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deSTEMber

SCIENCE ★ TECHNOLOGY ★ ENGINEERING ★ MATH

Balloon Boats

Be a structural engineer and create a boat that moves through water! Using a Styrofoam plate, a balloon, and a straw, see how far and fast you can make your boat go!

TEKS:

5.6D Design an experiment that tests the effect of force on an object.
6.8B Identify and describe the changes in position, direction, and speed of an object when acted upon by unbalanced forces.

How To:

1. Fill the kiddie pool or large plastic bin with water.
2. Make one hole punch along the edge of the Styrofoam plate.
3. Insert about an inch of the straw inside the balloon and secure tightly with a rubber band.
4. Stick the other end of the straw through the Styrofoam plate hole keeping the balloon end on top of the plate.
5. Hot glue around the straw on both sides of the hole to prevent leaking.
6. Once the glue is dry, blow up the balloon using the opposite end of the straw. Hold the end of the straw tight to keep the balloon filled up until you are ready to release in the water.
7. Take your balloon boat to the kiddie pool or plastic bin to test!
8. After the first trial, measure the distance the boat traveled. *What could you change to make the boat move faster or farther? What would happen if you tried two straws, two balloons, less weight, etc.?*
9. Make modifications and test to see if your new design goes faster and/or farther.

Materials:

- Kiddie pool or large plastic bin to hold water (a larger surface area is more important than depth)
- Straw
- Rubber band
- Hole puncher
- Styrofoam plate
- Hot glue gun and glue
- Measuring tape
- Stopwatch
- Pencil
- Balloon

31 Days of STEM Fun!

The STEM Explanation:

Friction is the force that resists motion between two objects or surfaces. When you put your boat in the water, friction prevents it from moving very much. After blowing up the balloon, attaching it to the straw, and releasing it, the air in the balloon travels through the straw and out the open end. This pushes the boat forward overcoming the friction of the water that is pushing back against it. The boat moves forward because the force of the released air pushing the boat is greater than the force of the friction that is resisting its movement.

Career Connection:

Structural engineers are concerned with the design and construction of all types of structures such as bridges, boats, dams, tunnels, power plants, offshore drilling platforms, and space satellites. Structural engineers research the forces that will affect the structure and then develop a design that allows it to withstand these forces.

Resource:

- http://lifewithmoorebabies.blogspot.com/2012/09/balloon-boats.html

