

Instructors Guide to:

A Boat that Floats

A great beginning exercise to introduce building and design. You can use this exercise to then introduce the design process.

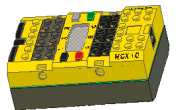
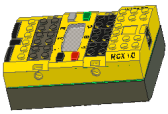
Introduce the names of the LEGO pieces. Show the difference between a weak and a strong structure. Attaching different LEGO pieces: 3 stacked plates = 1 beam/brick, how to make a piece stick straight up. See different techniques in the Constructapedia about bracing.

Introduce how buoyancy can be taught with this exercise:

Why doesn't a ship that weighs thousands of pounds sink?

The weight of the volume of water the submerged portion of the boat displaces must be more than the weight of the boat.

A variety of rocks works well to serve as weights for the boats to hold afloat.



In the Classroom:

Grade Level: K-8

Building Skills: Strength, design

Time: 45 min

Programming Skills: None

A Boat that Floats

This activity introduces the concepts of buoyancy along with some LEGO building basics.

Challenge

Build a LEGO “boat” that will stay afloat and hold the most rocks (weight).

(Note: you can choose to allow or not allow the students to test their designs in the water prior to final testing.)

Materials

Any LEGO™ pieces from your kits excluding the RCX and sensors.
Rocks or other material to weigh down the boat.

Skills Learned

Design, Building

Lego Tips

Snapping the LEGO bricks outside of the water traps air inside them. Likewise if the LEGOs are wet water may get trapped inside them reducing their buoyancy. The large tires have air trapped inside them. Be sure to make a compartment of some sort to hold the rocks (weights).

Extensions

1. Perform a drop test with the boat to test how sturdy they are building their boat.