



Lessons Sequence							
TOPIC (S) ENERGY & ELECTRICITY	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 33%; vertical-align: top;"> <ol style="list-style-type: none"> 1. Energy Stores 2. Conservation of Energy 3. Energy in Food 4. Work and Power 5. The Cost of Electricity </td> <td style="width: 33%; vertical-align: top;"> <ol style="list-style-type: none"> 6. Non-Renewable Energy Resources 7. Renewable Energy Resources 8. Electric Circuits 9. Electric Current </td> <td style="width: 33%; vertical-align: top;"> <ol style="list-style-type: none"> 10. Voltage 11. Electrical Resistance 12. Static Electricity 13. End of topic assessment </td> </tr> </table>	<ol style="list-style-type: none"> 1. Energy Stores 2. Conservation of Energy 3. Energy in Food 4. Work and Power 5. The Cost of Electricity 	<ol style="list-style-type: none"> 6. Non-Renewable Energy Resources 7. Renewable Energy Resources 8. Electric Circuits 9. Electric Current 	<ol style="list-style-type: none"> 10. Voltage 11. Electrical Resistance 12. Static Electricity 13. End of topic assessment 			
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Knowledge & Skills development	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; vertical-align: top;"> <ul style="list-style-type: none"> - Identify the different energy stores in a range of situations - Describe energy before and after a change. - Describe energy before and after a change. - Explain what brings about transfers in energy - Compare the energy values of food and fuels. - Compare the energy in food and fuels with the energy needed for different activities. - Explain data on food intake and energy requirements for a range of activities. - Investigate energy released when foods or fuels burn - Identify control variables - Identify risks and precautions - Suggest possible sources of error - Calculate work done. - Apply the conservation of energy to simple machines. - Explain the difference between energy and power. - Calculate power - Describe the link between power, fuel use, and cost of using domestic appliances. - Predict the power requirements of different equipment and how much it costs to use. - Describe the difference between a renewable and a non-renewable energy resource. - Describe how electricity is generated in a power station. - Explain the advantages and disadvantages of different energy resources - Describe the difference between a renewable and a non-renewable energy resource. </td> <td style="width: 50%; vertical-align: top;"> <ul style="list-style-type: none"> - Explain the advantages and disadvantages of different energy resources - Identify the symbols for a range of electrical components - Draw circuit diagrams for series and parallel circuits with a range of components - Describe the difference between series and parallel circuits. - Construct simple series and parallel circuits - Describe what is meant by current. - Describe how to measure current. - Set up a circuit including an ammeter to measure current. - Predict current at different places in both series and parallel circuits - Describe what is meant by potential difference. - Describe how to measure potential difference. - Set up a simple circuit and use appropriate equipment to measure potential difference. - Predict potential difference at different places in both series and parallel circuits - Describe what is meant by electrical resistance. - Calculate resistance of a component and of a circuit. - Describe the difference between conductors and insulators in terms of resistance. - Explain how objects can become charged. - Describe how charged objects interact. - Describe what is meant by an electric field. </td> </tr> </table>	<ul style="list-style-type: none"> - Identify the different energy stores in a range of situations - Describe energy before and after a change. - Describe energy before and after a change. - Explain what brings about transfers in energy - Compare the energy values of food and fuels. - Compare the energy in food and fuels with the energy needed for different activities. - Explain data on food intake and energy requirements for a range of activities. - Investigate energy released when foods or fuels burn - Identify control variables - Identify risks and precautions - Suggest possible sources of error - Calculate work done. - Apply the conservation of energy to simple machines. - Explain the difference between energy and power. - Calculate power - Describe the link between power, fuel use, and cost of using domestic appliances. - Predict the power requirements of different equipment and how much it costs to use. - Describe the difference between a renewable and a non-renewable energy resource. - Describe how electricity is generated in a power station. - Explain the advantages and disadvantages of different energy resources - Describe the difference between a renewable and a non-renewable energy resource. 	<ul style="list-style-type: none"> - Explain the advantages and disadvantages of different energy resources - Identify the symbols for a range of electrical components - Draw circuit diagrams for series and parallel circuits with a range of components - Describe the difference between series and parallel circuits. - Construct simple series and parallel circuits - Describe what is meant by current. - Describe how to measure current. - Set up a circuit including an ammeter to measure current. - Predict current at different places in both series and parallel circuits - Describe what is meant by potential difference. - Describe how to measure potential difference. - Set up a simple circuit and use appropriate equipment to measure potential difference. - Predict potential difference at different places in both series and parallel circuits - Describe what is meant by electrical resistance. - Calculate resistance of a component and of a circuit. - Describe the difference between conductors and insulators in terms of resistance. - Explain how objects can become charged. - Describe how charged objects interact. - Describe what is meant by an electric field. 				
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Assessment / Feedback Opportunities	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 16.6%;">Targeted questioning throughout topic</td> <td style="width: 16.6%;">Peer assessment of energy resources presentations</td> <td style="width: 16.6%;">AWOL assessment – formative teacher assessment in students books</td> <td style="width: 16.6%;">Mid topic assessment – formative assessment</td> <td style="width: 16.6%;">Homework topic quiz – formative assessment</td> <td style="width: 16.6%;">End of topic assessment – teacher summative assessment</td> </tr> </table>	Targeted questioning throughout topic	Peer assessment of energy resources presentations	AWOL assessment – formative teacher assessment in students books	Mid topic assessment – formative assessment	Homework topic quiz – formative assessment	End of topic assessment – teacher summative assessment
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Cultural Capital	<ul style="list-style-type: none"> • Life skills – Understanding electricity bills • Possible visit by “Tomorrow’s Engineers Energy Quest” funded by Shell or Power Plant Workers through STEM Ambassadors program 						

SMSC / Promoting British Values (Democracy, Liberty, Rule of Law, Tolerance & Respect)	<ul style="list-style-type: none"> • Health issues related to diet (calories/energy in food) • Moja Islands task – considering and prioritising an islands energy needs (politics) • Listening to others during presentations • Working in groups during practicals or research tasks
Reading opportunities	<ul style="list-style-type: none"> • News articles – current energy issues (e.g. residents against new wind farm) • Recommended Read: Electrical Circuits (Oaka Books) • Various reading and comprehension activities embedded within scheme of work
Key Vocabulary	<p>Independent Variable, Dependent Variable, Control Variables, Method, Conclusion, Precaution, Evaluation, Reliable, Precision, Valid, Anomaly</p> <p>Energy, Joule, Kinetic Energy, Elastic Energy, Power, Watt, Kilowatt-hour, Work done, Conservation of energy, Static Electricity, Charge, Current, Potential Difference, Resistance, Electron, Series, Parallel, Circuit, Gravitational Energy, Chemical Energy, Vibrational Energy, Energy Pathway, Short Circuit, Van de Graff, Circuit Symbol, Geothermal, Hydroelectric, Biomass</p>
Digital Literacy	<p>SharePoint resources including topic quiz, computer use for research on energy resources</p> <p>Possible use of excel to plot graphs and analyse data, powerpoint, word, etc to present information, internet for research</p>
Cross-Curricular Links	<p>Numeracy/Maths – averages (means), reading scales, graph plotting, lines of best fit, using and rearranging equations, using scientific calculators</p> <p>PE & PSHCE – Healthy diets</p> <p>Engineering – Electric circuits</p>
Careers	<p>Dietician, food scientist, all careers within electric companies including accounts, electrical engineer, electrician, politician</p>