

Science Progression of Knowledge and Skills Electricity

**Key to understanding this document: Black = National Curriculum objectives Red = Knowledge/Skills to be taught Green = Resources to be used**

*At The Discovery School we understand the importance of our children knowing more, remembering more and doing more. With this in mind, we teach the children the knowledge they require, ensuring they have opportunities for the retrieval of knowledge and the chance to apply new skills during their learning.*

<u>Area of Learning</u>	<u>E</u> <u>Y</u> <u>F</u> <u>S</u>	<u>Year</u> <u>1</u>	<u>Year</u> <u>2</u>	<u>Year</u> <u>3</u>	<u>Year 4</u>	<u>Year 5</u>	<u>Year 6</u>
<b>Electricity</b>					<p>Working scientifically: Gathering, recording, classifying and presenting data to answer questions. E1: Identify common appliances that run on electricity. Children go on an electricity hunt/ or shown images etc. Children then must group (sorting and classifying) these appliances into changes light, changes heat, changes sound or changes movement.</p> <p>Working scientifically: Setting up simple practical enquiries. Record findings using labelled diagrams.</p>		<p>E1To be able to use recognised symbols when representing a simple circuit in a diagram. Children will have cards with symbols on the back and they have to test each other on the symbol. Then the children could have circuit diagrams and photographs of that circuit and they have to spot the mistake. On your classroom display make sure you have symbols that the children already know and symbols they are learning so differentiate between Year 4 and Year 6.</p> <p>Working scientifically : Identifying scientific evidence that has been used to support or refute ideas or arguments. Using test results to make predictions to set up further comparative and fair tests . 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> <p>E2To be able to associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit.</p>

			<p>Using results to draw conclusions and make predictions for new values.  E2: Construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers.  Children must construct a simple series circuit. Children to draw and label the circuit in their book. Discuss what happens when certain aspects of the circuit are removed. Challenge pupils by - problem solving opportunities where they must fix circuits which are not complete. What is missing? Etc  Children could be given a range of circuits they must then predict which ones they think will work/ not work and why.</p> <p>Working scientifically:  Setting up simple practical enquiries.  Reporting on findings from enquiries, including oral or</p>	<p>Begin by asking the children to build a simple circuit ( recap from Year 4 ) Then ask the question “ How will the number of cells affect the bulb? Then allow the children to investigate what happens and then add buzzers to see how the sound changes.  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.  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  E4.To be able to 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.  Children (in small groups of 3) list the variables that they think might affect the brightness of the bulb. List the ways by which they could measure or observe the brightness of the bulb/s. The children can then choose one of the independent variables (e.g. the number of bulbs) and one of the dependent variables (e.g. brightness of bulb in lux). Placing these two variables together, the children can make their own investigation – e.g. Does the number of bulbs affect the brightness of the bulbs (in lux)?</p>
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			<p>written explanations. Using straightforward scientific evidence to answer questions to support findings.</p> <p>E3: 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. E4: Recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit.</p> <p>Children to design and make a lantern or torch incorporating a series circuit.</p> <p>Working scientifically: Setting up simple practical enquiries. Using results draw simple conclusions.</p> <p>E5: Recognise some common conductors and insulators, and associate metals with being good conductors.</p> <p>Children to set up investigation to test conductors and insulators to see which are the most effective. As a result children can make a switch.</p>	<p>Ask the children to make a prediction; possibly based on previous observations/measurements.</p> <p>The children can carry out their investigation.</p> <p>Working Scientifically Recording data and results of increasing complexity using scientific diagrams and labels.</p> <p>E4 To be able to use recognised symbols when representing a simple circuit in a diagram.</p> <p>The children will use recognised symbols when drawing circuit diagrams throughout this topic and when linked to DT Topic.</p>
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Key Vocabulary				Bulb Switch Battery Light Circuit Insulator Conductor Motor Electricity	Volts Series circuit Cell Bulb (lamp) holder, Buzzer, crocodile clip, leads, wires, Component Resistance Voltage
Key Resources				Circuit components e.g. – bulb, wires, batteries, motor etc materials to make torch/lantern .	Circuit components e.g. – bulb, wires, batteries, motor etc, buzzer, range of materials to test, symbol cards

