Science: Jet Powered Boats!

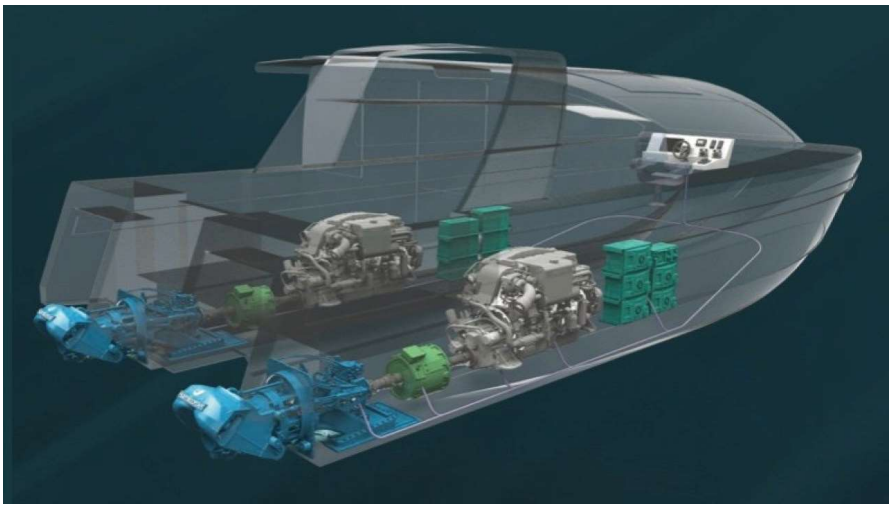
Ages: 7 - 13

Hello everyone. This is Bill from the Okanagan Regional Library System. Welcome to the fun and inventive world of making STEAM projects in your own home. Each month, I will share a fun and interesting project that you can make using materials commonly found in your own home.

Even though we can't be together right now, we can still learn how to make exciting projects each week!

This month's project: Jet Powered Boats

Jet Powered Boats



It is so easy to build a Jet Powered boat using baking soda and vinegar. Dip into the recycling bin for a small water bottle and then you are all set.

Chemistry is all about the way different materials are put together, and how they are made up including atoms and molecules. It is also how these materials react under different conditions. Chemistry if often a base for physics so you will see overlap!

What might you experiment within chemistry? We can think of a mad scientist and lots of bubbling beakers, and yes, there is a reaction between bases and acids to enjoy. Also, chemistry involves matter, changes, solutions, and the list goes on and on.

Materials Needed:

- Baking Soda
- Vinegar
- Empty Water Bottle
- Paper Towels
- Straw
- Tape
- Scissors or Xacto Knife
- Bath Tub or Sink
- Water

Time: 30 minutes

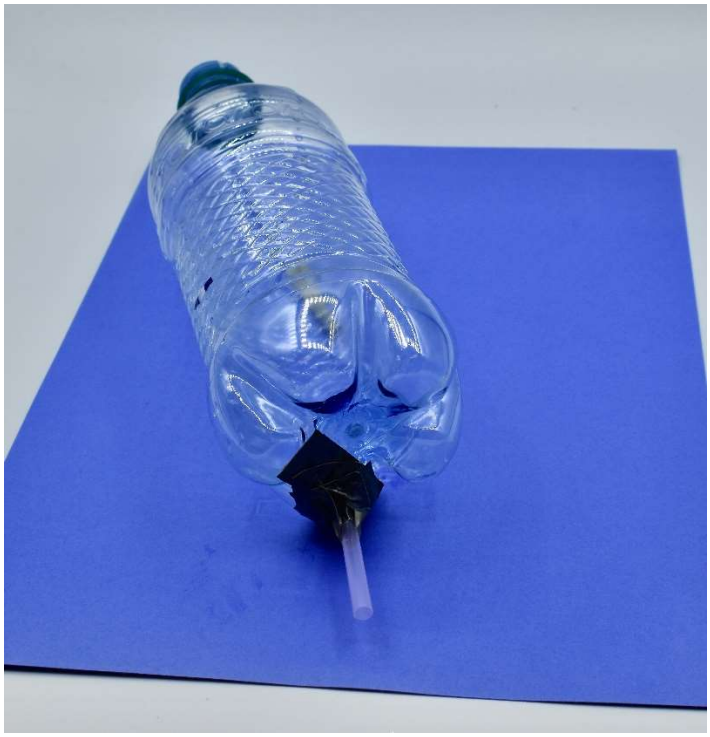
Have you ever wondered how a jet ski works? In this experiment, you will use vinegar and baking soda to magically move a bottle forward through water . When baking soda and vinegar are combined, a gas is created that when forced out the back of your bottle will move it forward.

Steps:

1. Cut the straw so that you have a piece about 1/3 its original length.

2. Pierce a hole in the non-lid end of the water bottle, large enough to poke the straw through it.

3. Tape around the gap, to prevent air escaping and to keep the straw in place.



4. Carefully pour some vinegar into the bottle and replace the lid.

5. Take a small piece of paper towel and place a couple of teaspoons of baking soda on top of it. Roll it up into a ball small enough to be pushed through the neck of the water bottle.Take the lid off the bottle, stuff the wad of baking soda into it and then quickly put the lid back on.

6. Place your bottle in the water and watch your jet boat go.

The Science behind your Jet Boat

The science behind this balloon experiment, is the chemical reaction between the base (baking soda) and the acid (vinegar). When the two ingredients combine, a gas is created that wants to find a way to escape out of the bottle.

This gas is carbon dioxide or CO2. The gas fills the space in the plastic water bottle, and It will escape through the straw causing your boat to move forward.

OKANAGAN REGIONAL LIBRARY

Real World Science – Jet Skis

Unlike a balloon, a blimp has a shape and structure that enable it to fly and maneuver. The main part of a blimp is called the envelope. The envelope is the large bag that holds the gas, in this case, helium. The envelope is generally cigar-shaped, for aerodynamic purposes, and made of a durable airtight, lightweight fabric that is much like the fabric of a space suit. Since blimps are comparably light, they are much more fuel efficient that jets and other aircraft.

STEAM

This activity includes everything you need for a comprehensive STEAM project.

Science: Understanding how an acid and a base react to each other.
Technology: Understanding how the real world use of blimps could be the answer to energy conservation.
Engineering and Art: Construction of the ghost balloon.
Math: Measuring out the quantities (acid and base) needed to inflate your balloon.