

How does plastic affect the environment?



Age 11-14



60 minutes

Curriculum links

- Investigate how human pollution impacts the environment
- Understand how plastic pollution affects marine organisms

Resources



Slideshow 4:
How does plastic affect the environment?



Student Sheet 4a:
Common plastic waste

Student Sheet 4b:
Plastics in the ocean

Student Sheet 4c:
Marine life cards



External Link:
Sea turtle with a straw up its nostril

Extension or home learning

Completing the “Plastic advocacy” task. This will involve redrafting the letter or poster to a professional standard. Where possible, to be completed on a computer and printed out.

PLASTIC CLEVER SCHOOLS

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Register here to join in:

<https://plasticcleverschools.co.uk/>

Lesson overview

In this biology Key Stage 3 (KS3) lesson, students learn how plastics affect the marine environment. This lesson is focussed on the physical harm caused by plastics to marine organisms and eco-system services. Included are teacher resources that promote students to become advocates for reducing plastic waste to protect our oceans.

Lesson steps

1. What is the most common trash? (10 mins)

Students order the types of waste found washed on beaches from the most to least common.

2. How does plastic affect the environment? (15 mins)

Students move around the classroom to investigate how different types of plastics waste impact the environment.

3. Marine life cards (10 mins)

Students have a set of marine animal cards. They are presented with information and must decide which animal is going to be most and least effected.

4. Plastics advocacy (20 mins)

Students apply what they have learned by choosing one of two activities. Either making a poster or writing a letter.

5. Marine animal reflection (5 min)

Students write a reflection on what they have learned in the lesson from the perspective of a marine animal.

Learning outcomes

- Order most common types of plastic waste
- Describe how plastic waste impacts the environment
- Predict how plastic waste impacts a variety of marine organisms
- Formulate solutions to plastic waste issues
- Predict how plastic waste impacts a variety of marine organisms

TEACHER GUIDANCE 4 (page 1 of 3)

HOW DOES PLASTIC AFFECT THE ENVIRONMENT?

Step Guidance

Resources

1
10
mins



Students are introduced to the topic by first considering what everyday products are most commonly found in our oceans.

- Using slide 3 alone, ask students to order these everyday items from most to least commonly found in the ocean.
- Note that, depending on your class, this can be done with or without Student Sheet 4a.
- Reveal the answers to students, as shown on slide 4,
- Using slide 5, introduce the topic and learning objectives.

Slideshow 4:
Slides 1-5

Student Sheet 4a:
Common plastic waste

2
15
mins



Students now have an appreciation of the abundance of different materials. Next, they move to different stations around the room and discover how different objects can affect the environment.

- Print out slides 22-27 and place around the room. For larger classes print two copies.
- Hand out Student Sheet 4b.
- Students move to each station filling in two sections of the table titled, 'Impact on the environment', and 'How can we prevent this?'
- Once several students have completed and returned to their seats, ask all students to return. Review the sections allowing all students to fill in missing sections.

Slideshow 4:
Slide 6

Student Sheet 4b:
Plastics in the ocean

Print:
Slides 21-26

3
10
mins



In step 3, students must consider how different factors will affect marine organisms. They must use knowledge acquired in step 2 to make predictions.

- Use slide 7 to introduce microplastics. [If you want to explore this and the link to climate change further, see slides 28 and 29.](#)
- Using slide 8, introduce the task to students. Explain that they will be predicting how different statements will effect the marine organisms shown on the board.
- Note that, depending on the class, you can either do this activity from the board or using Student Sheet 4c.
- Reveal statement 1 on slide 9. Allow students to discuss, in pairs or groups, and rank which organisms are affected most to least. Review choices made by groups as a whole class discussion.
- Repeat for statements 2 and 3, respectively shown on slides 10 and 11.

Slideshow 4:
Slides 6-11

Student Sheet 4c:
Marine life cards

Video:
Sea turtle with straw up its nostril - [read guidance on page 42 before sharing this video.](#)

TEACHER GUIDANCE 4 (page 2 of 3)

HOW DOES PLASTIC AFFECT THE ENVIRONMENT?

Step Guidance

Resources



Recently footage of a turtle having a plastic straw removed from its nostril became hugely popular on social media. The footage was taken by Christine Figgener, marine biologist at Texas A&M University. Initially they assumed it was a barnacle or worm. You may want to introduce step 3 with the video. Pose students the question: "Can you guess what has got stuck in the turtle's nostril?" This video is 8 minutes long so you may wish to use just a short excerpt.



This video is hosted on YouTube and you may need to unblock this service, liaising with your IT department.

The link for the video is:
Sea Turtle with Straw up its Nostril *NO* TO PLASTIC STRAWS

<https://youtu.be/4wH878t78bw>



Watch the video before presenting it to the class.

Depending on the age of your class, consider whether it is too graphic. This video contains inappropriate / strong language.

4
20
mins



Students now understand how plastics harm marine organisms. In this step, students attempt to find solutions to the problem. They are introduced to advocacy and create their own campaign material.

- Using slide 12, introduce students to scales of change.
- Using slide 13, students consider what changes individuals can make to reduce harm caused by plastic. Hand out post-it notes. Ask students to work in pairs or groups and write their ideas on to a post it note. Facilitate students to share their ideas in a whole class discussion.
- Using slide 14, highlight more changes individuals can make to reduce physical harm caused by plastic.
- slide 15, explain what an individual can do to create a bigger change.
- Introducing the plastic advocacy task, show slide 16. Ask students to choose either option 1 or option 2. Students can either write a letter to their local government or create a poster for their community.
 - Ensuring students progress, show students slides 17 and 18 co-create a success criteria. Facilitate a discussion on:
 1. "What makes a good campaign poster?"
 2. "What makes a good letter?"
 - Ask one student to stand by the class board and list the classes' shared success criteria.
 - Ask students to begin Plastic Advocacy task. Circulate to offer fast feedback.

Slideshow 4:
Slides 12-18

TEACHER GUIDANCE 4 (page 3 of 3)

HOW DOES PLASTIC AFFECT THE ENVIRONMENT?

Step Guidance

Resources

5
5
mins



Students reflect on the lesson from different perspectives.

- Using slide 19, ask students, “Describe what you would think of this lesson if you were...”
 1. A turtle.
 2. A drinks manufacturer.
 3. A fisherman
- Collect student's response.

Slideshow 4:
Slide 19

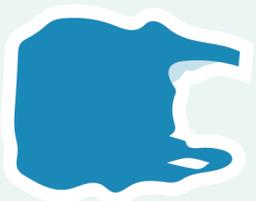
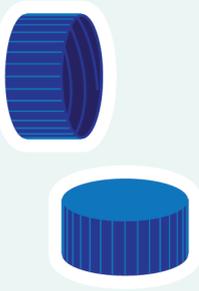
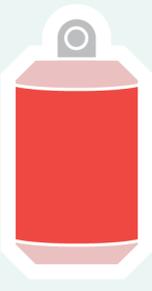
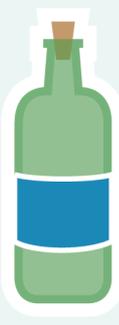
+
20
mins



As there is limited time in the lesson, ask students to complete their plastic advocacy task. This will involve either redrafting their letter or poster to a professional standard. Where possible, completing on a computer.

Common plastic waste

These items are often found washed up on beaches. Order them from the most to least commonly found.

		Other plastic bags				Plastic Grocery bags	
Plastic bottl caps 		Aluminium cans 		Plastic straws 		Glass beverage bottle 	
Plastic cups and plates 		Plastic bottl 		Food wrappers 		Cigarette butt 	



Plastic in the ocean



Plastics in the oceans can cause harm to the environment. Move to each station, write down the impact on the environment, and think of a way how we can prevent it.

Source	Impact on the environment	How we can prevent it
Cigarette butt		
Beverage bottles and caps		
Plastic straws		
Plastic bags		
Fishing line and nets		
Microplastics		

Marine life cards

Sperm whale



The sperm whale is the largest toothed whale on the planet, living in ice-free oceans around the world. They often hunt at depth and eat larger prey such as squid.

Mussel



Mussels are a type of shellfish. They live in coastal waters, mostly in temperate oceans. They feed by filtering the seawater for plankton, small sea creatures floating in the water.

Lanternfish



Lanternfish live in all the world's oceans. They live at depths of between 300m and 1,500m, rising towards the surface to feed at night. They feed on plankton, small animals drifting on the ocean currents.

Albatross



Albatross live across the southern oceans of the world and in the North Pacific. They return to land to breed and nest. They eat a range of marine life including squid and fish

Green turtle



Green turtles live across tropical and subtropical oceans worldwide. They nest on beaches and can be found near human settlements. Turtles eat many different foods including jellyfish

