



Shock Value

Pre and Post Visit Materials

The goal of this program and its pre and post-visit activities is to learn about the science surrounding electricity and magnets.

Pre-Visit Activities

1. Go over new vocabulary words as a class. (some words may have multiple definitions but the ones pertaining to the program are listed)
 - Battery – A device that converts stored chemical energy into electrical energy that can be used in a circuit
 - Circuit – a closed loop through which electrons transport electrons
 - Component – a device that interacts with the electrons in a circuit. Most components use electricity by manipulating it and transforming it into mechanical energy or light. There are three types: resistors – a device that resists the flow of electricity in a circuit, capacitors – store electrical energy as a charge and resist changes to voltages, and inductors – which store energy as a magnetic field and resist changes to current.
 - Conductor – a material that allows the flow of electrons in a circuit.
 - Current – the rate at which electric charge flows past a point in a circuit. Current cannot flow without voltage.
 - Electricity – a form of energy resulting from the existence of charged particles (such as electrons or protons), either statically as an accumulation of charge or dynamically as a current.
 - Electromagnet – a type of magnet where the magnetic field is created by an electrical charge

- Fuel Cell – similar to a battery, it takes energy from a chemical reaction and converts it to electricity. Fuel cells can usually function indefinitely as long as resources flow through them.
- Insulator – a material that resists the flow of electrons in a circuit.
- Static electricity – a stationary electric charge, typically produced by friction, that causes sparks or crackling or the attraction of dust or hair
- Voltage – the force that drives the current between two points
- Triboelectric effect – when two materials are rubbed together and a charge is created.

2. Create a Triboelectric Effect

- Materials: balloons, salt and pepper, combs, baggies, paper plates (It is important to use paper not Styrofoam or plastic)
- Before class blow up enough balloons for your class. Also create baggies of mixed salt and pepper
- Have students rub a balloon on their head, this will cause their hair to stand on end – demonstrating the Triboelectric effect.
- If you have amber at your school the effect can also be created by rubbing denim on the amber.
- Next have students pour the salt and pepper mixture onto the paper plate. The students will then rub the comb onto their clothing for one minute. After that period of time they can over the comb above the salt and pepper mixture and the pepper will separate.

Post-Visit Activities

1. Have the students journal about their trip. The prompt should be, “What was your favorite part of the trip to the museum?” They can either write or draw their response.
2. Make a potato battery
 - Materials: potatoes, zinc nails, copper nails, wire, light bulbs, alligator clips, other produce
 - Divide your class into groups.
 - Give each group 1 potato, one zinc nail, one copper nail, two alligator clips, two pieces of wire, and a light bulb.
 - Have the students place the zinc nail in one side of the potato and the copper nail on the other – like so:
 - Attach the alligator clips to the wire and place one clip on each nail. Touch the other ends of the wire to the light bulb and see if it will light up.
 - Have students try it with other produce and see what the results are.

