

**Lent 2**  
**Science Year 4: Electricity (Physics)**

**Scripture Link: Ephesians 1:19**

**National Curriculum Objective**

**Enquiry Question: What is electricity and how does it work?**

	Lesson 1	Lesson 2	Lesson 3
<b>Learning intention for each lesson</b>	To know that many common appliances run on electricity	To know what electricity is, and that electricity travels around a circuit	To know that a circuit has to be complete for it to work
<b>Recall and Retrieval</b>	Know what light and dark are Name some light sources Know what a reflection is Know how a shadow is made.	Explain what gravity and friction are Know some forces that can change the shape of materials know that an 'electrical appliance' is a tool or apparatus that we use in our day-to-day life with the assistance of electricity can name some everyday electrical appliances	know that electricity is a form of energy that can give things the ability to move and work. know that electricity can be dangerous. can name some everyday electrical appliances
<b>Sequence of substantive knowledge throughout the lesson</b>	I know that an 'electrical appliance' is a tool or apparatus that we use in our day-to-day life with the assistance of electricity.  I can name some everyday electrical appliances: TV, kettle, cooker, iron, computer	I know that electricity is a form of energy that can give things the ability to move and work.  I know that electricity can be dangerous.  I know that a circuit is a device made of other, smaller electrical devices that can move the flow of electricity through itself to power larger devices.  I know that every complete circuit must have a power source.  I know how to create a simple circuit (including a lamp)  I know that a simple electrical circuit needs: a battery (or other energy source), a light bulb (or other device that uses energy) and wires	I know that an electrical circuit is a complete path which electrical energy can flow through  I know that for a circuit to be complete, there must be wires connected to both the positive and negative ends of the power supply.
<b>Key Skills/disciplinary knowledge</b>	<ul style="list-style-type: none"> <li>• asking relevant questions and using different types of scientific enquiries to answer them;</li> <li>• making systematic and careful observations</li> </ul>	<ul style="list-style-type: none"> <li>• asking relevant questions and using different types of scientific enquiries to answer them;</li> <li>• setting up simple practical enquiries,</li> <li>• making systematic and careful observations</li> </ul>	<ul style="list-style-type: none"> <li>• asking relevant questions and using different types of scientific enquiries to answer them;</li> <li>• setting up simple practical enquiries, comparative and fair tests;</li> </ul>

	<ul style="list-style-type: none"> <li>reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions;</li> <li>using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions;</li> <li>identifying differences, similarities or changes related to simple scientific ideas and processes</li> </ul>	<ul style="list-style-type: none"> <li>recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables;</li> <li>reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions;</li> <li>using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions;</li> <li>identifying differences, similarities or changes related to simple scientific ideas and processes</li> </ul>	<ul style="list-style-type: none"> <li>making systematic and careful observations</li> <li>gathering, recording, classifying and presenting data in a variety of ways to help in answering questions;</li> <li>reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions;</li> <li>using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions;</li> <li>identifying differences, similarities or changes related to simple scientific ideas and processes</li> </ul>
<b>Key Vocabulary</b>	Electrical, appliance, mains, plug,	Electrical, appliance, mains, plug, circuit, component, cell, battery, positive, negative, bulb, connect/connectors, loose connection, short circuit,	circuit, component, cell, battery, positive, negative, connect/connectors, loose connection, short circuit, crocodile clip,
<b>Main teaching activity</b> <i>If the school has another short term planning format, this does not need to be included.</i>			
<b>Scaffolding</b>		Pictures to help with labelling and identifying the parts.  Create actions for each component?	Children to explore the various components and use labels to label them.
<b>Challenge</b>		Mixed ability pairs.  Remind children to work safely with electricity.	Children can work individually, in pairs or in small groups to make different circuits and make predictions.  Remind children to work safely with electricity.
<b>Diversity Links</b>			
<b>Catholic Social Teaching Principles</b>			
<b>British Values</b>			

<b>Wider links</b>			
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**Lent 2**  
**Science Year 4: Electricity (Physics)**

	Lesson 4	Lesson 5	Lesson 6
<b>Learning intention for each lesson</b>	To know how to add a switch to a circuit and the effect it has.	To know what conductors and insulators are and which are the best materials for these.	To know some information about some scientists involved in developing electricity.
<b>Recall and Retrieval</b>	Know what can cause the size of shadows to change Know what a simple circuit is and how to make one. know that a simple electrical circuit needs: a battery (or other energy source), a light bulb (or other device that uses energy) and wires	know that electricity will only travel around a circuit that is complete. know that you can use a switch in a circuit to create a gap in a circuit and the impact of this. Can describe some dangers associated with the sun.	Know what is meant by conductors and insulators – naming some examples. know that a simple electrical circuit needs: a battery (or other energy source), a light bulb (or other device that uses energy) and wires
<b>Sequence of substantive knowledge throughout the lesson</b>	I know that electricity will only travel around a circuit that is complete.  That means it has no gaps.  I know that you can use a switch in a circuit to create a gap in a circuit. This can be used to switch it on and off.  I know that when a switch is open (off), there is a gap in the circuit. Electricity cannot travel around the circuit.  I know that when a switch is closed (on), it makes the circuit complete. Electricity can travel around the circuit.	I know that some materials let electricity pass through them easily. These are known as conductors.  I know that some good conductors include: many metals, such as copper, iron and steel.  I know that some materials do not allow electricity to pass through them. These are known as insulators.  I know that plastic, wood, glass and rubber are good insulators. That is why they are used to cover materials that carry electricity.  I know that the plastic covering those surrounds wires is an electrical insulator and it stops you from getting an electrical shock.	I know that some scientists work to develop our knowledge of electricity.  I know that Alessandro Volta, Michael Faraday were scientists involved in the early development of electricity  I know that Henry Snaith is a modern scientist involved in the development of solar electricity..
<b>Key Skills/disciplinary knowledge</b>	<ul style="list-style-type: none"> <li>• asking relevant questions and using different types of scientific enquiries to answer them;</li> <li>• setting up simple practical enquiries, comparative and fair tests;</li> <li>• making systematic and careful observations</li> <li>• recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables;</li> </ul>	<ul style="list-style-type: none"> <li>• asking relevant questions and using different types of scientific enquiries to answer them;</li> <li>• setting up simple practical enquiries, comparative and fair tests;</li> <li>• making systematic and careful observations</li> <li>• recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables;</li> </ul>	<ul style="list-style-type: none"> <li>• reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions;</li> </ul>

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<b>Key Vocabulary</b>	circuit, component, cell, battery, positive, negative, bulb, connect/connectors, loose connection, short circuit, crocodile clip, bulb, switch, current.	Electrical, appliance, mains, plug, circuit, component, cell, battery, positive, negative, connect/connectors, loose connection, short circuit, crocodile clip, bulb, switch, buzzer, motor, conductor, insulator, metal, non-metal, symbol, voltage, current	
<b>Main teaching activity</b> <i>If the school has another short term planning format, this does not need to be included.</i>			
<b>Scaffolding</b>	<p>Children can work individually, in pairs or in small groups to make different circuits and make predictions.</p> <p>Mixed ability pairs</p> <p>Remind children to work safely with electricity.</p>	<p>Children to work in pairs to sort the materials into conductors and insulators.</p> <p>Remind children to work safely with electricity.</p>	
<b>Challenge</b>	<p>Children to investigate placing the switch in different places in the circuit, does it make a difference where it goes?</p> <p>Teacher to model writing an evaluation then children to complete individually</p>	<p>Children to use STEM sentences to support their interpretation of results. Teacher to model first and children use their results to complete.</p>	
<b>Diversity Links</b>			
<b>Catholic Social Teaching Principles</b>			

<b>British Values</b>			
<b>Wider curriculum links</b>			