

Lesson Plan for Candy Boat Racers

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Introduction/Background Info

Some boats are built for speed like race cars. They're sleek and smooth. Other boats are built for power like trucks. They're big and bulky but can carry a lot. Have you ever noticed that they look totally different? Take a look at the boats below. The speed boat has a sleek design. It carries two people but not much else. Now compare that to the U.S. Navy's Aircraft carrier. Its boxy design seats over 2000 and still has space for 30 jets. Unfortunately it isn't as nimble as the first boat



Boats and cars come in all different sizes. The ones on the left are fast the ones on the right are strong.

In this lesson you'll be designing your very own boat out of aluminum foil. This is the same thing engineers at NASA and NASCAR do everyday to get their vehicles looks, shape, and power. They use computers to figure out the perfect shape for both agility and strength so that they get the best performance. Now start thinking to get that perfect balance of speed and power and in a few minutes you will take your design to the track to race your friends.

Student Objectives:

- Learn basic concepts about how water flows
- Understand which shapes are better and for what reasons
- Apply these lessons to the shapes of cars and planes

Lesson Overview

- Introduce basic fluid dynamic concepts. What shapes flow well and what shapes don't.
- Give them a 12X12 inch sheet of aluminum to make their boats
- Have them race each other in the baking pan of water
- Wrap up and ask how these shapes relate to car shapes and plane shapes

Materials

- Two rolls of aluminum (15\$)
- One water trough filled water for every 5 students (5\$ / pan) (reuse the one from oil spill)
- Straws from soft drinks (4\$ / 100)
- Five boxes of Dots candy (3\$/each)

Procedure

- 1) Fill the water troughs with water 5 inches high
- 2) Give the students freedom to fold their own aluminum boat
- 3) Have them place the boat in the water in pairs for a race
- 4) Give them straws to blow through and propel the boats
- 5) In the first race see who has the fastest design
- 6) In the second competition see who can hold the most dots with out sinking
- 7) Now give them a chance to redesign their original boat to carry as much candy as they can while still making it to the other side of the pan
- 8) Have them retest the design in water
- 9) Clean up

Resources

http://www.ehow.com/how_8764980_teach-lift-aerodynamics-second-grade.html

<http://www.grc.nasa.gov/WWW/K-12/airplane/bga.html>

<http://www.brighthubeducation.com/pre-k-and-k-lesson-plans/10798-transportion-unit-boats/>