

Episode 7: Paddle Boats



Can a boat still move without a motor or sail? Luke is putting it to the test in the Science Time Lab, making a paddle boat with household items to propel through the water!

Scientific concepts:

1. Potential energy (stored energy) can make things move.
2. When something is in motion it has kinetic energy.

Science process skills:

Observing and communicating.

Let's investigate:

How can you make a plastic boat move by itself?

Materials

- 1 x plastic tub filled with water
- 1 x small shallow plastic container
- 4 x large rubber bands
- 2 x chopsticks
- Sticky tac
- Foam shapes
- Duct tape



Experiment procedure

1. Using three rubber bands, wrap two chopsticks onto the plastic container - one on each side.
2. Decorate the boat using foam shapes and tape. Attach a flag onto the back of your boat with some tac.
3. Make a paddle by wrapping a rubber band around a piece of foam (small enough to fit in the space between the two chopsticks) and attach with tape.
4. Secure the paddle at the rear of your boat, by looping the rubber band over each chopstick.
5. Twist the rubber band on the paddle to wind it up. As you wind it, the band stretches, storing up energy.
6. Put the boat in a tub of water and watch as the paddle rotates and pushes the boat forward! When you let the paddle go, the rubber band should unwind and shrink back to its original size releasing the stored energy and turning the paddle.

How it works: The way you rotate the *paddle* changes which direction the boat moves i.e. pulls it forwards or pushes it backwards. The more you twist the rubber band, the further the boat will move (kinetic energy).

Early Education links

Episode themes relate to [EYLF Learning Outcomes](#) 4.2, 4.3, 4.4 and 5.1. Support children's experimentation and investigation skills through conversation & questioning – Does the boat move backwards if the paddle is wound in the other direction? What do you think will happen if we twist the rubber band very tight? Does the boat move less or more when the rubber band is twisted loosely?

Follow-up learning

- Extend children's understandings about potential energy and kinetic energy by providing loose parts for a simple cotton reel car experiment (materials needed include - large plastic cotton reel, rubber band and pencil). Encourage children to problem-solve as they engineer their car and explore how elastic potential energy from twisted rubber bands can roll the cotton reel car and make it move (kinetic energy).

