

***Our Intent is: To develop inquisitive children who are excited about investigating with curiosity, "How can scientific enquiry explain the world?" Exploring answers by gathering and analysing evidence.***



Forton Primary School  
Science

Pendle Class  
Autumn 2  
Year B

*ETYMOLOGY – Electricity is derived from the greek word electron which means amber (a kind of resin produced by certain plants).*

**A Beginners Guide to Electricity and Magnetism  
By Gill Arbuthnott**

**Key Concept: Science – Electricity**

**Key Question: Can we vary the effects of electricity?**

**Unit Overview:**

Associate the brightness of a lamp or volume of buzzer with the number and voltage of cells used in the circuit

**N.C. LINKS:**

**Electricity** Pupils should be taught to:

- 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.

**Vocabulary:**

- symbol
- circuit
- electrons
- resistance
- voltage

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	<ul style="list-style-type: none"><li>• cell/battery</li></ul>
<p><b>New Knowledge Progression:</b></p> <ul style="list-style-type: none"><li>• Associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit.</li><li>• 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.</li><li>• Use recognised symbols (at least: cells, wires, switches, bulbs, buzzers and motors) when representing a simple circuit in a diagram.</li><li>• Use/interpret circuit diagrams to construct a variety of more complex circuits predicting whether they will 'work'.</li></ul>	<p><b>Building on Prior learning when B follows A:</b></p> <ul style="list-style-type: none"><li>• Identify common appliances that run on electricity.</li><li>• Construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers.</li><li>• 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.</li><li>• Recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit.</li><li>• Recognise some common conductors and insulators, and associate metals with being good conductors.</li><li>• Electricity can be dangerous.</li><li>• Electricity sources can be mains or battery.</li><li>• Batteries 'push' electricity round a circuit and can make bulbs, buzzers and motors work.</li><li>• Faults in circuits can be found by methodically testing connections.</li></ul>

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- Drawings, photographs and diagrams can be used to represent circuits (although standard symbols need not be introduced until UKS2).

### **Key Skills (Disciplinary)**

- Suggest more than one possible prediction and begin to suggest which is the most likely. Justify their reason with some knowledge and understanding of the scientific concept.
- Make decisions about which variables to change, measure and keep the same.
- Make most of the planning decisions for an investigation.
- Identify possible risks to themselves and others and suggest ways of reducing these.
- Use their developing scientific knowledge and understanding and relevant scientific language and terminology to communicate more abstract concepts.
- Comment on the results and whether they support the initial prediction.
- Use their scientific knowledge and understanding and appropriate scientific language and terminology to explain their findings and data and answer their initial question.
- Make a hypothesis where they say how one thing will affect another and give a reason for their suggestion with a developing understanding of the scientific concept.
- Identify variables to change, measure and keep the same in order for a test to be fair.
- Independently plan investigations and explain planning decisions.
- Decide when it is appropriate to carry out a fair test investigation, comparative test or alternative.
- Make, and act on, suggestions to control / reduce risks to themselves and others.
- Use equipment fit for purpose to take measurements which are increasingly accurate and precise.
- Articulate understanding of the concept using scientific language and terminology when describing abstract ideas, observations and findings.

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- Record data and results of increasing complexity using scientific diagrams and labels, recognised symbols, classification keys, tables, bar and line graphs, and models.
- Spot unexpected results that do not fit the pattern (anomalies).
- Identify patterns in results collected and describe them using the change and measure variables (causal relationships)  
*(e.g. as we increased the number of batteries the brightness the bulb increased.*
- Identify evidence that refutes or supports their ideas.
- Independently form a conclusion which draws on the evidence from the test.
- Use scientific language and terminology to explain why something happened.
- Be able to suggest reasons for unexpected results (anomalies).

**Sequence of Lessons:**

1. To explain the importance of major discoveries in electricity.
2. To use symbols when representing a simple circuit.
3. To observe and explain the effects of differing volts in a circuit.
4. To plan an investigation.
5. To conduct an investigation and record data.

**Enhancements:**

**End of Unit Outcome:**

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- Practical investigations using electrical wires, crocodile clips, bulbs, bulb holders, batteries, buzzers, motors and switches.

An investigation into whether the length of wires has an impact on the brightness of the bulb in a circuit.