Circuit Exploration

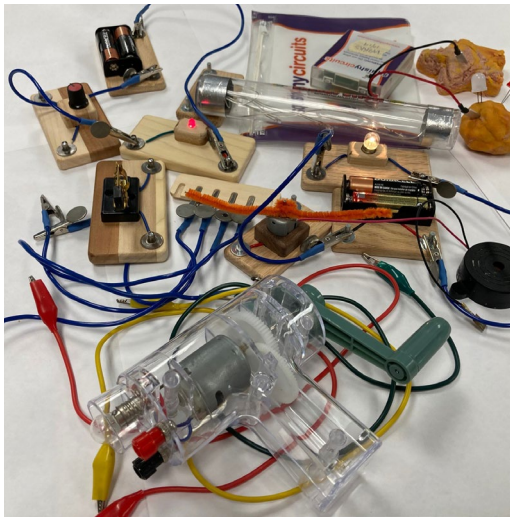
Exploring electricity with young children can be somewhat intimidating, but keeping it simple allows children to develop a solid basis for understanding electricity as they get older. The objective is for them to explore, observe, and make predictions.

Try It

1. Provide children with a variety of tools and materials such as: circuit blocks, various alligator clip wires, battery packs, switches, buzzers, spinners, squishy circuits (conductive and non-conductive clay), small light bulbs (different colors), or a Makey-Makey banana piano with a computer station.
2. Allow children to explore using the alligator clips, attaching to batteries, and seeing what they can get to light up, make a sound, etc.
3. Use analogies to help children understand the basics of electricity. A train analogy is a great one to use: The train must leave the station before the next one arrives, but things can stop the train on the tracks so that it won't move unless a switch is thrown or the flow is allowed to continue. The vocabulary of circuits—open circuit, closed circuit, etc.—can make more sense when discussed through this analogy.
4. Talk to children about the flow of electricity and that both ends of the battery must be connected for the electrons to flow. As the children explore, adult participants can explain that there must be a complete circuit for anything to happen.

TINY TIP!

Try starting this activity with a take-apart of a simple flashlight or cheap electric toothbrush to help children see the real-world application of circuits.



Learning Opportunities

The flow of electricity may seem like the stuff of magic at such a young age, but simply by playing with materials and exploring how to complete a circuit to make something happen, children are gaining valuable foundational learning for electrical engineering and mathematics concepts.

Book Recommendation:
Switch On Switch Off by Melvin Berger

Open-Ended Questions

- How does electricity flow?
- What connections need to be made for the circuit to be complete?
- What do batteries and bulbs do?
- What do we need to do to make something happen (the bulb light up, the switch turn on, or the spinner spin)?
- How can we connect things to make this work?
- What if it doesn't work? What can we try?

TINY TIP!

Try using an energy stick to quickly demonstrate closed circuits using your own body as a conductor!

WORDS AND CONCEPTS TO EMPHASIZE

- Circuit (open or closed)
- Conductor
- Battery
- Electricity
- Insulator
- Counting (number of bulbs that light up)
- Patterns (putting colored bulbs in a pattern)