Why Do Boats Float?

Grade Level: 5-8
Subject Areas: Physical Science
Duration: 50 minutes or less
Setting: classroom/lab
Skills: gathering, organizing, and analyzing information application of learned information, evaluation of learned information
Vocabulary: buoyancy, displacement

Objectives

Students will:

- design and build a clay boat;
- assess which shape best supports cargo without sinking; and,
- explain the relationship between surface area and buoyancy.

Materials

- 10-20 gallon aquarium filled with water
- pennies
- golf ball size clump of clay for each student or team

The Activity

1. Present a problem: each student, or team, will design and construct a vessel that will carry the greatest amount of cargo.
2. Give students time to engineer the vessel and to shape the clay.
3. Give each student or team a turn floating their vessel, and loading it with pennies until it sinks.
4. The vessel that supports the most pennies is deemed the most seaworthy.

Wrap Up

What shape best supported the weight of the cargo?
Did placement of the cargo affect buoyancy of the vessel?
What is the relationship between surface area and buoyancy?
Given this understanding, design a more seaworthy vessel.

Additional Resources

The Watercourse and Western Regional Environmental Education Council, 1995. *Project Wet Curriculum and Activity Guide.*

A good related activity in this guide is called “Water Crossings”.
In this activity students build a boat that will float using natural materials.