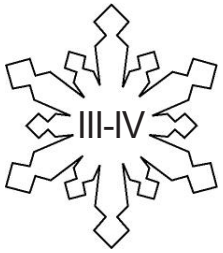
Build a Psychrometer

Levels



Grades 5-8

Overview:

During this activity, students build a psychrometer to measure humidity in the classroom.

Objectives:

The student will build a working psychrometer.

GLEs Addressed:

Science

- [5-8] SA1.1 The student demonstrates an understanding of the processes of science by asking questions, predicting, observing, describing, measuring, classifying, making generalizations, inferring, and communicating.
- [6] SD3.1 The student demonstrates an understanding of cycles influences by energy from the sun and by Earth's position and motion in our solar system by connecting the water cycle to weather phenomena.

Materials:

- Bowl of water
- Bulb thermometers (2 per group)
- Pre-washed pieces of muslin fabric (1 per group)
- Small containers (1 per group)
- Water
- Rubber bands (1 per group)
- STUDENT INSTRUCTION SHEET: "Build a Psychrometer"

Activity Procedure:

1. Demonstrate the idea of humidity by asking students to dip their hands in water then wait for their hands to dry in the air. Ask students what happened to the water that was on their hands.
2. Explain that the water evaporated, or moved into the air. It changed from a liquid into a vapor, using the heat from students' hands. The air holds moisture. Ask students to think about how the air feels just before it rains, or about steam from a steam bath. The air feels different at these times because it is full of water vapor. Relative humidity is a measure of the amount of moisture in the the air relative to he amount of moisture air can hold. Warm air can hold more moisture than cold air.
3. Explain that a person can increase the humidity of a room by evaporating water in the room. Outside, humidity increases when water from oceans, lakes, rivers, etc., evaporates. Evaporation is one way water moves from Earth to the atmosphere in the water cycle.
4. Explain that an instrument used to measure the humidity of the air is called a psychrometer (si-krawmeter). Today students will build psychrometers to measure humidity.
5. Divide students into lab groups. Distribute the STUDENT INSTRUCTION SHEET and materials.
6. Assist students with building psychrometers. After students have completed building the psychrometers, set them aside for use in the Measuring Humidity activity.

Name:_____

Levels

III-IV

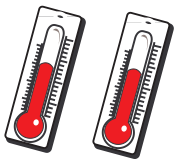
Build a Psychrometer

Student Instruction Sheet

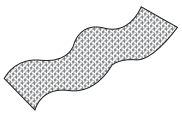
Experiment:

Materials:

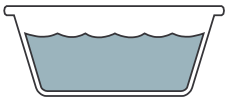
- 2 bulb thermometers



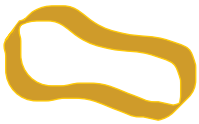
- 1 piece of muslin fabric



- Small container of water



- 1 rubber band



Procedure:

1. Make sure that the two thermometers are reading exactly the same temperature. If they are not, try to trade with others to get two that match.
2. On one bulb thermometer, wrap a piece of muslin fabric around the bulb. Fasten it with a rubber band so the muslin trails out about three inches.
3. Place the trailing end of the muslin in the container of water (as shown below). It will act as a wick and carry the water to the bulb.
4. Lay the two thermometers side by side on the table and allow the water to wick up to the bulb of the muslin-wrapped thermometer.