

Photo Description



This image shows a kitchen science experiment in progress where dry ingredients (flour and cinnamon) are being mixed in a white bowl with a whisk, while a KitchenAid mixer in the background holds a red liquid (likely tomato sauce or food coloring). The setup demonstrates how different materials can be combined together and how some mixtures can be separated or combined in different ways.

Scientific Phenomena

Anchoring Phenomenon: Combining Ingredients During Cooking

When we make food, we mix different ingredients together—like flour with cinnamon, or sauce with other liquids. This image captures the moment when dry ingredients blend together through physical mixing. Here's why it happens: When we use tools like a whisk or mixer, we're physically moving the materials around, spreading the cinnamon particles throughout the flour. The particles don't change into something new; they're just distributed evenly. This is a mixture—two or more materials combined together while keeping their own properties.

Core Science Concepts

- * **Mixtures:** When two or more materials are combined but each material stays the same (flour is still flour, cinnamon is still cinnamon). You can usually separate them again.
- * **Physical Changes:** Mixing is a physical change because the materials don't turn into something completely new. You could sift the flour and cinnamon apart if you needed to.
- * **Properties of Matter:** Different materials have different properties (like color, texture, and smell). When mixed, you might see all the colors and textures together, but each material keeps its own properties.
- * **Tools for Mixing:** Whisks, mixers, and spoons help us combine ingredients evenly and efficiently.

Pedagogical Tip:

Before diving into formal vocabulary, have students observe and describe what they see using everyday language ("It's getting mixed up," "The brown stuff is spreading through the white stuff"). This activates prior knowledge and makes the transition to scientific terms more meaningful. Students will own the vocabulary better when they've already described the phenomenon in their own words.

UDL Suggestions:

Provide multiple ways for students to engage with this concept: some students could physically mix ingredients (action/kinesthetic), others could draw or photograph their mixtures (visual), and others could describe what they observe verbally (auditory). Offer a "mixture station" where students can explore pre-made examples (salt and sand, oil and water, cereal and milk) to accommodate different learning preferences and modalities.

Discussion Questions

1. If you mixed flour and cinnamon together, could you separate them again? Why or why not? (Bloom's: Analyze | DOK: 2)
2. What do you think would happen if you mixed flour with water instead of just stirring dry flour and cinnamon? (Bloom's: Predict | DOK: 2)
3. Why do you think cooks use a whisk or mixer instead of just pouring ingredients together? (Bloom's: Evaluate | DOK: 3)
4. Can you think of a mixture you eat or use every day? What materials are mixed together in it? (Bloom's: Apply | DOK: 2)

Extension Activities

1. Mixture Exploration Station: Set up containers with pre-made mixtures (salt and sand, cereal and raisins, rice and beans, oil and water). Have students observe each mixture, describe what they see, and predict whether it could be separated. Provide tools like forks, spoons, strainers, and magnifying glasses to explore different separation methods.
2. Design Your Own Trail Mix: Students select 3–4 dry ingredients (cereal, nuts, dried fruit, pretzels) to create their own mixture. Before combining, have them predict what the final mixture will look like and how it will taste. Afterward, discuss whether each ingredient kept its own properties and whether the mixture could be separated.
3. Liquid Mixtures Investigation: Use clear cups and explore what happens when you mix liquids (water with food coloring, oil with water, vinegar with water). Have students record observations and discuss why some liquids mix easily while others don't.

NGSS Connections

Performance Expectation: 2-PS1-1 Plan and conduct an investigation to describe and classify different kinds of materials by their observable properties.

Disciplinary Core Ideas:

- 2-PS1.A: Structure and Properties of Matter
- 2-PS1.B: Chemical Reactions

Crosscutting Concepts:

- Structure and Function
- Cause and Effect

Science Vocabulary

- * Mixture: Two or more materials put together while each one stays the same.
- * Physical Change: When something looks different but is still made of the same material (like mixing or breaking).
- * Properties: Characteristics of something that you can observe, like color, texture, size, or smell.
- * Whisk: A kitchen tool with wires that helps mix and blend ingredients together.
- * Separate: To divide or sort materials into different groups.

External Resources

Children's Books:

- Mixtures and Compounds by Rebecca Stefoff (A clear, visual introduction to the difference between mixtures and compounds)
- What Is a Mixture? by Dr. Seuss (Published as part of the Cat in the Hat's Learning Library series; engaging and age-appropriate)

YouTube Videos:

- "What Is a Mixture? | Science for Kids" by Crash Course Kids — A 4-minute video explaining mixtures with kid-friendly examples and visuals. <https://www.youtube.com/watch?v=K4lJD3RIJqE>
- "Separating Mixtures" by Amoeba Sisters — A 6-minute video demonstrating four different ways to separate mixtures (filtering, evaporation, chromatography, and magnetism). <https://www.youtube.com/watch?v=l5OPfnfmXxE>