



Subject links:

Science, Maths, Geography,
Citizenship,

Ages 5-7

Curriculum key words:

Human impact, environmental responsibility, data,
statistics, fieldwork, outdoor learning, community, group
work

Ocean Literacy Principles:

6. The ocean and humans are inextricably interconnected

Learning objectives:

- To take part in an activity to look after the local environment
- To analyse and present real life data
- To consider the impact of litter on the natural world and act to help reduce it

Resources provided:

- [Marine Litter Fact File](#)
- [Beach litter through a child's eyes \(video\)](#)
- [Source to Sea survey form](#)
- [Risk assessments](#)
- [Curriculum links](#)

Extra resources required:

Gloves, bin bags, litter
pickers (if you have them)

Taking action on litter

Sustainability Goals:



Step 1

Background

Litter reaches the ocean in a number of ways: it's washed in from our rivers, is left on our beaches, or is cast overboard from boats. It not only makes the marine environment look unpleasant, but it impacts the health of thousands of marine animals every year, usually by ingestion, entanglement or suffocation. Plastic is the most-commonly found litter material and it does not biodegrade, but breaks up into smaller and smaller pieces which can be mistaken for plankton or other food sources. You can find more information in the [Marine Litter Fact File](#).

Litter surveys help us understand the type of litter plaguing our environment, and we can use the survey results to raise awareness and campaign for change. Our lesson, [How clean are our seas?](#), provides an overview of the marine litter problem.

Step 2

Set the scene

10 minutes – What is marine litter?

Watch the video, [Beach litter through a child's eyes](#), to introduce the concept of litter picking and why it's important. Pause the video during the text sections and discuss the statements as a class. After watching, discuss how litter might have travelled to the sea. Explain that most of the litter in the ocean comes from inland sources, so we need to collect litter from our local environment too

Step 3

Activities

Activity 1: 1 hour – Litter picking

As a class, carry out a litter pick and survey. Choose a safe area in your local community like a park, river or school grounds. Litter picking is a great way for students to practise survey techniques and observe litter in the environment first-hand. To help you plan, we have provided some [risk assessment templates](#). Use our [Source to Sea survey form](#) to record what you find. Discuss the survey and how it works before setting off to ensure students understand the categories.

If you're unable to complete a litter pick, students could each bring in three waste items from home to use for their data. You could organise the litter items as a class in an open space, using hoops to represent different material categories.

Activity 2: 30 minutes – Analysing the results

When you return from your litter pick, compile the results as a class. Display a [survey form](#) on your interactive whiteboard and collect survey data from each group, adding to the board to find out a class total. Analyse and interpret the data as a class to find out the most-common and least-common items. Students could create simple charts or graphs to display the results.

Step 4

Extend

30 minutes – Reducing litter in the community

Using the most-common litter item as inspiration, students could design a group poster to be displayed in your local community. The poster should raise awareness of the problem and the types of litter found, and encourage people not to litter. Once posters are designed, you could have a class trip out to put the posters up on noticeboards, in shops, at school, or could be shared via local social media groups or your school website. Ensure you've gained permission from any businesses or the council in advance.

Step 5

Reflect

5 minutes

As a class, discuss your thoughts when conducting the litter pick. Try not to ask too many closed questions and let the students guide the discussion around their emotions when experiencing litter in the environment.

Step 6

Follow up

Complete our [Litter detectives](#) lesson to sort items into categories based on their properties and degradation times. Use our [Artivism](#) lesson to continue raising awareness with an art piece using litter.

Curriculum links

England

Citizenship

- Responsibility for themselves and their environment.
- To realise that people and other living things have needs, and that they have responsibilities to meet them.
- What improves and harms their local, natural and built environments and about some of the ways people look after them.

Maths

- Identify and represent numbers using objects and pictorial representations including the number line, and use the language of: equal to, more than, less than (fewer), most, least.
- Interpret and construct simple pictograms, tally charts, block diagrams and simple tables.

Wales

Humanities

- I have experienced a range of stimuli that have enthused and inspired me to imagine and be curious about my locality and Wales, as well as the wider world.
- I am beginning to recognise the effects that I have on the natural world.
- I can describe how people and the natural world may impact on each other.
- I can take care of resources and not waste them, and I am conscious of the importance of creating a sustainable future.
- I am beginning to understand that my actions and those of others have causes and effects. I can contribute actively and constructively to my community.
- I can recognise that my actions and those of others impact upon communities and the environment.

Science

- I can explore the environment, make observations and communicate my ideas.

Maths

- I can use mathematical language to describe quantities, and to make estimates and comparisons such as 'more than', 'less than' and 'equal to'.
- I am beginning to represent and interpret data, using a range of methods.

Scotland

Social sciences

- I explore and discover the interesting features of my local environment to develop an awareness of the world around me.
- I explore and appreciate the wonder of nature within different environments and have played a part in caring for the environment.
- I can consider ways of looking after my school or community and can encourage others to care for their environment.

Science

- I have contributed to discussions of current scientific news items to help develop my awareness of science.

Maths

- I am developing a sense of size and amount by observing, exploring, using and communicating with others about things in the world around me.
- I have explored a variety of ways in which data is presented and can ask and answer questions about the information it contains.
- I have used a range of ways to collect information and can sort it in a logical, organised and imaginative way using my own and others' criteria.

Marine Litter Fact File



From source to sea

It is estimated that 11 million tonnes of plastic ends up in the sea worldwide each year (1), and that 80% of litter found in the sea is from inland sources (2).

Sources on land can include intentional and accidental littering, items flushed down toilets, sinks and drains, windblown litter from bins and landfills, and litter carried by rainwater into drains, rivers and eventually the sea. Litter is also a problem at sea, with sources like fishing, sailing, speed boats, commercial ships and container spills causing litter pollution.



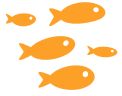
Litter timeline

Litter in the ocean takes longer to degrade than litter on land, but will eventually start to break up due to wave action, currents, saltwater and sunlight. Degradation time varies greatly depending on the properties of the litter.

Microplastics are a serious environmental issue. They are plastics that have broken up into pieces less than 5mm. However, some plastics enter the environment this size already - like microfibres and plastic nurdles. Nurdles are the small plastic pellets used in the production of plastic products.

1. Pew, 2020
2. Europa, 2016

Marine Litter Fact File



Marine life and litter

Litter items can cause harm to all sorts of marine life, from tiny plankton to huge whales.

Animals can become entangled in litter, causing injury, reduced mobility and even death. Ingestion of litter, particularly plastic, is very problematic for marine life as they are unable to digest it. Large amounts of plastic ingestion can lead to starvation, as there is no room left for food. One study found 100% of turtles sampled to have plastic in their stomach (3). In some areas, the extreme amount of plastic on the sea floor can suffocate the animals and plants living there.

Invasive species

Ocean currents can move plastics around the world. Small animals and plants can hitch a ride on the surface of plastic and travel with the currents, introducing non-native species to new areas. The introduction of non-native species could cause harm to the ecosystem.

Plastic chemicals

Several chemicals used in the production of plastic materials are carcinogenic. Toxic contaminants can also accumulate on the surface of plastic materials that have broken up and been underwater for a long time. When marine animals ingest plastic accidentally, these toxic contaminants enter their digestive systems and could build up in the food web over time.



Gannet carrying fishing rope
📷 JHS Archer-Thomson



Microplastic pieces within seaweed
📷 Natasha Ewins

Marine Litter Fact File



Litter surveys

Litter surveys are not only important for clearing rubbish, but also for gathering data on the types of litter polluting our environment. [Beachwatch](#) is our national beach clean and survey initiative, and has been running for nearly 30 years. Our brilliant volunteers head out to beaches across the UK to clean and survey our coastline, collecting and recording the rubbish they find within a 100m stretch of beach. This litter data helps inform our campaigns and lobby government, and has led to influential changes like the UK-wide carrier bag charge, microbead bans and changes to wet wipe packaging.

We also use the data to determine the sources of litter. For example, if a significant amount of sewage-related debris (SRD) is found in an area, we work with local sewage treatment companies to try to improve treatment plants, and with communities to raise awareness of what should and shouldn't be flushed down the toilet.



Reducing litter

We all need to do our bit to reduce litter in the environment. By rethinking how we shop and what we use in our daily lives, we can all make a difference. Refusing unnecessary plastic and other materials, reducing the amount of products we consume, and repairing rather than replacing are all important actions we can take. Through education, we can help raise awareness, encourage positive consumer behaviour, and campaign for change from businesses and the government.



© Natasha Ewins



© Aled Llywelyn

Marine Litter Fact File



Recycling

Even if we reduce the number of items we use, we will still need to throw some away. This is where efficient recycling is key. Download a guide from your local council to help students understand what can be recycled at home and at school. Many items can be recycled, but if your local council has limited recycling options check out [Terracycle's website](#) for local drop-off points.

Plastics can only be recycled at best 2-3 times before they lose their strength, so we still need to move away from plastics to materials that can be recycled time and time again. We need to change how products are recycled, and how we incentivise best practice to ensure materials and resources are valued. This could include redesigning products or calling for economic incentives like Deposit Return Schemes (DRS), where a small deposit is paid when consumers buy a single-use drinks container and is refunded when they return it to a store or dedicated recycling point.



Circular economy

We currently have an economy which is linear, which means we make, use and dispose of products using up finite resources. It's estimated that only 9% of all plastic ever made has been recycled (4), so we know that recycling alone isn't the solution. Instead we need to move towards a circular economy, where products are designed to be used time and again, repairable, or re-purposed as new products. The whole life cycle of the product has been considered, so very little ends up in landfill.



Litter collected at a beach clean
📷 Natasha Ewins



Single-use plastic straws
📷 Natasha Ewins

4. Geyer *et al.*, 2017

Source to Sea Litter Quest

80% of the litter we find in our ocean comes from inland sources.
Your survey will help track litter items from source to sea.



About your survey

Where did you clean?

- | | | | |
|-------------|--------------------------|----------------|--------------------------|
| Town | <input type="checkbox"/> | River | <input type="checkbox"/> |
| Countryside | <input type="checkbox"/> | Playground | <input type="checkbox"/> |
| Park | <input type="checkbox"/> | Office grounds | <input type="checkbox"/> |
| Street | <input type="checkbox"/> | School grounds | <input type="checkbox"/> |

First half of your postcode:

How many bags of litter did you fill?

Weight of litter (kg):

About your group

How many people are in your group?

Is your group taking part as a:

School group? Youth group?

What is the age range of those taking part?

Are you taking part as part of an organisation?

What is the weirdest thing you found?

Try to recycle the litter you collect if you can, but always keep yourself safe!


What to do – Spot the litter, write down what you found, then pick it up.
You can use a tally to keep track as you go along. ||||

Plastic drink bottles




How many?

Loose plastic bottle caps/lids




How many?

Plastic drink cups




How many?

Glass bottles




How many?

Metal drink cans




How many?

Polystyrene fast food container



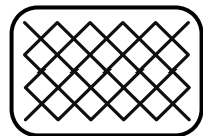
How many?

Paper cups



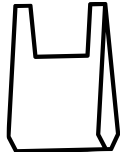
How many?

Disposable BBQs




How many?

Single-use plastic bags



How many?

Polystyrene cups




How many?

Plastic bags for life



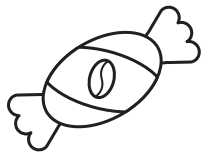
How many?

Wet wipes



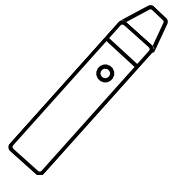
How many?

Packets e.g. crisps, sweets



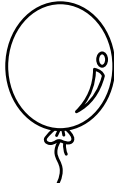
How many?

Vapes



How many?

Balloons



How many?