Danson Primary School - Design and Technology – Electrical Systems – KS2				
		Year 4	**Year 5**	**Year 6**
		Torches	**Doodlers**	**Steady Hand Game**
Skills	**Design**	● I can design a torch, considering the target audience and creating both design and success criteria focusing on features of individual design ideas.	● I can identify factors that could be changed on existing products and explain how these would alter the form and function of the product. ● I can develop design criteria based on findings from investigating existing products. ● I can develop design criteria that clarifies the target user.	● I can design a steady hand game ● I can identify and name the components required to do this ● I can draw a design from three different perspectives. ● I can generate ideas through sketching and discussion. ● I can model ideas through prototypes.
	Make	● 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.	● I can alter a product's form and function by tinkering with its configuration. ● I can make a functional series circuit, incorporating a motor. ● I can construct a product with consideration for the design criteria.	● I can construct a stable base for a game. ● I can accurately cut, fold and assemble a net. ● I can decorate the base of the game to a high-quality finish. ● I can make and test a circuit. ● I can incorporate a circuit into a base.
	Evaluate	● I can evaluate electrical products. ● I can test and evaluate the success of a final product.	● I can carry out a product analysis to look at the purpose of a product along with its strengths and weaknesses. ● I can determine which parts of a product affect its function and which parts affect its form. ● I can analyse whether changes in configuration positively or negatively affect an existing product.	● I can test my own and others finished games, identifying what went well and making suggestions for improvement.
Knowledge		● I know that an electrical circuit must be complete for electricity to flow. ● I know that a switch can be used to complete and break an electrical circuit. I know the features of a torch: case, contacts, batteries, switch, reflector, lamp, lens. ● I know facts from the history and invention of the electric light bulb(s) - by Sir Joseph Swan and Thomas Edison.	● I know that series circuits only have one direction for the electricity to flow. ● I know when there is a break in a series circuit, all components turn off. ● I know a motorised product is one which uses a motor to function. ● I know that product analysis is critiquing the strengths and weaknesses of a product.	● I know that batteries contain acid, which can be dangerous if they leak. ● I know the names of the components in a basic series circuit, including a buzzer. ● I understand the diagram perspectives 'top view', 'side view' and 'back'.
Vocabulary		battery, bulb, buzzer, conductor, circuit, circuit, diagram, electricity, insulator, series circuit, switch, component, design, design criteria, diagram, evaluation, LED, model, shape, target audience, input, recyclable, theme, aesthetics, assemble, equipment, ingredients, packaging, properties	circuit component, configuration, current, develop, DIY, investigate, motor, motorised, problem solve, product analysis, series circuit, stable, target user	assemble, battery, battery pack, benefit, bulb, bulb holder, buzzer, circuit, circuit symbol, component conductor, copper, design, design criteria, evaluation, fine motor skills, fit for purpose, form, function, gross motor skills, insulator, LED user
National Curriculum		● Use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose, aimed at particular individuals or groups	● Use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose, aimed at particular individuals or groups	● Use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose, aimed at particular individuals or groups

	● Generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer aided design ● Select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately ● Select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics ● Investigate and analyse a range of existing products ● Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work ● Understand how key events and individuals in design and technology have helped shape the world ● Understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages]	● Select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately ● Investigate and analyse a range of existing products ● Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work ● Apply their understanding of how to strengthen, stiffen and reinforce more complex structures ● Understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors]	● Generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer- aided design ● Select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately ● Select from and use a wider range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities ● Investigate and analyse a range of existing products ● Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work ● Understand how key events and individuals in design and technology have helped shape the world ● Understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors]