Nova's Electrifying Science Challenge

Learning objective: To identify and describe the function of components in a simple series circuit and recognise the effect of changing variables.

Read each flashcard carefully. Test your knowledge of electrical circuits with Nova the owl. Can you identify the components and explain how they influence the flow of electricity?

What is a simple electrical circuit?

A closed loop that allows electricity to flow from a power source through components and back again.

What is the difference between a cell and a battery?

A cell is a single unit that provides energy, whereas a battery consists of two or more cells connected together.

Define a conductor and provide an example.

A material that allows electricity to flow through it easily, such as copper or steel.

Define an insulator and provide an example.

A material that does not allow electricity to flow through it, such as plastic, rubber, or wood.

What is the function of a switch in a circuit?

To open or close a circuit, thereby controlling the flow of electricity to the components.

Why does a bulb shine brighter if you add more cells to the circuit?

Adding more cells increases the voltage, which pushes more electrical current through the circuit.

What happens to the bulb if there is a break in the circuit?

The circuit becomes incomplete (open), the flow of electricity stops, and the bulb will not light up.

Explain the role of a filament in a traditional light bulb.

It is a thin wire that heats up and glows when an electrical current passes through it, producing light.

Compare and contrast a motor and a buzzer in a circuit.

Both are output components; a motor uses electricity to create movement (kinetic energy), while a buzzer uses electricity to create sound.

Justify why we use plastic to coat electrical wires.

Plastic is an insulator, which prevents the electricity from escaping the wire and protects people from receiving an electric shock.

What might happen if you use a battery with too high a voltage for a small bulb?

The excess energy could cause the filament to overheat and break, causing the bulb to blow.

Explain why a circuit with a longer wire might result in a dimmer bulb.

Longer wires often have more resistance, which makes it harder for the current to flow, reducing the energy reaching the bulb.