

## Lesson Plan: Soda Bottle Boat

Subject: Chemistry/Reactions

Age Group: 4-5th Grade

Supplies Needed:

- Large Tub
- Water
- Empty Soda Bottle
- Vinegar
- Thumb Tack
- Marbles
- Toilet Paper
- Baking Soda

Introduction:

- Ask the students what they think a chemical reaction is.
- After explaining what chemical reaction is, begin the experiment.

Instructions:

1. Use thumb tack to make a hole in the cap of the soda bottle.
2. Take 3 or 4 sheets of toilet paper and put some baking soda on them.
3. Spread the baking soda out evenly and roll up the toilet paper to slow down the reaction between the baking soda and vinegar.
4. Put the rolled up toilet paper into the soda bottle.
5. Add some marbles to the bottle so that the opening of the bottle is weighted down and the hole in the cap is in the water.
6. Fill the bottle  $\frac{1}{4}$  of the way with vinegar and quickly put the cap on the bottle.
7. Place the bottle in a tub filled with water and watch the bottle move across the water.

Follow-up:

- A chemical reaction is a change in which two or more substances combine to form a new substance or substances.
- Reactions can produce or absorb energy.
- Some common chemical reactions include seeing, burning, breathing, and rusting.
- The 3 different liquids form layers on top of each other because they have different densities.
- The corn syrup is the densest, then water in between, and then oil is the least dense.

Source: <http://pbskids.org/zoom/activities/sci/sodabottleboat.html>