

Christ Church CE Primary School



S.T.E.M

Design & Technology Progression of Skills

At Christ Church Primary School, the main aim of Design and Technology curriculum is to prepare children to deal with tomorrow's rapidly changing world. Our aims are to provide a broad, balanced and differentiated curriculum that encourages creativity and imagination throughout. We also aim to develop the creative, technical and practical expertise needed to perform everyday tasks confidently and to participate successfully in an increasingly technological world; to build and apply a repertoire of knowledge, understanding and skills in order to design and make high-quality prototypes and products for a wide range of users; to enable children to critique, evaluate and test their ideas and products and the work of others: to understand and apply the principles of nutrition and learn how to cook.

Intent

All of our D&T projects aim to develop a greater awareness and understanding of how everyday products are designed and made. Through the teaching of this subject, the children's creativity and innovation skills are developed as well as their creative problem solving, both as individuals and as part of a team. Design and Technology allows the children to learn to take risks and become resourceful, innovative, enterprising and capable citizens. The vital skills that are developed in D&T can then be transferred across the rest of the curriculum. We see Design and Technology as a means to support learning in a range of ways. D&T allows the children to draw upon and apply, within a context, the subject knowledge and skills within Mathematics, Science, History, Computing and Art. Pupils are provided with a Design & Technology child friendly Knowledge Organiser, which is also shared with parents at the beginning of each term to specify the knowledge, skills and vocabulary to be acquired and an overview of content.

There are a number of key documents that support our planning and delivery of Design & Technology:

- National Curriculum mapping document
- Teacher and Child-friendly Knowledge Organisers for each unit
- The journey of a Christ Church Child in Design & Technology
- Vocabulary Progression document
- Intent, Implementation and Impact document
- Enrichment opportunities



	NC		Key Stage 1	Key Stage 2
		Design	• Design purposeful, functional, appealing products for themselves and other users based on design criteria • Generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and, where appropriate, information and communication technology	• 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
		Make	• Select from and use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing] • Select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics	• 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
		Evaluate	• Explore and evaluate a range of existing products • Evaluate their ideas and products against design criteria	• 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

Cooking & Nutrition		EYFS	Key Stage 1		Key Stage 2			
	NC		<u>Technical Knowledge</u> • Use the basic principles of a healthy and varied diet to prepare dishes. • Understand where food comes from.		<u>Technical Knowledge</u> • Understand and apply the principles of a healthy and varied diet • Prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques • Understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed.			
		EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
	Topic		Fruit and Vegetables (smoothie)	A Balanced Diet (healthy wraps)	Eating Seasonally (seasonal pie)	Adapting a Recipe (biscuits)	Nutritional Values (bolognese sauce)	National Dishes (Shepherd's Pie)

			Design - To design smoothie carton packaging by-hand or on ICT software. Make - To chop fruit and vegetables safely to make a smoothie. - To identify if a food is a fruit or a vegetable. - To learn where and how fruits and vegetables grow. Evaluate - To taste and evaluating different food combinations. - To describe appearance, smell and taste.	Design - To design a healthy wrap based on a food combination which works well together. Make - To slice food safely using the bridge or claw grip. - To construct a wrap that meets a design brief. Evaluate - To describe the taste, texture and smell of fruit and vegetables. - To taste test food combinations and final products. - To describe the information that should be included on a label. - To evaluate which grip was most effective.	Design - To create a healthy and nutritious recipe for a savoury tart using seasonal ingredients, considering the taste, texture, smell and appearance of the dish. Make - To know how to prepare themselves and a work space to cook safely in, learning the basic rules to avoid food contamination. - To follow the instructions within a recipe. Evaluate - To establish and using design criteria to help test and review dishes. - To describe the benefits of seasonal fruits and vegetables and the impact on the environment. - To suggest points for improvement when making a seasonal tart.	Design - To design a biscuit within a given budget, drawing upon previous taste testing judgements. Make - To follow a baking recipe, from start to finish, including the preparation of ingredients. - To cook safely, following basic hygiene rules. - To adapt a recipe to improve it or change it to meet new criteria (e.g. from savoury to sweet). Evaluate - To evaluate a recipe, considering: taste, smell, texture and appearance. - To describe the impact of the budget on the selection of ingredients. - To evaluate and comparing a range of food products. - To suggest modifications to a recipe (e.g. This biscuit has too many raisins, and it is falling apart, so next time I will use less raisins).	Design - To adapt a traditional recipe, understanding that the nutritional value of a recipe alters if you remove, substitute or add additional ingredients. - To write an amended method for a recipe to incorporate the relevant changes to ingredients. Make - To cut and prepare vegetables safely. - To use equipment safely, including knives, hot pans and hobs. - To know how to avoid cross-contamination. - To follow a step by step method carefully to make a recipe. Evaluate - To identify the nutritional differences between different products and recipes. - To identify and describe healthy benefits of food groups.	Design - To write a recipe, explaining the key steps, method and ingredients. - To include facts and drawings from research undertaken. - To 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 - To generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design. Make - To follow a recipe, including using the correct quantities of each ingredient. - To adapt a recipe based on research. - To work to a given timescale. - To work safely and hygienically with independence. - To prepare and cook variety of predominantly savoury dishes using a range of cooking techniques.
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			• Understanding the difference between fruits and vegetables. • To understand that some foods typically known as vegetables are actually fruits (e.g. cucumber). • To know that a blender is a machine which mixes ingredients together into a smooth liquid. • To know that a fruit has seeds and a vegetable does not. • To know that fruits grow on trees or vines. • To know that vegetables can grow either above or below ground. • To know that vegetables can come from different parts of the plant (e.g. roots: potatoes, leaves: lettuce, fruit: cucumber).	• To know that 'diet' means the food and drink that a person or animal usually eats. • To understand what makes a balanced diet. • To know where to find the nutritional information on packaging. • To know that the five main food groups are: Carbohydrates, fruits and vegetables, protein, dairy and foods high in fat and sugar. • To understand that I should eat a range of different foods from each food group, and roughly how much of each food group. • To know that nutrients are substances in food that all living things need to make energy, grow and develop. • To know that 'ingredients' means the items in a mixture or recipe. • To know that I should only have a maximum of five teaspoons of sugar a day to stay healthy. • To know that many food and drinks we do not expect to contain sugar do; we call these 'hidden sugars'.	• To know that not all fruits and vegetables can be grown in the UK. • To know that climate affects food growth. • To know that vegetables and fruit grow in certain seasons. • To know that cooking instructions are known as a 'recipe'. • To know that imported food is food which has been brought into the country. • To know that exported food is food which has been sent to another country. • To understand that imported foods travel from far away and this can negatively impact the environment. • To know that each fruit and vegetable gives us nutritional benefits because they contain vitamins, minerals and fibre. • To understand that vitamins, minerals and fibre are important for energy, growth and maintaining health. • To know safety rules for using, storing and cleaning a knife safely. • To know that similar coloured fruits and vegetables often have similar nutritional benefits.	• To know that the amount of an ingredient in a recipe is known as the 'quantity.' • To know that it is important to use oven gloves when removing hot food from an oven. • To know the following cooking techniques: sieving, creaming, rubbing method, cooling. • To understand the importance of budgeting while planning ingredients for biscuits.	• To understand where meat comes from - learning that beef is from cattle and how beef is reared and processed, including key welfare issues. • To know that I can adapt a recipe to make it healthier by substituting ingredients. • To know that I can use a nutritional calculator to see how healthy a food option is. • To understand that 'cross-contamination' means bacteria and germs have been passed onto ready-to-eat foods and it happens when these foods mix with raw meat or unclean objects.	• To know that 'flavour' is how a food or drink tastes. • To know that many countries have 'national dishes' which are recipes associated with that country. • To know that 'processed food' means food that has been put through multiple changes in a factory. • To understand that it is important to wash fruit and vegetables before eating to remove any dirt and insecticides. • To understand what happens to a certain food before it appears on the supermarket shelf (Farm to Fork). • To understand and apply principles of a healthy and varied diet. • To understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed.
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	Vocabulary		<u>Technical Vocabulary</u> design evaluate make product user <u>Cooking & Nutrition</u> <u>Fruit and vegetables</u> blender fruit peel slice smoothie vegetable	<u>Technical Vocabulary</u> design design criteria evaluate product purpose user <u>Cooking & Nutrition: A balanced diet</u> balanced diet carbohydrate dairy fruit oils sugar protein vegetable	<u>Technical Vocabulary</u> annotated sketch design criteria evaluate investigate purpose research <u>Cooking & Nutrition: Eating Seasonally</u> climate imported ingredients natural processed reared recipe seasonal food	<u>Technical Vocabulary</u> aesthetics annotated sketch design criteria functions investigate research <u>Cooking & Nutrition: Adapting a recipe</u> adapt creaming method processed recipe rubbing sieving texture	<u>Technical Vocabulary</u> aesthetics innovative ideas investigate functions model/prototype product analysis <u>Cooking & Nutrition: Nutritional Values</u> cross-contamination dietary requirements farm to fork healthy nutrients processed reared substitute	<u>Technical Vocabulary</u> aesthetics innovative ideas functions model/prototype product analysis modify <u>Cooking & Nutrition: National Dishes</u> accompaniment bridge method cross-contamination farm to fork preparation processed reared unit of measurement
	Curriculum Opportunities		<u>Science</u> ❖ Thinking scientifically – classifying fruit and vegetables ❖ Animals, including humans - learning about the importance of fruit and vegetables in the diet and food hygiene ❖ Seasons looking at seasonality of fruit & vegetables	<u>Science</u> ❖ Discussing the senses that humans have ❖ Having an awareness of food hygiene	<u>Reading</u> ❖ Reading - following the instructions in a recipe <u>Geography</u> ❖ Knowing what climate is and that it affects food growth, ❖ Reading information from a map of the world, knowing the environmental impact of importing food <u>PSHE</u> ❖ Considering food hygiene, ❖ Knowing that fruit and vegetables give us nutritional benefits	<u>Maths</u> ❖ Completing a budget, <u>PSHE</u> ❖ Following basic food hygiene	<u>PSHE</u> ❖ Considering the rights of animals and the ethical issues behind cattle farming, ❖ Understanding what makes a balanced diet ❖ Reading nutritional values and deciding which recipe is healthier	<u>PSHE</u> ❖ Considering different dishes from other cultures, ❖ Developing awareness of healthy eating, following basic food hygiene

Structures		EYFS	Key Stage 1	Key Stage 2	
	NC		<u>Technical Knowledge</u> Build structures, exploring how they can be made stronger, stiffer and more stable	<u>Technical Knowledge</u> Apply their understanding of how to strengthen, stiffen and reinforce more complex structures	
		EYFS	Year 1	Year 3	Year 5
	Topic		Free Standing Structures (Baby bear's chair)	Shell Structures (Constructing a castle)	Frame Structures (Bridges)

	Skills		<u>Design</u> • To generate and communicate ideas using sketching and modelling. • To learn about different types of structures, found in the natural world and in everyday objects. <u>Make</u> • To make a structure according to design criteria. • To create joints and structures from paper/card and tape. • To build a strong and stiff structure by folding paper. <u>Evaluate</u> • To explore the features of structures. • To compare the stability of different shapes. • To test the strength of own structures. • To identify the weakest part of a structure. • To evaluate the strength, stiffness and stability of own structure.	<u>Design</u> • To design a castle with key features to appeal to a specific person/purpose. • To draw and label a castle design using 2D shapes, labelling: -the 3D shapes that will create the features -materials needed and colours. • To design and/or decorate a castle tower on CAD software. <u>Make</u> • To construct a range of 3D geometric shapes using nets. • To create special features for individual designs. • To make facades from a range of recycled materials. <u>Evaluate</u> • To evaluate own work and the work of others based on the aesthetic of the finished product and in comparison, to the original design. • To suggest points for modification of the individual designs.	<u>Design</u> • To design a stable structure that is able to support weight. • To create a frame structure with a focus on triangulation. <u>Make</u> • To make a range of different shaped beam bridges. • To use triangles to create truss bridges that span a given distance and support a load. • To build a wooden bridge structure. • To independently measure and mark wood accurately. • To select appropriate tools and equipment for particular tasks. • To use the correct techniques to saws safely. • To identify where a structure needs reinforcement and using card corners for support. • To explain why selecting appropriating materials is an important part of the design process. • To understand basic wood functional properties. <u>Evaluate</u> • To adapt and improve own bridge structure by identifying points of weakness and reinforcing them as necessary. • To suggest points for improvements for own bridges and those designed by others.
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	Knowledge		• To know that shapes and structures with wide, flat bases or legs are the most stable. • To understand that the shape of a structure affects its strength. • To know that materials can be manipulated to improve strength and stiffness. • To know that a structure is something which has been formed or made from parts. • To know that a 'stable' structure is one which is firmly fixed and unlikely to change or move. • To know that a 'strong' structure is one which does not break easily. • To know that a 'stiff' structure or material is one which does not bend easily.	• To understand that wide and flat based objects are more stable. • To understand the importance of strength and stiffness in structures. • Develop and use knowledge of nets 3D shapes.	• To understand some different ways to reinforce structures • To understand how triangles can be used to reinforce bridges. • To know that properties are words that describe the form and function of materials. • To understand why material selection is important based on properties. • To understand the material (functional and aesthetic) properties of wood.
	Vocabulary		<u>Topic vocabulary:</u> Stable Stiff Strong Structure Weak <u>Technical vocabulary:</u> Design Evaluate Make Product User	<u>Topic vocabulary:</u> 2D shapes 3D shapes Castle Net Scoring Stable Stiff Strong Tab Weak <u>Technical vocabulary:</u> annotated sketch design criteria evaluate investigate purpose research	<u>Topic vocabulary:</u> Coping saw Arched bridge Beamed bridge Reinforce Suspension bridge Truss bridge <u>Technical vocabulary:</u> aesthetics innovative ideas investigate functions model/prototype product analysis

	Curriculum Opportunities		<u>Reading</u> ❖ discussing the events from 'Goldilocks and the three bears' <u>Maths</u> ❖ Creating 3D shapes from playdough, ❖ Recording totals on a tally chart <u>Science</u> ❖ Interpreting the results of the tip-test	<u>Maths</u> ❖ Identifying and naming 2D and 3D shapes in castle structures, ❖ Drawing 2D shapes, ❖ Constructing nets to make 3D shapes <u>History</u> ❖ Learning about the features of castles and their purpose	<u>Maths</u> ❖ Measuring wood accurately to the nearest mm, draw 45° angles <u>Science</u> ❖ Using investigative methods to test the strength of a range of bridges, considering properties of materials
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Textiles		EYFS	Key Stage 1	Key Stage 2	
	NC		<u>Technical Knowledge</u> • See objectives above	<u>Technical Knowledge</u> • See objective above	
		EYFS	Year 2	Year 4	Year 6
	Topic		Textiles: Templates & Joining (Puppets)	Textiles: 2D shape to 3D product (Cushions)	Textiles (Waistcoats)

	Skills		<u>Design</u> • To use a template to create a design for a puppet. <u>Make</u> • To cut fabric neatly with scissors. • To use joining methods to decorate a puppet. • To sequence the steps taken during construction. <u>Evaluate</u> • To reflect on a finished product, explaining likes and dislikes.	<u>Design</u> • To design and make a template from an existing cushion and applying individual design criteria. <u>Make</u> • To follow design criteria to create a cushion. • To select and cut fabrics with ease using fabric scissors. • To thread needles with greater independence. • To tie knots with greater independence. • To sew cross stitch to join fabric. • To decorate fabric using appliqué. • To complete design ideas with stuffing and sewing the edges (Cushions) <u>Evaluate</u> • To evaluate an end product against the design criteria. • To investigate and analyse a range of existing products.	<u>Design</u> • To design a waistcoat in accordance to a specification linked to set of design criteria. • To annotate designs, to explain their decisions. <u>Make</u> • To use a template when cutting fabric to ensure they achieve the correct shape. • To use pins effectively to secure a template to fabric without creases or bulges. • To mark and cut fabric accurately, in accordance with their design. • To sew a strong running stitch, making small, neat stitches and following the edge. • To tie strong knots. • To decorate a waistcoat, attaching features (such as appliqué) using thread. • To finish the waistcoat with a secure fastening (such as buttons). • To learn different decorative stitches. • To sew accurately with evenly spaced, neat stitches. <u>Evaluate</u> • To reflect on their work continually throughout the design, make and evaluate process.
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	Knowledge		• To know that 'joining technique' means connecting two pieces of material together. • To know that there are various temporary methods of joining fabric by using staples, glue or pins. • To understand that different techniques for joining materials can be used for different purposes. • To understand that a template (or fabric pattern) is used to cut out the same shape multiple times. • To know that drawing a design idea is useful to see how an idea will look.	• To know that applique is a way of mending or decorating a textile by applying smaller pieces of fabric to larger pieces. • To know that when two edges of fabric have been joined together it is called a seam. • To know that it is important to leave space on the fabric for the seam. • To understand that some products are turned inside out after sewing so the stitching is hidden.	• To understand that it is important to design clothing with the client/ target customer in mind. • To know that using a template (or clothing pattern) helps to accurately mark out a design on fabric. • To understand the importance of consistently sized stitches.
	Vocabulary		<u>Topic vocabulary:</u> Decorate Hand puppet Fabric Staple Template <u>Technical vocabulary:</u> design design criteria evaluate product purpose user	<u>Topic vocabulary:</u> Applique Cross stitch Cushion Fabric Running stitch Seam <u>Technical vocabulary:</u> aesthetics annotated sketch design criteria functions investigate research	<u>Topic vocabulary:</u> Fabric Fastening Waistcoats Running Stitch Seam Template <u>Technical vocabulary:</u> aesthetics innovative ideas functions model/prototype product analysis modify
	Curriculum Opportunities			<u>Maths</u> ❖ Choosing a 2D shape for their cushion, ❖ Using knowledge of length to leave correct space for stuffing, seam and running stitch length <u>Art & Design</u> ❖ Designing a theme for their applique shapes	

Mechanisms/Mechanical Systems		EYFS	Key Stage 1		Key Stage 2	
	NC		<u>Technical Knowledge</u> Explore and use mechanisms [for example, levers, sliders, wheels and axles], in their products.		<u>Technical Knowledge</u> Understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages]	
		EYFS	Year 1	Year 2	Year 3	Year 5
	Topic		Mechanisms: Sliders and Levers Making a moving story book	Mechanisms: Wheels and axles Moving Vehicle	Mechanical Systems: Levers and Linkages Making a Moving Monster	Mechanical Systems: Cams Automata Toys

	Skills		<u>Design</u> • To explaining how to adapt mechanisms, using bridges or guides to control the movement. • To design a moving story book for a given audience. <u>Make</u> • To follow a design to create moving models that use levers and sliders. <u>Evaluate</u> • To test a finished product, seeing whether it moves as planned and if not, explaining why and how it can be fixed. • To review the success of a product by testing it with its intended audience.	<u>Design</u> •To design a vehicle that includes wheels, axles and axle holders, that when combined, will allow the wheels to move. •To create clearly labelled drawings that illustrate movement. <u>Make</u> •To adapt mechanisms, when: - they do not work as they should. - to fit their vehicle design. - to improve how they work after testing their vehicle. <u>Evaluate</u> •To test wheel and axle mechanisms, identifying what stops the wheels from turning, and recognising that a wheel needs an axle in order to move.	<u>Design</u> • To create a class design criterion for a moving monster. • To design a moving monster for a specific audience in accordance with a design criteria. <u>Make</u> • To make linkages using card for levers and split pins for pivots. • To experiment with linkages adjusting the widths, lengths and thicknesses of card used. • To cut and assemble components neatly. <u>Evaluate</u> • To evaluate own designs against design criteria. • To use peer feedback to modify a final design.	<u>Design</u> • To experiment with a range of cams, creating a design for an automata toy based on a choice of cam to create a desired movement. • To understand how linkages change the direction of a force. • To make things move at the same time. • To understand and drawing cross sectional diagrams to show the inner workings of my design. <u>Make</u> • To measure, mark and check the accuracy of the jelutong and dowel pieces required. • To measure, mark and cut components accurately using a ruler and scissors. • To assemble components accurately to make a stable frame. • To understand that for the frame to function effectively the components must be cut accurately and the joints of the frame secured at right angles. • To select appropriate materials based on the materials being joined and the speed at which the glue needs to dry/set. <u>Evaluate</u> • To evaluate the work of others and receiving feedback on own work. • To apply points of
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						improvement to their toys. • To describe changes they would make/do if they were to do the project again.
	Knowledge		• To know that a mechanism is the parts of an object that move together. • To know that a slider mechanism moves an object from side to side. • To know that a slider mechanism has a slider, slots, guides and an object. • To know that bridges and guides are bits of card that purposefully restrict the movement of the slider.	• To know that wheels need to be round to rotate and move. • To understand that for a wheel to move it must be attached to a rotating axle. • To know that an axle moves within an axle holder which is fixed to the vehicle or toy. • To know that the frame of a vehicle (chassis) needs to be balanced.	• To know that mechanisms are a collection of moving parts that work together as a machine to produce movement. • To know that there is always an input and output in a mechanism. • To know that an input is the energy that is used to start something working. • To know that an output is the movement that happens as a result of the input. • To know that a lever is something that turns on a pivot. • To know that a linkage mechanism is made up of a series of levers.	• To understand that the mechanism in an automata uses a system of cams, axles and followers. • To understand that different shaped cams produce different outputs. • To know that an automata is a hand powered mechanical toy.
	Vocabulary		<u>Topic Vocabulary</u> Mechanism Model Sliders Stencil Template <u>Technical Vocabulary</u> design evaluate make product user	<u>Topic vocabulary</u> Axle Axle holder Chassis Mechanism Wheel <u>Technical Vocabulary</u> design design criteria evaluate product purpose user	<u>Topic Vocabulary</u> Input Lever Linkage Mechanical Motion Output Pivot <u>Technical Vocabulary</u> annotated sketch design criteria evaluate investigate purpose research	<u>Topic Vocabulary</u> Accurate Automata Axle Cam Dowel Frame Linkage <u>Technical Vocabulary</u> aesthetics innovative ideas investigate functions model/prototype product analysis

	Curriculum Opportunities		<u>Art and Design</u> ❖ Drawing the background of their design along with the moving parts	<u>Maths</u> ❖ Identifying lengths on their design, ❖ Considering how wheels work	<u>Maths</u> ❖ Recording a tally survey <u>Art and Design</u> ❖ Sketching design ideas	<u>Maths</u> ❖ Measuring accurately to the nearest mm <u>History</u> ❖ Learning about Victorian toys
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Electrical Systems / Computer Programming		EYFS	Key Stage 1	Key Stage 2
	NC		<u>Technical Knowledge</u> Understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors]	<u>Technical Knowledge</u> - Understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors] - Apply their understanding of computing to program, monitor and control their products.
		EYFS	Year 4	Year 6
	Topic		Electrical Systems: Simple Circuits and Switches Torches	Electrical Systems/Computer programming Alarm system using computer control

	Skills		<u>Design</u> • To design a torch, giving consideration to the target audience and creating both design and success criteria focusing on features of individual design ideas. <u>Make</u> • To make a torch with a working electrical circuit and switch. • To use appropriate equipment to cut and attach materials. • To assemble a torch according to the design and success criteria. <u>Evaluate</u> • To evaluate electrical products. • To test and evaluate the success of a final product.	<u>Design</u> • To use research to develop a design specification for a functional product that responds automatically to changes in the environment. Take account of constraints including time, resources and cost. • To generate and develop innovative ideas and share and clarify these through discussion. • To communicate ideas through annotated sketches, pictorial representations of electrical circuits or circuit diagrams. <u>Make</u> • To formulate a step-by-step plan to guide making, listing tools, equipment, materials and components. • To competently select and accurately assemble materials, and securely connect electrical components to produce a reliable, functional product. • To create and modify a computer control program to enable an electrical product to work automatically in response to changes in the environment. <u>Evaluate</u> • To continually evaluate and modify the working features of the product to match the initial design specification. • To test the system to demonstrate its effectiveness for the intended user and purpose. • To investigate famous inventors who developed ground-breaking electrical systems and components.
	Knowledge		• To understand that electrical conductors are materials which electricity can pass through. • To understand that electrical insulators are materials which electricity cannot pass through. • To know that a battery contains stored electricity that can be used to power products. • To know that an electrical circuit must be complete for electricity to flow. • To know that a switch can be used to complete and break an electrical circuit.	• To understand and use electrical systems in their products. • To apply their understanding of computing to program, monitor and control their products. • To know and use technical vocabulary relevant to the project.

	Vocabulary		<u>Topic Vocabulary</u> Battery Bulb Series circuit Switch Torch Wire <u>Technical Vocabulary</u> aesthetics annotated sketch design criteria functions investigate research	<u>Topic Vocabulary</u> Control Input devise Monitor Output device parallel circuit program series circuit <u>Technical Vocabulary</u> aesthetics innovative ideas investigate functions model/prototype product analysis
	Curriculum Opportunities		<u>Science</u> ❖ Identifying electrical products, conductors and insulators, ❖ Building a simple series circuit with a switch <u>History</u> ❖ Learning about life before electricity <u>PSHE</u> ❖ Identifying electrical hazards	<u>Science</u> ❖ Drawing circuit diagrams, naming components and their functions

	Enrichment Opportunities		❖ Fun Food Chef	Enrichment Opportunities			Enrichment Opportunities		
	Linked texts			Linked texts			Linked texts		