

Visible Elements in Photo



- Red gerbera daisies in a clear glass vase with water and green stems
- Wooden dining table with a curved edge
- Black chair (partially visible)
- Pendant lamp with warm lighting hanging from ceiling
- Framed pictures on wall in background
- Open doorway leading to another room

Reasonable Inferences

- From the cut flowers in water: The flowers are cut from their roots and depend on the vase structure to stay upright, absorb water, and remain fresh for display. This suggests a need for a container that supports weight, holds liquid without leaking, and allows access to water.
- From the indoor setting with artificial lighting: The flowers are indoors away from natural sunlight, implying they need to be positioned to maximize light from the hanging lamp to stay vibrant longer.
- From the glass vase design: The transparent material allows observation of water level and stem health, suggesting that visibility is important for monitoring plant condition over time.

Engineering Task

K-2 Challenge:

Design a holder to keep flowers standing up straight in water. Your holder should:

- Hold at least 3 flowers without them falling over
- Let water reach the flower stems
- Use materials you can find in the classroom

Challenge: Can you make your holder pretty AND strong?

3-5 Challenge:

Design a flower vase or support structure that keeps cut flowers upright and healthy for at least 5 days. Your design must:

- Hold water without leaking (capacity: at least 200 mL / about 1 cup)
- Support the weight of at least 5 flowers with 8–12 inch stems
- Allow the flower stems to absorb water from the bottom
- Be stable enough not to tip over when bumped gently
- Use only recyclable or classroom-safe materials

Success criteria: Test your design by filling it with water, adding weighted flowers, and checking stability after 24 hours. Measure water level daily to see if it stays high enough for the flowers to drink.

EDP Phase Targeted

Ask / Define Problem

This task works best starting with the Ask phase because students need to observe why cut flowers need support (they've lost root stability), how water delivery works (capillary action up the stem), and what keeps them from wilting (consistent hydration + light). The photo shows a real-world need (flowers drooping without support) rather than a solution already in progress. Students will ask questions like "Why do the flowers stay up?" and "What happens if we don't change the water?" before they design.

Suggested Materials

- Clear plastic bottles or cups (various sizes)
- Floral foam or crumpled paper/newspaper (to hold stems in place)
- Rubber bands or tape (to bundle stems)
- Modeling clay (to seal bottle openings and hold stems)
- Straws or pencils (to prop up weak stems)
- Sand, pebbles, or marbles (for weight and drainage)

Estimated Time

45–60 minutes for one session (design + build + initial test), or Two 30-minute sessions (design on Day 1, build + test + observation on Day 2–3 to track water uptake and flower health over time).

Why This Works for Teachers

This task directly supports NGSS 3-5-ETS1-1 (Define a simple design problem reflecting a need or a want) by asking students to identify why cut flowers need structural support, then design a solution that meets real constraints like water capacity and stability—moving from observation to engineering thinking.