

## Objective

By the end of this lesson, you will be able to understand the basic concepts of chemistry and conduct simple experiments using household materials.

## Materials and Prep

- Water
- Vinegar
- Baking soda
- Lemon juice
- Food coloring
- Cups
- Plastic spoons
- Measuring spoons
- White vinegar
- Clear plastic bottles
- Markers
- Paper towels

Make sure to have adult supervision during the experiments.

## Activities

1. **Colorful Volcano:** Create a volcano using the clear plastic bottle as the base. Decorate the bottle to resemble a volcano using markers. Mix baking soda and food coloring in a cup. Pour vinegar into the bottle and quickly add the baking soda mixture. Observe the colorful eruption.
2. **Lemon Power:** Squeeze lemon juice into a cup. Dip a strip of paper towel into the lemon juice. Attach the ends of the strip to the positive and negative terminals of a battery. Observe if the paper towel strip glows or not.
3. **Bubbling Fizz:** Fill a cup with water and add a spoonful of baking soda. Slowly pour vinegar into the cup and observe the bubbling reaction. Add food coloring for extra fun.

## Fourth Grade Talking Points

- "Chemistry is the study of matter and how it changes."
- "Matter is anything that takes up space and has mass. It can be a solid, liquid, or gas."
- "Atoms are the tiny building blocks of matter. They are so small that you can't see them with your eyes."
- "Chemical reactions happen when atoms join together or break apart to form new substances."
- "In the volcano experiment, the baking soda and vinegar react to produce carbon dioxide gas, which causes the eruption."
- "The lemon power experiment shows how the acid in lemon juice can create a small amount of electrical energy."
- "When baking soda and vinegar mix, they create a chemical reaction that produces carbon dioxide gas, which causes the bubbling fizz."