



## Design and technology Composites and components Cycle A/1

Unit:	Composite: (unit objective/objectives)	Components
Electrical systems: Electric poster  LKS2  Cycle A	Design and assemble an electric poster, including a functional simple circuit with a bulb, following a demonstration.	<ul style="list-style-type: none"><li>• Know how to carry out research based on a given topic (e.g. The Romans) to develop a range of initial ideas.</li><li>• Know how to generate a final design for the electric poster with consideration for the client's needs and design criteria.</li><li>• Know how to plan the positioning of the bulb (circuit component) and its purpose.</li><li>• Know how to mount the poster onto corrugated card to improve its strength and withstand the weight of the circuit on the rear.</li><li>• Know how to measure and mark materials out using a template or ruler.</li><li>• Know how to fit an electrical component (bulb).</li><li>• Know different ways to give the final product a higher quality finish (e.g. framing to conceal a roughly cut edge).</li><li>• Know how to give and accept constructive criticism on own work and the work of others</li><li>• Know how to test the success of initial ideas against the design criteria and justifying opinions.</li><li>• Know to revisit the requirements of the client to review developing design ideas and check that they fulfil their needs.</li><li>• Know that an electrical system is a group of parts (components) that work together to transport electricity around a circuit.</li><li>• Know and understand the common features of an electric product e.g. a switch, battery or plug, dials, buttons etc.</li><li>• Know examples of common electrical products e.g. kettle, remote control etc.</li><li>• Know that an electric product uses an electrical system to work (function).</li><li>• Know the name and appearance of a bulb, battery, battery holder and crocodile wire to build simple circuits.</li></ul>



Design and technology Composites and components Cycle A/I

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Electrical systems - torches  LKS2  Cycle B	<ul style="list-style-type: none"><li>• Describe what makes a torch successful.</li><li>• Create suitable designs that fit the success criteria and their own design criteria.</li><li>• Create a functioning torch with a switch according to their design criteria.</li></ul>	<ul style="list-style-type: none"><li>• Know how to design a torch giving consideration to the target audience and create both design and success criteria focusing on features of individual design ideas.</li><li>• Know how to make a torch with a working electrical circuit and switch.</li><li>• Know how to use appropriate equipment to cut and attach materials.</li><li>• Know how to assemble a torch according to the design and success criteria.</li><li>• Know how to evaluate electrical products.</li><li>• Know how to test and evaluate the success of a final product.</li><li>• Know that electrical conductors are materials which electricity can pass through.</li><li>• Know that electrical insulators are materials which electricity cannot pass through.</li><li>• Know that a battery contains stored electricity that can be used to power products.</li><li>• Know that an electrical circuit must be complete for electricity to flow.</li><li>• Know that a switch can be used to complete and break an electrical circuit.</li></ul>



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Electrical Systems: Doodlers  UKS2  Cycle A	<ul style="list-style-type: none"><li>• Create a functional Doodler that creates scribbles on paper with or without a switch.</li></ul>	<ul style="list-style-type: none"><li>• Know how to identify factors that could be changed on existing products and explain how these would alter the form and function of the product.</li><li>• Know how to develop design criteria based on findings from investigating existing products.</li><li>• Know how to develop design criteria that clarifies the target user.</li><li>• Know how to alter a product's form and function by tinkering with its configuration.</li><li>• Know how to make a functional series circuit, incorporating a motor.</li><li>• Know how to construct a product with consideration for the design criteria.</li><li>• Know how to break down the construction process into steps so that others can make the product.</li><li>• Know how to carry out a product analysis to look at the purpose of a product along with its strengths and weaknesses.</li><li>• Know how to determine which parts of a product affect its function and which parts affect its form.</li><li>• Know how to analyse whether changes in configuration positively or negatively affect an existing product.</li><li>• Know how to peer evaluate a set of instructions to build a product.</li><li>• Know that, in a series circuit, electricity only flows in one direction.</li><li>• Know that when there is a break in a series circuit, all components turn off.</li><li>• Know that an electric motor converts electrical energy into rotational movement, causing the motor's axle to spin.</li><li>• Know that a motorised product is one which uses a motor to function.</li></ul>



Design and technology Composites and components Cycle A/I

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<p>Electrical systems - Steady hand games</p> <p>UKS2</p> <p>Cycle B</p>	<ul style="list-style-type: none"> <li>• Learn about skills developed through play and apply this knowledge in a survey of one or more children's toys.</li> <li>• Identify the components of a steady hand game.</li> <li>• Design a steady hand game of their own according to their design criteria, using four different perspective drawings.</li> <li>• Create a secure base for their game, with neat edges, that relates to their design.</li> <li>• Make and test a functioning circuit and assemble it within a case.</li> </ul>	<ul style="list-style-type: none"> <li>• Know how to explain simply what is meant by 'form' (the shape of a product) and 'function' (how a product works).</li> <li>• Be able to state what they like or dislike about an existing children's toy and why.</li> <li>• Know about skills developed through play and apply this knowledge in a survey of one or more children's toys.</li> <li>• Know how to identify the components of a steady hand game.</li> <li>• Know how to design a steady hand game of their own according to their design criteria, using four different perspective drawings.</li> <li>• Know how to create a secure base for their game, with neat edges, that relates to their design.</li> <li>• Know how to make and test a functioning circuit and assemble it within a case.</li> <li>• Know that 'form' means the shape and appearance of an object.</li> <li>• Know the difference between 'form' and 'function'.</li> <li>• Know that 'fit for purpose' means that a product works how it should and is easy to use.</li> <li>• Know that 'form over purpose' means that a product looks good but does not work very well.</li> <li>• Know the importance of 'form follows function' when designing: the product must be designed primarily with the function in mind.</li> <li>• Know the diagram perspectives 'top view', 'side view' and 'back'.</li> </ul>