How Simple Electrical Circuits Work

KS2 SCIENCE KS3 SCIENCE Ages 10-14 ⏰ 3 min read

What is an Electrical Circuit?

An **electrical circuit** is a closed loop that electricity travels through. Think of it like a roundabout—electricity needs a path to follow, and that path must form a complete circle for electricity to keep moving. Without a complete path, electricity cannot flow, and nothing happens.

Think of it like a race track: runners can only complete a lap if the track is unbroken. If there's a gap, they can't keep going around.

The Main Parts of a Circuit

Every simple circuit needs **three essential parts:** a **power source** (like a battery), a **wire** (the path), and a **load** (something that uses the electricity, like a light bulb).

The **battery** is the engine of the circuit—it provides the energy that makes electrons move. **Wires** are the roads that electricity travels down. The **light bulb** (or other device) is what uses that energy to do something useful, like producing light or heat.

How Electricity Flows

Electricity flows from the positive side of a battery, through the wires and the bulb, and back to the negative side. This movement of tiny particles called **electrons** is what we call **electric current**. As long as the loop is unbroken, the current keeps flowing and the light stays on.

Think of it like water in a pipe: the battery pushes electricity forward like a pump pushes water, and the wires are like pipes guiding it along.

Opening and Closing Circuits

A **switch** is a simple device that opens and closes the circuit. When you flip a light switch, you're either breaking the circuit (turning the light off) or completing it (turning the light on). An open circuit means no current flows, while a **closed circuit** means electricity is moving through.

This is why **two batteries** can sometimes power a device better than one—they provide more energy. But if even one wire is broken or loose, the whole circuit stops working.

Why Circuits Matter

Understanding circuits is the foundation for learning about all **electrical devices** we use every day—from smartphones to kitchen appliances. Every electronic gadget contains circuits that control how electricity flows to make it work properly and safely.