



30 minutes



Grades
K-2

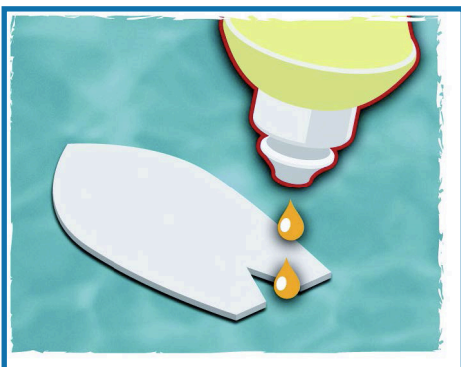
Soap Boat

How do you make a boat move if all you've got is soap?

Instructions

Students experiment with different soap products to see which one moves a cardboard boat across the water most effectively.

- 1 Put a cardboard boat on the water.
- 2 Place a few drops of dishwashing liquid on the top of the water in the "v" of the boat. See what happens.
- 3 Try again, but this time insert a wedge of soap into the "v" and don't use any dishwashing soap. See what happens.



Materials


PER CLASS:


- Large container of water
- Dishwashing liquid

PER STUDENT OR TEAM:

- A small (about 1-inch long) piece of cardboard cut into a boat shape, with a "v" shape cut into the stern
- Small piece of soap

Engineering & Science Connections

 Engineers have to know chemistry—the properties of elements and compounds—in order to solve certain kinds of problems. In this activity, how can you make a model boat move in water if all you’ve got is soap? The dishwashing soap mixes with the water and weakens the attraction between the water and the back of the boat, which means that the front of the boat is more strongly attracted to the water (called adhesion). The difference in attraction forces between the back and front of the boat creates a pulling force that moves the boat forward.

 Some insects, like water striders, are able to walk on water due to a force called surface tension. The surface of the water forms an invisible membrane to act like a stretched elastic cover that holds the water together. Surface tension is what enables water to support the weight of objects like water bugs, leaves, and even a paper boat. Engineers who study surface tension have been able to design small water-walking robots will be used to clean up oil spills.

Guiding Questions ?

Do you think adding more dishwashing soap would make the boat move farther or faster?

Do you think shampoo or laundry soap would make the boat move?

Do you think putting the boat in another liquid, like apple juice, would change how the boat reacts?

*Adapted from “365 Science Experiments”, with permission from Hinkler Books Pty Ltd. 2007.
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