Broward County Public Schools Videoconference

Reading Rascals

Lesson: Hot Stuff
Instructor: Dr. Evelyn Nelson-Weaver
BECON Distance Learning Teacher

Grade Level: First Grade
Sunshine State Standard: SC.B.1.1 and SC.H.3.1
Benchmark: SC.B.1.1.1, SC.C.1.1.4, and SC.H.3.1.1
Objective(s):
1. Students will identify the sun as a source of heat.
2. Students will recognize that heat can be produced in many ways.
3. Students will use a thermometer to measure hot and cold.

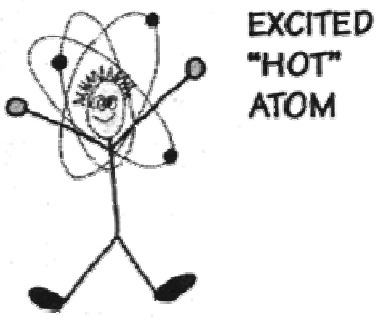
SCIENCE SKILL EMPHASIS: Measure and Observation.

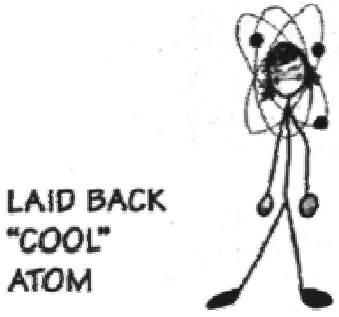
LITERATURE CONNECTION:
Book Title: Energy from the Sun
Author: Allan Fowler
Publisher: Children's Press, New York, NY (1997).
Summary: Defines energy and examines how energy from the sun provides us with heat, light, plants, food, and other things necessary for life on Earth.
Student questions: *Read pages 1 -14 only.*

1. Toasters and TV sets run on what kind of energy? *Electricity*
2. Where do you get your energy? *From the food you eat*
3. Where does the energy come from that helps plants grow? *The sun*

INTERNET CONNECTION: *Heat Energy* (1997). Retrieved April 14, 2008, from http://www.powermasters.com/heat_energy.html

Did you know that **HEAT** is a form of **ENERGY**? Yep, this form of energy affects everything from fuel to all of the parts in a racecar. And, we're going to look at a few experiments to learn how this form of energy acts and why we need to know all about it. Benjamin Thompson (1753 - 1814), known in Europe as "Count Rumford", was the first person to show that HEAT is a form of ENERGY.
The **heat energy** of a substance is determined by how active its atoms and molecules are. A **hot** object is one whose atoms are excited and show rapid movement.
A **cooler** object's molecules and atoms will be less excited and show less movement.





LITERATURE CONNECTION:
Book Title: Highkights Book of Science Questions That Children Ask
Publisher: Barnes & Nobel Books, New York, NY (1995).
Summary: More than 350 real questions about science topics answered by Dr. Jack Meyers, science editor for *Highlights for Children*.

What makes popcorn pop? *Read page 203.*
What is the energy used to make the popcorn pop? *Heat*

INTERNET CONNECTION: *Forth Grade Science* (1997). Retrieved April 14, 2008, from http://www.utm.edu/departments/cece/old_site/fourth/4C2.shtml

What are some sources of heat? (*sunlight, electricity, chemical, burning friction, gas (fuels), coal, etc*.)

Activity One: The measure of the speed of particles is called temperature. It is measured in degrees by using a what? (*thermometer*) Use a thermometer to find the temperature of a bowl of **cold tap water, crushed ice** and **boiling water**. Record and discuss the temperature differences.

Activity Two: Fill one small jar with cold water and one jar with very hot water. Put two drops of food coloring in each container of water. Observe. What happened to the hot water? (*As matter is heated, the particles move faster*.)

INTERNET CONNECTION: *Heat Experiment: Cold Hands* (2007). Retrieved April 14, 2008, from http://www.kids-science-experiments.com/coldhands.html

Put your cold hands together and start rubbing them together slowly. Do they still feel cold?
2. Now start rubbing them together really fast. How do they feel now? Are they warmer?
3. Next, try rubbing your hands up and down your thighs really fast. This will warm both your hands and legs.
4. Try crossing your arms and rubbing your hands up and down the tops of your arms really fast. This will warm both your hands and arms.

This is called friction. When you rub things together you create friction and friction is what causes heat.

MEDIA CONNECTION: Friction from Discovering Simple Machines: Work and Energy. United Learning (2001). Retrieved April 14, 2008, from discovery streaming: http://streaming.discoveryeducation.com/

MATERIALS NEEDED: Thermometer, cold tap water, crushed ice and boiling water. **NOTE: These materials are needed only if you wish to replicate the experiments the instructor will demonstrate during the lesson.**

EXTENSION: Energy Unit (Friction & Heat) from ASC Great Northern Science Handbook • www.akscience.org. Retrieved April 14, 2008, from **http://www.akscience.org/assets/handbook99/EnergyUnit.pdf**