

**Grade Level:** 4-5

**Topic:** Energy Movement

**Title:** *Hot and Cold Colors*

## Objectives/Goals

1. The students will explore the effect of the heating and cooling of small particles in matter.
2. The students will discover that energy of motion can be transformed into heat energy.

## Standards

5.3.8

[View Resource\(s\)](#)

Investigate, observe, and describe that heating and cooling cause changes in the properties of materials, such as water turning into steam by boiling and water turning into ice by freezing. Notice that many kinds of changes occur faster at higher temperatures.

5.3.10

[View Resource\(s\)](#)

Investigate that some materials conduct heat much better than others, and poor conductors can reduce heat loss.

4.3.11

[View Resource\(s\)](#)

Investigate, observe, and explain that things that give off light often also give off heat.

4.3.13

[View Resource\(s\)](#)

Observe and describe that things that give off heat, such as people, animals, and the sun.

## Materials

- Paper clip; eraser; plain sheet of paper
- Food coloring
- Containers of the same size i.e. drinking glasses, beakers
- Hot water; cold water; room temperature water
- Stopwatch
- Science notebooks

Adapted from *Science NetLinks website* : Hot and Cold Colors  
*Scott Foresman Science 4<sup>th</sup> grade, Chapter 12* :page 348

## Activities

1. Ask question: How can you make objects warmer?
2. Record ideas in the science notebook.
3. Distribute a paper clip; eraser; paper
4. Follow Directed Inquiry in Scott Foresman page 348.
5. Record observation in the notebook.
6. In the student notebook answer the question: What can you infer about what happens when one object rubs against another.
7. Ask students to think about what might happen if they add food coloring to the hot water; cold water; room temperature water.  
Make predictions in notebook and explain your answer.
8. Students will make a chart or table in notebook to record the outcomes.
9. Test each container of water by adding 1 drop of food coloring.  
start the stopwatch as soon as the food coloring hits the water and stop the watch when the color spreads throughout the water.
10. Record the time in seconds and record observations on the chart created.
11. Students will write conclusions, thoughts and questions as a wrap-up in their notebooks.

## Assessment

*FOSS Scoring Guide*