

Implementing Common Core Standards

Science Goals

Students will recognize how energy can be transferred from one object to another.

- *3.P.3.1 Recognize that energy can be transferred from one object to another by rubbing them against each other.*
- *3.P.3.2 Recognize that energy can be transferred from a warmer object to a cooler one by contact or at a distance and the cooler object gets warmer.*

With this goal, I plan to use energy activities that show how friction is created and how convection and conduction occur in everyday objects. For example, when sticks are rubbed together to start campfires, energy is being transferred from one object to another to create the heat. As movement of the sticks gets faster and faster, the molecules move faster and faster and eventually there is enough energy to cause combustion of the wood or leaves, creating sparks of fire. Students will have opportunities to practice this by rubbing their hands together as well as rubbing balloons against their heads to demonstrate static electricity.

Math Goals

- *Make sense of problems and persevere in solving them*
- *Construct viable arguments and critique the reasoning of others.*

Science and math are closely related and students will have several opportunities throughout this unit to relate energy to graphing, measurement, and basic arithmetic properties. For example, when comparing temperature of objects based on colors, students will use their math skills to read thermometers, interpret and graph data and figure out differences using math equations. Students will place thermometers in 2 separate boxes. One box will be covered in black construction paper while the other is covered in white construction paper. They will observe changes in temperature and create a viable argument/explanation of how the heat was transferred through radiation. *How much did the temperature change? Which object absorbed more heat? The object with black paper or the object with white paper? What happened to the temperature at each 5 minute interval? How can we show that on a graph?* Other variations in objects can also be used to track temperature changes such as using sand or dirt. Students will use 2 containers of either sand or dirt to get a constant temperature. Then they will shake one of the containers very vigorously and measure the temperature after the shake. *Did the temperature increase or decrease? What could be the cause of the temperature change?*

Reading Goals

With reading goals, students will ask and answer questions to demonstrate understanding of a text referring explicitly to the text as the basis for the answers (CCSS.ELA-Literacy.RL.3.1). Students will also explain how specific aspects of a text's illustrations contribute to what is conveyed by the words in a story (*CCSS.ELA-Literacy.RL.3.7). By showing students pictures of common objects and activities using heat, students will explain the scientific reasoning behind each picture.