<table>
<tr><th colspan="6">Design and Technology: Electric Cars</th></tr>
<tr><td>Vocabulary</td><td colspan="2">Electricity, car, future, battery, circuit, wheels, chassis, axis, levers, gears, pulleys, design, similarities, differences, materials, suitable, effective, prototype, evaluate, strengths, improvements.</td><td>Prior Learning</td><td colspan="2"><u>Mechanisms and Movement</u><br>Children created taxis as part of their Bright Lights, Big City topic:<br>● Most vehicles that move on land have axles and wheels that are fixed to a chassis.<br>● An axle fixed to a chassis has freely moving wheels.<br>● A freely moving axle has fixed wheels.</td></tr>
<tr><td>Know It: essential knowledge</td><td colspan="5">● Electric cars are important for the future to help climate control.<br>● Electric cars are made with batteries.<br>● Electric cars need charging points.<br>● Cars (from different manufacturers) have different colours and designs.<br>● Cars are designed and made in different shapes and sizes, depending on need.<br>● Cars have engines that generates power to makes the wheels move.</td></tr>
<tr><td rowspan="2">Think It:</td><td colspan="2">RUAH</td><td colspan="2">Oracy</td><td>Discernment</td></tr>
<tr><td colspan="2">Should we force others to look after God’s creation or should we encourage them?</td><td colspan="2">Cars are polluting the Earth so we should stop making and using them. Is this possible and is there a way to reduce their impact?</td><td>Is our country ready for electric cars only?</td></tr>
<tr><td>Prove It: assessment)</td><td colspan="5">Evaluation of car designs.<br>● How does your electric car work?<br>● Why have you created this particular design?<br>● What would you improve? Why?</td></tr>
<tr><td>Beyond Year 4</td><td colspan="5"><u>Electricity</u><br>● Use electrical circuits in a range of constructions, not just cars.<br>● Consider shape, design and structure for movement.</td></tr>
<tr><td>Lesson Sequence</td><td>Lesson 1</td><td>Engage</td><td colspan="3">Research electric cars</td></tr>
<tr><td>Lesson 2</td><td rowspan="5">Develop</td><td colspan="3">Explore materials</td></tr>
<tr><td>Lesson 3</td><td colspan="3">Make the chassis</td></tr>
<tr><td>Lesson 4</td><td colspan="3">Design</td></tr>
<tr><td>Lesson 5</td><td colspan="3">Make the car prototype</td></tr>
<tr><td>Lesson 6</td><td colspan="3">Evaluation</td></tr>
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| Show It: design skills and concepts | Topic specific skills | Materials for purpose | Mechanisms & movement | Electricity | Use of ICT |
|---|---|---|---|---|---|
| | | **Year 3 Skill**<br>Plan which materials will be needed for a task and explain why.<br>**Year 4 Skill**<br>Choose from a range of materials, showing an understanding of their different characteristics. | **Year 3 Skill**<br>Explore and use a range of mechanisms (levers, sliders, axles, wheels and cams) in models or products.<br>**Year 4 Skill**<br>Explore and use a range of mechanisms (levers, axles, cams, gears and pulleys) in models or products. | **Year 3 Skill**<br>Incorporate a simple series circuit into a model.<br>**Year 4 Skill**<br>Incorporate circuits that use a variety of components into models or products. | **Year 3 Skill**<br>Write a program to make something move on a tablet or computer screen.<br>**Year 4 Skill**<br>Write a program to control a physical device, such as a light, speaker or buzzer. |
| | Generic skills | **Compare and Contrast** | **Investigation** | **Generation of ideas** | **Significant people** |
| | | **Year 3 Skill**<br>Explain the similarities and difference between the work of two designers.<br>**Year 4 Skill**<br>Create and complete a comparison table to compare two or more products.<br><br>*A comparison table is an organised way to compare products.* | **Year 3 Skill**<br>Use tools safely for cutting and joining materials and components.<br>**Year 4 Skill**<br>Select, name and use tools with adult supervision. | **Year 3 Skill**<br>Develop design criteria to inform a design.<br>**Year 4 Skill**<br>Use annotated sketches and exploded diagrams to test and communicate their ideas. | **Year 3 Skill**<br>Describe how key events in design and technology have shaped the world.<br>**Year 4 Skill**<br>Explain how and why a significant designer or inventor shaped the world.<br><br>*William Morris was a British textile designer, artist and socialist activist associated with the British Arts and Crafts Movement.* |
| | | **Evaluation** | | | |
| | | **Year 3 Skill**<br>Suggest improvements to their products and describe how to implement them, beginning to take the views of others into account.<br>**Year 4 Skill**<br>Identify what has worked well and what aspects of their products could be improved, acting on their own suggestions and those of others when making improvements.<br><br>*Evaluation can be done by considering whether the product does what it was designed to do, whether it has an attractive appearance, what changes were made during the making process and why the changes were made.*<br><br>*The evaluation process can include suggesting improvements and explaining why they should be made.* | | | |

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