

A STEM in the Park

Take Home Activity

STEM

in the **PARK**™

Science, Technology, Engineering, and Mathematics



Temperature and Density activities

Water forms layers based on salinity and temperature. Less dense water rests on top of denser water. Water becomes denser as it gets colder, but once it reaches 4° C something interesting happens. Between 4° C and 0° C water becomes less dense. Ice is less dense than water. (Remember, ice cubes float!)

During cold winters, ponds and lakes can freeze. In the spring, the ice melts. As the ice warms up it becomes denser and begins to sink. The nutrients at the bottom of the water begin to rise. This is called turnover. The Same thing happens in the fall as the surface water cools.

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What You Need...

1. Obtain two water samples. One at room temperature and one warm. (but not boiling)
2. Put a few drops of different food coloring in each sample.
3. Measure the temperature of each sample.
4. Pour the coldest water into the bowl first, then the warm sample to form layers. The warm water on top represents water heated by the sun.
5. Add ice to the bowl.
6. Observe as the ice melts.

Observe...

You should see that as the ice melts, the colder water will move to the bottom. The water at the bottom will begin to circulate and move toward the top. Measure the temperature of the water at the top, middle and bottom of the bowl. Watch throughout the day as the ice continues to melt.

Other things to try...

- Use a small fan to test the effects of wind on the circulation of water.
- Use a hose or faucet to add water to simulate a stream. How does this effect circulation.

K12 Science- Unit 2: The World's Oceans > lesson 1: Ocean Water

This activity is brought to you by the Ohio Virtual Academy

