Lesson Title: My First Fizzy Volcano!

Materials Needed:

- A large tray, baking sheet, or shallow plastic bin to contain the mess
- Play-doh or modeling clay (brown, green, or multiple colors)
- A small plastic bottle or cup (a recycled spice jar or yogurt drink bottle works well)
- Baking soda (about 1/2 cup)
- White vinegar (about 1-2 cups)
- Red or orange food coloring
- A small amount of dish soap (optional, for extra bubbles)
- A spoon and a small bowl for the baking soda
- A small pitcher or measuring cup for the vinegar
- Small toy dinosaurs or rocks for decoration (optional)

Learning Objectives:

By the end of this lesson, Viviana, Reggie, Allegra, and Florence will be able to:

- Participate in a hands-on activity by adding ingredients and molding materials.
- Observe a simple cause-and-effect reaction (mixing baking soda and vinegar).
- Use descriptive words to talk about what they see and feel (e.g., "bubbly," "fizzy," "fast," "messy").
- Demonstrate curiosity by watching the "eruption" and asking questions or making excited sounds.
- Develop fine motor skills through molding clay and pouring ingredients (with assistance).

Lesson Procedure:

1. **Introduction: The Sleepy Mountain (5 minutes)**

   Gather the children around the activity area. Hold up the small bottle.

   Teacher: "Look at this! Today, we are going to build a special kind of mountain called a volcano. Have you ever seen a volcano in a book or a show? Sometimes they are sleepy, and sometimes... they wake up! Our job today is to build our own sleepy mountain and then see if we can wake it up with a little bit of science magic."

2. **Activity: Building and Waking the Volcano! (15 minutes)**

   Place the small bottle in the center of the large tray.

   Step 1: Build the Mountain. Give each child a piece of play-doh. "Okay, little builders! Let's build our mountain. Viviana, can you press your play-doh on this side? Reggie, how about you build up the back?" Encourage them to work together to press the play-doh all around the bottle, creating a mountain shape. Leave the opening of the bottle clear. You can add the toy dinosaurs and rocks around the base.

   Step 2: Add the Magic Powder. "Every volcano has a secret power deep inside. Ours is this white powder." Show them the baking soda. Let each child use the spoon to add a scoop of baking soda into the top of the bottle. "Great job, Allegra! Florence, your turn to add a scoop!" Add a few drops of dish soap for extra foam if you like.

Step 3: Add the Lava Color. "What color is hot lava? Red! Let's add our lava color." Drop 4-5 drops of red food coloring into the bottle with the baking soda.

Step 4: Wake it Up! This is the exciting part! Pour the vinegar into the small pitcher. "Okay, scientists, are you ready? Let's count down from three to wake up our volcano! 3... 2... 1... GO!" Let one or two children help you pour the vinegar into the bottle and watch what happens. The mixture will fizz and bubble up over the sides like an erupting volcano.

3. **Discussion & Observation: What's Happening? (5 minutes)**

   As the volcano fizzes, use open-ended questions to guide their observations:

   - "Wow! What do you see happening?"
   - "What sound does it make? Can you hear the fizz?"
   - "Touch the bubbles on the tray. How do they feel?"
   - "The lava came out so fast! Should we try it again?" (You can add more baking soda and vinegar for a second eruption).

Creative Extension: Fizz Painting

After the main eruption, give the children some small paintbrushes. They can dip the brushes into the colorful, fizzy "lava" on the tray and "paint" on a piece of thick paper or cardboard. This extends the sensory experience and connects science with art.

Clean-Up and Closure (5 minutes)

Involve the children in a simple clean-up. They can help carry the tray to the sink and use a cloth to wipe up small spills. As you clean, talk about the activity.

Teacher: "That was so much fun! We built a mountain and made our very own volcano erupt with fizzy bubbles. You were all amazing scientists today!"

Differentiation & Support:

- **For a hesitant child:** Offer hand-over-hand guidance for scooping the baking soda or pouring the vinegar. They can also be in charge of placing the dinosaurs or handing you the materials.
- **For a child needing more sensory input:** Encourage them to touch the fizz on the tray and describe the feeling. Let them be the first to pour the vinegar (with help) to be close to the reaction.
- **To extend the challenge:** Ask "what if" questions. "What if we add more vinegar? Do you think the bubbles will be bigger or smaller?" Let them experiment with a second eruption.

Observational Assessment:

While the children are engaged, informally observe the following:

- **Engagement:** Did each child actively participate in building, scooping, or watching? Note their level of excitement and focus.
- **Language Use:** Did they use any new words like "volcano," "fizz," or "erupt"? Did they describe what they saw (e.g., "It's red!" "Bubbles!")?
- **Fine Motor Skills:** How did they handle the spoon and play-doh? Was pouring (with assistance) a manageable challenge?
- **Scientific Curiosity:** Did they show awe or surprise? Did they want to do the experiment again?