

**Project FOCUS  
Best Lessons  
THIRD GRADE**

**Title of Lesson:** Heat and Energy

**Theme:** Physical Science

**Unit Number:**            **Unit Title:** Heat Energy

**Performance Standard(s) Covered (enter code):**

S3P1. Students will investigate how heat is produced and the effects of heating and cooling, and will understand a change in temperature indicates a change in heat.

d. Use thermometers to measure the changes in temperatures of water samples (hot, warm, cold) over time.

**Enduring Standards (objectives of activity):**

**Habits of Mind**

- Asks questions
- Uses numbers to quantify
- Works in a group
- Uses tools to measure and view
- Looks at how parts of things are needed
- Describes and compares using physical attributes
- Observes using senses
- Draws and describes observations

**Content (key terms and topics covered):**

Heat  
Heat energy  
Temperature  
Molecules

**Learning Activity (Description in Steps)**

**Abstract (limit 100 characters):**

**Details:**

Begin the class by asking the students where energy is found. Once they have given you some ideas ask them if they think there is more energy in something hot or something cold. Discuss to them that when they play sports they need energy and ask them if playing makes them hot or cold. This will verbally answer their question on whether energy is in something hot or something cold.

**Part I**

Have all the students stand up and gather in a tight circle in the room. Explain to the students that energy is made up of molecules and they are going to be molecules for a minute. Right now, they are very cold molecules. A good way of helping them remember this is that people, too, like to huddle up close together when they are cold. Now have them wiggle and barely move around. Have the students freeze and ask them if they are a little warmer and show them how they are a little further apart. Have them move faster now and jump up and down. Then have the students stop and look where they are. They should be even further apart and even warmer.

After this demonstration tell the students that you are going to place a drop of food color into a bowl of warm water and in a bowl of cold water and tell them to make a hypothesis about which one will spread the color the quickest. After they complete their hypothesis gather them in a circle around the bowls and place a drop of food coloring in the center of each bowl.

Since the hot water molecules are moving faster the food color should disperse faster in the bowl of hot water. Explain that the food color molecules and the energy molecules keep bumping into each other and turn all of the water a different color. Have the students record their observations.

**Materials Needed (Type and Quantity):**

- Clear bowls - 2
- Food coloring - 1 color
- Hot water
- Cold water
- Optional: thermometers

**Notes and Tips (suggested changes, alternative methods, cautions):**

- Optional: Measuring the temperature of the two bowls of water is a great way to integrate math into this experiment as well as cover another science education standard.

**Sources/References:**

- 1) Originally submitted by Kelby Pruitt , edited by Jessica Valle (2010)
- 2)
- 3)