

# Science

## Year 6 – Summer 2-Electricity

### National Curriculum / End Point statement

#### Electricity

- 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.

#### Working Scientifically

- 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
- Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, and bar and line graphs
- Using test results to make predictions to set up further comparative and fair tests
- Using simple models to describe scientific ideas
- Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of results, in oral and written forms such as displays and other presentations
- Identifying scientific evidence that has been used to support or refute ideas or arguments.

Step 1	Step 2	Step 3	Step 4
Reactivate year 4 learning – Common electrical appliances, whether a simple circuit will work or not (pictures not symbols), switches/buzzers/bulbs, insulators and conductors. WALT use recognised symbols when representing a simple circuit in a diagram.	WALT plan an enquiry to answer a question	WALT use secondary sources to research ideas	WALT report and present findings from an enquiry.
In Focus - <a href="https://explorify.wellcome.ac.uk/en/activities/zoom-in-zoom-out/inside-out">https://explorify.wellcome.ac.uk/en/activities/zoom-in-zoom-out/inside-out</a>	In focus - <a href="https://explorify.wellcome.ac.uk/en/activities/odd-one-out/take-your-turn">https://explorify.wellcome.ac.uk/en/activities/odd-one-out/take-your-turn</a>	In Focus – <a href="https://explorify.wellcome.ac.uk/en/activities/whats-going-on/soak-up-some-rays">https://explorify.wellcome.ac.uk/en/activities/whats-going-on/soak-up-some-rays</a>	In Focus - <a href="https://explorify.wellcome.ac.uk/en/activities/odd-one-out/roving-robots">https://explorify.wellcome.ac.uk/en/activities/odd-one-out/roving-robots</a>
<b>Success Criteria</b>			

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<p>I can tell you what a circuit is. I can explain what will happen if you break the circuit I know the recognised symbol for a cell/ wire/ bulb/ buzzer/ switch (motor)</p>	<p>I can draw a simple circuit diagram using the recognised symbols I can explain what happens if you break the circuit I know that the higher the voltage, the brighter the lamp/ louder the buzzer</p>	<p>I know what a volt is I can use secondary sources to research</p>	<p>I know how to construct a circuit I can construct a circuit that has two components I can explain what the effect of having more than one component has on the brightness of a bulb/volume of a buzzer/speed of a motor</p>
<b>Suggested Outcome</b>			
<p>Ask children to draw what they think the scientific symbol is for each component of a circuit. Then ask them to match the name, real life image of the component, the scientific symbol and description of the component. Allow time for discussion before revealing the answers.</p>	<p>Use reactivated knowledge of circuits to investigate what happens when two or more cells are used, as well as different voltage cells and batteries to power a bulb or buzzer. Children plan an investigation to see how the brightness of a bulb/volume of a buzzer is affected by the number and voltage of cells used in a circuit.</p>	<p>Children research the Scientist Alessandro Volta</p>	<p>Children investigate how to increase and/or decrease the brightness of a bulb and volume of a buzzer (not using more cells!) Children record their observations/data and record their conclusions.</p>
<b>Vocabulary</b>		<b>NC links</b>	
Buzzer, voltage, cell, circuit, variations, <b>components</b> , <b>functions</b> , switches, <b>symbols</b> , diagrams		Science – Yr 4 Electricity, Materials DT	
<b>Key Learning</b>			
<p>Adding more cells to complete a circuit will make a bulb brighter, a motor spin faster or a buzzer make a louder sound. If you use a battery with a higher voltage, the same thing happens. Adding more bulbs to a circuit will make each bulb less bright. Using more motors or buzzers will mean that the motors will spin more slowly and the buzzers will be quieter. 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. Year 6 is where recognised circuit symbols are introduced and used to draw simple circuit diagrams.</p>			
<b>Possible Evidence</b>		<b>Common Misconceptions</b>	
<ul style="list-style-type: none"> <li>• Children can make electric circuits and demonstrate how variation in the working of particular components, such as the brightness of bulbs, can be changed by increasing or decreasing the number of cells or using cells of different voltages.</li> <li>• Children can draw circuit diagrams of a range of simple series circuits using recognised symbols.</li> <li>• Children can incorporate a switch into a circuit to turn it on and off.</li> <li>• Can change cells and components to achieve a specific effect.</li> </ul>		<p>Some children may think:</p> <ul style="list-style-type: none"> <li>• Larger sized batteries make bulbs brighter, motors faster, buzzers louder.</li> <li>• A complete circuit uses up electricity</li> <li>• Components in a circuit that are closer to the battery get more electricity</li> </ul>	

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| <ul style="list-style-type: none"><li>• <i>Can communicate structures of circuits using circuit diagrams with recognised symbols.</i></li><li>• <i>Can devise ways to measure brightness of bulbs, speed of motor, volume of a buzzer during fair tests</i></li><li>• <i>Can predict results and answer questions by drawing on evidence gathered</i></li></ul> |  |
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