Microsoft STEM Lesson- Balloon Powered Car

4TH - 8TH GRADE

Activity: Building a Balloon Powered Car
Focus: STEM, Essential Employability Skills
Grade Range: 4th-8th
Time: 45 minutes

Microsoft

ADOPT A CLASS
Today's students, tomorrow's leaders

INSTRUCTIONS

1. Introduce the activity for the day, building a balloon powered car! Explain to students that through today's activity building a balloon powered car, they will learn about STEM concepts such as engineering, aerodynamics, and physics.
2. Split the class up into small groups of 3 to 5 students and pair one mentor from your team with each small group of students.
3. Pass out materials to each small group including a balloon, straws (at least 2), cardboard or stiff paper, bottle caps or similar small round objects (at least 4), tape, scissors, wooden skewers or sticks (at least 2), and rubber bands (at least 2).
4. Instruct students that in their small groups, they must work together as a team to build a car that is powered by the balloon.
    - TIP: Encourage students to think strategically how these materials would work together to make the car. Before building, mentors should offer support but allow the students in their small groups to build the car to the best of their abilities.
5. Allow students 20 to 30min to build and test the car. If students need assistance, instructions on building the car successfully are below:
    - Create the Car Body: Cut a rectangle from the cardboard (about 6" x 3") to make the body of the car.
    - Add Axles: Tape two straws underneath the body lengthwise, spaced evenly. Make sure they're straight.
    - Make Wheels: Poke small holes in the center of the bottle caps to use as wheels. Thread the wooden skewers through the straws and attach a bottle cap on each end of the skewer to serve as wheels.
    - Attach the Balloon: Tape a balloon to one end of a straw. Secure it tightly with tape or a rubber band to prevent air from escaping through the sides. This will be the car's "engine."
    - Final Assembly: Tape the balloon-and-straw contraption to the car body so the straw points backward. The opening of the balloon should face the back of the car.
    - Power Up: Blow into the straw to inflate the balloon, pinch the straw to keep the air inside, place the car on a smooth surface, and release the air to watch the car go!
6. After all cars are assembled, each group has a few minutes to demonstrate their car..
7. After all cars have been demonstrated, debrief with some of the following questions:
    - How does the air escaping from the balloon make the car move?
    - Can you modify the design to make the car go farther or faster?
    - What factors affect the car's speed (weight, size of wheels, etc.)?
    - What kinds of jobs are similar to the lesson and activity that we did today? (Engineering, Design, Entrepreneurship,
    - What kinds of skills did we use today to build the car? (teamwork, creative thinking, problem solving, etc.)

Not sure what the car looks like or how it works? Check out this YouTube video!
https://www.youtube.com/watch?v=QFmjaA4wxqM

SYNOPSIS

Through Microsoft's STEM Lesson, students will build a simple car powered by the air from a balloon and learn about STEM concepts like engineering, aerodynamics, and physics.

MATERIALS

-Balloons (1/group)
-Straws (to serve as axles)
-Cardboard or stiff paper (for the car base)
-Bottle caps or similar small round objects (for wheels)
-Tape
-Scissors
-Wooden skewers or sticks (for axles)
-Rubber bands (optional, for

TIPS

Encourage students to think strategically how these materials would work together to build the car. Offer support but allow the students in their small groups to design and build the car to the best of their abilities.