

Physics – Ocean Literacy Principle 2

The ocean and life in the ocean shape the features of the Earth

Wave energy activity

Waves are the transfer of energy from one place to another, from a multitude of sources. There are transverse waves and longitudinal waves. Use a slinky toy to experiment with the two types of wave and to get students to infer that water waves are transverse waves.

In order to understand how waves affect our coastlines, it is important to understand the physics behind waves and their individual properties. Erosion, transport and deposition are constantly happening and with the increased frequency of ocean storms due to climate change, we need to understand these processes to protect our land.

Method:

- Ask students to work in small groups and select some sand or gravel (the substrate) and put it at one end of the tray.
- Fill the tray with water to a depth of around 2cm.
- Tip the tray back and forth, gently at first, to see what happens to the substrate.
- Reset the substrate and repeat the experiment, but tip the tray much more

Activity Learning Objectives:

Students will explore the different types of waves, and what energy they transfer. They will also be able to explain different ocean waves, and calculate their speed using the wave equation, as well as describing their effect on our

What you will need:

- Slinky toy
- Trays – we suggest a long, narrow tray but any will work
- Water
- A variety of substrate – the material usually found at the bottom of a marine

Further work:

Encourage students to think about ways in which we can protect our coastline at vulnerable places. Try using Lego to construct examples of coastal defences for their trays, and see how that affects the substrates that have been identified as more vulnerable.

Physics links to other Ocean Literacy Principles:

Principle 3:

Identify various sources of renewable energy in order to reduce fossil fuels going into the atmosphere. Can you suggest renewable energies suitable for your Commonwealth country?