Soap powered boat experiment

Safety!

- You will need scissors in this experiment. Be very careful with them or ask an adult to do the cutting for you.
- Washing up liquid will irritate if you get it into your eyes. Be really careful with the liquid and don't use too much!

Apparatus

- A small cardboard square, such as a cardboard drinks container.
- A fairly large tub or bowl of water
- A small amount of washing up liquid
- Scissors
- A small stick, maybe a cocktail stick or an old pen or pencil

Method

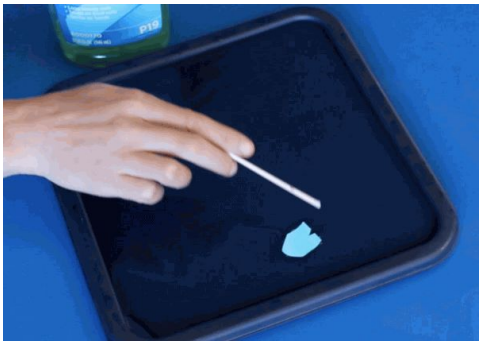
Summary

In this experiment, you will be making a small boat, made out of cardboard, that is completely powered by soap!

Steps

- First, use the scissors with the cardboard to create this shape. A juice container could be a good material, as the thin plastic lining will keep the boat waterproof.

- Then, place the boat in the water bowl and put a small amount of washing up liquid in a small bowl.
- Finally, Use the stick and cover the end of it in the liquid. Place the end of the stick in the notch at the end of the boat and watch it go!



Evaluation / Conclusion

What would happen if you have less (or more) soap? Can you figure it out and try it out? Why do we make the front of the boat pointy? What would happen if it was flat?
Once you have done this, you could go out to your garden or in nature to find a few leaves and very small twigs. You could have a go at making your boats, in all different shapes and sizes - see how much they can carry without sinking!

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FOLLOW UP SCIENCE

So what actually made the boat move around?

Answer: This is because the soap creates a backward force into the water meaning the boat will move forward.

For further depth (maybe for the parents!):
Surface tension is a fundamental concept in physics. It allows insects (such as water striders) that are heavier than water to float and slide on a water's surface. Surface tension is the desire of particles to be together, as one unit, due to the attraction of the particles. This creates what you may have seen before, the curving of water at the edge of a container - meniscus!

Google the 'Jesus Christ lizard' for an animal that uses this to its advantage!

Washing up liquid is what scientists call a surfactant. This means the soap changes the surface tension of the water which makes it propel forward. The boat is being pushed forward by the water molecules! The changing of the surface tension is what makes washing liquid so good at cleaning - if the boat was a bit of dirt on a plate, it wants to move away, and becomes less attached to the plate and comes off more easily.

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