

Applicable standards

National Curriculum for England Key Stage 2

KS2 Geography

Element of the Geography Programme of Study

Lessons

1 2 3 4 5 6 7 8 9 10

Human and physical geography

- Describe and understand key aspects of physical geography, including: climate zones, biomes and vegetation belts, rivers, mountains, volcanoes and earthquakes, and the water cycle
- Human geography, including: types of settlement and land use, economic activity including trade links, and the distribution of natural resources including energy, food, minerals and water

1	2	3	4	5	6	7	8	9	10
			✓	✓		✓	✓	✓	
		✓	✓		✓	✓	✓		

Geographical skills and fieldwork

- Use maps, atlases, globes and digital/computer mapping to locate countries and describe features studied

1	2	3	4	5	6	7	8	9	10
				✓					

KS2 English

Element of the English Programme of Study

Lessons

1 2 3 4 5 6 7 8 9 10

Spoken language

- Listen and respond appropriately to adults and their peers
- Ask relevant questions to extend their understanding and knowledge
- Articulate and justify answers, arguments and opinions
- Give well-structured descriptions, explanations and narratives
- Maintain attention and participate actively in collaborative conversations
- Use spoken language to develop understanding through speculating, hypothesising, imagining and exploring ideas
- Participate in discussions, presentations, performances, role play, improvisations and debates
- Consider and evaluate different viewpoints, attending to and building on the contributions of others

1	2	3	4	5	6	7	8	9	10
✓	✓	✓	✓	✓	✓	✓	✓	✓	
✓	✓	✓	✓	✓	✓	✓	✓	✓	
✓	✓	✓	✓	✓	✓	✓	✓	✓	
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✓	✓	✓	✓	✓	✓	✓	✓	✓	

KS2 Mathematics

Element of the Mathematics Programme of Study

Lessons

1 2 3 4 5 6 7 8 9 10

Statistics

- Interpret and present discrete and continuous data using appropriate graphical methods, including bar charts and time graphs

1	2	3	4	5	6	7	8	9	10
			✓						

Applicable standards

National Curriculum for England Key Stage 2

KS2 Design and technology	Lessons									
	1	2	3	4	5	6	7	8	9	10
Element of the Design and Technology Programme of Study										
Design										
<ul style="list-style-type: none"> 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 									✓	✓
<ul style="list-style-type: none"> Generate, develop, model and communicate ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design 									✓	✓
Make										
<ul style="list-style-type: none"> Select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately 										✓
<ul style="list-style-type: none"> 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										
<ul style="list-style-type: none"> Investigate and analyse a range of existing products 									✓	✓
<ul style="list-style-type: none"> Evaluate ideas and products against design criteria and consider the views of others to improve work 									✓	✓
<ul style="list-style-type: none"> Understand how key events and individuals in design and technology have helped shape the world 										✓

SCHEME OF WORK

Lesson 1: What are plastics? Part one

Overview

In this lesson students investigate the properties of materials and develop an understanding of why plastic is so widely used due to its versatility. They learn how plastic is produced and then go on to investigate which material is most effective for the purpose of insulation. The lesson concludes with an overview of the historical development of plastics where students identify significant events on a timeline.

Learning outcomes

- Match materials to their properties
- Understand the process of plastic production
- Describe why plastic is chosen over other materials
- Investigate which materials are the best insulators
- Review the historical development of plastics
- Reflect on why plastic is a versatile material

Resources



Slideshow 1:
What are plastics? Part one



Activity Overview 1a:
Insulation investigation



Student Sheet 1a:
Materials card match

Student Sheet 1b:
Insulations investigation

Student Sheet 1c:
Innovation diary



Gallery:
PET bottle production



Thinglink:
Global plastics production

Lesson 2: What are plastics? Part two

Overview

In this lesson students continue to investigate different types of plastics, so that by the end of these first two lessons they are familiar with the seven types of plastic and what they are used for. Students identify why each type of plastic is well suited to its use. They go on to complete a practical to create their own plastic slime using borax and PVA glue (creating a polymer) and reflect on the variety of uses for plastics.

Learning outcomes

- Understand how to identify the seven types of plastic
- Describe the plastic production process
- Describe the plastic recycling process
- Create a polymer
- Reflect on sustainable alternatives to plastic

Resources



Slideshow 2:
What are plastics? Part two



Activity Overview 2a:
Making plastic



Student Sheet 2a:
Plastic production



Gallery:
Where does plastic come from?

Gallery:
How is plastic recycled?



Thinglink:
Seven Types of plastic

SCHEME OF WORK

Lesson 3: Where are plastics? Part one

Overview

In this lesson students follow the life-cycle of a PET bottle. Using Google Maps, students track the journey of a plastic bottle during its lifetime and map the possible outcomes of where it ends up. Students go on to discover how plastic is recycled into other plastics. They then reuse a plastic bottle by completing a craft activity where they make a snack box or bird feeder. It may be possible to organise a speaker to join this lesson, some local authorities offer schools programmes or outreach workshops.

Learning outcomes

- Explore what happens to a plastic bottle after its first and only use
- Map the journey of a plastic bottle from production to recycling or litter
- Understand the recycling process
- Demonstrate how single use plastics can be reused
- Explore alternative uses for a range of discarded plastics

Resources



Slideshow 3:
Where are plastics? Part one



Activity Overview 3a:
Google maps

Activity Overview 3b:
Bird feeder

Activity Overview 3c:
Snack box



Student Sheet 3a:
Life cycle of a plastic bottle



Gallery:
How is plastic recycled?



Thinglink:
Life cycle of a plastic bottle

Lesson 4: Where are plastics? Part two

Overview

In this lesson students discover some of the incredible uses for plastic and reflect on why single-use plastics have become unpopular. Students examine data from a sample of litter collected at Henderson Island. They go on to work out how and where the plastic litter could have come from and create a bar graph representing this data.

Learning outcomes

- Examine data from Henderson Island
- Create a bar graph demonstrating the amount of plastic litter collected
- Explore important uses of plastic
- Create a poster demonstrating the pros and cons of plastics
- Reflect on societies needs / wants related to plastics

Resources



Slideshow 4:
Where are plastics? Part two



Student Sheet 4a:
Henderson Island



Gallery:
Fantastic plastic

Lesson 5: What impact can plastic have? Part one

Overview

In this lesson students are introduced to microplastics and ocean plastic pollution and begin to understand how and why it occurs through investigating one of three case studies. They go on to discover some of the dangers plastic pollution and microplastics can pose to marine life and consider how entire food webs are impacted.

Learning outcomes

- Understand ocean plastic pollution statistics
- Investigate different ways plastic pollution affects marine life
- Explore three case studies related to ocean plastic pollution
- Understand the impact of microplastics on food webs
- Reflect on how plastic pollution impacts the wider food web

Resources



Slideshow 5:
What impact can plastic have? Part one



Activity Overview 5a:
Food webs



Student Sheet 5a:
Plastic pollution case studies



Gallery:
Marine plastic pollution

Gallery:
Coral life (advanced)

SCHEME OF WORK

Lesson 6: What impact can plastic have? Part two

Overview

This lesson sees students investigate how plastics get into the oceans and affect marine life. Students discover how plastic pollution doesn't start when plastic enters the ocean. They go on to consider economic, political and social elements of human geography that impact ocean plastic pollution. Students examine case studies relating to plastic pollution at home and abroad to consider the social and economic impacts.

Learning outcomes

- Understand how plastics get into the ocean ecosystem
- Describe three ways in which ocean plastic pollution can occur
- Discover some of the ethical and social issues related to ocean plastic pollution
- Discuss and describe how plastics pollution is linked to economics, human rights and sustainability
- Reflect on the sustainable development goals

Resources



Slideshow 6:
What impact can plastic have? Part two



Student Sheet 6a:
Plastic impact case studies

Student Sheet 6b:
Plastic profiles

Student Sheet 6c:
The sustainable development goals



Gallery:
Marine plastic pollution

Lesson 7: What can I do? Part one

Overview

The last two lessons in this unit challenge students to work collaboratively to create a campaign based on the 6 Rs. First students find out about innovation, development and policy changes that have recently occurred. They are then briefed on their mission – to reduce the amount of plastic consumption in their school community. In groups students then design and implement their campaign, planning and launching it over the following week.

An interim lesson can follow this lesson for students to continue to work on their campaigns, measure progress, make changes and / or work on promoting their cause. They might wish to conduct surveys during this time, analyse their data and make promotional materials.

Learning outcomes

- Name the 6 Rs and explain what each one means
- Understand developments in technology and innovation regarding plastics pollution
- Discover how recent policy has been proposed and enacted relating to plastics pollution
- Reflect on how they can make a difference
- Work collaboratively to plan a plastics pollution campaign

Resources



Slideshow 7:
What can I do? Part one



Student Sheet 7a:
Our plastics project

Lesson 8: What can I do? Part two

Overview

In the last lesson students review the success of their campaign and the impact it had on plastic consumption. They review their targets, reflect on what went well and decide what they would do differently. They then share their results and discuss what they could do going forward. The unit of work could end with an assembly for students to share their findings and continue to spread their message.

Learning outcomes

- Review the impact of their campaign
- Reflect on achievements and challenges
- Share their findings and results with a wider audience
- Discuss what they plan to do next

Resources



Slideshow 8: What can I do? Part two

Lesson 9: Design Technology - The plastics problem

Overview

In this lesson students are posed with a problem; they need to design a product which can carry a number of items from one location to another. They should attempt to design a new product and consider its features including strength, usability and materials. Students go on to evaluate existing solutions to this product in terms of strength, cost, aesthetics, usability and sustainability. Finally, they conclude by evaluating whether a new product is required or whether there are already suitable alternatives.

Learning outcomes

- Understand design criteria
- Develop and communicate ideas
- Discuss purpose, function and appeal of products
- Investigate and analyse a range of existing products
- Evaluate ideas and products

Resources



Slideshow 9:
The plastics problem



Student Sheet 9a:
Solutions sheet

Student Sheet 9b:
Product analysis



Thinglink:
What's your bag?

Lesson 10: Design Technology - The plastics solution

Overview

Students explore a range of products which have been redesigned with sustainability in mind. They then consider some of the other single-use plastics they know of and choose one to redesign focussing on sustainability. Students then develop their designs considering the materials they will use and how it will be manufactured, pitching their idea to the class and reflecting on feedback. At the end of these two lessons students can produce a prototype.

Learning outcomes

- Understand key events which have shaped the redesign of plastic products
- Research and develop an idea
- Model and communicate designs in a variety of forms
- Evaluate ideas against criteria and consider the views of others
- Select a range of tools and materials to develop a product

Resources



Slideshow 10:
The plastics solution



Student Sheet 10a:
Product design