


Learning Journey	Science	Electricity	Year 4 Autumn 2	
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Building on prior learning	Theme overview	Preparing for future learning	Vocabulary	
<p>This is new learning and makes no direct link to learning in Y3 or KS1. Electricity will be a new concept to them.</p> <p>They will have been planning their own experiments throughout Y3 and the first term of Y4.</p> <p>During this time, they will have taken increased responsibility for gathering evidence to describe the relationship between variables (cause and effect) and, in turn, identified what must be changed, what must be measured and what must be kept the same.</p> <p>Whilst they are becoming increasingly independent in doing this, there are occasions where group decisions and teacher input are necessary.</p>	<p>Chapter 1: Electrical power sources. Many devices are powered by electricity; these need a source of electricity, which could be mains or battery.</p> <p>Chapter 2: What batteries do? The battery's job is to push electricity to the device, but it needs something to carry the electricity all the way from the supply to the device, this is what we call a circuit.</p> <p>Chapter 3: Making devices work harder. If there are more batteries they push harder and so the device will work harder e.g. brighter or faster</p> <p>Chapter 4: Insulators and conductors. However not everything can carry the electricity from the source to the device, some materials allow the electricity through (conductors) and others don't (insulators)</p>	<p>Explain what the children will study in the next unit of work and where this will lead in the next year</p> <p>In the second half of the spring term the children will go on to study living things in their habitats.</p> <p>They will build on prior learning about food chains, food webs, how changes in the environment can affect what species live there and, how as humans, we have an impact on environments and ecosystems. They will go on to consider how we have a responsibility to care for habitats and the environment in general.</p> <p>NB: In Y6 they will build on this unit by controlling electrical circuits.</p>	<p>Electricity: supply battery mains lead connection circuit switch wire device lamp motor buzzer.</p>	<p>Complete circuit, incomplete circuit connection Metal, non-metal Conductor Insulator Voltage, push Current, flow Brightness</p>

NC coverage and HWJS skills development

National curriculum coverage:

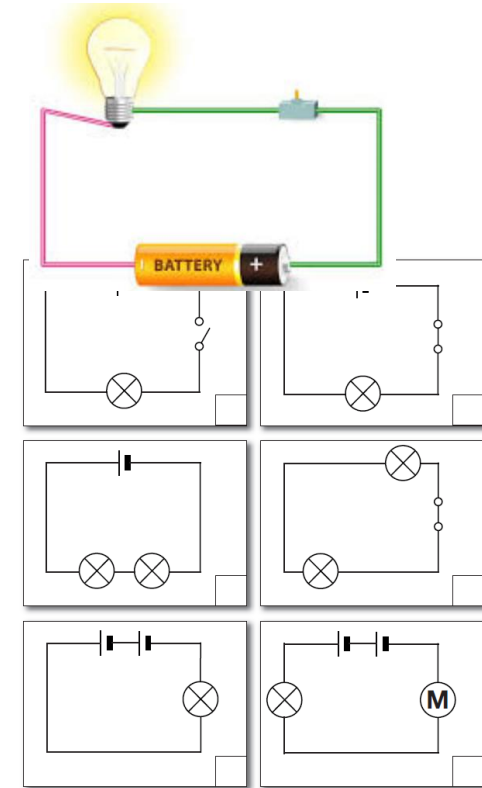
- Identify common appliances that run on electricity and construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers
- Identify whether or not a lamp will light in a simple series circuit, based on whether or not the lamp is 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.

HWJS skills development.

- Describe and evaluate their own and other people's scientific ideas related to Electricity in the NC using evidence from a range of sources.
- Ask their own questions about the scientific phenomena they are studying, and select and plan the most appropriate ways to answer these questions, or those of others, recognising and controlling variables where necessary - including observing changes over different periods of time, noticing patterns, grouping and classifying things, carrying out comparative and fair tests.
- Record data and results using scientific diagrams and labels, classification keys, tables and where appropriate, simple graphs.
- Present findings and draw conclusions in different forms, and raise further questions that could be investigated, based on their data and observations.
- Use appropriate scientific language and ideas from the national curriculum to explain, evaluate and communicate their methods and findings.

Knowledge organisers

- A source of electricity (mains or battery) is needed for electrical devices to work.
- A complete circuit is needed for electricity to flow and devices to work.
- Electricity sources push electricity round a circuit.
- More batteries will push the electricity round the circuit faster.
- Some materials allow electricity to flow easily and these are called conductors. Materials that don't allow electricity to flow easily are called insulators.
- Devices work harder when more electricity goes through them
- Identify and name devices and justify if it is mains or battery powered and if battery powered, find it.
- Give children a range of different battery powered devices and ask them to predict how the battery would need to be different. They remove the batteries and categorise how batteries need to be different and why.
- Give children leads, batteries and lamps and let them get it to light.
- Give children some broken circuits. they have to identify what is wrong and make it work.
- How does the length of time a battery is on for affect how well a device works?
- How does the number of batteries added to the circuit affect a device?



<p><u>Connections / deepening understanding</u></p> <p>How is the understanding of this area deepened in other areas of the curriculum? What links are there in the other subjects in the curriculum?</p>	<p><u>RADE</u></p> <p>Are the rights of the child relevant in this area of study - do they get referred to in the work?</p>	<p><u>Assessment</u></p> <p>By the end of the unit the children will be able to Or describe ...</p>			
<p>Maths – Recording data English – Writing a formal report</p>		<p>A source of power is needed to make things work</p>	<p>Electricity is pushed around a circuit</p>	<p>A complete circuit is needed to enable something to work</p>	<p>Gather evidence to describe the relationship between variables (cause and effect) by identifying what must be changed, what measured and what must be kept the same.</p>
<p>Assessment recording for the unit - checking the level of pitch of the work</p>					
<p><u>Key skill(s)/ knowledge to be assessed by the end of the unit</u></p>	<p><u>Lower attaining</u></p>	<p><u>Middle attaining</u></p>	<p><u>Higher attaining</u></p>		
<p><u>Key skill(s)</u></p> <p>Make a simple circuits.</p> <p>Gather evidence to describe the relationship between variables (cause and effect) by changing the number of batteries in a circuit. Decide what to measure and what must be kept the same.</p> <p>Test materials in circuits to see if they are insulators or conductors.</p>	<p>Pupils can make a simple circuit. Pupils can describe the difference between one battery and two. Pupils can describe that metals are conductors.</p>	<p>Pupils can make a simple circuit and add devices describing what happens Pupils can describe what happens to bulbs or motors when batteries are added to a circuit Pupils can describe that metals are conductors and that other materials are insulators.</p>	<p>Pupils can make a circuits, add devices describing what happens and give reasons for changes that are noticed. Pupils can describe what happens to bulbs or motors when batteries are added to a circuit. They can make links to the voltage of the batteries and describe this relationship. They observe patterns, for example, that bulbs get brighter if more cells are added</p> <p>Pupils can describe that metals are conductors and that other materials are insulators. They can make predictions as to which materials are insulators and conductors.</p>		

<p><u>Key Knowledge.</u></p> <p>A source of power is needed to make things work. It can be mains or battery powered.</p> <p>Electricity is pushed around a circuit</p> <p>A complete circuit is needed to enable something to work</p>	<p>Pupils can describe that sources of electricity could be mains or battery</p> <p>Pupils know that electricity has to flow from a power source around a circuit.</p> <p>Pupils can describe that components must all be connected and a power source is needed.</p>	<p>Pupils can describe that sources of electricity could be mains or battery depending on what the device does. Some need more power than others</p> <p>Pupils can describe that electricity has to flow from a power source around a circuit and back to the power source.</p> <p>Pupils can describe that components must be connected with the battery integral to the circuit.</p>	<p>Pupils can describe that sources of electricity could be mains or battery depending on what the device does. Some need more power than others do. They know that mains produces higher power than batteries. Power is measured in volts.</p> <p>Pupils can describe that electricity has to flow from a power source around a circuit and back to the power source. They can describe the effect of adding other components or insulators</p> <p>Pupils can describe that components must be connected with the battery integral to the circuit. IF two batteries are used, they must be connected in series.</p>
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NB: The assessments are completed for two reasons – to enable the class teacher and in turn the subject leader to evaluate the pitch of the learning within the unit in order to consider any necessary updates and for the class teacher to report to parents on the attainment of pupils in the end of year reports.