



Term 1
Unit Overview: UKS2 Science
Electricity

<p><u>National Curriculum Objectives</u></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 when representing a simple circuit in a diagram. 	<p><u>Substantive knowledge</u></p> <ul style="list-style-type: none"> ❖ Know that adding more cells to a complete circuit will make a bulb brighter, a motor spin faster or a buzzer make a louder sound. ❖ Know that if you use a battery with a higher voltage, the same thing happens. ❖ Know that adding more bulbs to a circuit will make each bulb less bright; using more motors or buzzers, each motor will spin more slowly and each buzzer will be quieter. ❖ Know that turning a switch off (open) breaks a circuit so the circuit is not complete and electricity cannot flow. Any bulbs, motors or buzzers will then turn off as well. ❖ Recognise circuit symbols to draw simple circuit diagrams. 	<p><u>Vocabulary</u></p> <p>Circuit, complete circuit, circuit diagram, circuit symbol, cell, battery, bulb, buzzer, motor, switch, voltage</p> <p><u>Phonics / polysyllabic words</u></p> <p>Electricity (c/y) circuit (ui) connection (tion) conductor (or)</p>
<p><u>Working Scientifically Skills</u></p> <ul style="list-style-type: none"> ❖ 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 precision, taking repeat readings when appropriate. ❖ recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs. ❖ reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations. 	<p><u>Disciplinary knowledge</u></p> <ul style="list-style-type: none"> ❖ Incorporate a switch into a circuit to turn it on and off. ❖ Change cells and components in a circuit to achieve a specific effect. ❖ Communicate structures of circuits using circuit diagrams with recognised symbols. ❖ Devise ways to measure brightness of bulbs, speed of motors, volume of a buzzer during a fair test. ❖ Predict results and answer questions by drawing on evidence gathered. 	<p><u>Reading support</u></p> <ul style="list-style-type: none"> ❖ Word mats ❖ Scaffolded recording / choice of recording ❖ Pre teaching of vocab <p><u>Extension: deeper thinking</u></p> <ul style="list-style-type: none"> ❖ Describe what a fuse wire does and why it is useful. ❖ Interpret more complex circuit diagrams. ❖ Investigate how differences in voltage affect the performance of components in a circuit, taking into account external aspects that may affect results. ❖ Plan and carry out an investigation with a high degree of independence, considering and controlling variables.
<p><u>Possible misconceptions</u></p> <p>Some children may think:</p> <ul style="list-style-type: none"> ❖ larger-sized batteries make bulbs brighter ❖ a complete circuit uses up electricity ❖ components in a circuit that are closer to the battery get more electricity. 		



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<p><u>Prior learning: Yr 4 Electricity / Making Connections</u></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. ❖ Recognise some common conductors and insulators, and associate metals with being good conductors. 		<ul style="list-style-type: none"> ❖ Understand that in a series circuit the flow of electricity (current) is shared between the different loops. ❖ Suggest extensions to the games they and others build or devise alternative games.
<p><u>Future learning: KS3</u></p> <ul style="list-style-type: none"> ❖ Electric current, measured in amperes, in circuits, series and parallel circuits, currents add where branches meet and current as flow of charge. ❖ Potential difference, measured in volts, battery and bulb ratings; ❖ resistance, measured in ohms, as the ratio of potential difference (p.d.) to current. ❖ Differences in resistance between conducting and insulating components (quantitative). ❖ Static electricity. 	<p><u>British Values</u></p> <ul style="list-style-type: none"> ❖ <u>Democracy:</u> Teamwork during science investigations ❖ <u>The rule of law</u> Understand the importance of safety rules when working scientifically make choices when planning an investigation as others may have different points of view as to where to start. ❖ <u>Individual Liberty:</u> Choice to join a club-science club/ Justifying conclusion from experiments, respecting other people's results / Devising own ways to present ideas and solutions / Allow children to develop their independence, offering them opportunities to follow their own ideas and interests / Ensure that all children engage in a wide range of activities and are not limited by gender or other stereotypes. ❖ <u>Tolerance</u> Scientific discoveries have come from other cultures and religious beliefs 	<p><u>Key People</u></p> <ul style="list-style-type: none"> ❖ Mildred S Dresselhaus ❖ Lewis Howard Latimer <p><u>Christian Values</u></p> <ul style="list-style-type: none"> ❖ <u>Courage</u> Asking our own questions and investigating new ideas. ❖ <u>Respect</u> Supporting other's ideas, even if they differ to our own. ❖ <u>Trust</u> Celebrating everyone's unique ideas and working together collaboratively.



DOWN AMPNEY PRIMARY SCHOOL

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	<p>often compete with scientific understanding.</p> <ul style="list-style-type: none">❖ <u>Mutual respect</u> Work as a team, discuss findings and Offer support and advice to others.	
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