Lesson: Lava Lamp Experiment	Name:
Teacher:	Date:

Florida State Standards:

- SC.4.P.8.1: Observe and describe the properties of matter, including mass, volume, and density.
- SC.5.P.8.2: Identify the effects of forces on the motion of objects, including gravity, friction, and buoyancy.

Florida State Benchmarks:

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Objective:

Students will:

1. Explain how density affects the layering of liquids.
2. Describe the chemical reaction between baking soda and vinegar, focusing on gas production.
3. Demonstrate the experiment and observe key reactions.

Materials (per group):

- 160 mL Vegetable Oil
- 80 mL Vinegar
- Food Coloring
- 15 g Baking Soda
- 60 mL Water
- Spoon
- Clear Cup or Glass
- Small Bowl or Cup

Safety Precautions:

- Wear safety goggles and aprons.
- Handle vinegar and baking soda carefully.
- Keep the work area clean and avoid ingesting materials.
- Supervise students closely during the experiment.

Procedures

1. Introduction (10 minutes)

- Ask students if they know how lava lamps work.
- Show a picture or video of a lava lamp and explain density and chemical reactions.
- Introduce the experiment as a safe way to mimic a lava lamp.

2. Experiment (25–30 minutes)

1. Fill a clear cup about two-thirds full with vegetable oil.
2. In a small bowl, mix vinegar and water, then slowly pour into the oil-filled cup.
3. Add a few drops of food coloring and watch how it interacts with oil and water.
4. Add a spoonful of baking soda and observe the chemical reaction. Note how bubbles form and rise.

3. Observations (5–10 minutes)

- Watch bubbles rise through the oil.
- Discuss why this happens (CO_2 gas is produced).
- Talk about density: oil is less dense than water, so bubbles move through differently.

4. Generalization (5 minutes)

- Discuss how density and chemical reactions work in everyday life, e.g., lava lamps.
- Connect observations to real-world applications.

Cleanup:

- Dispose of materials safely.
- Wash and dry containers and utensils.
- Encourage students to help clean up.
- Wipe the work area to remove any food coloring residue.