

What prior knowledge should students have?

- Identify common appliances that run on electricity.
- Construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers.
- Identify whether or not a lamp will light in a simple series circuit, based on whether or not the lamp is part of a complete loop with a battery.
- Recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit.
- Recognise some common conductors and insulators, and associate metals with being good conductors.

What skills will students learn? (Disciplinary Knowledge)

- Children independently ask scientific questions. This may be stimulated by a scientific experience or involve asking further questions based on their developed understanding following an enquiry.
- The children select from a range of practical resources to gather evidence to answer their questions. They carry out fair tests, recognising and controlling variables. They decide what observations or measurements to make over time and for how long. They look for patterns and relationships using a suitable sample.

What key knowledge will be taught? (Substantive Knowledge)

- Associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit.
- Compare and give reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzers and the on/off position of switches.
- Use recognised symbols when representing a simple circuit in a diagram.

| Key Vocabulary | Definition |
|-----------------|---|
| Voltage | Volts are a measure of the energy of a flow of electricity. Mains electricity carries a voltage of 210-240 volts. A typical cell in school has 1.5 volts. |
| Switch | An electrical component that can make or break an electrical circuit. When a switch is open (off), there is a gap in the circuit and electricity cannot flow around the circuit. |
| Battery | A device consisting of one or more cells |
| Cell | A single electrical energy source |
| Circuit | A complete path that an electric current can flow around. It flows from the battery, through wires and devices before returning to the battery. If the circuit is not complete, the electrical current cannot flow. |
| Circuit diagram | A visual representation of an electrical circuit using symbols to represent the electrical components. |

Diagram

