Food packaging

Introduction

These materials are intended to provide lesson ideas for Science, D&T, English and Literacy. The ideas and materials are suitable for children at KS1 and KS2 although some differentiation will be necessary for the youngest children. In particular, younger children will not be able to follow the written instructions on the pupil sheets. However, they should be able to manage the project work with support.

The materials focus on the use of plastics in modern food packaging and the impact this can have on the environment.

Project overview

Stage	Time	Overview
1: Introduction	5-10 mins	What do we mean by packaging and what happens to used packaging materials?
2: Main presentation	10-15 mins	A presentation describing some problems that modern packaging materials may cause, the purposes and types of packaging and introducing the 'Six Rs'.
3: Project work	20-120 mins	There are five suggested tasks relating to food packaging. Task 1: Interview an elderly relative about how they used to shop and how food used to be packaged. Task 2: Plan how to pack a healthy picnic that avoids plastic food packaging and disposable plastic forks/glasses. Task 3: Design a poster or presentation to persuade consumers or manufacturers to apply the 'Six Rs' to food packaging. Task 4: Ten-top ways to reuse a jam-jar. Task 5: A creative writing task about Marinella and Marino, the Marine Turtles.

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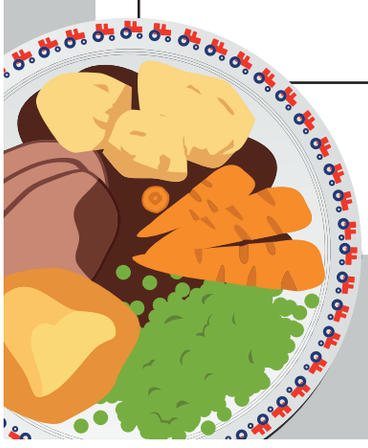
Presentation notes

These notes also appear on the PowerPoint 'motes' pages.

Slide 2: Introduction	Children should be familiar with packaging. Ensure they know about different types of packaging and what 'landfill' means.
Slide 4: Plastic waste causes problems in the oceans…	Plastic waste does not decay quickly. Therefore, plastic waste that ends up in the oceans is likely to remain there for decades. There are many examples of where animals have become entangled in plastic waste such as plastic bags, bottle and discarded nylon fishing nets.
Slide 5: …and on land	In the UK, we now recycle a lot of our waste plastic. However, plastic in the form of polythene and clingfilm ends up in landfill. Some households do not recycle waste and waste from litter bins in public places is rarely sorted for recycling.
Slide 6: The purposes of food packaging	All these reasons are important. Food is kept fresh because packaging may keep the food dry, keep microbes out or may enclose a protective atmosphere such as nitrogen gas (to stop food oxidising and to stop some microbes from multiplying).
Slide 7: Life before plastic: paper, glass and tins	Plastic packaging is relatively recent: 1946: The first plastic spray bottle was invented. 1954: Polystyrene foam was invented. 1950: Polythene bin bags were invented. 1960: Bubble wrap was invented. 1970s: Many drinks such as milk, lemonade and cola in plastic bottles become widespread. Plastic containers are used for foods like yoghurt. 1986: Microwaveable plastic trays are invented. Before plastic, food was packaged in cellophane (made from wood, cotton or hemp), paper (including waxed and greaseproof paper), tins and glass bottles or jars.
Slide 8: Plastic packaging… Slide 9: …and more packaging	Children will be very familiar with modern packaging materials. They may be less familiar with paper, glass and tin packaging.
Slide 10: Benefits of food packaging	This is reinforcement of Slide 6. This is to emphasise that plastic packaging is beneficial provided it is disposed of and processed responsibly.
Slide 11: Reducing waste: The 'Six Rs' Slide 12: Examples of the 'Six Rs' in action	The 'Six Rs' are an important checklist. They are used by designers to reduce the environmental impact of products. They can also be used to evaluate the environmental impact of other products. Consumers may also use the 'Six Rs' to reduce their negative impact on the environment.



Slide 13: What would you do?	This gives an simple example of how to reduce plastic waste as a consumer. Some companies are doing their bit to reduce waste. Starbucks now offer a 25 pence discount on coffee if presented with a reusable cup.
Slides 14-32:	These slides explain the tasks for children. You may prefer to provide the children with a 'Pupil sheet' or show/explain to the children what to do.

The tasks

Task 1: Interview an elderly relative about how they used to shop and how food used to be packaged

Suggested equipment and materials:

PowerPoint presentation or the student sheet, interview questions, clipboard, sound recorder app such as the 'Voice Memo' app in the 'Extras' folder on iPhone. A voice recording app is usually built into Android software too.

Task overview:

Children use the stimulus material with example interview questions to devise additional questions. If appropriate, they interview an elderly relative using their interview questions and make notes or record their relative's responses using a sound recording app. Children use the outcomes of the interview to write a report describing how people used to shop and how food used to be packaged. You may prefer to record an interview with an elderly friend relative yourself to use in class with your children.

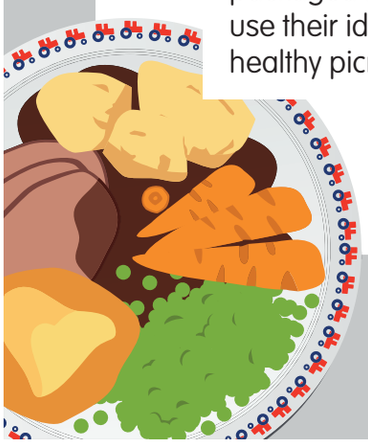
Task 2: Plan how to pack a healthy picnic that avoids using additional food packaging and disposable plastic forks/glasses

Suggested equipment and materials:

PowerPoint presentation showing different types of food packaging and storage materials or the student sheet.

Task overview:

Children use the stimulus material to explore different ways in which food and drink are packaged by shops and think about the additional food packaging they use at home. They use their ideas about healthy food options and the stimulus material to plan how to pack a healthy picnic. Children describe their plan using pictures, diagrams and text.



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Task 3: Design a poster or presentation to persuade consumers or manufacturers to apply the 'Six Rs' to food packaging

Suggested equipment and materials:

PowerPoint presentation or the student sheet, laptop/tablet or A3 paper, coloured pencils.

Task overview:

Children use the stimulus material explaining about the 'Six Rs' to design a poster or presentation. It should encourage people who design, make, buy and use things to think about packaging and to persuade them to create less waste from it.

Task 4: Ten-top ways to reuse a jam-jar

Suggested equipment and materials:

PowerPoint presentation or the student sheet showing one novel use of a jam-jar, craft materials, digital camera.

Task overview:

Children think creatively to develop ideas for reusing empty jam jars as an example of 'upcycling' (defined as the creative reuse of waste materials). They try out their idea using craft materials and photograph their product. They produce an illustrated 'how-to' sheet as modelled by the stimulus material.

Task 5: A creative writing task about the marine turtles, Marinella and Marino

Both the names Marinella and Marino are derivatives of the Latin name 'Marin', meaning, 'of the sea'.

Suggested equipment and materials:

PowerPoint presentation or the student sheet.

Task overview:

Children use information from the stimulus material to plan and write a story or poem about the effect of waste plastic packaging on marine turtles.

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FARMVENTION

Possible links to the English National Curriculum

Stage/subject	Topic	National Curriculum statements
KS1: Science	Y1 Everyday materials	• Distinguish between an object and the material from which it is made • Compare and group together a variety of everyday materials on the basis of their simple physical properties.
	Y2: Uses of everyday materials	• Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses.
	KS1 Working Scientifically	• Asking simple questions and recognising that they can be answered in different ways. • Identifying and classifying. • Using their observations and ideas to suggest answers to questions.
KS1 Design and technology	Design	• Design purposeful, functional, appealing products for themselves and other users based on design criteria. • Generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and, where appropriate, information and communication technology.
	Make	• Select from and use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing]. • Select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics.
	Evaluate	• Explore and evaluate a range of existing products. • Evaluate their ideas and products against design criteria.
	Cooking and nutrition	• Use the basic principles of a healthy and varied diet to prepare dishes. • Understand where food comes from.
KS1 English	Composition	• Develop positive attitudes towards and stamina for writing. • Consider what they are going to write before beginning. • Make simple additions, revisions and corrections to their own writing. • Read aloud what they have written with appropriate intonation to make the meaning clear.
LKS2 Science	Y4: Living things and their habitats	• Recognise that environments can change and that this can sometimes pose dangers to living things.

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	LKS2 Working Scientifically	• Asking relevant questions and using different types of scientific enquiries to answer them. • Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions. • Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables. • Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions. • Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions. • Identifying differences, similarities or changes related to simple scientific ideas and processes. • Using straightforward scientific evidence to answer questions or to support their findings.
LKS2 English	Composition	• Plan writing. • Draft and write. • Evaluate and edit. • Proof-read for spelling and punctuation errors. • Read aloud their own writing, to a group or the whole class, using appropriate intonation and controlling the tone and volume so that the meaning is clear.
UKS2 Science	Y5: Properties and changes of materials	• Compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets. • Use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating. • Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic.
	UKS2 Working Scientifically	• Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary. • Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate. • Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs. • Using test results to make predictions to set up further comparative and fair tests. • Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations. • Identifying scientific evidence that has been used to support or refute ideas or arguments.

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KS2 Design and technology	Design	• Use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose, aimed at particular individuals or groups. • Generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design.
	Make	• Select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately. • Select from and use a wider range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities.
	Evaluate	• Investigate and analyse a range of existing products. • Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work. • Understand how key events and individuals in design and technology have helped shape the world.
	Cooking and nutrition	• Understand and apply the principles of a healthy and varied diet. • Prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques • Understand seasonality.
KS1-KS2: 6.3: Language and literacy		The writing they [pupils] do should include narratives, explanations, descriptions, comparisons, summaries and evaluations: such writing supports them in rehearsing, understanding and consolidating what they have heard or read.

Useful links and additional resources

Practical Action's 'Six Rs' classroom materials: https://practicalaction.org/6rs

Zero Waste to Landfill Certification:
https://www.valpak.co.uk/waste-recycling/zero-waste-to-landfill

The Waste and Resources Action Programme (which operates as WRAP):
http://www.wrap.org.uk/
WRAP's vision is a world in which resources are used sustainably.
Their mission is to accelerate the move to a sustainable, resource-efficient economy by:
reinventing how we design, produce and sell products,
rethinking how we use and consume products, and,
redefining what is possible through re-use and recycling.

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National Geographic article about plastics:
https://www.nationalgeographic.com/magazine/2018/06/plastic-planet-waste-pollution-trash-crisis/?beta=true

Starbucks reward customers who get into the recycling habit with a discount on every drink bought. Customers who bring their own tumbler or cup get a 25p discount on their drink:
https://www.starbucks.co.uk/responsibility/environment/recycling