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**Knowledge Rich Curriculum Plan**

SCIENCE- More Electrical Circuits



| **Lesson/Learning Sequence**  | **Intended Knowledge:***Students will know that…* | **Prior Knowledge:***In order to know this, students need to already know that…* | **Working Scientifically** | **Tiered Vocabulary and Reading Activity** | **Assessment**  | **Support** |
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| ***Potential Difference***  | *Students will know the difference between voltage and potential difference being that the voltage is the amount of energy required to move a unit charge between two points whereas the potential difference is the difference between the higher potential of one point and the lower potential of the other point. Students will learn that P.d. is measured in V. Students will be introduced to Ohms law stating that the current flowing in a circuit is directly proportional to the applied potential difference provided the temperature remains constant. They will use the equation V=IR. They will investigate the hypothesis that current is directionally proportionate to potential difference and plot their results on a graph.*  | *Students will recall that changing the voltage of the battery has an effect on a simple circuit.* *Students will recall that Voltage is the strength with which a battery can ‘push’ current around a circuit. The greater the voltage the greater the ‘push’ around a circuit. Students will recall that current is measured in amps. Students will recall that voltmeter must be connected in parallel to the component.*  | *Analyse- Presenting data**Enquire- Testing Hypothesis* | *Potential difference* *Directly proportionate***What is voltage?****How might adding more batteries affect the potential difference?****Why might the current change when you add more batteries?** | *Retrieval questions**Simple exam questions**Homework quiz 1* *End of topic test* *Summative assessment 3* | *Knowledge organiser (provided on Teams and in class)*[*https://www.bbc.co.uk/bitesize/topics/zgy39j6/articles/zjm8kty*](https://www.bbc.co.uk/bitesize/topics/zgy39j6/articles/zjm8kty) |
| ***Resistance***  | *Students will learn that resistance is measured in Ohms Ω and it is a measure of how hard it is for charge to flow. Students will learn that thinner wires will have a higher resistance than thicker wires even though they are made from the same material and are of the same length. Students will learn that wires which are longer in length have a higher resistance than shorter wires even though they are made from the same material and are of the same thickness.*  | *Students will recall that current is the flow of charge in a circuit and is measured in amps. Students will recall that potential difference is the difference in electrical potential between two points in a circuit.*  | *Maths skills- Rearranging equations.* *Enquire- Testing Hypothesis* | *Resistance* *Collisions**Electrons***Would it be easier to pass through a corridor or a field?****Would it be easier to pass through a lake or a field?** | *Retrieval questions**Simple exam questions**Homework quiz 1* *End of topic test* *Summative assessment 3* | *Knowledge organiser (provided on Teams and in class)*[*https://www.bbc.co.uk/bitesize/topics/zgy39j6/articles/z6n27yc*](https://www.bbc.co.uk/bitesize/topics/zgy39j6/articles/z6n27yc) |
| ***Parallel circuits*** | *Students will learn that parallel circuits contain junctions/branches where current splits, meaning that there is more than 1 path around the circuit. Students will be able to identify the same parallel circuit from diagrams. Students will be able to draw a diagram of a parallel circuit. Students will conduct a practical to investigate if the current splits in a parallel circuit.*  |  *Students will recall that a series circuit is where the current flows in a continuous loop. Students will recall that current is measured in amperes/ amps (A) Students will recall that in a series circuit the current is the same at any point in the circuit.*  | *Enquire- Collect current data for different branches of a parallel circuit* | *Parallel circuit**Junction***What is a series circuit?****What might happen to the bulbs in a parallel circuit if one blows?****How might adding another branch affect the current in the circuit?** | *Retrieval questions**Simple exam questions**Homework quiz 1* *End of topic test* *Summative assessment 3* | *Knowledge organiser (provided on Teams and in class)*[*https://www.bbc.co.uk/bitesize/topics/zgy39j6/articles/z34yf82*](https://www.bbc.co.uk/bitesize/topics/zgy39j6/articles/z34yf82) |
| ***Parallel circuits-changing components*** | *Students will identify a range of circuit diagrams that represent the same parallel circuit. Describe how to measure voltage across the battery and across each branch of a parallel circuit. Describe the rule for voltages in a parallel circuit. Explain how a parallel circuit is like a set of nested simple-series circuits. Predict the voltage of batteries connected together in parallel.* | *A parallel circuit is made of branches.* voltage*as the amount of potential energy between two points on a circuit. Voltmeters need to be connected in parallel to measure the potential difference across a component.*  | *Enquire- collect voltage data in different branches of a parallel circuit* | *Components**Diagrams* *Voltage***How do you connect an ammeter to a component?****How might you connect a voltmeter to a component?****How might the voltage change for components in parallel?** | *Retrieval questions**Simple exam questions**Homework quiz 1* *End of topic test* *Summative assessment 3* | *Knowledge organiser (provided on Teams and in class)*[*https://www.bbc.co.uk/bitesize/topics/zgy39j6/articles/z34yf82*](https://www.bbc.co.uk/bitesize/topics/zgy39j6/articles/z34yf82) |