

**Program Description:**

Students discuss the relationship between electric current and magnetism. They build a circuit that includes a coil of wire around a cardboard tube and hang a magnet in the center of the tube to explore how current affects the magnet. This simple setup allows students numerous opportunities for experimentation: they can change the direction of current, explore the effect of opening and closing the circuit, and add a second magnet, among many possibilities. Teachers can continue to use the electromagnet in the classroom to further explore the connection between electricity and magnetism.

**Learning Objectives:**

1. Students will explore the relationship between current and magnetism as they build a working electromagnet.
2. Students will identify and adjust relevant variables, including direction of current, constant versus intermittent current, and the orientation or number of magnets.

**Alignment with Connecticut Core Science Curriculum**

- 4.4** *Electrical and magnetic energy can be transferred and transformed.*
- Electricity in circuits can be transformed into light, heat, sound, and magnetic effects.
  - Magnets can make objects move without direct contact between the object and the magnet.

**Key Vocabulary:** *Current, voltage, electromagnet, magnetic field, attract, repel.*

**Preparation for Visit:**

It is useful if students have begun their study of electricity before their visit. They will benefit from previous experience with circuits, current, and magnets. The following background knowledge is helpful:

- Electricity flows from an energy source (such as a battery) through a continuous loop and back to the battery. If there is a break in the path, no current will flow.
- Magnets can attract (pull) or repel (push) other magnets.