

Lent 2
Design & Technology – Electrical Systems: Torches: Y4

Scripture Link:

National Curriculum Objective:

Design, make and evaluate a _____ (product) for _____ (user) for _____ (purpose)

	Lesson 1	Lesson 2	Lesson 3
Learning intention for each lesson	I can learn about electrical items and how they work.	I can analyse and evaluate electrical products.	I can design a product to fit a set of specific user needs.
Recall and Retrieval	<ul style="list-style-type: none"> • Electrical systems are a group of parts (components) that work together to transport electricity around a circuit. • Listing examples of common electric products (kettle, remote control etc.) • Naming and identifying simple circuit components (bulb, battery and wires). 	<ul style="list-style-type: none"> • I can identify electrical products. • I know what electrical conductors and insulators are • I know that electrical conductors are materials which electricity can pass through. 	
Sequence of substantive knowledge throughout the lesson	<ul style="list-style-type: none"> • I know what electrical conductors and insulators are • I know that electrical conductors are materials which electricity can pass through. • I know that electrical insulators are materials which electricity cannot pass through. • I know that a battery contains stored electricity that can be used to power products. • I know that an electrical circuit must be complete for electricity to flow. <p>I know that a switch can be used to complete and break an electrical circuit.</p>	<p>Evaluate:</p> <ul style="list-style-type: none"> • I know that electricity occurs naturally in lightning. • I know that it took a long time for people to discover how to capture and use electricity for electrical items such as hairdryers and computers. • I know that until they discovered how to capture it, people lived without any electricity. • I know how a torch works. • I know what is important in torch design. 	
Key Skills/disciplinary knowledge	<p>Evaluate:</p> <ul style="list-style-type: none"> • I can identify electrical products. 	<p>Evaluate:</p> <ul style="list-style-type: none"> • I can evaluate electrical products. • I can identify the features of a torch. 	<p>Make:</p>

		<ul style="list-style-type: none"> I can say what is good and bad about different torches. 	<ul style="list-style-type: none"> I can design a torch, giving consideration to the target audience and creating both design and success criteria focusing on features of individual design ideas. I can factor in who my product is for in my design criteria. I can design a torch which satisfies both the design and success criteria.
Key Vocabulary	Battery, bulb, buzzer, conductor, circuit, diagram, electricity, insulator, series, circuit, switch	Circuit, component, design, criteria, diagram, Evaluation, LED, model, series circuit, shape, Target, audience	Circuit, component, design, criteria, diagram, input, insulator, recyclable, switch, theme
Main teaching activity <i>If the school has another short term planning format, this does not need to be included.</i>			
Scaffolding	<p>Pupils needing extra support:</p> <ul style="list-style-type: none"> may benefit from looking at a completed circuit while trying to create one of their own, and they should be encouraged to check all of the connections to make sure the circuit is complete. Provide the pupils with the Activity: Circuit diagrams, with the example at the beginning of the main event. 	<p>Pupils needing extra support:</p> <ul style="list-style-type: none"> should spot the similarities and differences between the torches before evaluating them. children to circle the aspects of torch on the sheet as well as writing a sentence (with support if necessary). Use the Activity: Features of a torch diagram as an aid to writing, circling favourite parts and discussing their ideas for their own torch design. 	<p>Pupils needing extra support:</p> <ul style="list-style-type: none"> may need suggested materials for each component and should keep their design simple to ensure they have the time to create a quality product. consider writing the design criteria as a class, with their collective input, for one of the user profiles as an example and then provide the remaining one to the pupils for them to complete
Challenge	<p>Pupils working at greater depth:</p> <ul style="list-style-type: none"> should be challenged to suggest other items that could be used in place of a paper clip or suggest entirely new switch design ideas. give the pupils a blank sheet of paper and the Activity: Circuit symbols to draw their own circuit diagram without visual examples and references 	<p>Pupils working at greater depth:</p> <ul style="list-style-type: none"> should explain which features are important when making a good torch and which features are appealing to the user. Work independently. 	<p>Pupils working at greater depth:</p> <ul style="list-style-type: none"> should apply their findings from evaluating torches to their design, adding specific features to satisfy their client's needs. provide them with the blank user profiles, to investigate and design for a set person of their or your choice.
Diversity Links			
Catholic Social Teaching Principles			

British Values			
Wider links			

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	Lesson 4	Lesson 5	Lesson 6
Learning intention for each lesson	I can make a torch.	I can make a torch	I can evaluate my torch.
Recall and Retrieval			
Sequence of substantive knowledge throughout the lesson			
Key Skills/disciplinary knowledge	Make: <ul style="list-style-type: none"> • I can make a torch with a working electrical circuit and switch. • I can use appropriate equipment to cut and attach materials. • I can assemble a torch according to the design and success criteria. 	Make: <ul style="list-style-type: none"> • I can make a torch with a working electrical circuit and switch. • I can use appropriate equipment to cut and attach materials. • I can assemble a torch according to the design and success criteria. 	Evaluate: <ul style="list-style-type: none"> • I can test and evaluate the success of a final product.
Key Vocabulary	Aesthetics, assemble, equipment, evaluation, ingredients, model, packaging, Properties, shape, sketch, test	Aesthetics, assemble, equipment, evaluation, ingredients, model, packaging, properties, shape, sketch, test	
Main teaching activity <i>If the school has another short term planning format, this does not need to be included.</i>			

Scaffolding	<p>Pupils needing extra support:</p> <ul style="list-style-type: none"> • may benefit from using pre-made shapes such as bottles, boxes or toilet rolls rather than creating the housing from scratch. • use a pre-made circuit as a model for pupils to copy. Use the star chart edition of the final evaluation. 	<p>Pupils needing extra support:</p> <ul style="list-style-type: none"> • may benefit from using pre-made shapes such as bottles, boxes or toilet rolls rather than creating the housing from scratch. • use a pre-made circuit as a model for pupils to copy. Use the star chart edition of the final evaluation. 	
Challenge	<p>Pupils working at greater depth:</p> <ul style="list-style-type: none"> • should create their housing from scratch and add special features to suit their 'client'; chosen user profile. • extend and stretch their understanding by presenting them with transferable scenarios and open questioning; what if we were to design an 'x' (for example, speaker, lamp) for 'x' firefighter, cyclist)? 	<p>Pupils working at greater depth:</p> <ul style="list-style-type: none"> • should create their housing from scratch and add special features to suit their 'client'; chosen user profile. <p>extend and stretch their understanding by presenting them with transferable scenarios and open questioning; what if we were to design an 'x' (for example, speaker, lamp) for 'x' firefighter, cyclist)?</p>	
Diversity Links			
Catholic Social Teaching Principles			
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Wider curriculum links			