Ashwell Primary School
Design & Technology Curriculum
Skills & Knowledge Organiser – Electrical Systems

Electrical Systems – Key Stage 2

		Year 4 – Torches	Year 5 – Doodlers
Skills	**Design**	▪ Designing a torch, giving consideration to the target audience and creating both design and success criteria focusing on features of individual design ideas.	▪ Identifying factors that could be changed on existing products and explaining how these would alter the form and function of the product. ▪ Developing design criteria based on findings from investigating existing products. ▪ Developing design criteria that clarifies the target user.
	Make	▪ Making a torch with a working electrical circuit and switch. ▪ Using appropriate equipment to cut and attach materials. ▪ Assembling a torch according to the design and success criteria.	▪ Altering a product's form and function by tinkering with its configuration. ▪ Making a functional series circuit, incorporating a motor. ▪ Constructing a product with consideration for the design criteria. ▪ Breaking down the construction process into steps so that others can make the product.
	Evaluate	▪ Evaluating electrical products. ▪ Testing and evaluating the success of a final product.	▪ Carry out a product analysis to look at the purpose of a product along with its strengths and weaknesses. ▪ Determining which parts of a product affect its function and which parts affect its form. ▪ Analysing whether changes in configuration positively or negatively affect an existing product. ▪ Peer evaluating a set of instructions to build a product.
Knowledge	**Technical**	To understand that: ▪ electrical conductors are materials which electricity can pass through. ▪ electrical insulators are materials which electricity cannot pass through. To know that: ▪ a battery contains stored electricity that can be used to power products ▪ an electrical circuit must be complete for electricity to flow. ▪ a switch can be used to complete and break an electrical circuit.	▪ To know that series circuits only have one direction for the electricity to flow. ▪ To know when there is a break in a series circuit, all components turn off. ▪ To know that an electric motor converts electrical energy into rotational movement, causing the motor's axle to spin. ▪ To know a motorised product is one which uses a motor to function.
	Additional	▪ To know the features of a torch: case, contacts, batteries, switch, reflector, lamp, lens. ▪ To know facts from the history and invention of the electric light bulb(s) - by Sir Joseph Swan and Thomas Edison.	▪ To know that product analysis is critiquing the strengths and weaknesses of a product. ▪ To know that 'configuration' means how the parts of a product are arranged.
Key Vocabulary		Battery, bulb, buzzer, circuit diagram, component, conductor, electrical, item, electricity, electronic item, insulator, series circuit, switch, target audience, test, torch, wire	circuit component, configuration, current, develop, DIY, investigate, motor, motorised, problem solve, product analysis, series circuit, stable, target user