

Monica Garza

Grade 9th

Title: Chemical Reaction in a Baggie

GLEs Addressed

Science Content GLE [9] SB3.1

The student demonstrates an understanding of the interactions between matter and energy and the effects of these interactions on the systems by recognizing that a chemical reaction has taken place.

Science Process GLE [9] SA1.1

The student demonstrates an understanding of the process of science by asking questions, predicting, observing, describing, measuring, classifying, making generalizations, inferring, and communicating

Writing GLE [9] W 4.2.2

The student writes for a variety of purposes and audiences by writing in a variety of nonfiction forms (e.g. letter, report, biography, autobiography, and/or essay to inform, describe, or persuade

Cultural Standard B-2

Culturally knowledgeable students are able to build on the knowledge and skill of the local cultural community as a foundation from which to achieve personal and academic success throughout life. The student who meets this standard will make effective use of the knowledge, skills and ways of knowing from their own cultural traditions to learn about the larger work in which they live.

Science Concept: In a chemical reaction, new substances are formed.

*****The scoring guide and assessment task are located at the end of the lesson. Please share them with your students before beginning the lesson.**

Materials

Gear up:

1 plastic zipper type sandwich baggie

Approximately 5 grams of Baking Soda-Sodium hydrogen carbonate NaHCO_3

Approximately 2 milliliters of Dilute Hydrochloric acid HCl or Vinegar

1 plastic pipette

3-4 pieces of chart paper posted on walls.

Explore (per group of 2-3 students):

1 triple beam balance

1 plastic zipper type sandwich baggie

Approximately 5 grams of baking soda (Sodium hydrogen carbonate NaHCO_3)

Approximately 2 milliliters of vinegar or Dilute Hydrochloric acid HCl

1 plastic pipette

1 Alka Seltzer™ tablet
1 antacid tablet
Approximately 3/4 inch of white chalk
Science journal

Reference: Glencoe Science, Physical Science, McGraw-Hill Companies, Inc. 2005

Vocabulary

reactants- substances that are combined
products- new substances that are formed
chemical reaction-a change on which one or more substances are converted into new substances

Gear Up Process Skills: Observing, communicating

Begin by asking students the following questions about what they know about chemical reactions and record their responses on chart paper.

- How can you tell if a chemical reaction has taken place?
- How do you know this is not a physical change?
- What are some examples of chemical reactions?

1. Place 5 grams of baking soda in a baggie.
2. Fill pipette with approximately 2 ml of dilute hydrochloric acid or vinegar.
3. Carefully place filled pipette in the bag and seal the baggie. Be careful not to allow any liquid to leak from the pipette.
4. Directing the stem of the pipette toward the baking soda squeeze the contents of the pipette so that it reacts with the baking soda.
5. Allow students to make observations of the contents of the bag, noting bubble formation and baggie expansion. Discuss observations.
6. Ask: What chemical reactions are going on around you every day?
7. Record student responses on poster chart.

Explore Process Skills: Predicting, observing, inferring

Show students the antacid, chalk and Alka Seltzer™. Ask students to predict which set of reactants will produce new substances when combined. Have students record their predictions in their science journal and teacher will also record them on poster chart.

Provide student groups with listed materials to use and explore. Provide enough materials to allow them to repeat the activity. Students will write observations in their science journal.

Discuss with students what is happening in the baggies.

Ask: What would happen if more or less of either reactant were used?

Ask: What would happen if different reactants were used such as chalk or antacids?

Students will compare their observations with their predictions and discuss as a class.

Generalize Process Skills: Measuring, making generalizations, communicating

How can a person identify if a chemical reaction has taken place?

Why is it important that measurements are accurately made?

Why is it important that the plastic bag be sealed?

What inferences can you make about different substances combining and chemical reactions that take place?

Apply Process Skills: Observing, communicating

Students take a walking tour around the school and observe evidence of chemical changes occurring in their environment. Students record observations in a science journal.

Extensions- What chemical reactions are taking place in our atmosphere right now?

How is the burning of fossil fuels affecting our atmosphere?

Scoring Guide

GLE/Standard	Below Proficient	Proficient	Above Proficient
Science Content GLE [9] SB3.1	Student explains what a chemical reaction is and gives one example.	Students explains what a chemical reaction is and gives two examples.	Student explains what a chemical reaction is and gives three or more examples.
Science Process GLE [9] SA1.1	Student omits making an inference about why steel rusts.	Student makes one inference about why steel rusts.	Student makes two or more inferences about why steel rusts.
Writing GLE [9] W4.2.2	Student does not write a paragraph in science journal	Student writes one paragraph in science journal using correct grammar and complete sentences.	Student writes two or more paragraphs in science journal using correct grammar and complete sentences.
Cultural Standard B-2	Student does not describe an example of a chemical reaction in their everyday life.	Student describes at least one example of a chemical reaction in their everyday life.	Student describes two or more examples of chemical reactions in their everyday life.

Assessment Task

In their science journal students will write at least one paragraph that is written with complete sentences and correct grammar. That paragraph will explain what a chemical reaction is and give at least two examples. It should also include at least one inference about why steel rusts.

The student will describe at least one chemical reaction that she/he encounters in everyday life.