

Freshwater vs. Saltwater
Discrepant Event Activity
Teacher Resource

Grade Level **3-12**

Objectives

1. The student will understand the density of water by exploring the difference in freshwater and saltwater.
2. The student will employ simple equipment and tools to gather data.
3. The student will demonstrate the use of 21st century technology with a document camera.

National Standards

[NS.K-4.1](#); [NS.5-8.1](#); [NS.9-12.1](#)

Science as Inquiry

[NS.K-4.2](#); [NS.5-8.2](#); [NS.9-12.2](#)

Physical Science

[NS.K-4.5](#); [NS.5-8.5](#); [NS.9-12.5](#)

Science & Technology

[NT.K-12.1](#)

Basic Operations and Concepts

[NT.K-12.3](#)

Technology Productivity Tools

[NT.K-12.6](#)

Technology Problem-Solving & Decision-Making Tools

Teacher Background Information

This is an activity for teachers to introduce the concept of density. The simple way to introduce this concept is with water, an egg, and salt. In order for the egg to float in a liquid, the density of the egg must be less than that of the liquid. Density is the same regardless of how much of that substance is present due to being a physical property. The density of water is 1, density= mass/volume. The egg will sink in the freshwater due to having a higher density. The egg will float in the saltwater due to the adding of mass (salt) we have increased the water's density.

Before each activity, have students state a hypothesis.

MATERIALS

| | |
|-----------------------------------|---------------|
| Document Camera | Salt (kosher) |
| Personal Computer | Raw Egg |
| Interactive White Board/Projector | Water |
| Glass Beaker | Metric Ruler |
| Spoon | |

PROCEDURE

1. Focus the document camera on the beaker.
2. Take snapshots of each trial throughout the experiment.
3. Fill beaker with 500mL of freshwater.
4. Place the egg in the beaker.
5. Have students observe what happens to the egg.
6. Have students mark the location of the bottom of the egg on the beaker with a solid line. This is the initial position of the egg in freshwater at 0.
7. Take a snapshot and save image.
8. Measure 10 grams of salt on the electronic balance.
9. Add the 10 grams of salt into the freshwater and stir with a spoon.
10. Wait for the egg in the beaker to settle then measure the distance the egg is from the initial marked position.
11. Take a snapshot and save image.
12. Repeat steps 8-11 until the egg floats on the surface of the water.
13. Record all data in a table.

If you have software that has a measuring tool than have students use that to measure each trial of the saved image instead of a ruler.

QUESTIONS

1. What happens to salt (NaCl) molecules when dissolved in water (H₂O)?
2. Why does adding NaCl to H₂O increase its density?
3. Why is this information important for real life situations?