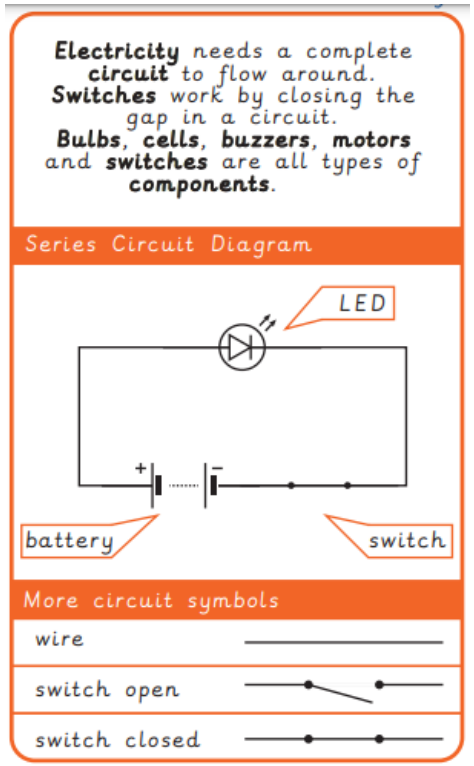
	Year:	5 and 6	**Unit:**	Electrical systems
	Overview: This unit builds on pupils' knowledge of how to incorporate electrical circuits into products from Y4. Children explore how circuits can be adapted to suit different purposes, explore series circuits and recreate one using conductive adhesive tape. They then apply this knowledge to design and create an electronic greeting card. Children learn about the development of exchanging personal messages, to the invention of the Penny Black stamp. **Design Brief:** Develop an electronic greeting card, using paper-applicable circuit components.			

Key Vocabulary		**Key skills for the electronic greeting card**		
Design criteria	To help designers focus their ideas and test the success of them	***Design***	***Make***	***Evaluate***
Function	How an object or product operates or works	Year 5 • Designing an electronic greetings card with a simple electrical control circuit • Creating a labelled design showing positive and negative parts in relation to the LED and the battery Year 6 • Drawing a design from three different perspectives • Generating ideas through sketching and discussion • Modelling ideas through prototypes	Year 5 • Making a working circuit • Creating an electronic greeting card, referring to a design criteria • Mapping out where different components of the circuit will go Year 6 • Making electromagnetic motors and tweaking the motor to improve its function • Accurately cutting, folding and assembling a net • Decorating the card to a high quality finish • Making and testing a circuit • Incorporating a circuit into a base	Year 5 • Evaluating a completed product against the original design sheet and looking at modifications that could be made to improve the reliability or aesthetics of it or to incorporate another type of electronic device, eg: buzzer Year 6 • Testing own and others cards, identifying what went well and making suggestions for improvement
Graphite	A conductive, black material that is used to make pencil lead			
Innovative	Introducing or using new ideas or ways of doing something.			
Insulator	A material that doesn't allow electricity or heat to pass along or through it.			
Modify	Changing something to improve or fix it.			
Parallel circuit	An open circuit where the current follows two or more paths.			
Series circuit	A closed circuit where the current only follows one path.			

Progression of knowledge and skills in Electrical Systems		
What should I already know? (LKS2)		**What will I learn in this unit? (UKS2)**
• How to use annotated sketches, cross-sectional and exploded diagrams to develop and communicate ideas. • How to select and use tools with some accuracy to cut, shape, join and finish. • How to use construction materials and electrical components according to their functional properties and aesthetic qualities. • How to use electrical systems in their products, such as series circuits incorporating switches, bulbs and buzzers.		• How to develop a design specification for a product that responds automatically to environmental changes in the environment. • How to generate and communicate ideas through annotated sketches and representations of electrical circuits or circuit diagrams. • Using step-by-step plan, to select and accurately assemble materials, electrical components, to produce a functional product. • How to create and modify a computer control program to enable an electrical product to respond to changes in the environment. (future learning)