

Plastic: Key Stage 3

Ideas for teachers

including teachers' notes for
pupils' activity pages

Hyperlinks within the text are **underlined bold copy**.

Click on the link to find out more about the subject.

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Ideas for teachers

Background

The amount of plastic waste generated annually in the UK is estimated to be nearly 3 million tonnes. An estimated 56% of all plastics waste is used packaging, three-quarters of which is from households. It is estimated that only 7% of total plastic waste is currently being recycled.

The production and use of plastics has a range of environmental impacts. Firstly, plastics production requires significant quantities of resources, primarily fossil fuels, both as a raw material and to deliver energy for the manufacturing process. In addition, plastics manufacture requires other resources such as land and water and produces waste and emissions.

Plastics production also involves the use of potentially harmful chemicals, which are added as stabilisers or colorants. Many of these have not undergone environmental risk assessment and their impact on human health and the environment is currently uncertain.

Most plastics are non-degradable, taking a long time to break down, possibly up to hundreds of years – although no-one knows for certain as plastics haven't existed for long enough. With more and more plastics products, particularly plastics packaging, being disposed of soon after their purchase, the landfill space required by plastics waste is a growing concern.

Plastic waste, such as plastic bags, often becomes litter. For example, nearly 57% of litter found on beaches in 2003 was plastic.

Currently in Northern Ireland only limited facilities exist for recycling plastics.

Every square mile of ocean contains an average of 46,000 pieces of plastic, which choke and entangle sea birds and mammals



Plastic bags do not biodegrade; they break down into small pieces, eventually entering the food chain when eaten by animals

British shoppers use more than 17 billion plastic bags per year – the equivalent of 350 for every adult. We use each one on average for only 12 minutes before throwing it away. Plastic bags are destined for landfill almost as soon as they are created, and add to the 2.8 million tonne mound of plastic waste produced in the UK every year. Some ends up in the sea, with every square mile of ocean now containing an average of 46,000 pieces of plastic, which choke and entangle sea birds and mammals. What's more, plastic bags do not biodegrade; instead they eventually break down into smaller and smaller bits, contaminating soil, waterways and oceans, and entering the food chain when eaten by animals.

Reusing plastic is preferable to recycling as it uses less energy and fewer resources. However the overall aim should be to reduce the amount of plastic we use.

Please see [Plastic information sheet](#) from [Waste Online](#) or visit [rethink waste: in education](#) for more information.

Rethink

- Watch this video looking at the use of [plastic for bottled water](#) Discuss the issues raised in the video with your students.
- Consider the use of plastics used in food packaging.
- Think about organising [Waste Free lunch](#) days when students should try and minimise the amount of packaging used for lunches. Compare the amount of waste generated from a regular lunch day with that from one of your Waste Free Days.
- Encourage students to use reusable water bottles, bags and lunch boxes.
- Set the students a task to list all the plastic products they use in everyday life.
- Look at this [picture gallery](#) of the impact of rubbish on some developing countries. Discuss the situation with

On average we use a plastic bag for only 12 minutes before throwing it away

Reusing plastic is preferable to recycling as it uses less energy and fewer resources

Apart from that which has been incinerated, nearly every bit of plastic ever made still exists today



your students; how do the pictures make them feel; what do they feel they can do about it. Note that waste from richer countries is often sent for 'recycling' in poorer countries.

- Read the positive stories of how countries around the world are tackling the issue of plastic bags. See **Plastic Bag Bans Around the World**.
- Also read **Plastic Bag Free Towns** to find out how people in the UK have taken on the problem of plastic bags themselves.
- Challenge the students to come up with suggestions as to how they could persuade more people in their area to reduce their use of plastic bags.
- Invite local businesses, **politicians** or councillors in to your school so children can question them about what they are doing to reduce packaging.
- Visit the local supermarkets and look at the most heavily packaged items see student activity.
- Contact your local council to arrange a representative to visit your school to discuss the topic of waste
- Ask the students to search the internet to find out about alternatives to plastic packaging materials.

Reduce

- Class or school councils could lobby the students to use fewer plastic bags and bottles.
- Read how one well known **supermarket has tried to reduce their packaging**. See how changing the shape of the containers, the materials involved and removing things like plastic trays can reduce the volume of packaging involved.

Making reusable and sustainable items a way of life is a very positive step towards a planet-friendly existence



Each year, an estimated 500 billion to one trillion plastic bags are consumed worldwide



Reuse

- Plastics are amazing materials, often designed to be hardy and long lasting. Some plastics are unsuitable for reusing with food or drink but can often be used for other purposes. Task your students to come up with creative uses for plastic bags or bottles. Look [here](#) for some ideas.

An average
323 plastic bags
are taken into our
homes every year

Recycle

- Have recycle bins available in class and make sure students know when and how to use them and which plastic can be recycled.
- Visit or contact your local council recycling centre or packaging factory to learn more about the process involved and the energy used. For a list of local councils in Northern Ireland click [here](#).
- Learn about the different **recycling symbols for plastic**
- Find out more about **recycling** and the facilities in your area. Task the students to carry out internet searches to find out about opportunities for plastic recycling businesses in Northern Ireland
- Use the internet to find out which types of plastic can be recycled in their local area.

Only 2.5% of
plastic bottles are
presently recycled
in Europe

Teachers' notes for pupils' activity pages

Key Stage 3

Activities

1. Design a bag
2. Case study
3. Field study
4. Join the dots

Curriculum links

Citizenship
Science
English language
Mathematics

Background knowledge

Plastic is made from oil. Oil is a limited resource. Production and recycling of plastics consumes energy and can be harmful to the environment. Most plastic still ends up in landfill. Plastic pollution is growing problem both at home and internationally. Plastic can take hundreds of years to degrade.

Aim

Students will understand the importance of reducing the amount of plastic used in such everyday objects such as plastic bags, bottles and food packaging.

Students will feel empowered to take action to reduce their usage of plastics.

Objectives and aims of activities

Activity 1: Design a bag

Students will design a reusable shopping bag for the 11-15 year old age group to take when shopping.

- Discuss with your students the number of plastic bags they get when they are out shopping.
- Ask them if they ever take old plastic bags out with them if they are going shopping, if not why not.
- Ask them to design a reusable shopping bag that will be attractive to their age group.
- They will design their bag and prepare a sales pitch to encourage people to use them instead of taking new plastic ones from the shops.
- They should think of the most suitable material, create an eye-catching design or memorable message and add any additional ideas or features which might make the bag more useful or more attractive.
- They should draw their designs and label any special features.
- Students will then prepare a prototype and a pitch to encourage their peers to choose your bag.
- Allow students time to pitch their designs to each other. They could vote to find the most popular design.
- Ask the students what they could do to encourage more shops to reduce packaging or the number of plastic bags they use? Think about writing letters, joining campaigns and asking shops about their environmental policies.
- Task the students to search the internet to find a local/national campaign to encourage reduction in packaging and/or plastic bag usage.

Activity 2: Case study

- Students will understand how small changes to materials used and the way food is packaged for supermarkets can substantially reduce waste and the need for new plastic.
- Students will start to understand their power as consumers.
- Students will be empowered to lobby local businesses and politicians to take action on their environmental commitments.

Activity 2: Case study

Consider the case study and ask the students to read the examples of how one supermarket chain has started to **reduce food packaging**.

- Discuss the strategies this supermarket chain using to reduce their environmental impact? Suggested lines of questioning:
 - What simple changes has the supermarket made to reduce product packaging and packaging used for transporting products?
 - What argument does the supermarket give to continue to plastic package fresh fruit and vegetables?
 - This supermarket has made a very public commitment to reducing its environmental impact. What do you think are the benefits for the supermarket, for the consumer and for the producers?

Activity 3: Field visit to your local supermarket

Students will identify some over packaged products

Challenge your students to visit their local supermarket to look for heavily packaged products. This activity could be done in school in teams or perhaps as homework.

- They can then contact the manufacturer, producer or supermarket to ask about their packaging policies and any plans to improve their environmental impact.
- Adapt this **letter writing guide** for tips.
- Invite local supermarket owners or politicians in to school to question them and lobby for change.

Activity 4: Join the dots

- Students will start to see how our actions here can have far reaching impacts.
- Students will understand the role they can play in reducing plastic usage and waste.

This activity can be done as an individual as described on the student's page or as a whole class activity using a ball of string for the connections.

Ask the students to stand in a circle and label them with one of the people from the diagram. You may like to think of more people to include more students in this activity.

Start with any one of the labeled students and ask them to think of a connection they may have to anyone else in the

circle. Holding on to the end of the string they should pass the string on to the person they feel they have a connection with and explaining how they could be connected. The next student does the same until the people are all interconnected.

Pulling on the string illustrates that something happening in one place has a wider impact. This can be both beneficial and detrimental.

For example:

■ ***Negative consequence***

Plastic waste discarded by the supermarkets may be sent for processing in a developing country that does not have good facilities to deal with it.

■ ***Positive consequence***

The person reusing their plastic bags reduces the amount of new plastic bags required from the supermarket and subsequently the manufacturer.