

Heat Energy

Adapted lesson from “Elementary Science with Vernier”

Setting: Computer lab, teams of 2-3 students (data and resource collector, computer operator, and experimenter) classroom teacher and ITRT

Materials: Vernier temperature sensor (8), ice (lots), plastic sandwich bags, thick socks, warm water and cups, paper towels, student worksheets

VA SOL's:

Grade 3 Science Earth Patterns 3.9b) the energy from the sun drives the water cycle; Earth Resources 3.11 The student will investigate and understand different sources of energy
Grade 2 Science Matter c) changes in phases of matter with the addition or removal of energy.
Math 3.13 Reading thermometer; 3.17 Read and interpret data

Major understanding: Human's create body heat by eating which is our source of energy. Heat energy causes phase changes in matter and heat will always travel from something warmer to something colder. After the exploration of heat energy in our hands the students will understand that heat energy can move

Objectives:

Students will measure temperature.

Students will work collaboratively to investigate change in temperature.

Students will create graphs of temperature and evaluate increase or decrease in temperature.

Activities:

1. ITRT or classroom teacher will model the use of the temperature probe and software for the students in the in the lab. Measure temperature of two adults hands. Discuss how to read the temperature. Make sure the probe is left on the desk for a few minutes between collections.
2. Working in groups of 2-3 students will conduct the first investigation, How warm is your hand and record the data. Students will draw the graph.
3. With the same group, students will try to change the temperature of their hand by holding a cup of warm water, holding ice cubes, rubbing the hands together, and measuring the temperature with their hand inside a sock. A prediction will be made before each collection. Students will indicate whether this was an increase or decrease in temperature.
4. students will answer the questions on the worksheet. Discuss with the class the observations. Where is the heat coming from? Does heat energy move from one thing to another? What happened to the ice in your hand? Is the Sun a source of heat energy? Are there other sources of energy and types of energy? When your hand was in the sock what happened?
5. What other experiments can we try with temperature?

Assessment:

Formative- Laboratory participation and collaboration

Summative- Completion of data sheets and final questions.