Lesson Plan: "Blast Off! Make a Baking Soda and Vinegar Rocket!"

Age Group: 5 years and up
Duration: 30-40 minutes

Objective:

By the end of this lesson, students will understand how a chemical reaction between baking soda and vinegar creates gas that builds up pressure, resulting in a mini rocket launch.

Materials Needed:

- Video Tutorial by DiscoverlifeSkills.com: "Blast Off! Make a Baking Soda and Vinegar Rocket!"
- Film canister with a tight-fitting lid
- Baking soda
- Vinegar
- Safety goggles (optional)
- Outdoor space for launching (e.g., playground or backyard)
- Tray or mat to catch spills (optional)

Introduction (5 minutes):

1. **Greeting & Warm-up Discussion**:
    - Start with: "Have you ever seen a rocket launch? What makes rockets go up into the sky?"
    - Introduce the activity: "Today, we're going to make our own mini rocket using baking soda and vinegar. We'll learn how chemical reactions can create enough pressure to make something shoot into the air!"
2. **Introduce the Concept**:
    - Explain: "When baking soda and vinegar mix, they create a gas called carbon dioxide. This gas builds up

pressure and pushes the rocket up, just like real rockets."

Main Activity (20-25 minutes):

1. Watch the Video (5 minutes):

- Play the video tutorial "Blast Off! Make a Baking Soda and Vinegar Rocket."
- Ask students to watch carefully and note the steps for launching the rocket.

2. Prepare and Launch the Rocket (15-20 minutes):

- **Step 1: Set Up the Launch Area** (2 minutes):
  - Choose a safe outdoor space with plenty of room.
  - Ensure students are standing back from the launch area.
- **Step 2: Prepare the Rocket** (5 minutes):
  - Open the lid of the film canister and add a small amount of baking soda.
  - Pour some vinegar into the canister (keep it ready for the next step).
- **Step 3: Launch the Rocket** (5 minutes):
  - Quickly snap the lid onto the canister and place it upside down on the ground.
  - Stand back and watch the rocket launch as the reaction creates gas pressure.
- **Step 4: Discuss the Results** (5 minutes):
  - Observe and discuss how the rocket flew. Ask questions like: "What happened inside the canister? Why did the rocket launch?"

Discussion and Reflection (5-7 minutes):

1. **Group Discussion**:

    - Ask: "What did you notice about how the rocket went up? How did the baking soda and vinegar create the gas?"
    - Explain the science behind it: "The reaction between baking soda and vinegar produces carbon dioxide gas. This gas creates pressure inside the canister until it forces the lid off and the rocket launches."
2. **Encourage Curiosity**:
    - Ask: "What other things do you think we could make with this kind of reaction? What if we tried different amounts of baking soda or vinegar?"

Activity: Rocket Art (Optional, 10 minutes):

1. **Create Rocket Drawings**:
    - Provide paper and coloring materials.
    - Have students draw their own rockets or scenes of the rocket launch they just witnessed.

Extension Ideas:

- **Rocket Science**: Discuss how real rockets use fuel and gases to launch into space.
- **Experiment with Variables**: Try varying the amounts of baking soda and vinegar to see how it affects the height of the rocket.

This lesson provides an engaging and hands-on way for students to explore chemical reactions and understand the principles of gas pressure and rocket propulsion. The excitement of launching a mini rocket adds a fun, memorable experience to their learning.