

BOY, IS THAT BUOYANT!

Grade 4

Standard I

Materials needed:

- 3 clean peanut butter or mayonnaise jars with lids
- 3 golf balls
- Table salt (about one 26 ounce package)
- Pasta server or large slotted spoon
- Masking tape and/or permanent marker
- Hot water
- Paper towels or newspaper

Objective:

Students will learn that salt increases the density of water and creates a condition wherein objects are more buoyant than they would be expected to be under normal conditions.

Directions:

● Label each jar with masking tape (if you want to reuse your jars) or marker as follows:

1st jar: Gunnison Bay or North arm

2nd jar: Gilbert Bay or South arm

3rd jar: Fresh water

- Fill the 1st jar 28% full of table salt, add hot water (for super-saturation) to 1 inch below lid level, replace lid tightly and shake (to dissolve salt as much as possible).
- Fill the 2nd jar 6 to 11% full of table salt and repeat what you did with the 1st jar.
- Fill the 3rd jar with room temperature water to equal the level of the other jars.
- When water has cooled and salt has dissolved as much as possible (the water in the 1st and 2nd jars may become super-saturated and be unable to dissolve all of the salt) take the lid off the jars and place side by side on paper towels or newspaper.
- Have students drop a golf ball into each jar with the slotted spoon and record or graph their observations.
- Ask students to interpret their observations out loud or on paper.
- Experiment may be repeated with variables introduced (drop objects of different size, shape or density and compare results to the golf ball, or, what % of salt can be absorbed in the jar of water before it becomes saturated, etc).

Questions for discussion & discovery:

- Which of the jars (1 or 2) gave results closest to that of fresh water? Why?
- How did the golf balls react to being placed in each jar? Why?
- What does it mean to be buoyant or to create buoyancy?
- Why are the 2 arms of the lake so different in salt concentration?
- What living things can survive in salty water? At what concentration? How?
- What other places in the world have similar conditions?