



Make Your Own Paddle Boat

Aim: To enable students to become aware of the engineering techniques used throughout the waterways of Ireland.

Make your own paddle boat worksheet includes an activity, a discussion section and some background knowledge of steamboats on Irish Waterways. All of the activities can be carried out within a classroom setting. The worksheet aims to link in with the following curriculum links:

STEM (Science, Technology, Engineering and Maths)

4th Class

Strand: Science, Technology, Engineering and Maths

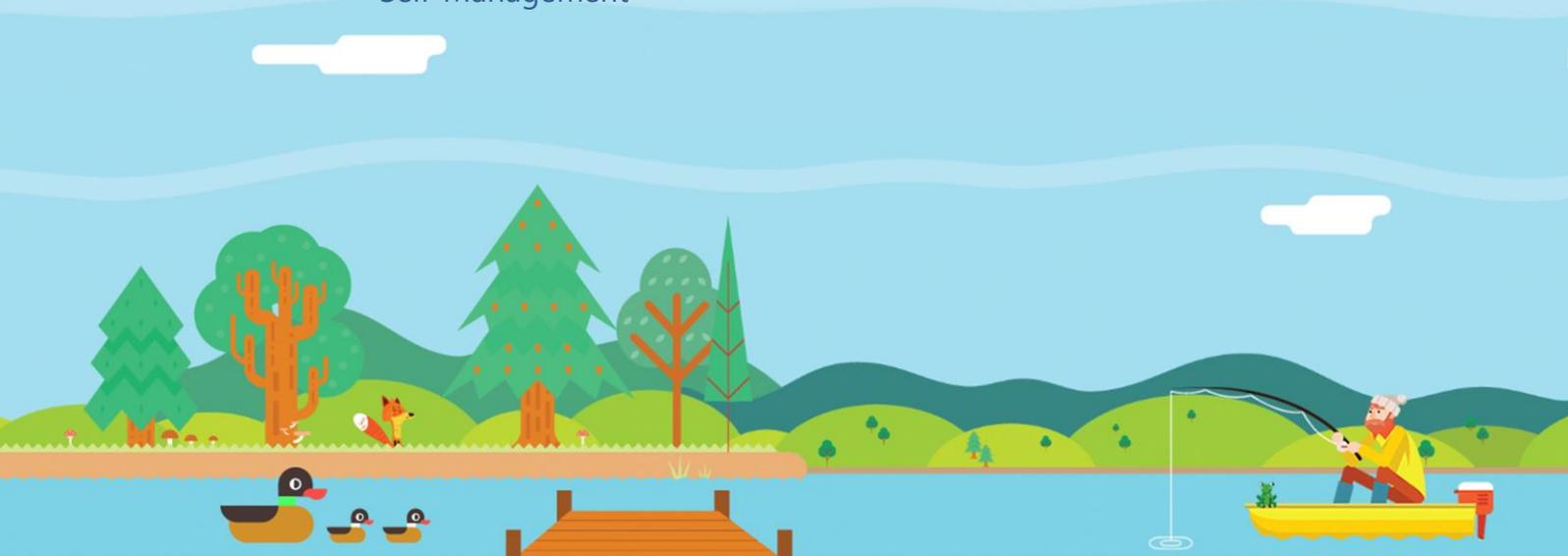
- Talk and discussion
- Active learning
- Collaborative learning
- Problem solving
- Skills through content
- Free exploration of materials
- Investigative approach
- Using the environment



KS2

Strand: Thinking Skills and Personal Capabilities (TSPC) Framework

- Managing Information
- Thinking, Problem Solving and Decision Making
- Being Creative
- Working with Others
- Self-Management





Make Your Own Paddle Boat

Setting the Scene

Have you ever driven a paddle boat? If you can ride an exercise bicycle, you can drive a paddle boat. A simple paddle boat is designed for two or four people sitting in an upright position. The boat is moved by turning the pedals (similar to the way you ride a bicycle). As you turn the pedals the paddles under the boat turn and the boat moves.

Let's make your own paddle boat.



What You Need:

- Plastic drink bottle
- 2 long pencils
- Elastic band
- Piece of flat plastic e.g. a plastic tub lid will work
- Sellotape



What You Do

- 1) Tape two pencils exactly opposite each other on two sides of the water bottle. The pencils need to extend about 10cm past the bottom of the bottle.
- 2) Cut a paddle from the plastic tub lid. Make it 2.5cm x 5cm.
- 3) Loop the rubber band over the end of each pencil.
- 4) Insert the paddle between the sides of the rubber band.
- 5) Turn the paddle round and round towards you, to wind the rubber band.
- 6) Place the boat in the basin of water and release the paddle.





What Happens?

The boat moves forward.

Why?

When you wind the rubber band you store energy (this is called potential energy) when you let go, this potential energy is changed into motion (moving) energy (this is called kinetic energy) and the boat moves.



Find Out/Discuss

- Predict what will happen if you wind the rubber band in the opposite direction?
- Does the paddle turn in the same direction as you wind it up?
- Does the shape/weight of the container affect the movement of the boat? Re- design with other containers and see!
- Does the boat move faster if the paddles turn partly in the air and partly in the water?
- Can you modify your design to make your boat faster?
- What is the best type of rubber band to use - thin, thick, long, short etc.
- What shaped container makes the fastest boat?
- Can additional paddle wheels be added?



Background Information – Steamboats on the Irish Waterways

Steamboats are boats with a paddle wheel driven by a steam engine. The first steamboat was invented in America by John Fitch in 1787.

Steamboats were widely used on the River Shannon and on Lough Erne during the nineteenth century. They mainly carried passengers but were also used to transport small cargo.





SS Lady of the Lake Passenger Steamboat

The **SS Lady of the Lake** was the best known of the paddle steamboats on Lough Erne. Its main duties were cruises to and from Castlecaldwell near Belleek in conjunction with the railway. Constructed in 1866 it traded until 1915.

Resources

<http://www.eyewitnesstohistory.com/fulton.htm>

<http://www.askaboutireland.ie/reading-room/environment-geography/transport/inland-waterways-in-westm/shannon-steamers/>

