



Electricity

Note for Teachers: Progression Summary from Light topic in Year 4 (Spring 2)

- **Year 4:** Children build and recognise simple series circuits, identify basic components, and understand that a complete circuit is needed for a device to work.
- **Year 6:** Children explain how circuits behave, including linking the number of cells to brightness/volume, comparing components, and representing circuits using standard symbols.
- **Progression:** Moves from hands-on construction and observation (how circuits work) to scientific explanation, prediction, and representation (why circuits behave as they do and how to model them accurately).

1. Can I use recognised symbols to represent a simple circuit in a diagram?

- **Previous Learning (Year 4 Spring)** - built simple circuits
 - **Vocab:** electricity, symbol, circuit, scientific diagram
 - Know simple circuits can be represented using scientific symbols instead of pictures.
 - Know that common symbols include those for a cell, wire, bulb, switch and buzzer.
 - Know circuit diagrams show how components are connected in a clear and organised way.
 - Know that using standard symbols allows scientists to communicate ideas accurately.
- (note for teachers – suggested task: provide images of circuits. Children to convert them into circuit diagrams using recognised symbols, then compare and discuss accuracy and clarity.)
- **Recording data and results of increasing complexity using scientific diagrams and labels**

2. Can I investigate how the number of cells affects the brightness of a bulb?

- **Previous Learning (last lesson):** used symbols to represent simple electrical circuits
 - **Vocab:** investigate, cells, brightness, bulb, symbol
 - Know that adding more cells to a circuit can increase the brightness of a bulb.
 - Know that a cell provides electrical energy to the circuit.
 - Know that a fair test involves changing one variable (e.g. number of cells) while keeping others the same (e.g. same bulb, same wires).
 - Know that taking repeat readings improves the accuracy and reliability of results.
- (note for teachers – suggested task: children build circuits using different numbers of cells and observe how the brightness of the bulb changes, recording results in a table, repeating tests, and identifying patterns.)
- **Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary**
 - **Taking measurements, using a range of scientific equipment, with increasing accuracy and**

3. Can I compare how components function and give reasons for differences?

- **Previous Learning (last lesson):** investigated how the number of cells affects brightness
 - **Vocab:** compare, component, function
 - Know that different components in a circuit (e.g. bulbs, buzzers, switches) have different functions.
 - Know that the brightness of bulbs and the volume of buzzers can change depending on the number of cells and how the circuit is constructed.
 - Know that a switch controls whether a circuit is complete (on) or incomplete (off).
 - Know that comparing results helps us explain why components behave differently.
- (note for teachers – suggested task: provide circuits with bulbs, buzzers and switches and ask children to compare how each behaves when the number of cells changes or the switch is opened/closed, then explain their observations using evidence from their tests.)
- **Identifying scientific evidence that has been used to support or refute ideas or arguments**

5. Can I design and build a circuit to solve a problem and explain how it works?

- **Previous Learning (last lesson):** used results from circuit investigations to make a prediction
 - **Vocab:** design, circuit, purpose
 - Know that circuits can be designed for specific purposes, (e.g. alarms, traffic lights, simple lighting systems).
 - Know that choosing the correct components and arrangement affects how a circuit functions.
 - Know that predictions and prior test results can be used to improve a circuit design.
 - Know explanations should describe how and why a circuit works using scientific vocabulary.
- (note for teachers – suggested task: set a challenge such as designing a burglar alarm or traffic light system. Children plan their circuit, build it, test it, and then explain how it works, including how their design uses components and electrical energy effectively.)
- **Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms**
 - **Using test results to make predictions to set up further comparative and fair tests**

4. Can I use results from circuit investigations to make predictions and plan further tests?

- **Previous Learning (last lesson):** compared how components function
 - **Vocab:** investigation, prediction, variable, pattern
 - Know that results from investigations can be used to identify patterns in how circuits behave.
 - Know that patterns can help us predict what will happen when a circuit is changed, (e.g. predicting brightness with more cells).
 - Know that predictions should be based on evidence from previous tests.
 - Know that planning further tests requires changing only one variable at a time.
- (note for teachers – suggested task: using results from Lesson 2 and 3, ask children to predict what will happen if more cells are added, different bulbs are used, or wires are changed. They then plan and carry out a new test to check their predictions, recording whether results match expectations.)
- **Using test results to make predictions to set up further comparative and fair tests**
 - **Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary**