



Blowin' in the Wind

Primary Audience: 3rd – 5th

Description: Build a wind detector to learn about force and convection currents.

Key Word: Convection

Materials:

- Ruler
- Scissors
- Tissue paper
- Paper hole-punch
- Thread
- Tape
- New, unsharpened pencil

Instructions:

1. Measure and cut a 1 x 3 inch strip of tissue paper.
2. Using the hole-punch, punch a hole in the middle of one end of the paper strip.
3. Cut a 2-inch piece of thread and tie one end of the thread through the hole in the paper strip.
4. Tape the free end of the thread to the pencil about two inches from the pencil's end. This is your wind detector.
5. Hold the wind detector near the bottom of a door opened about 2 inches.
6. Observe the direction of the movements of the hanging paper.

What's going on?

The molecules that make up warm air have more energy and move around faster than cold air molecules, which have less energy. Warm air molecules move away from each other causing warm air to be lighter than cold air molecules, which stay close together. This allows the warmer, lighter air to rise, and the colder, heavier air to sink. This up and down movement of air due to different temperatures is called convection currents.

If the door is opened during the winter, cold air forces itself into the bottom of the room and replaces the rising warmer air. In the summer, an air-conditioned room is colder than the air outside so the cold air from the bottom of the room leaves

Weather

first when the door is opened. The paper on our homemade wind detector will blow in the direction in which the wind is going.

Relevant Ohio Science Content Standards:

- Physical Sciences 3-5 B: Identify and describe the physical properties of matter in its various states.
 - 4.4: Explain that matter has different states (e.g. solid, liquid and gas) and that each state has distinct physical properties
- Physical Sciences 3-5 C: Describe the forces that directly affect objects and their motion,
 - 3.3: Identify contact/noncontact forces that affect the motion of an object (e.g. gravity, magnetism and collision).
- Earth and Space Sciences 3-5 D: Analyze weather and changes that occur over a period of time.
 - 4.1: Explain that air surrounds us, takes up space, moves around us as wind, and may be measured using barometric pressure.