Physical vs. Chemical Change: Mini Lava Lamp

Objective:
Students will understand the difference between physical and chemical changes by creating a mini lava lamp.

Hook:
Start with a video of a real lava lamp in action. Ask, “How do you think the blobs of color move up and down in a lava lamp?”

Key Facts:

1. A physical change affects the form of a chemical substance but not its chemical composition.
2. A chemical change results in one or more new substances being formed.
3. In a lava lamp, the movement of blobs is due to changes in density and temperature.
4. The mini lava lamp uses water, oil, and a fizzing tablet to create movement.
5. Water and oil do not mix due to their different densities and polarities.
6. The fizzing tablet reacts with water to produce carbon dioxide gas.
7. The gas bubbles carry colored water blobs to the surface.
8. As the gas escapes, the water blobs sink back down.
9. This experiment demonstrates both physical changes (movement of blobs) and a chemical change (fizzing reaction).
10. Observing the reaction helps differentiate between physical and chemical changes.

Word Bank:

1. **Density**: The mass per unit volume of a substance.
2. **Polarity**: The distribution of electrical charge over atoms in a molecule.
3. **Fizzing**: The release of gas bubbles in a liquid.
4. **Carbon Dioxide**: A gas produced in the reaction.
5. **Physical Change**: A change in which no new substances are formed.
6. **Chemical Change**: A change that results in the formation of new substances.

Activity Instructions:

1. **Introduction (10 mins):** Explain the differences between physical and chemical changes using examples.
2. **Demonstration (10 mins):** Show how to create a mini lava lamp.
3. **Creation (20 mins):** Students will make their own mini lava lamps using water, oil, and fizzing tablets.
4. **Observation (10 mins):** Students will observe the movement of blobs and the fizzing reaction.
5. **Discussion (10 mins):** Discuss the physical and chemical changes observed in the experiment.

Materials Needed:

- Clear plastic bottles or jars
- Water
- Vegetable oil
- Food coloring
- Alka-Seltzer tablets or similar fizzing tablets
- Measuring cups and spoons

Riddle: I rise and fall with colors bright, a fizzy show that's quite a sight. What am I? (Answer: A mini lava lamp)

Comprehension Questions:

1. What causes the blobs in a lava lamp to move?
2. What is the difference between the physical changes and chemical changes observed in the experiment?
3. Why do water and oil not mix?

Exit Ticket: Explain one physical change and one chemical change you observed in the mini lava lamp experiment.
