

Suitable for
3-7 years

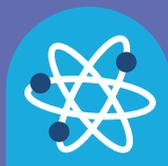
- Solo
- ✓ Pairs
- ✓ Groups

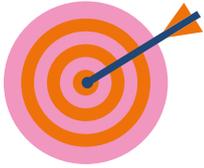
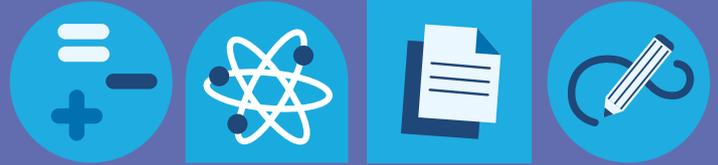
Uwe's activity

Coral drama

Teacher Pack

Created and written by Lisa Wilson in collaboration
with quality engineer, Uwe Wolfram





This pack supports the workshop plan for a science and engineering-inspired drama workshop for 3-7 year olds called *Life as a Coral*.

This workshop takes approximately one and a half hours to complete and requires a clear space for children to move around such as a gym hall.

Using drama exercises this workshop explores the topics of the coral reefs of Scotland, the scientists and engineers helping them and what they can do themselves to help the environment. By using story and drama as a format the children act out the information as they process it using imaginative play, movement and group-work.

Life as a Coral is part of a wider project called Let's Do Engineering through Heriot-Watt University and is designed to get young children to learn about the jobs that engineers play in our world. This workshop is based on research by Heriot-Watt researcher Dr. Uwe Wolfram and was created by theatre-maker and science communicator Lisa Wilson.



Key Messages

Corals are animals that live in the sea and build reefs. Each Coral animal lives in a cup-like skeleton that it builds.

Reefs create biodiversity by making homes for fish and other sea life.

Scotland has coral reefs very deep down in the sea. These are cold-water corals.

ROV is a tool to help study reefs. ROV stands for Remotely Operated Vehicle and they are non-crewed submersibles piloted from the surface which can take lots of measurements and images.

A bioengineer is a scientist that helps animals or plants using engineering skills.

Some bioengineers are helping coral reefs.

Too much Carbon Dioxide (CO₂) is bad for deep water corals. It dissolves older skeletons that new corals build upon.

This destroys a safe habitat for many fish and other animals.

We can all do things to reduce our CO₂ levels and help coral reefs in the process.



Activities:

Imagination warm-up – getting used to moving our bodies, thinking about the sea and listening to instructions. Whole class working as individuals to respond to instructions.

A day in the life of coral – acting as a coral animal through imaginative play/narration

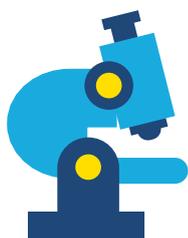
Protect the polyp! – Working in pairs to learn about coral skeletons

Exploring the sea – using imaginative play to swap between being part of a coral reef and an ROV submersible (class split into two halves)[A tablet or camera is useful but not essential]

Who is helping the corals? – Find out what a bioengineer is and what they do to help. A whole-class greeting game with fun actions.

Solving CO₂ – in small groups children are given suggestions on activities they can do to reduce their CO₂ and help the coral reefs. They will make a tableau (frozen image) to show these activities.

Coral Reef quiz – a science recap where children fill in the missing words by calling out or putting up their hands.



Supporting Science:

Coral reefs are made up of tiny animals called coral polyps. Corals are related to jellyfish and look like jellyfish turned on their backs.

Each coral polyp (individual coral animal) builds a skeleton around itself that looks like a cup. This skeleton protects the coral animal and it allows it to extend its tentacles out to catch passing food. Corals stay in their cups their entire lives and it is the currents which allow small food to pass by the corals, bringing in a source of food.

Scotland has coral reefs, though these are different from tropical reefs which are near the surface of the ocean. Scotland's reefs are in cold, deep water. The main risks to deep water corals is a process called ocean acidification which occurs when there is too much carbon dioxide in the atmosphere and some gets absorbed by the ocean. This increase in CO₂ changes the chemical composition of the water and makes it more acidic.

Reefs are built from thousands or even millions of coral animals building their skeletons on top of old disused skeletons. These reefs are home to many kinds of plants and animals and are vital for the health of our seas. Ocean Acidification makes holes appear in these disused skeletons and they start to dissolve. This is like the foundations of house dissolving while you are living there. This is a threat to the living coral but also all the other animals and plants that live around the reef.

This project was made in association with bioengineers who look at ways to help coral reefs. A bioengineer is someone who uses engineering skills (problem solving) as well as biology skills (learning about animals and plants) to learn about and help living organisms. Bioengineers working on corals use skills like X-raying corals in different environments to see what impact the environment has on their skeletons. They use measurements, problem solving and working with other types of scientists to help the coral reefs. The best way for scientists and engineers to solve problems is to share information and work together.

One of the tools scientists and engineers use to get more information about coral reefs is an ROV. An ROV is a Remote Operated Vehicle – which is a submersible which is piloted from the surface rather than by a person inside. An ROV can have a range of tools to help it collect information including sensors created for specific tasks. ROVs have still and video cameras and can take samples of water and animals as well as a range of other tools depending on their mission.

It is important that we all reduce the amount of CO₂ we create as individuals to help save our environment including deep cold-water corals. Some of the ways we can do that are; by walking, cycling or using public transport rather than cars, saying no to single-use plastics and micro plastics including glitter which end up in our oceans, recycling our waste, using reusable versions of things like straws and water bottles, fixing or using what we already have rather than buying new, turning off lights and any electronic equipment while not in use, eating meat less frequently, trying to find biodegradable products such as washing up liquid and packaging. The choices we make can have a huge impact on the world around us, and we can help each other to remember to choose ways to help the environment.

Experiences and Outcomes

- I use drama to explore real and imaginary situations, helping me to understand my world. EXA 0-1 4a
- I have the freedom to choose and explore how I can use my voice, movement, and expression in role play and drama. EXA 0-12a
- Inspired by a range of stimuli, I can express and communicate my ideas, thoughts and feelings through drama. EXA 0-1 3a / EXA 1-13a
- I can talk about science stories to develop my understanding of science and the world around me. SCN 0-20a
- I can describe some of the kinds of work that people do and I am finding out about the wider world of work. HWB 0-20a / HWB 1-20a
- I am learning to move my body well, exploring how to manage and control it and finding out how to use and share space. HWB 0-2 1a
- I am discovering ways that I can link actions and skills to create movement patterns and sequences. This has motivated me to practise and improve my skills to develop control and flow. HWB 1-2 1

- I am developing my movement skills through practice and energetic play. HWB 0-2 2a
- I explore and discover engineering disciplines and can create solutions. TCH 1-12a

Further Topic Links:

World Ocean Day Schools Resources – a long list of different ways to learn about our oceans

<https://worldoceanday.school/resources/connection-to-water/>

Wildlife trust information about cold water corals

<https://www.wildlifetrusts.org/wildlife-explorer/marine/anemones-and-corals/cold-water-coral>

NASA games on greenhouse gasses, (tropical) coral bleaching and ocean currents

<https://climatekids.nasa.gov/menu/play/>

NASA information on Ocean Acidification

<https://climatekids.nasa.gov/acid-ocean/>