make Scotland a healthier nation.

How much waste do we produce?

For waste management purposes, waste production is measured in tonnes (a male adult elephant weighs approximately 7 tonnes) and recycling rates are measured using the same factor. However, the volume of waste produced can be more striking, especially since the composition of waste has altered from heavy, more compacted items such as glass and metal towards lighter but more bulky items such as plastics. Scotland currently produces around 12 million tonnes of waste each year, of which around 2.5 million tonnes is produced by households.

What do we throw away?

The change in the composition of waste has been largely affected by lifestyle changes that have occurred over the past century:

In the 1930's, post-war Britain was re-building the economy, people had become accustomed to rationing and were more conserved in their spending on 'luxury' items such as textiles (these were re-used and recycled both domestically and industrially during the war and this practice continued for some time after the war ended). Plastic was virtually unknown as a food packaging material and indeed was still very much in experimental production. Plastics mainly appeared as a waste product in industrial and commercial waste. People tended to buy food fresh from local suppliers with liquids and foods packaged in papers or in glass. Many glass containers would have a deposit on them for return and refill systems, and those without deposits would be used within households for storage of home-made or home-baked goods. Additionally, most people had coal or wood burning fires that were used to burn some organic materials and paper.

By the 1960's, and following severe smog experienced in the cities and towns across the UK in the 1940's and 50's, many people had converted their home fire to gas or oil-fired central heating systems. Plastics were more developed and could be applied to a greater number of uses as the variety of plastics available expanded. Supermarkets began to arise, following a reduction in the numbers of local shops selling fresh produce. Glass deposit and return systems were slowly reduced as the use of plastics increased and appeared in greater quantities in household waste.

In the 1990's very few people, even in rural areas, had a coal or wood burning fire as their main source of heat. Gas became increasingly accessible and therefore more readily used as a source of heating within households. The range of plastics had increased, and a wide variety is now used to package a large range of different products, including food. The spread of supermarkets as the main source of people's food shopping has resulted in greater transport of foods from around the UK and the World, and as a result, an increase in the use of packaging to preserve and protect foods during transportation. Households reuse less items than previously e.g., clothing and other textiles, and glass packaging.

Additionally, people are cooking less from raw materials rand relying on more ready meals. This results in a greater amount of waste from packaged foods (which would previously have been made within the home). As households have become greater financial entities, the amount of waste in tonnage and volume has increased by approximately 2% per annum since the beginning of the 1980's.

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Landfill sites	Waste is gathered up (e.g. waste collections from household bins), dumped into huge man-made cavities in the earth and eventually covered over. The waste is then left to decompose, for some waste products this can take thousands of years.
Incineration	Waste is gathered up (e.g. waste collections from household bins) and burnt. Incinerators are usually used in large urban areas to supplement the use of landfill or where there is a lack of available landfill sites. Industrial incinerators used for waste management collect the heat generated through the burning process and use it to generate electricity or district heating.
Recycling	Collecting similar products and reforming them into a new, similar product or a new use of the raw material. Recycling usually involves some form of manufacturing process. It is more expensive to recycle plastics and metals than it is to recycle glass or paper packaging. Not all the waste collected for recycling is recycled due to high costs of recycling some waste products.
Reuse	Reusing products from their original form or turning them into some other product, not requiring substantial manufacturing.

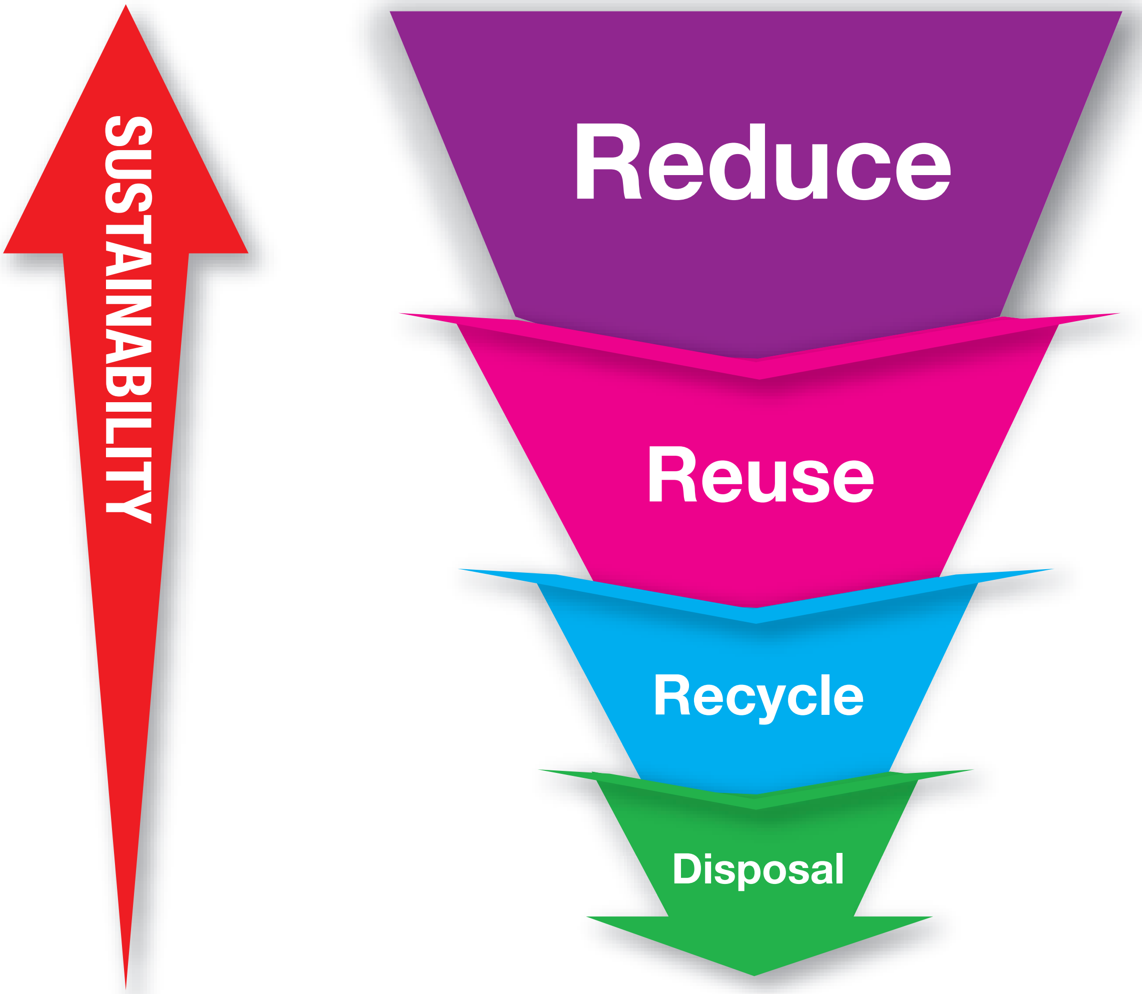
The method of waste management used most frequently in Scotland is landfill. Landfill is not a sustainable method of managing our waste in the long term, as the space available for landfill in Scotland is finite. Landfill sites are a source of greenhouse gases, which contribute to climate change. They can also pollute surface and ground water through the production of leachate and cause problems with odour, vermin and flies.

The way that we manage our waste, including disposal, has a direct and significant impact on our environment. There are also environmental impacts associated with making new products to replace the things that we dispose of, including extracting more resources and the processes of manufacture and distribution. Living in a non-sustainable way impacts on future generations, as our lifestyles will affect the environmental quality and resources available for the future. We need to increase rates of recycling and reuse to recover more value from our waste to reduce the environmental harm caused by waste management, especially through using landfill sites and to conserve resources for future generations.

The preferred route for food waste management is Anaerobic Digestion which extracts value from the landfill waste stream. Anaerobic Digestion processes plant and animal waste materials (biomass) into methane or biogas for heating and power. Anaerobic Digestion is produced by bacteria, which digest biomass in environments with no oxygen, producing methane as a by-product. Biomass is anything plant or animal-based, which includes municipal solid waste, crop residues, compost paper, food waste and wastewater.

Waste items can often be repaired and reused or recycled into new and useful products. However, all the options available for waste management have some kind of negative impact upon the environment. Whether this is pollutants in water i.e., liquids from landfill sites that must be captured and treated before they are released into natural watercourses), landfill gases (methane and carbon dioxide) that must be captured and burnt off, emissions of pollutants from incinerators, recycling plants and manufacture of products, and those from transport of waste around the country to different sites.

Ultimately, the most sustainable option with the greatest environmental benefits is reducing the amount of waste we produce. Minimising the amount of waste that we produce means that less waste is sent for reuse, recycling or disposal, thus minimising its environmental impact



Scotland could achieve more environmentally friendly and sustainable waste management if we all learn to reduce waste by choosing products that have no or less packaging (e.g. loose fresh fruit and vegetables instead of packaged) or by choosing products that are packaged in paper or glass rather than in plastics or metal (e.g. aluminium); to reuse what waste we can (e.g. using plastic bags more than once to carry shopping; give old clothes and spectacles to charities for reuse in other countries); and recycling that which cannot be reduced or reused will contribute to an overall reduction in waste production. Composting is a way of managing waste and making sure the soil is healthy too. You can use this process to turn garden and kitchen waste into a free, environmentally friendly source of organic matter, which can be put back on to your garden, improving the soil and conserving moisture. It also helps to reduce the amount of rubbish that must go into a landfill site (RHS, 2023).

Information sourced from: https://www.food.gov.uk/food-safety