


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

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Pendle Class Autumn 2 Year B	N.C. LINKS: Electricity Pupils should be taught to: <ul style="list-style-type: none"> • 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. 		
<i>ETYMOLOGY – Electricity is derived from the greek word electron which means amber (a kind of resin produced by certain plants).</i>			
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	Vocabulary: <table border="1" style="width: 100%;"> <tr> <td style="width: 50%; vertical-align: top;"> Subject Specific: symbol circuit electrons resistance voltage </td> <td style="width: 50%; vertical-align: top;"> Working Scientifically: Plan Variables Measurements Accuracy </td> </tr> </table>	Subject Specific: symbol circuit electrons resistance voltage	Working Scientifically: Plan Variables Measurements Accuracy
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	cell/battery	Precision Repeat reading Labels Classification Scatter Key graphs Predictions Bar graphs Line graphs Patterns Quantitative Interpret Measurements Systematic
<p>New Knowledge Progression:</p> <ul style="list-style-type: none"> • 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 (at least: cells, wires, switches, bulbs, buzzers and motors) when representing a simple circuit in a diagram. 	<p>Building on Prior learning when B follows A:</p> <ul style="list-style-type: none"> • 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. 	

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- Use/interpret circuit diagrams to construct a variety of more complex circuits predicting whether they will 'work'.

- Recognise some common conductors and insulators, and associate metals with being good conductors.
- Electricity can be dangerous.
- Electricity sources can be mains or battery.
- Batteries 'push' electricity round a circuit and can make bulbs, buzzers and motors work.
- Faults in circuits can be found by methodically testing connections.
- 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.

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- 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.
- 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.

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4. To plan an investigation.
5. To conduct an investigation and record data.

Enhancements:

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

End of Unit Outcome:

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

Oral Assessments:

- Can you explain the importance of major discoveries in electricity?
- What do these symbols mean when representing a simple circuit?
- Can you explain the effects of differing volts in a circuit?
- Can you explain an investigation and the outcomes?