

Kristin Adams

**Grade Level:** 5th

**Title of Lesson:** Physical and Chemical Change

**Unit Title:** Physical Science

**Performance Standard(s) Covered:**

**S5CS1. Students will be aware of the importance of curiosity, honesty, openness, and skepticism in science and will exhibit these traits in their own efforts to understand how the world works.**

- a. Keep records of investigations and observations and do not alter the records later.
- b. Carefully distinguish observations from ideas and speculation about those observations.
- c. Offer reasons for findings and consider reasons suggested by others.
- d. Take responsibility for understanding the importance of being safety conscious.

**S5P2. Students will explain the difference between a physical change and a chemical change.**

- a. Investigate physical changes by separating mixtures and manipulating (cutting, tearing, folding) paper to demonstrate examples of physical change.
- c. Investigate the properties of a substance before, during, and after a chemical reaction to find evidence of change.

**Essential Question:** What is a physical change? What is a chemical change?

**Objective:** Students will understand what constitutes a physical change as well as what constitutes a chemical change. Students will also understand the difference between a physical and chemical change.

**Key Words and Terms:** chemical change, physical change

**Learning Activity**

**Abstract (limit 100 characters):** Students will learn what physical and chemical changes are using literature and experimentation.

**Materials Needed:** 1 gallon of vinegar, one box of baking soda, paper towels, paper for each student. One of each item for one group of three students: 1 beaker, 1 spoon, 1 thermometer,

**Safety Concerns:** Make sure students leave beakers on table at all times to prevent having broken glassware. Have paper towels to clean up excess vinegar.

**Procedure:**

1. As a class, the students and I will read a page of their science textbook, which explains what a physical change is.
2. Students will then be given a piece of paper to demonstrate physical change.
3. After students have made a physical change to their paper, which should be ripping or cutting, a couple of students can show and explain what they did to their paper.
4. We will then read out a page of the science textbook, which explains what a chemical change is.
5. Students will divide up into groups of 3 and be given a beaker(which should have 150 ml of vinegar already in in), a spoon, and a thermometer and should have their science journals.
6. Students will place thermometer in beaker and record the temperature as well as the states of matter of vinegar and baking soda.
7. I will go to each table and students will take a spoonful of baking soda. I will then instruct students to place the baking soda into the beaker.
8. Students will observe the reaction and the temperature change and record the temperature of the mixture, what happened during the reaction, and the state of matter in the beaker.
9. Students will clean up and we will review what happened through the reaction.
10. For a closing, students will make a map of the changing states of matter of the baking soda and vinegar.

**Notes and Tips:** It would be helpful to have scale for students weigh out their baking soda and vinegar, so they could also observe the conservation of matter.

**References:**