Activity Title: Balloon Powered Car

Recommended Grades

Kindergarten, Grade 1, Grade 2, Grade 3, Grade 4, Grade 5
Could be expanded to older grades by using more complicated materials than balloons

Curriculum Connections:

Matter
- 2 – materials used to make objects

Energy
- K – how can objects move
- 1 – how objects move, how movement can be influenced
- 3 – force and movement, simple machines
- 4 – forces and objects
- 5 – thrust and drag

Computer Science
- K – instructions to be followed, have steps
- 1 – instructions to be followed, have steps
- 2 – creativity support design
- 3 – could relate to creativity and relationship to computational thinking (designing instructions)
- 4 – how can design meet needs

Scientific Methods
- 1 – carry out an investigation, data recorded
- 2 – methods and processes used in investigation, data collection
- 3 – data can be used to analyze
- 4 – how can evidence advance knowledge in science, data types
- 5 – variables can be controlled or changed

Time

10-30 minutes

Skills Focused On

• Creativity • Decision-making • Hypothesizing • Innovation	• Observation • Problem-solving • Resourcefulness

Materials Needed

- Balloon
- 4 plastic water bottle caps (with a hole poked in the middle)
- 2 small straws
- 1 fat straw
- Tape
- 2 skewers
- Elastic band
- Plastic water bottle

Background Information

How does a car move? Well there are a few different kinds of fuel - gas, diesel, hydrogen, electricity, mechanical. What does your parent's car use? Or your friend's? Today you are going to use a balloon to power a car made of materials that you can find at home.

Experimental Steps

1. Place a skewer through a water bottle cap.
2. Put the skewer through a small straw and then cap the other side with another bottle cap. Make sure that the straw can move freely.
3. Repeat with the other skewer. These are your wheels.
4. Thread the fat straw into the balloon and secure it on with the elastic and tape.
5. Make sure no air can escape, and test it by blowing the balloon up through the straw.
6. Tape the fat straw/balloon on the top of the plastic water bottle.
7. Tape the wheel and axles on the bottom of the plastic water bottle.
8. Make sure everything is secure and straight (or your car may turn).
9. Blow up the balloon and cover the end of the straw so the air doesn't escape.
10. Point your car with the balloon facing forward and let it go!
11. Measure how far the car went. You may want to repeat multiple times to better observe a pattern.

Discussion/Experimental Extensions

Now that you have built your first version, try to improve the design. Compare between different cars. What can you do to make it go faster? Or farther?

Additional Resources

Balloon Powered Car experimental video produced by Future Energy Systems - provides background information and instructions for experiment: https://youtu.be/-56XTkxKSsU.

To learn more about fuels, efficiency and EcoCars, check out the Efficiency and EcoCar video https://youtu.be/eGgHMBYAFI4.

Learn more about Future Energy Systems (https://www.futureenergysystems.ca/) and access more learning content, including storytimes, lab tours, ask an experts and more (https://www.futureenergysystems.ca/engage/learning https://www.youtube.com/channel/UCJr8N9KyFJ6d-t36TPtUlwg).