ICEBERG DENSITY EXPERIMENT

This hands-on experiment will help students understand physical properties like buoyancy, melting points, and hydrogen bonding—all while making connections to climate, ocean science, and the North Atlantic!

Materials

Water
Bowl
Blue food coloring
Freezer
Salt

INSTRUCTIONS:

STEP 1: Prepare the Iceberg: Pour 1-2 cups of water into a small container, bowl, or plastic cup.
Add a few drops of blue food coloring (optional) for better visibility. Place the container in the freezer overnight until completely frozen.

STEP 2: Set Up the Experiment: Fill a large clear bin with 4-6 cups of plain water to serve as the control group.

STEP 3: Prepare additional bins of water with different salt concentrations:
No salt (Control Group) – Plain water
1 tbsp salt per cup of water – Low salt concentration (brackish water)
3 tbsp salt per cup of water – Moderate salt concentration (ocean water)
6 tbsp salt per cup of water – High salt concentration (Dead Sea level)
Stir each solution until the salt completely dissolves.

STEP 4: Place the frozen "iceberg" into the control bin (plain water) and observe:
How much of the iceberg is above and below the water?
Does it melt quickly or slowly?
Repeat with the salt bins, noting changes in buoyancy and melting rate.

WHY DOES THIS HAPPEN?

Adding salt increases water density, making objects more buoyant.
The higher the salt concentration, the higher the iceberg floats because denser water provides more upward force.
Saltwater can also slow the melting process since it disrupts ice's structure differently than freshwater.

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TYPE OF WATER	**OBSERVATIONS**
FRESHWATER	
1 TBSP SALT	
3 TBSP SALT	
6 TBSP SALT	

How did salt affect iceberg buoyancy?_____

Did you notice any currents or movement in the water as the iceberg melted?_____

What role does ocean salinity play in real-world iceberg movement?_____

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How might global warming impact icebergs in saltwater vs. freshwater?_____

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Did the iceberg melt faster in freshwater or saltwater? Why do you think that happened?_____

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