


Science Project Overview Year 4 Electricity

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| <p>Subject Knowledge (PoS)</p> <p>Substantive Knowledge</p> <ul style="list-style-type: none"> Common electrical appliances using mains electricity include fridges, washing machines, toasters etc Common electrical appliances use batteries e.g torches, remote control etc Some appliances use both mains electricity and batteries Phones, laptops etc, A complete circuit needs a battery, appliance and wires and no breaks. A switch opens and closes a circuit. Common conductors and insulators see below.  <ul style="list-style-type: none"> Conductors enable the flow of electricity. Insulators stop the flow of electricity. | <p>Working Scientifically (PoS+Overview)</p> <p>Disciplinary knowledge</p> <p>During years 3 and 4, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:</p> <ul style="list-style-type: none"> grouping and classifying can I notice patterns and observe changes overtime? ask their own questions about what they observe recording findings using simple scientific language, drawings and labelled diagrams Setting up simple practical enquiries: comparative tests To use straightforward scientific evidence to answer questions or to support their findings. draw simple conclusions and use some scientific language, first, to talk about and, later, to write about what they have found out. 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 | <p>Resources</p> <p>Electricity circuits, paperclips, batteries, wires, bulbs, photos of electrical equipment, buzzers, switches.</p> |
| <p>Previous learning:</p> <p>From Development Matters Reception</p> <p>Recognise some similarities and differences between life in this country and life in other countries.</p> <p>Explore the natural world around them.</p> <p>Describe what they see, hear and feel whilst outside.</p> <p>Recognise some environments that are different from the one in which they live.</p> <p>Understand the effect of changing seasons on the natural world around them.</p> | <p>Preparing learning:</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. (Y6 - Electricity) 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. (Y6 - Electricity) Use recognised symbols when representing a simple circuit in a diagram. (Y6 - Electricity) | <p>Bespoke to our school:</p> <p>There is a big emphasis within this unit on the teaching of tier 2 and 3 vocabulary and symbols.</p> |

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| Vocabulary: Electricity, electrical appliance/device, mains, plug, electrical circuit, complete circuit, component, cell, battery, positive, negative, connect/connections, loose connection, short circuit, crocodile clip, bulb, switch, buzzer, motor, conductor, insulator, metal, non-metal, symbol | | |
| Misconceptions: <ul style="list-style-type: none"> • electricity flows to bulbs, not through them • electricity flows out of both ends of a battery • electricity works by simply coming out of one end of a battery into the component. | | |
| Maths links: Statistics: Use bar charts and time graphs to present discrete/continuous data Use bar charts, pictograms, tables and other graphs to solve comparison, sum and difference problems Measurements: Solve problems using a different range of measures- use dataloggers for light levels (Lux) and sound(dB) | | |
| Explorify links: Power up Inside out Battery bonanza Curly coil All transport was electric Electrical appliances | | |
| Possible careers/jobs: Renewable energy engineer (works on environmentally-conscious energy production) ,Electrical engineer (works with equipment that uses electricity), Electrician (installs and maintains electrical equipment) ,Physicist (studies physics) | | |

