CIRCUIT TRAINING

wattson's world

Discover how electricity travels and learn
safe ways to keep it from entering our bodies.

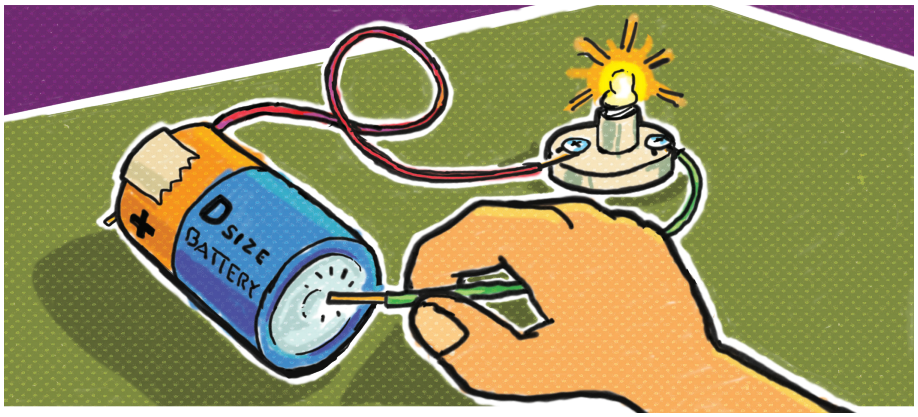
INTRODUCTION:

Electricity does a lot of traveling. In the Inland Northwest, most of our power comes from hydroelectric dams and so it must travel a long way—sometimes hundreds of miles—to reach homes and businesses. Electricity is sent along heavy distribution lines on tall towers, where transformers boost the voltage and keep the current strong along the way.

When electricity gets to neighborhoods, its voltage strength is decreased using different kinds of transformers at utility substations. It then is directed along overhead utility poles or through underground wires to neighborhoods where additional transformers, usually mounted on power poles, reduce the voltage to a power level that can be used by appliances, lights, and other gadgets.

Inside a house, electricity runs through wires to wall outlets and lights. It's always there whenever you flip a switch or plug in a cord. For electricity to power an appliance or light, however, it must travel in a circuit (make a circular journey that brings it back to where it started).

By switching on an appliance, you complete a link to a circuit, which lets electricity flow from the outlet, through the power cord into the appliance, and then back through the cord to the outlet, and out to the power lines again.



Bringing electricity to our homes and businesses makes modern life possible, but we must learn to handle it wisely. That's because electricity not only travels through wire, it can travel through our bodies which can be hazardous. This lesson demonstrates to kids how electricity travels and opens up a discussion of safety.

MATERIALS:

- D-cell battery
- 1.2-volt light bulb
- E-10 light bulb base
- Two 12-inch pieces of insulated solid strand copper wire (18-22 gauge) with one inch of insulation removed at each end
- Masking tape

SAFETY TIP:

Never experiment with the electricity that comes from a wall outlet. It's much more powerful than the electricity made by small batteries and could seriously hurt or kill someone.

CALL IF YOU SMELL OR HEAR A GAS LEAK: (800) 227-9187

811

Know what's **below.**
Call before you dig.

AVISTA

CIRCUIT TRAINING

INSTRUCTIONS:

Before-class preparations

1. Connect the ends of two wires to a light bulb base
2. Tape the tip of one of the wires to the positive end of the battery

QUESTIONS AND ACTIVITIES:

1. Ask students for things they have in their homes or at school that use electricity.
2. Explain how electricity journeys in a circuit to power these things.
3. Show how completing a circuit (touching the loose wire to the negative end of the battery) lets electricity travel from the battery, through the bulb, and back to the battery.
4. Explain how electricity will travel through any conducting material such as the copper wires. Ask them to explain the difference between a conductor and an insulator.
5. Tell how electricity can travel through human beings, too, and surprise them because we are made of 70 percent water, and water is a great conductor.
6. Ask why electric wires are coated with insulation. (To keep electricity from entering our bodies).
7. Ask them what might happen if they touched a frayed electric cord with exposed wires. (The electricity could travel through their bodies).
8. Ask what might happen if they touched an electric line that fell from a power pole outside. (They might get shocked and hurt or killed).
9. Ask what they should do if their kite got stuck in a power line? Cotton is a conductor. (Let go of the string then tell an adult to call the utility company).
10. Ask what might happen if they climbed a tree near power lines.
11. Show a picture of a substation and ask if they've seen one near their neighborhood.
12. Ask why it is smart to stay away from electric substations, too. (They contain electrical equipment that is dangerous to touch.)