







**Pioneer Federation**  
**Medium term plan**  
**Cycle 1, Term 2**  
**science**



<b>Subject:</b> science	
<b>Key Concept/ Theme:</b> Electricity	
<b>Prior Learning links:</b> The children will have not learnt anything about electricity in science in the past. They will have learnt how technology has changed over time in history and that electricity has helped modern life. They will have learnt the scientific enquiry skills and will be building on applying these in a different way when learning about electrical circuits.	
<b>Vocabulary:</b> Electricity    Series circuit    Conductor    insulator <b>Appliances:</b> fridge, freezer, TV, computer, iron, kettle, etc <b>Components:</b> battery, bulb (lamp), bulb (lamp) holder, buzzer, crocodile clip, leads, wires, switch <b>Describing words:</b> brighter, duller, slow, fast, quiet, loud <b>Effects of electricity:</b> Light, sound, movement, heat <b>Switches – open, close</b>	
<b>School specific areas to cover (where applicable):</b>	
1.	Deeper learning question:  How has electricity changed our lives? Prior learning reconnection (year group, cycle & term): This is a new concept in science to learn. LO: <i>Let's learn how to identify electrical appliance and understand the effects of electricity.</i> Enquiry focus: safely using equipment, recording results Activity: To walk around school to identify electrical appliances. Classify the appliances into: changes heat, sound, light, movement. Discuss safety of electricity at start of topic- children to use a reflection question to show their knowledge about being safe with electricity. Future learning links:
2.	Deeper learning question:  Do all electrical appliances use a circuit? Reconnection: Name/classify electrical appliances game with kettle, IWB, lamp, remote control car, fridge, computer. LO: <i>Let's learn about a series circuit and name the components we are using.</i> Enquiry focus: predicting Activity: Children to make a simple circuit and record in drawing. Problem solving: give the children pictures of different circuits, they need to predict which ones will make the bulb turn on before investigating. Model how to write a prediction and use scientific language. Can they give reasons for their predictions.
3	Deeper learning question:

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	<p> Why is it important to know how circuits work in the real world?</p> <p>Reconnection: Give a simple circuit with a problem in it and ask them from last week's learning how to make the bulb turn on. Can they name the components?</p> <p>LO: <i>Let's learn about a series circuit in real life situations.</i></p> <p>Activity: Children to have a look at the inside of a torch. Can they see the simple circuit? Record their findings through diagrams and relate last week's learning to a real life object. Are there any other objects you would find these circuits in? Draw each of the parts and explain what it does in order for the torch as a whole to function properly.</p>
4	<p>Deeper learning question:</p> <p> Why do we need switches in electrical appliances within the home?</p> <p>Reconnection: Which electrical appliances use a simple series circuit?</p> <p>LO: <i>Let's learn about using switches in circuits.</i></p> <p>Enquiry focus: recording results</p> <p>Activity: Look at a circuit and discuss in groups what happens when there is a break, how could we use a switch? Does it matter where the switch goes? Think of appliances which use a switch- how is the switch used? Children to draw their circuits they make and write how a switch works in a circuit and which appliances use switches and why.</p>
5	<p>Deeper learning question:</p> <p> Why is it important to know what a conductor or an insulator is when thinking about electrical appliances at home and safety?</p> <p>Reconnection: What does a switch do in a circuit?</p> <p>LO: <i>Let's learn about conductors and insulators.</i></p> <p>Enquiry focus: classifying,</p> <p>Activity: Groups to classify whether the material they are given is a conductor or an insulator. Once classified, then test in their own circuits in replacement of the switch. Record circuits using drawings and scientific reasoning for their diagrams.</p>
6	<p>Deeper learning question:</p> <p> Why would electrical engineers need to know about circuits for their job?</p> <p>Reconnection: children to sort insulators and conductors.</p> <p>LO: <i>Let's learn how to use our knowledge to make our own appliance.</i></p> <p>Activity: Children to use all their knowledge to make their own torch. Children to design the inside first with diagrams and explanations. If they have to change any part, they can record this below as part of their thought processes and to show the journey.</p>
7	<p>Deeper learning question:</p> <p>Reconnection: Think about the process of making your torch, did the problems you encounter help you become a better scientist? What did you learn from those mistakes?</p> <p>LO: <i>Let's learn about famous scientists and their impact on society and the developments in science.</i></p>

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Activity: Link to the reconnection question. Famous scientists discover things through mistakes and it takes time. Children to research and find out about Benjamin Franklin (1706-90) Alessandro Volta (1745-1827) Andre-Marie Ampere (1775-1836). Groups to be given a person each then they have to teach the other children about their findings. Link back to the 'big question' how has electricity changed our lives when researching these people.

End of unit quiz: Knowledge based questions as the torch making can form a part of the assessment with the teacher working with groups to identify knowledge. Use the 'big question' to answer at the end of the quiz.

End points: To make a series circuit. To name appliances which use electricity. To name the components in a circuit. To know how a switch works. To know what a conductor and insulator is and how these are used in circuits. To know how to be safe with electricity. To know how to predict, classify and record in science.

The whole unit will be based around an explorer needing to make a torch to find the iron man and to go exploring. The children will make a torch as their end product to show their knowledge.