

Curriculum Pathway: Designing		
	Substantive Knowledge	Practical Knowledge Skills
KS1	<p><b>Children will know:</b></p> <ul style="list-style-type: none"> <li>• A product is something that is made to do a job or fulfil a need.</li> <li>• A design brief describes the product that is to be made</li> <li>• A product is made for a person known as the client</li> <li>• Drawing out design ideas is useful to see how the product will look.</li> <li>• Using model and construction kits can help to develop their ideas and designs.</li> </ul>	<p><b>Children will know how to:</b></p> <p>Designing Skills</p> <ul style="list-style-type: none"> <li>• Research similar existing products, including online research.</li> <li>• Use knowledge of existing products to help with generating their own ideas.</li> <li>• Explain what their product is and how it will work.</li> </ul> <p>Drawing Skills</p> <ul style="list-style-type: none"> <li>• Generate and communicate ideas using sketches, drawing and digital software.</li> <li>• Create clearly labelled drawings to explain how their product works.</li> </ul>
LKS2	<p><b>Children will know:</b></p> <ul style="list-style-type: none"> <li>• The difference between a design brief and design specifications.</li> <li>• Design specifications describe how a product should be made, how it works or what it should do.</li> <li>• How making models of their intended product can help in the design process.</li> <li>• There can be a range of people and places that can be clients for a product.</li> <li>• How computer-aided design software can help in the design process.</li> </ul>	<p><b>Children will know how to:</b></p> <p>Designing Skills</p> <ul style="list-style-type: none"> <li>• Conduct research, including consumer surveys to find out needs and wants of the client</li> <li>• Generate ideas for a product, considering its purpose and who the client is.</li> <li>• Design a product that meets client's needs and the design brief.</li> <li>• Use design specifications as a guide to the making process.</li> <li>• List the design features that will appeal to the client.</li> </ul> <p>Drawing Skills</p> <ul style="list-style-type: none"> <li>• Communicate and draw out their designs using three-dimensional techniques such as 'crating' and isometric drawing.</li> <li>• Use computer software to show what their final product will look like.</li> </ul>
UKS2	<p><b>Children will know:</b></p> <ul style="list-style-type: none"> <li>• Creating a prototype of a design is useful for checking ideas and seeing how well they work.</li> <li>• Different types of drawing can be used to help with designing and communicating ideas about a product.</li> <li>• How labels and annotated drawings can be used to explain and communicate how a product is made and how it will work.</li> <li>• Surveys, interviews and questionnaires are used to find out the needs and wants of clients.</li> </ul>	<p><b>Children will know how to:</b></p> <ul style="list-style-type: none"> <li>• Carry out different surveys and questionnaires for research and to help with the design process.</li> <li>• Write step by step instructions and recipes to make a product they have designed.</li> <li>• List the materials and tools that will be needed to make a product they have designed.</li> </ul> <p>Drawing Skills</p> <ul style="list-style-type: none"> <li>• Communicate their ideas using cross-sectional drawings and cut-away drawings.</li> <li>• Use computer-aided design software to develop and communicate their ideas.</li> </ul>

Curriculum Pathway: Making		
	Substantive Knowledge	Practical Knowledge Skills
KS1	<p><b>Children will know:</b></p> <ul style="list-style-type: none"> <li>To keep themselves safe when making things.</li> <li>Simple procedures for working hygienically with food.</li> <li>About a range of materials and their properties and how they can be used when making a product.</li> <li>Improving a product whilst making it is an important part of design technology.</li> </ul>	<p><b>Children will know how to:</b></p> <ul style="list-style-type: none"> <li>Follow instructions to make a product from a design.</li> <li>Select and use tools most appropriate for a practical task.</li> <li>Measure and mark out different materials when working with them.</li> <li>Cut and shape a range of materials using different tools and techniques.</li> <li>Assemble, join, and combine a range of materials using different methods and techniques.</li> <li>Apply a range of different finishing techniques to their made product.</li> </ul>
LKS2	<p><b>Children will know:</b></p> <ul style="list-style-type: none"> <li>Rules and procedures for keeping themselves safe when making products.</li> <li>The properties of materials that they are working with and how these determine the tools and techniques that they use.</li> <li>That a list of the main stages of turning a design into a product will aid the making process.</li> <li>What different components of a system do and how these can be incorporated into their product to make them work.</li> </ul>	<p><b>Children will know how to:</b></p> <ul style="list-style-type: none"> <li>Follow instructions to ensure that they work safely.</li> <li>Select suitable tools, equipment, materials, and components for the task.</li> <li>Explain their choices of materials, techniques and tools when making a product.</li> <li>Measure, mark out, cut and shape materials with increasing accuracy.</li> <li>Select and apply a finishing technique to create a quality product.</li> <li>Identify and implement ways of improving a product whilst making it.</li> </ul>
UKS2	<p><b>Children will know:</b></p> <ul style="list-style-type: none"> <li>Choosing materials, tools and equipment is dependent upon the skills and techniques to be used.</li> <li>Step-by-step action plans should be created and followed when making complex products.</li> <li>A range of different finishing techniques and choose ones that are suitable to create a quality product.</li> </ul>	<p><b>Children will know how to:</b></p> <ul style="list-style-type: none"> <li>Work responsibly using guidelines to ensure they keep themselves and others safe.</li> <li>Write an action plan for the making process including lists of tools, equipment and materials needed.</li> <li>Accurately assemble, join and combine materials and components to ensure a quality finish to a product.</li> <li>Apply a range of decorative and finishing techniques following the product design.</li> </ul>

Curriculum Pathway: Evaluation		
	Substantive Knowledge	Practical Knowledge Skills
KS1	<p><b>Children will know:</b></p> <ul style="list-style-type: none"> <li>Evaluating existing products can help them to design and make their own product ideas.</li> <li>When evaluating existing products; they explore what it does, how it works, what materials it is made of and who it has been made for.</li> <li>Evaluating a product is about identifying what is good about the product and ways it could be made better.</li> </ul>	<p><b>Children will know how to:</b></p> <ul style="list-style-type: none"> <li>Explore and identify how products have been created, including the materials that have been used to make the product.</li> <li>Taste and evaluate different foods using a taste test.</li> <li>Evaluate a finished product against their design.</li> <li>Reflect on a finished product explaining their likes, dislikes and suggesting improvements.</li> </ul>
LKS2	<p><b>Children will know:</b></p> <ul style="list-style-type: none"> <li>Design specifications are a list of success criteria for the product.</li> <li>When evaluating products, it is important to use the design brief and the design specifications as a guide.</li> <li>The client can be used to evaluate the success of a product.</li> <li>Peer review of their product is useful in identifying ways in which it could be improved.</li> <li>To use a range of information sources to identify areas in which their product could be improved.</li> <li>Stories about iconic designs and designers that have helped to shape the world in which we live.</li> </ul>	<p><b>Children will know how to:</b></p> <ul style="list-style-type: none"> <li>Identify the characteristics of a design which makes the product useful and successful.</li> <li>Test for the strength and stability of different structures</li> <li>List the ways in which a finished product meets the design specifications.</li> <li>Evaluate their product using a range of sources including client review, peer review, design brief and the design criteria.</li> <li>Use consumer surveys to evaluate their finished product.</li> </ul>
UKS2	<p><b>Children will know:</b></p> <ul style="list-style-type: none"> <li>To continually reflect on and evaluate their work throughout the stages of designing and making.</li> <li>As part of the evaluation process, the designer can consider the cost (time and money) of making the finished product.</li> <li>That evaluating the whole project is an important part of design technology.</li> <li>About a range of inspirational designs and designers throughout history and use this knowledge to support their own work as designers.</li> </ul>	<p><b>Children will know how to:</b></p> <ul style="list-style-type: none"> <li>Identify strengths and areas for development in their own ideas and products.</li> <li>List ways of improving a product considering the views of others and intended users.</li> <li>Evaluate a product against specific design specifications.</li> <li>Evaluate whether products can be recycled, reused, or repurposed and how sustainable the materials used are.</li> </ul>

Curriculum Pathway: Cooking and Nutrition		
	Substantive Knowledge	Practical Knowledge Skills
KS1	<p><b>Children should know:</b></p> <ul style="list-style-type: none"> <li>Names of a range of different fruit and vegetables</li> <li>Fruit and vegetables come from different parts of the plant.</li> <li>That eating fruit and vegetables forms part of a healthy diet.</li> <li>What is meant by a healthy and balanced diet.</li> <li>Where some common foods originate from.</li> <li>Ingredients refers to the items in a food mixture or a recipe.</li> <li>Some information that is found on food labelling.</li> </ul>	<p><b>Children should know how to:</b></p> <ul style="list-style-type: none"> <li>Describe the taste, texture, and smell of fruit and vegetables</li> </ul> <p><b>Food Preparation Skills:</b></p> <ul style="list-style-type: none"> <li>Cut foods with a vegetable knife using the claw grip.</li> <li>Cut foods with a vegetable knife using the bridge hold.</li> <li>Grate soft foods.</li> <li>Snip ingredients using scissors.</li> <li>Squeeze the juice from fruit or vegetables.</li> <li>Peel with a swivel peeler with adult support</li> <li>Mix with increasing thoroughness to combine ingredients.</li> </ul>
LKS2	<p><b>Children should know:</b></p> <ul style="list-style-type: none"> <li>Food is either grown, reared, or caught for food.</li> <li>Different foods are grown around the world and that some food is dependent on the seasons.</li> <li>The different food groups in the Eatwell Guide and how they feature as part of a healthy balanced diet.</li> <li>That nutrients are substances in foods that living things need to make energy, grow, and develop.</li> <li>The principles of a healthy and varied diet, particularly the importance of fruit and vegetables.</li> <li>The importance of food preparation routines that are safe and hygienic.</li> </ul>	<p><b>Children should know how to:</b></p> <ul style="list-style-type: none"> <li>Prepare food in a safe and hygienic way using appropriate utensils.</li> <li>Create a healthy recipe considering the taste, texture, smell, and appearance of the dish.</li> <li>Create visually appealing products by shaping and moulding food.</li> <li>Measure ingredients accurately</li> <li>Follow a recipe to assemble or cook ingredients.</li> <li>Shape food with accuracy for a desired effect.</li> <li>Make bread, and the role of yeast in bread-making.</li> </ul> <p><b>Food Preparation Skills:</b></p> <ul style="list-style-type: none"> <li>Crush garlic using a garlic press or the back of a spoon.</li> <li>Use a table knife to cut equal dough portions.</li> <li>Fold ingredients together carefully</li> <li>Use measuring jugs, spoons and scales to measure ingredients with increasing accuracy.</li> <li>Use a range of food preparation techniques when following recipes.</li> </ul>
UKS2	<p><b>Children should know:</b></p> <ul style="list-style-type: none"> <li>The importance of correct storage and handling of ingredients using knowledge of micro-organisms to promote hygiene and prevent cross-contamination.</li> <li>Processed food is food that has undergone multiple changes in a food factory.</li> <li>People have different food diets for health, religious, cultural, and personal reasons.</li> <li>Some people are intolerant and/or allergic to certain food substances and that precautions are needed to keep them safe.</li> </ul>	<p><b>Children should know how to:</b></p> <ul style="list-style-type: none"> <li>Follow a recipe accurately.</li> <li>Measure accurately and calculate ratios of ingredients to scale up or down from a recipe.</li> <li>Demonstrate a range of baking and cooking techniques.</li> <li>Create and refine recipes, including ingredients, methods, cooking times and temperatures.</li> <li>Choose and adapt recipes for dietary reasons.</li> </ul> <p><b>Food Preparation Skills</b></p> <ul style="list-style-type: none"> <li>Cut higher resistance foods using the claw grip or the bridge grip</li> <li>Use different weighing scales with increasing accuracy.</li> <li>Use a measuring jug independently and accurately.</li> <li>Cook using a range of different methods</li> </ul>

Curriculum Pathway: Materials / Textiles		
	Substantive Knowledge	Practical Knowledge Skills
<b>KS1</b>	<p><b>Pupils should know:</b></p> <p><b>Materials</b></p> <ul style="list-style-type: none"> <li>• Sheet materials refers to materials that are flat.</li> <li>• Sheet materials can be folded to create three-dimensional shapes.</li> </ul> <p><b>Textiles</b></p> <ul style="list-style-type: none"> <li>• Some joining techniques are permanent and others are temporary.</li> <li>• Temporary joining techniques might be used when pinning fabric to hold it together (so it doesn't move around whilst cutting or sewing)</li> <li>• Permanent joining technique might be used to finish a products so it can be used without falling apart.</li> <li>• A template (or fabric pattern) can be used to cut out the same shape multiple times.</li> </ul>	<p><b>Pupils should know how to:</b></p> <p><b>Materials</b></p> <ul style="list-style-type: none"> <li>• Measure and mark out to the nearest centimetre.</li> <li>• Cut sheet materials safely using tools provided.</li> <li>• Shape sheet materials through folding, creasing, and curling.</li> <li>• Use shape to increase the strength and stiffness of a structure.</li> <li>• Join materials through gluing and by making slots.</li> </ul> <p><b>Textiles</b></p> <ul style="list-style-type: none"> <li>• Thread a needle.</li> <li>• Cut fabrics neatly for sewing.</li> <li>• Pin and cut fabric using a template.</li> <li>• Join fabrics using an evenly spaced running stitch.</li> <li>• Colour and decorate textiles using techniques such as painting, printing and simple stitching.</li> </ul>
<b>LKS2</b>	<p><b>Pupils should know:</b></p> <p><b>Materials</b></p> <ul style="list-style-type: none"> <li>• That products are made of materials that are chosen because of their properties.</li> </ul> <p><b>Textiles</b></p> <ul style="list-style-type: none"> <li>• That 'joining technique' means connecting two pieces of fabrics together and the methods that are permanent or temporary.</li> <li>• A range of joining techniques to connect two pieces of fabrics together such as sewing and gluing.</li> <li>• Joining two edges of fabrics together creates a seam.</li> <li>• A range of sewing techniques (such as a running stitch for making seams and cross stitch for decoration)</li> <li>• Applique is a way of decorating textiles by adding smaller pieces of fabric to create a picture or a pattern.</li> </ul>	<p><b>Pupils should know how to:</b></p> <p><b>Materials</b></p> <ul style="list-style-type: none"> <li>• Measure, mark-out, cut and shape a wide range of materials.</li> <li>• Cut internal shapes and joining slots in sheet materials.</li> <li>• Join and combine materials and components using a variety of methods.</li> <li>• Manipulate different materials to create different effects by cutting, creasing, and folding.</li> </ul> <p><b>Textiles</b></p> <ul style="list-style-type: none"> <li>• Measure, mark out and cut fabric using a paper template (pattern)</li> <li>• Join fabrics together using a range of different sewing techniques (such as running stitch and cross stitch) including allowing for a seam.</li> <li>• Create a 3D fabric product by combining fabric pieces and using a seam allowance.</li> <li>• Apply a range of decorative techniques, including embroidery stitches, to different fabric materials.</li> </ul>
<b>UKS2</b>	<p><b>Pupils should know:</b></p> <p><b>Materials</b></p> <ul style="list-style-type: none"> <li>• The different properties of materials and how they are considered when designing and making a product.</li> </ul> <p><b>Textiles</b></p> <ul style="list-style-type: none"> <li>• Blanket stitch is used to strengthen edges and when joining to fabrics.</li> <li>• The importance of using a template (pattern) to accurately mark out a design on a fabric.</li> </ul>	<p><b>Pupils should know how to:</b></p> <p><b>Materials</b></p> <ul style="list-style-type: none"> <li>• Measure and cut materials with precision and refine the finish with appropriate tools.</li> </ul> <p><b>Textiles</b></p> <ul style="list-style-type: none"> <li>• Join textiles with a combination of stitching techniques (such as blanket stitch, back stitch for seams and running stitch to attach decoration).</li> <li>• Create products by joining several fabric pieces that employ a seam allowance.</li> <li>• Use the qualities of materials to create suitable visual and tactile effects in the decoration of masks and textile products.</li> </ul>

Curriculum Pathway: Structures		
	Substantive Knowledge	Practical Knowledge Skills
KS1	<p><b>Pupils should know:</b></p> <ul style="list-style-type: none"> <li>• Different types of structures that are found in the natural world and in the man-made world.</li> <li>• Different structures are used for different purposes.</li> <li>• A large base can make a structure stable.</li> </ul>	<p><b>Pupils should know how to:</b></p> <ul style="list-style-type: none"> <li>• Join different materials to create a structure.</li> <li>• Create a simple rectangular framework with corner struts for added strength.</li> <li>• how to use shape to increase the strength and stiffness of a structure.</li> </ul>
LKS2	<p><b>Pupils should know:</b></p> <ul style="list-style-type: none"> <li>• Whether a structure is a frame structure or a shell structure</li> <li>• Suitable techniques to strengthen materials.</li> <li>• Suitable techniques of making structures more stable</li> </ul>	<p><b>Pupils should know how to:</b></p> <ul style="list-style-type: none"> <li>• Choose suitable materials, techniques, and tools to construct or repair products.</li> <li>• Apply a range of techniques to create shell structures using paper.</li> <li>• Apply a range of practical skills and techniques to create stable and strong frame structures.</li> </ul>
UKS2	<p><b>Pupils should know:</b></p> <ul style="list-style-type: none"> <li>• Different properties of some common materials and how these properties are used when designing and making structures.</li> <li>• Ways of reinforcing structures, including using triangulation techniques.</li> </ul>	<p><b>Pupils should know how to:</b></p> <ul style="list-style-type: none"> <li>• Make frame structures that can support mechanical systems within a product.</li> </ul>

Curriculum Pathway: Mechanical Systems		
	Substantive Knowledge	Practical Knowledge Skills
KS1	<p><b>Pupils should know:</b></p> <ul style="list-style-type: none"> <li>• Know that mechanisms cause things to move.</li> <li>• Linear movement is movement in a straight line.</li> <li>• Rotational movement is circular movement.</li> <li>• A lever is something that turns on a pivot.</li> <li>• A wheel needs to be attached to an axel to rotate.</li> </ul>	<p><b>Pupils should know how to:</b></p> <ul style="list-style-type: none"> <li>• Use sliders to create linear motion in mechanical products.</li> <li>• Use levers and a pivot to create rotational movement in products.</li> <li>• Create simple folding mechanisms in pop up books.</li> <li>• Add wheels and axles to a frame or chassis to create a moving vehicle.</li> </ul>
LKS2	<p><b>Pupils should know:</b></p> <ul style="list-style-type: none"> <li>• How pop-up mechanisms can be adapted in mechanical books</li> <li>• Levers and linkages work together to create different movements in mechanical books.</li> <li>• Air in pneumatic systems creates movement.</li> </ul>	<p><b>Pupils should know how to:</b></p> <ul style="list-style-type: none"> <li>• Create pop-up mechanisms for mechanical books.</li> <li>• Create different types of movement in pop up books using a range of mechanical systems, including levers and linkages.</li> <li>• Create moving products that include pneumatic systems.</li> </ul>
UKS2	<p><b>Pupils should know:</b></p> <ul style="list-style-type: none"> <li>• Gear systems and pulley systems are used to change the speed and direction of movement in a mechanical system.</li> <li>• Different mechanisms are used to change rotational movement into other forms of motion.</li> </ul>	<p><b>Pupils should know how to:</b></p> <ul style="list-style-type: none"> <li>• Create systems that can change the speed and direction of rotational movement using either gears or pulleys.</li> <li>• Combine a structure with a mechanism to create a product with motion/movement.</li> <li>• Use a cam mechanism in a product to change the motion within the product.</li> </ul>

**Curriculum Pathway: Electrical & Program Systems**

	<b>Substantive Knowledge</b>	<b>Practical Knowledge Skills</b>
<b>LKS2</b>	<p><b>Pupils should know:</b></p> <ul style="list-style-type: none"> <li>• Components of an electric product such as a switch, battery, motors, and buzzer,</li> <li>• The importance of a complete circuit when using a series circuit.</li> <li>• Electrical circuits are used in products to make them work.</li> </ul>	<p><b>Pupils should know how to:</b></p> <ul style="list-style-type: none"> <li>• Build simple circuits, including bulbs and switches, into their products.</li> <li>• Use tools and equipment to attach components when creating a simple circuit.</li> <li>• Create products that include simple circuits to make them work.</li> <li>• Troubleshoot a simple circuit to identify components that may be faulty.</li> </ul>
<b>UKS2</b>	<p><b>Pupils should know:</b></p> <ul style="list-style-type: none"> <li>• An electric motor can be incorporated into a product to create movement.</li> <li>• A sensor is a tool that monitors, detects, and responds to changes.</li> <li>• Program systems have an input and an output.</li> <li>• Microcontrollers are small computer processors that turn inputs into outputs and are controlled through computer code.</li> </ul>	<p><b>Pupils should know how to:</b></p> <ul style="list-style-type: none"> <li>• Test a circuit to make sure it functions correctly before including it in a product.</li> <li>• Write procedures and/or computer code to control and monitor models or products.</li> <li>• Make a product device that includes a sensor to monitor change.</li> <li>• Make a product that allows the user to control and monitor the device including lights, sounds and motion.</li> <li>• Create a product with a mechanical system that can operate at varying speeds and with changes in direction controlled through computer code.</li> </ul>