

Our World, Our Future: The Climate Change Workshop

Teacher's Guide

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Introduction

Below we have outlined some of the key topics and issues explored in 'Our World, Our Future'.

The allocation of topics may vary depending on which classes are participating in the workshops. Once you have agreed your schedule with West End in Schools the facilitator leading your workshops will finalise the topics they will explore with each group. With this in mind we are unable to guarantee topics for specific classes. However, typically classes will work on the following:

Typical KS1 Topics

- Bees
- Plastics in the Ocean

Typical KS2 Topics

- Waste
- Deforestation
- The Urban Environment
- The Arctic and Renewable Energy

When 5-6 KS2 classes are taking part in a day some classes may work on advanced versions of the KS1 topics.

Contextual Information

Fossil Fuels

- Fossil Fuels have been used to generate power since the 1700's.
- They are Gas, Oil and Coal.
- All fossil fuels are extracted from deep under the ground.
- They are made from organisms from millions of years ago.
- When they are burned (which they are in order to release their energy) carbon is released into the atmosphere.

Renewable Energy

- Renewable energy is energy generated from natural sources like the wind, the sun, the sea, plants and the earth.
- Renewable Energy is carbon neutral, meaning it doesn't release any polluting carbon into the atmosphere.
- Wind Turbines and Solar panels are two of the most common types of renewable energy.

Topic 1: Bees

- Bees are extraordinary creatures that exist in all types of climates around the world, from forests in Europe to deserts in Africa, and even in the Arctic Circle.
- It is estimated that one third of the food we consume each day relies on pollination mainly by bees (other insects, birds and bats also pollinate!).
- These hardworking geniuses of nature collect pollen to take back to their hives.
- The pollen sticks to their legs and bodies so when they fly from flower to flower they pollinate as they go.
- Bees are under threat from several things:
 - Widespread use of Pesticides
 - Climate Change
 - Loss of habitat due to land use changes
 - Loss of biodiversity¹

Big changes start with small steps and we all have the power to make a difference.

What can we do to help the bees?

¹ *Biodiversity - The variety of plant and animal life in the world or in a particular habitat, a high level of which is usually considered to be important and desirable.*

Topic 2: Plastics in the Ocean

- How does plastic get into the ocean? The bottom line is... US!
 - Whether we mean to litter or not, there's always a chance the plastic we throw away could make it into the sea, and from there who knows how far it will drift or where it will end up? Maybe as far as the Arctic.
1. **Throwing plastic in the bin when it could be recycled:**
 - Plastic you put in the bin ends up in landfill. When rubbish is being transported to landfill, plastic is often blown away because it's so lightweight. From there, it can eventually clutter around drains and enter rivers and oceans this way.
 2. **Littering:**
 - Litter dropped on the street doesn't stay there. Rainwater and wind carries plastic waste into streams and rivers, and through drains. Drains lead to the ocean!
 - Careless and improper waste disposal is also a big contributor – illegal dumping of waste adds greatly to the plastic surge in our seas.
 3. **Products that go down the drain:**
 - Many of the products we use daily are flushed down toilets, including wet wipes and cotton buds. Microfibres are even released into waterways when we wash our clothes in the washing machine. They are too small to be filtered out by waste water plants and end up being consumed by small marine species, eventually even ending up in our food chain.
- Once in the ocean, plastic decomposes very slowly, breaking down into tiny pieces known as micro plastics that can be incredibly damaging to sea life.

Big changes start with small steps and we all have the power to make a difference.

What can we do to curb the flood of plastic into the oceans?

Topic 3: Waste

- Everything we wear, eat, play with, sit on, sleep in comes from somewhere? But where?!
- We have a system called the Materials Economy. Natural resources are taken from the ground, turned into other things in factories, sold, bought and then more often than not, end up in landfill!
- The US has 5 % of the world's economy but consumes 30% of the stuff. If the whole world consumed at the rate of the US we would need 3 - 5 planets!
- Do we need all the stuff we have? What can we do with out things when we no longer have a use for them?

Big changes start with small steps and we all have the power to make a difference.

What can we do to prevent so much 'stuff' ending in landfill?

Topic 4: Deforestation

- Deforestation is the mass destruction of forests around the world.
- Forests still cover 30% of the earth but between 1996 and 2016 the world lost 502,000 square miles (1.3 million square kilometers) of forest, an area the size of South Africa.
- Forests are the homes of millions of plants, insects and animals, many of which are yet to be discovered and most are under threat of extinction due to deforestation.
- Trees absorb carbon and as the levels carbon increase in our atmosphere, we need them more than ever.
- Trees and forests are cut down for a variety of reasons:
 - Farming and the grazing of livestock.
 - Mining and drilling.
 - The production of palm oil that can be found in everything from shampoo to chocolate bars.
 - Logging operations that produce paper, furniture and other wood products.

Big changes start with small steps and we all have the power to make a difference.

What can we do to help prevent further deforestation?

Topic 5: The Urban Environment

- Although we don't see climate change in our local environment like other parts of the world, that doesn't mean that the cause and effect is not here.
- Transport is a huge generator of carbon as it moves busy people around and moves food and other products from all over the world to our local supermarkets.
- Trees and green spaces are regularly replaced by more flats and buildings, changing the biodiversity of your area.

Big changes start with small steps and we all have the power to make a difference.

What can we do to improve our local environments?

Topic 6: The Arctic and Renewable Energy

- The Arctic is located at the northernmost part of our planet. Scientists usually define the Arctic as the area above the 'Arctic Circle' — an imaginary line that circles around the top of the globe.
- The Arctic consists of the Arctic Ocean and parts of Canada, Russia, the USA, Greenland, Norway, Finland, Sweden and Iceland.
- Already in the past 30 years, we've seen areas of Arctic sea ice melt that are larger than Norway, Sweden and Denmark combined.
- The melting ice means native animals such as Polar Bears, Seals and Arctic Foxes are losing their habitats.
- The ice in the Arctic acts as a natural freezer cooling the earth and the oceans. However, as the ice melts the water temperatures rise.
- As land ice melts off of Greenland the sea levels rise.
- The effect of the loss of Arctic ice is felt across the world causing extreme weather and flooding.
- The Arctic meltdown is caused by the increase of carbon (which has come largely from burning fossil fuels) trapping more heat in the Earth's atmosphere.

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What can you do to prevent The Arctic melting?