Explorer Education Programme

Lesson Plan: Oceans all Around Us

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Oceans all Around Us

Aim / Description:

Looking at the world through geography and science, students can learn about the marine elements of our natural environment.

Students can look at and compare the marine environment to other places locally, nationally and internationally.

Materials:

For discussion:
Globe or Atlas
Map of Ireland – showing the Atlantic Ocean, Irish Sea, Celtic Sea and Rivers.

For demonstrating:
Ice
Bowl
Clingfilm
Heat source – sun

For documenting:
A4 Paper, string, pencils
A3 poster paper, recycled items (bottle caps, string, tinfoil, cotton wool etc), art and craft materials (scissors, glue, paints, crayons etc).

Explorer Education Programme

Lesson Plan: Oceans all Around Us

Background Information:

How much Water is there?

Over 70% of the earth's surface is covered by water. The world's ocean contains 97% of all the water on the planet, which is salt water. The world ocean is interconnected by five oceans. These include the Atlantic Ocean, Pacific Ocean, Arctic Ocean, Indian Ocean and Southern (Antarctic) Ocean. The oceanic waters are interspersed by many smaller seas and other bodies of water.

Three percent of the water is aquatic (fresh) water. Approximately two percent of this is frozen ice, which is found in the polar ice caps. The rest of the aquatic water is found in lakes, rivers, streams, ponds, rain and underground in aquifers.

The world's ocean is the largest habitat on the planet. There is variety of animals, large and small living in it. Where animals live in the ocean depends on the waters temperature, salinity (saltiness) and depth. Some animals can only live in local regions, where others can roam all around the world's oceans.

What Oceans and Seas surround Ireland?

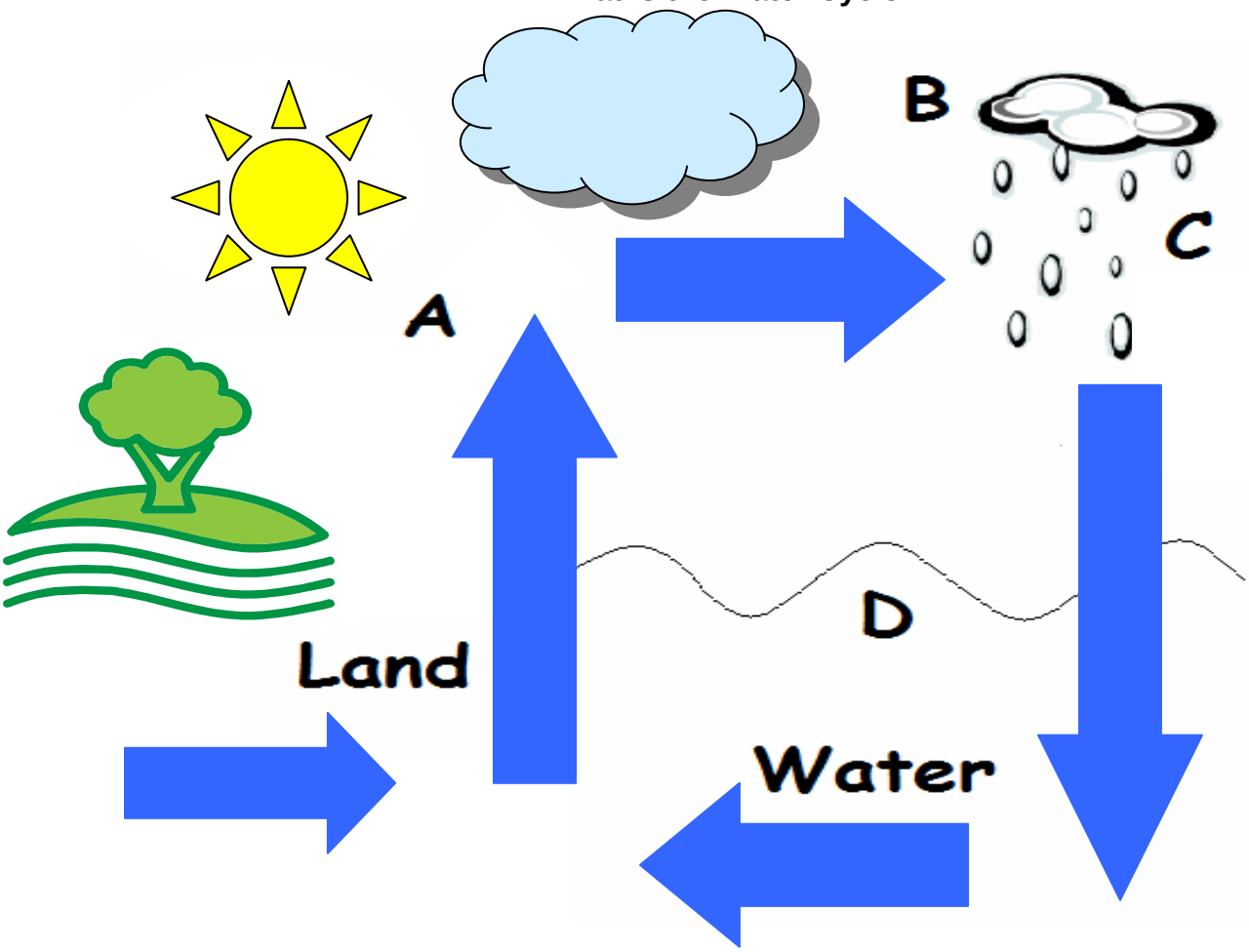
Ireland is an island nation and has the Atlantic Ocean, the Irish Sea and the Celtic Sea surrounding it.

There are over 130 rivers in Ireland, the longest of which is the river Shannon at 386 km (240 miles). There are over 35 Loughs in Ireland. The word Lough comes from the Irish word Loch, meaning lake. The three largest Loughs in Ireland are Lough Neagh (388 km^2), Lough Corrib (200 km^2) and Lough Derg (118 km^2).

Explorer Education Programme

Lesson Plan: Oceans all Around Us

What is the Water Cycle?



The water cycle is the journey water takes from the sky, to the ocean and back up to the sky again. It goes a round and a round in a continuous cycle.

In the water cycle, water goes a round and a round.

A: Evaporation: The sun heats the surface of the land and ocean. The heat causes the water to evaporate upwards in an invisible vapour.

B: Condensation: The water vapour forms into a cloud.

C. Precipitation: The clouds form water droplets, which fall to the land and ocean as rain.

D. Storage: Some of the rain runs into lakes, streams and rivers. This flows back into the ocean.

Explorer Education Programme

Lesson Plan: Oceans all Around Us

Why is it important to conserve water?

Animals on land and humans need water to drink. Plants take moisture from the soil.

There is a limited amount of fresh water for human beings. Therefore, without the water cycle there would be no water for animals, plants and humans to grow and live.

Humans use fresh water in the development of agriculture and industry. They also use it domestically in homes. Inefficient uses of water caused by human's can result in water pollution.

Water pollution means that water is unfit for use.

If polluted water enters the water cycle it creates problems for animals to survive both in fresh water and in the ocean.

See the following examples of the amount of water used in everyday by humans.

Brushing teeth with the tap running	6 litres per minute
Brushing teeth with the tap off	1 litre

Bath	80 litres

5 min Shower	35 litres

Flushing a standard toilet	9 litres

Explorer Education Programme

Lesson Plan: Oceans all Around Us

Activity: Experiment demonstrating a miniature water cycle

Step 1: Discuss our natural environment and generate ideas from the students of where there is water on earth.

- Use the globe, atlas and map of Ireland to show features (e.g. river, lake, the ocean or sea)
- Where is the closest water to where the students live? Is the water fresh or salty?
- What ocean and seas surround Ireland?
- How much water exists on the planet?
- What is the water cycle? (e.g. start by asking where does the rain come from?)

Step 2: Create a logbook and get the students to predict and document what they think will happen to water based on the following questions:

- What happens to ice when it is heated? (solid - liquid)
- What happens to water when it is heated (liquid - gas / vapour)
- What happens to water when it is frozen? (liquid - solid)
- How does the miniature water cycle compare to what happens in the environment?

Step 3: Place blocks of ice into a bowl. Place cling film over the top of the bowl and seal tightly. Place the bowl in the direct sunlight.

Step 4: Make and record observations in their logbook:

- of ice melting
- water heated by sun
- formation of droplets on the cling film
- water droplets going back into water

Step 5: The students should record their conclusion in their logbook of the water cycle. To show their understanding of the water cycle the students should each draw a diagram demonstrating: Evaporation; Condensation; Precipitation and Storage.

Step 6: Create a collage of the water cycle using recycled items. The materials used should show texture and colour to indicate the different stages of the water cycle. Students should also discuss and highlight why it is important to conserve and maintain clean waters.

Outcome:

Students should be able:

- to identify aquatic and marine features of our environment such as lakes, streams, rivers, oceans and seas - locally, nationally and internationally.
- be familiar with the names of aquatic and marine features.
- understand the effects of the water cycle - heating and cooling of water.
- understand the importance of conserving water.