Science

Electricity-Getting the Spark

Purpose:

- Recognize basic principles of electricity
- Solve a problem using components of electricity
- Create an electrical switch

Reference: http://www.extension.iastate.edu/e-set/science_is_here/circuits.html

Activity 1: Finding Your Way to Camp

Supplies for each youth participating:

- A strip of aluminum foil
- Small (2.5 V) light bulb
- D cell battery

Give the following scenario and work with youth to solve the problem. "You are returning to camp when you trip and break your flashlight. The only thing you are able to salvage is the battery and a light bulb from the flashlight. You discover you have a piece of aluminum foil in your pocket left over from lunch. Can you make enough light to get yourself back to camp?

Making a bulb light:

1. Cut the aluminum foil into a strip about 2"x 6"
2. Fold foil over and over along the long edge so it is still 6" long but only ¼ " wide
3. Touch one end of the battery to the bottom end of the bulb, and then connect the side of the stem of the bulb to the strip of foil
4. Connect the strip of foil to the other end of the battery.

Activity 2: Making a Switch

Supplies for each youth participant:

- Metal paper fasteners and paper clips
- 2 pieces of wire
- Wire strippers
- Cardboard, pencil
- D-cell battery
- Battery holder
- Light bulb and light bulb holder

The word circuit comes from the word "circle." A circuit is a pathway along which electricity can flow. If the path has a break in it (the switch is open), then the electrons are stopped from flowing around the path way. This is called an open circuit. When the switch is closed (a closed circuit), the pathway is completed and the electrons can continue flowing around the pathway.

1. Wrap the stripped end of one wire around a brass paper fastener and place the fastener with wire attached through a paper clip
2. Wrap second wire around a second paper fastener
3. Make a hole in the piece of cardboard with a pencil, and stick the first fastener with paper clip through the hole. Mark the place where the other end of the paper clip falls on the cardboard
4. Make another hole with pencil at the mark on the cardboard and push the second paper fastener through it
5. Turn the cardboard over and open up the fasteners. You can put tape over the open fasteners to hold them securely.

Open and close the switch by hooking and unhooking paper clip from fastener.

Adapted from Rod Buchele's workshop, *4-H Electric Series* and 4HCCS *Magic of Electricity,*

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