Play Resource Presents Science from Scrap

Water Turbine

You will need:

Plastic container

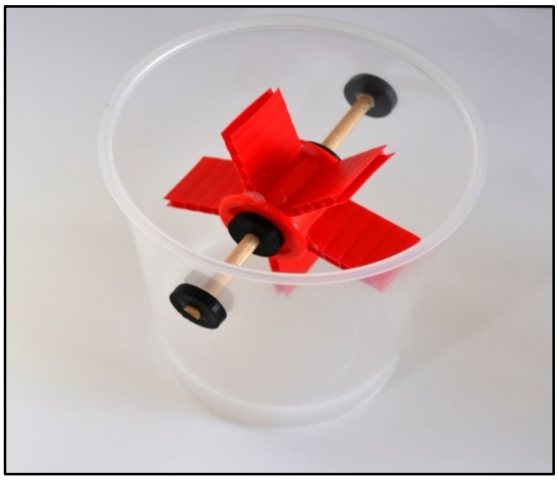
Plastic spool

Corriflute

Dowelling/skewer

Straw

4 Washers



How to use these resources for enquiry in Science/Maths

Initially the model can be used to simulate a water turbine but then become an exploration where the children change the paddles to investigate the difference they make, e.g. shape, size or number.
Challenge Task: Design and make a water turbine that can lift a load.

Instructions

- Cut 4-6 strips of corriflute about 3cm wide - the same length as the centre of the spool.
- Use sticky tape or glue gun to attach the corriflute paddles to the spool. They should be placed at right angles to the spool.
- Pierce small holes on opposite sides of the plastic container, push through dowelling/skewer.
- Place 1cm piece of tubing on dowel followed by straw (same size as spool). Slide spool on top of straw followed by second piece of tubing to hold turbine in centre of dowel.
- Attach washers to dowel on the outside of the plastic container.
- Hold the model turbine below a tap and over a sink. Turn the water on. (or water bottle and tray)
- Explore how to make the turbine turn slower or faster.

Background Knowledge

Many natural forms of running water, like rivers, are used to drive very large water turbines to form powerful 'hydroelectric power stations'. Hydropower plants capture the energy of falling water to generate electricity.
A turbine converts the kinetic energy of falling water into mechanical energy. Then a generator converts the mechanical energy from the turbine into electrical energy.

Key Questions

- What happens to the turbine when you change the speed of the water flow?
- How does water height affect the output of the turbine?
- How can you make your turbine spin in a different direction?
- What would happen if you used paddles of different sizes?
- What would happen if you used paddles of different shapes?
- Ask pupils to change the design to enable the water turbine to lift a load.

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Play Resource centre of creativity