

**Project FOCUS
Best Lessons
THIRD GRADE**

Title of Lesson: Measuring Temperature Changes

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

Thermal energy

Learning Activity (Description in Steps)

Abstract (limit 100 characters): Students will work in groups to measure and compare temperatures of 3 cups of water.

Details:

Divide the class into 3 groups and assign them one group to each water sample. Give each group a thermometer. Instruct the students to record the initial temperature of the water samples at the beginning of the experiment. Start the timer as soon as the thermometer is in the water and record the temperature of the water periodically (every 5 minutes) for a total of 30 minutes. After gathering the all the temperature readings, have the students individually graph the temperatures for their sample. Once all the data is collected, you can make one large class graph on the whiteboard or SmartBoard that contains the data from each sample. This will allow the kids to see the difference in temperature changes when comparing the samples to one another.

Have the students record their observations. How did the heat loss or heat gain vary with each sample? Which sample had the greatest temperature change, and why? Have students write conclusions about how objects gain and lose heat until they reach the same temperature based on the results recorded in their graphs.

Materials Needed (Type and Quantity):

- 3 standard Styrofoam cups
- 1 cup of ice cold water (may need to bring ice depending on available resources at school)
- 1 cup of room temperature water
- 1 cup of hot water (may need to bring hot water in a thermos depending on available resources at school)
- 3 thermometers (one for each sample)
- Graph paper - 1 per group or student
- Timer or stopwatch

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

- Tip: You will want to bring some kind of information or worksheet to present to the students so they are not just sitting around doing nothing between temperature readings.

Sources/References:

- 1) Originally submitted by Melia Morgan, edited by Jessica Valle (2010)
- 2)
- 3)