

Visible Elements in Photo



- White bowl containing tan/brown dry powder mixture with a whisk
- Sugar bag (yellow label) and other packaged dry ingredients in background
- KitchenAid stand mixer with red liquid/batter in stainless steel bowl
- Metal measuring cups and spoons
- Wooden cutting board and kitchen counter workspace
- Stainless steel pot lid (left side)

Reasonable Inferences

- From dry powder + whisk + packaged ingredients !' Someone is preparing a baked good or prepared food requiring precise mixing of dry and wet components.
- From stand mixer + red batter + measuring tools !' The task involves combining multiple ingredients in specific amounts to achieve a desired texture or consistency.
- From kitchen setup + two mixing stations !' There is a need to blend ingredients evenly while managing the order and timing of mixing steps to ensure a quality final product.

Engineering Task

K-2 Challenge:

Your job is to make the best trail mix snack! You have different dry ingredients (cereal, crackers, nuts, dried fruit). Use a spoon and a bowl to mix them together so every scoop tastes the same. How can you stir and mix so nothing stays stuck at the bottom? Try different mixing ways and pick the one that works best!

3-5 Challenge:

Design a mixing process for a recipe that combines 4 dry ingredients in specific proportions (e.g., 2 cups flour, 1 cup sugar, $\frac{1}{2}$ cup cocoa powder, 1 tablespoon baking soda). Your challenge: Create a step-by-step mixing plan that ensures uniform distribution so that a sample from the top, middle, and bottom of the final mixture contains all ingredients in the correct ratio. Test your plan and measure whether each sample matches the target proportions. What mixing tool (whisk, spoon, or mixer) and what sequence (dry first, then blend, etc.) produces the most consistent result?

EDP Phase Targeted

Ask / Define Problem

This phase fits best because the photo shows a real kitchen scenario with a clear, implicit problem: How do you combine multiple dry and wet ingredients so they mix evenly and produce a consistent final product? Students must observe the tools, ingredients, and setup to identify what "good mixing" means and why order and technique matter. The challenge naturally leads students to ask questions before jumping to solutions.

Suggested Materials

1. Dry ingredients (flour, sugar, cocoa powder, baking soda, salt, oats—or simpler: cereal, crackers, dried fruit for K-2)
2. Mixing tools (whisk, wooden spoon, hand mixer, or stand mixer depending on grade)
3. Bowls and measuring cups/spoons (plastic or metal)
4. Small cups or bags (for collecting and testing samples from different depths)
5. Simple scale or balance (optional, for 3-5 to measure proportions of samples)

Estimated Time

- K-2: 20–30 minutes (one session: introduce task, mix, taste-test, discuss)
- 3-5: 45–60 minutes (two sessions: Session 1 = plan and predict; Session 2 = mix, sample, measure, refine)

Why This Works for Teachers

This task directly supports NGSS 3-5-ETS1-1 (Define a simple design problem reflecting a need or want) and K-2-ETS1-1 (Ask questions, make observations, and gather information about a situation) by grounding the engineering process in a tangible, real-world food-science scenario students can taste, observe, and refine through iteration.