

Program Description:

Students review simple circuits as they use a battery to power a motor. They are asked to figure out how to make the motor turn in different directions. They learn that current has a direction and that the direction of the current through the motor determines which way it turns. They build a motor-powered car with a controller that switches the direction of current through the motor, allowing the car to move forward and backward.

Learning Objectives:

1. Students will understand that current is directional – traveling from the negative terminal of a battery through a circuit and back to the positive terminal.
2. Students will build a circuit with a controller that switches the direction of current through a motor, controlling the direction that the motor turns in.
3. Students will explore, test, and refine the connections that control the motion of their car.

Alignment with Connecticut Core Science Curriculum

- 4.1** *The position and motion of objects can be changed by pushing or pulling.*
- The size of the change in an object's motion is related to the strength of the push or pull.
- 4.4** *Electrical and magnetic energy can be transferred and transformed.*
- Electricity in circuits can be transformed into light, heat, sound, and magnetic effects.

Key Vocabulary: *current, circuit, battery terminal, positive, negative, motor, rpm (revolutions per minute)*

Preparation for Visit:

It is helpful if students have some familiarity with electricity and circuits, including the following concepts:

- A circuit is a continuous loop from an energy source through a path back to the energy source; along the way the energy can be used to do a job (ie produce heat, light a light, turn a motor).
- All parts of a circuit must have contact with each other for electricity, or electric current, to flow through the circuit.
- Electric current can travel through some materials (conductors) but is blocked by others (insulators).