



Time Frame:	Standards:
September 18, 2009 3 rd Hour Class 9 th grade Physical Science 70 minute class	8-9.PS.1.2.1 Use observations and data as evidence on which to base scientific explanations. (648.02a) 8-9.PS.1.6.1 Identify questions and concepts that guide scientific investigations. (649.01a)
Objectives:	
<div style="border: 1px solid black; padding: 5px;"> Students will record observations, differentiate between observations and inferences, and answer questions using the scientific method. Students will identify the difference between hot water and cold water, energy potential and why? </div>	
Background Information:	
This activity is meant to demonstrate the phase change between hot and cold water and how a student can tell if water is hot or cold without touching it. Cover Chapter 2 section 3 in the Prentice Hall Physical Science Book on Phase Changes Heat plays an important role in phase changes. Heat is energy that causes the particles of matter to move faster and farther apart. As the particles move faster, they can leave one phase and pass into another. 	
Materials:	
1 Quart jar of very cold water 1 Quart jar of very hot water. (Not boiling) Small bottle of red food coloring 	
Procedure:	
Explain to the students what you are going to do with the hot and cold water and have the students make a hypothesis. Add a drop of food coloring to the jar of hot water. Allow three or four minutes for the food coloring to settle.	

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Record Observation:

Add a drop of food coloring to the jar of cold water.

Allow three or four minutes for the food coloring to settle.

Record Observation:

Was their hypothesis correct?

Conclusions:

A drop of food coloring will mix much more rapidly in the hot water than in the cold water. This is because as the materials are heated, the molecules in them move more rapidly. The rapid movement of the molecules stirs the water and causes the food coloring to mix at a faster rate.

Water does not compress, but it will expand and contract due to changes in temperature. Other common liquids behave in the same way.

Assessment:

Have the students write a one-page paper on what they did, what they observed, explain what happened and why and if their hypotheses was correct. They can use their textbook as a source of information and reference.

References:

Activity From:

Physical Science Activities for Grades 2- 8 by Marvin N. Tolman and James O. Morton. 1986 Parker Publishing Company, Inc. West Nyack, New York.

Physical Science by Prentice Hall. 1988 Prentice Hall, Inc., Englewood Cliffs, New Jersey.