

5E Lesson Plan

Teacher:

Date:

Subject / grade level: 6th Grade Science

Materials: Heating plate, beaker, water-ice, spoon thermometer, stopwatch

NC SCOS Essential Standards and Clarifying Objectives

Lesson objective(s):

6.5 D Formation of a New Substance: The student is expected to identify the formation of a new substance by using the evidence of a possible chemical change such as production of a gas, change in temperature, production of a precipitate, or color change.

Differentiation strategies to meet diverse learner needs:

ENGAGEMENT

1. Teacher demonstration: Utilizing the color change in cabbage
Add 5ml of cabbage extract to a beaker of water and observe the chemical changes. (The red cabbage indicator will make a purple liquid when added to water.
2. Next, the cabbage juice mixture is poured into a beaker containing vinegar. (This should turn the mixture pink).
3. Utilizing, a student volunteer pour out 50ml of the mixture into a zip lock bag. Add antacid tablet, shake bag, and wait for reaction to take place. Students should notice a fizz and cloudiness in bag. (Students should guess that this is gas production. Students should be able to feel the temperature in bag. The substance in the bag gets colder.

EXPLORATION:

Prelab

In today's lab students you will be working with a hot plate that achieves heat really fast. Extreme caution to keep cloths, human contact, and electric cables away from heating element.

2. Make sure glass thermometers are used with caution. They should be treated as fragile glass. If thermometers break please do not try to clean on your own please notify teacher, so hazardous procedures may be done.

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3. Hotplate must be placed in a stable place.
4. Place hot plate on medium, do not touch anymore
5. The teacher's assistant will fill you beaker with water and ice. Place the thermometer in the ice. As soon as it reaches a minimum temperature, data collection will begin. Move beaker to center of hotplate and start stopwatch.
6. Students need to familiarize themselves with knowing how to read a thermometer.

Lab Exploration

Four lab assignments

- Student 1 holds thermometers and calls out readings
- Student 2 Stirs samples and calls out times
- Student 3 Records times and temperatures
- Student 4 converts recorded times into seconds.

7. Temperature readings are taken every 20-30 seconds. Student1 calls out temp. Student 2 should note time and report it right afterwards. Student 3 will record the temperatures and times.
8. Thermometer should be kept half way in the sample.
9. Student 2 should keep the sample stirred. Thermometer should be removed so that ice can be stirred vigorously.
9. After, a minimal amount of ice has melted, such that ice is floating off the beaker's bottom the thermometer can remain in the beaker a while student 2 stirs ice water.
10. Next, when the water comes to a bubbling boiling, data collection is almost complete. Continue reading temperatures a few minutes after boiling.
11. After taking readings on the boiling water, place the temperature on HIGH. You should notice a difference between the water on HIGH temperature and LOW temperature.
12. Turn heating oven off and unplug source. Do not touch burners while they are cooling.

EXPLANATION:

Questions:

1. Why is it important to keep stirring ice?
2. What happens if you leave the thermometer at the bottom and allow it to touch the glass?

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3. What are the methods of heat transfer in this experiment?
4. Was your hypothesis correct or incorrect?

ELABORATION: Students should make a Temperature vs Time graph with recorded readings.

EVALUATION: