



**The Big Blue Ocean Cleanup’s objective is to offer a Key Stage 2-Key Stage 3 curriculum unit to provide children with an understanding of how ocean pollution impacts on the natural world and inspire them to do something about it.**

**This will be achieved in 4 topics.**

- 1. Seabirds**
- 2. Oceans and Currents**
- 3. Pollution Analysis**
- 4. Looking to the future**

**Each topic aims to provide a basic understanding around the title theme, as well as outlining key points and how they are linked.**

**The lesson plans are designed to have the video presented at the start of the lesson. These videos raise the key points that will consequently be further developed within the teaching material provided, to give an overall contextual understanding. Each lesson will also contain various suggested activities that can be included/adapted/excluded from the lesson as you deem necessary.**

**The lesson plans are also colour coded to hopefully make it simple for you to follow:**

**Grey – The video narrative – the information raised within the videos.**

**Black – Teaching Information – extra information to explain the points raised in the video and give them context. This is the information to be relayed to the children in the way you see fit. NOTE: Some concepts are complicated and although it has been simplified as much as possible, we do understand the teaching information may not be fully suitable for younger KS2 classes, therefore please adapt as necessary. We hoped by providing you with all the information, we could give you the understanding and enable you to choose what information would be most important for your class.**



**Green – Key point summaries** – The key points highlighted by the section of teaching information/activity. If no other extra information is retained by the students, then it is hoped they will be able to retain the key points. These key points are linked and as a minimum should allow the students to follow the lesson context from the start to finish.

**Blue –Activity/Class Question:** Our suggested activities/ class questions. Please adapt as you feel necessary.

*Key words and definitions. Will be presented in a box.*

### **Topic 3: Pollution analysis.**

**Video 3:** <https://www.bigblueoceancleanup.org/education-programme>

#### **Overall Learning Objectives:**

- 1. Learn many different ways we can effectively Reduce, Reuse and Recycle**
- 2. Understand how plastic gets into the ocean: The sources of marine plastic**
- 3. Learn how we can group marine plastics into 4 categories depending on their characteristics**
- 4. Learn how the different ocean currents (learnt about last topic) affect different types of plastic**
- 5. To understand how currents transport plastic around the world so it is present in very isolated and far away places.**

The video summarises key points regarding plastic pollution analysis and how we can help our oceans. The lesson should develop knowledge around these key points and help students understand how the key points are linked to one another.



### Video Information:

No matter where we live, we are connected to a large body of water such as a lake or the ocean. Nearly all rivers and streams eventually lead to the sea. Small creeks and streams join large rivers, which flow into estuaries and bays, and eventually into the ocean. When it rains materials on land, including soil, chemicals, and litter, are carried through runoff to bodies of water. How can we reduce the amount of rubbish which goes into the sea?

Reduce reuse recycle

**Class question: Can anyone tell me anything they have done recently to reduce the amount of plastic they have been using?**

### Teaching information:

Reduce reuse recycle:

These three things come in an order of priority:

1. **Reduce:** The most important thing we can do is to reduce the amount of plastic we are using.

One way to reduce the amount of plastic is to use alternatives:

- Glass
- Metal
- Compostable materials
- Paper (E.g paper straws)
- Cardboard (E.g. cardboard boxes to carry shopping, many supermarkets have left over cardboard boxes by the checkout so customers are able to use them to carry their shopping instead of buying plastic bags).
- Fabric – Fabric shopping bags are becoming very popular as they are a lot longer lasting and stronger than plastic bags.

2. **Reuse:** How can we reuse the plastics we use?

- Takeaway containers: Many takeaways come in plastic takeaway containers that are easily reused and are very suitable for storing food to go in the freezer.
- Food bags – Plastic food bags can be easily hand washed and dried and reused many times.



- Plastic bags can be reused for a multitude of different things.
  
- 3. **Recycle:** Finally, if the plastics cannot be reduced or reused the final stage is to recycle them.
  
- The most important part of recycling is to correctly group the recycling according to the local councils requirements. (You could print out a copy of this/ Explain how your local council groups your recycling)
- Most places around the country are unable to recycle black plastic: So any food from supermarkets (eg meats, fish, ready meals) that are contained in black plastic is unable to be recycled.
- Dirty plastic also cannot be recycled. In fact any recyclable item (glass/metal/plastic) cannot be recycled if it is dirty: E.g dirty milk bottle, juice bottles, food packaging, pasta sauce jar, baked bean tins etc.
- Failing to clean recyclable items and putting them in the wrong recycling groups are classic examples of waste mismanagement and part of the reason why plastic that could be recycled ends up in normal rubbish and normal rubbish can then end up in the ocean.
- We need to better our recycling habits and recycle properly: Rinse before recycling. Order into the corrects groups: For example Glass/Metal/Paper/Cardboard/Plastic.

**Key points:**

Reducing our plastic usage can be done by using alternative: Glass/Metal/Cardboard

Reusing plastic is also possible: Takeaway containers, food bags and plastic bags are very useful and can be easily reused.

Recycling is very important, but items can only be recycled if they are cleaned and grouped correctly.



**Activity 1: Having gone through the ways in which you can actively engage in reducing, reusing and recycling the amount of plastic that is used in day to day life. Come up with a class pledge to reduce the amount of plastic you use as a class. These ideas are fully flexible and can be adapted to suit the individual class as well as ensuring they are within school policy/rules.**

E.g. – Children can bring in a cup from home or a drinks bottle to fill with water instead of a single use plastic water bottle.

– Ban plastic bags - No plastic bags are to be brought in by the class (E.g bags that may hold packed lunch or PE kit) find alternatives, fabric bags.

### **Teaching information:**

More and more plastic is entering our oceans. This plastic originates from many different sources:

***Source of Plastic: The different ways plastic enters the ocean***

- Rivers transport any plastic within them downstream and into the ocean.
- Storms can cause water to run off the land, into rivers and oceans, this run off water picks up rubbish and plastic along the way and transports it.
- Beach visitors are another source of marine plastic. Where they leave litter, tidal water will pick it up and take it out to sea.
- Another source of plastic is improper waste disposal and illegal water dumping, both in rivers and the oceans.
- Discarded and lost fishing equipment also accounts for a huge amount of marine plastic. With so many different plastic inputs into the sea it isn't a surprise that the amount of plastic in the ocean is increasing at a drastic rate.



Key point Plastic enters the ocean through many different ways, these are called plastic sources:

- Littering
- Rivers
- Storm run off
- Beach litter
- Improper waste disposal
- Dumping of waste at sea.

We learnt from the last topic (Oceans and Currents) that once in the sea, lots of the plastic becomes concentrated/trapped in the middle of an ocean, known as a gyre – here it breaks down due to -Waves/Sun exposure/Wind exposure/Weathering. This is how plastics break down into microplastics.

There are many different types of plastic and we can group them into 4 categories. Fragments, Foams, Sheets and Threads

**-Plastic Fragments** – These are hard plastics that tend to break up into hard fragments. (E.g bottle caps, broken plastic bottles, toys, bucket and spade)

**-Plastic Foams** – compressible plastic like polystyrene (E.g takeaway boxes for chips, shipping packaging)

**- Plastic sheets** – flexible, flat and thin sheet plastic (bags and tarpaulins)

**-Plastic threads** - round line or rope. A huge amount of marine plastic comes from discarded fishing gear, nets, lines and rope. These can be categorised as plastic threads and this is where a huge problem in the ocean lies.



**Key points:**

Gyres explain how larger pieces of marine plastic break down into smaller and smaller pieces until they become microplastics.

There are different types of plastic: Fragments/Foams/Sheets/Threads.

Some of these types plastics can be easily identified.

**Short activity identifying marine plastic from pictures: Good examples to use:**

**Fragments:**

Bucket and spade

Bottle top

Microplastic fragments

**Foams:**

Fish and chip polystyrene box

Polystyrene packaging

Kitchen Sponge

**Sheets:**

Plastic bag

Bit of tarpaulin

Cling film

**Threads/Lines:**

Fishing nets

Rope

Fishing line

**Video information:**

Scientists are also able to attach satellite transmitters and sensors to some plastic which will enable us to watch the movement of plastic across the ocean.



In 1992 an entire shipping container filled with toys including rubber ducks spilled its contents which resulted in these rubber ducks washing up on beaches all over the world.

### **Teaching information**

Types of plastics act differently due to their different characteristics. Many float (foams and fragments) these are affected by surface currents that transport them across the ocean. Many also sink, for example some fishing nets and sheets, these are then subject to deeper ocean currents that transport them across the ocean.

As we have learnt, water moves around the globe due to currents and therefore the plastic entering the ocean is able to be moved all around the world to places that are isolate and far away from where the plastic actually entered the ocean. Because of this, marine plastic is now found everywhere in the ocean. Lots of it is washing up on beaches, beaches used by turtles to lay their eggs, seals to give birth to pups and seabirds to rest their wings.

#### **Key points:**

Plastic are diverse and have different characteristics, some float and some sink. Floating plastic is moved by surface currents and gyres. Plastic that sinks is moved by deep ocean currents.

As a result, marine plastic is now found everywhere in the ocean. Even places that are very isolated and rarely visited by humans has marine plastic present. This is because ocean currents have transported it.

This now means that nowhere is safe from plastic an all animals living in the ocean are now living with lots of plastic rubbish and are threatened by it.

**Thank you**





Lesson plan material provided by Ellen McArthur, MSci Marine Biology 2019,  
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Please do not hesitate to get in contact if you have any questions or queries. I will  
endeavour to reply as soon as possible. Any feedback will also be greatly appreciated.

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