

Make a Mobile!

Alignment with NGSS

K. Forces and Interactions: Pushes and Pulls

K-2. Engineering Design

Key Ideas: Stability and Balance

Through mobile making, this lesson helps students explore the concepts of balance, counterbalance, weight and counterweight. This fun, hands-on science lesson can be replicated and home or school again and again.

Background Information/Vocabulary

- A **mobile** is a hanging structure that is a balanced system. Because it is balanced, a breeze might make it move, but it won't tip over.
- Artist **Alexander Calder** was fascinated with engineering and balance. He used balance to create delicate sculptures that used rods and objects that balanced each other. He named his sculptures mobiles because they seemed to be in constant motion from air currents inside and outside. His mobiles move, but always return to a stable position.
- **Vocabulary (for children ages 7+)**: balance, stable, weight, mobile, counterbalance, counterweight, gravity, balance point.

Materials

Gather materials for mobile

- String, wire, fishing line
- Pipe cleaners
- Balance rod (can be wooden, PVC pipe, tree branch, coat hanger, etc.)
- Scale to weigh objects (optional)

Gather objects to balance

- Recycled materials (plastic pop or salad dressing bottle and caps, cardboard tubes, egg cartons, old magazines, etc.)
 - Natural materials (sticks, pinecones, dried flowers, shells, etc.)
 - Art materials (colored paper, yarn, small decorative items like beads, take out containers, trading cards, maps)
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Procedure:

1. Begin the investigation by discussing the history of mobiles, what they are and who creates them (see background information).
 2. Introduce materials and demonstrate how to work with materials (wrapping wire, tying strings). For children 7 and up, review vocabulary words.
 3. Allow children to explore the materials and collaboratively craft a plan for balancing the objects on their mobiles.
 4. Give children time to build and test their mobiles.
 5. While children are constructing, help guide the process by encouraging them to discuss what/how they are creating their mobile (using vocabulary if age-appropriate). You can also help them explore cause and effect through questions like: "What happens if I add more weight to this side?"
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