



High School Grades Lesson Plan

Title: Fresh Water vs. Salt Water

By: Unknown

Subject(s): Physical Science

Grade Level: 9-12

Concept/Topic to teach: Compare and contrast the properties of fresh and salt water (buoyancy, density, freezability and crystal formation).

Materials: (for each group) coarse salt, two ice-cream pails or aquariums, water, 2 liter measuring jug, 250 mL measuring cup, two 3 inch plastic dishes (planter trays work), pennies, marbles, or other equally weighted objects weight scale ice cube tray paper towels

Procedures:

- A. Fill both ice-cream pails with 2 liters of water. Leave one fresh. In the other, add 250 mL coarse salt. Mix until all salt is dissolved. Weigh both pails and record the information Buoyancy test: place one plastic dish in each pail. One at a time, add the pennies or marbles. Count each as they are placed in the dish. A gentle touch helps. Record when each 'boat' sinks. Add another 250 mL to the salty water. Mix well again. Repeat weighing and buoyancy. Record your findings. If necessary repeat one more time to emphasize the differences of density and buoyancy.
- B. When finished the above, use the water from the two pails to do these two experiments: Label the ice cube tray 1/2 salt and 1/2 fresh. Fill accordingly. Place in the freezer and check on it approximately every hour for about 2 to 3 hours. Record your findings. Put a little water from each pail into a shallow dish or lid. Label them as salty and fresh. Place in a sunny window and leave alone for a couple of hours. When they have dried up have the students draw what they see.

In the classroom hints: Have the students work in small groups to do the different experiments. They should all be involved in the observing and recording part of it. Have the students make predictions throughout about what they think will happen.

What to do next (extension activity): Art: Using black construction paper and white pencil crayons. Make your own crystal designs. Remember, the more detail, the more interesting the final result will be. Make a stamp of the crystal out of thick foam and use it to print patterns using paints. With learned information, make conclusions about how salinity can make living complicated for some creatures. Find out how animals and sea creatures have adapted to this (e.g. some seabirds have glands to excrete excess salt).

Explore the problem of getting fresh water from salt water. Is it possible and if so, how might the students go about doing it?

Cross-curricular connections: Math - measurement (mass, volume), data recording (if done in graphs or charts). Language Arts - inferences, predictions, group work communication. Environmental Education - relating findings to the natural environment
Art - crystal art, drawing, printmaking