

Curriculum Pathway: Designing		
	Substantive Knowledge	Practical Knowledge Skills
KS1	Children will know: • A product is something that is made to do a job or fulfil a need. • A design brief describes the product that is to be made • A product is made for a person known as the client • Drawing out design ideas is useful to see how the product will look. • Using model and construction kits can help to develop their ideas and designs.	Children will know how to: Designing Skills • Research similar existing products, including online research. • Use knowledge of existing products to help with generating their own ideas. • Explain what their product is and how it will work. Drawing Skills • Generate and communicate ideas using sketches, drawing and digital software. • Create clearly labelled drawings to explain how their product works.
LKS2	Children will know: • The difference between a design brief and design specifications. • Design specifications describe how a product should be made, how it works or what it should do. • How making models of their intended product can help in the design process. • There can be a range of people and places that can be clients for a product. • How computer-aided design software can help in the design process.	Children will know how to: Designing Skills • Conduct research, including consumer surveys to find out needs and wants of the client • Generate ideas for a product, considering its purpose and who the client is. • Design a product that meets client's needs and the design brief. • Use design specifications as a guide to the making process. • List the design features that will appeal to the client. Drawing Skills • Communicate and draw out their designs using three-dimensional techniques such as 'crating' and isometric drawing. • Use computer software to show what their final product will look like.
UKS2	Children will know: • Creating a prototype of a design is useful for checking ideas and seeing how well they work. • Different types of drawing can be used to help with designing and communicating ideas about a product. • How labels and annotated drawings can be used to explain and communicate how a product is made and how it will work. • Surveys, interviews and questionnaires are used to find out the needs and wants of clients.	Children will know how to: • Carry out different surveys and questionnaires for research and to help with the design process. • Write step by step instructions and recipes to make a product they have designed. • List the materials and tools that will be needed to make a product they have designed. Drawing Skills • Communicate their ideas using cross-sectional drawings and cut-away drawings. • Use computer-aided design software to develop and communicate their ideas.

Curriculum Pathway: Making		
	Substantive Knowledge	Practical Knowledge Skills
KS1	Children will know: - To keep themselves safe when making things. - Simple procedures for working hygienically with food. - About a range of materials and their properties and how they can be used when making a product. - Improving a product whilst making it is an important part of design technology.	Children will know how to: - Follow instructions to make a product from a design. - Select and use tools most appropriate for a practical task. - Measure and mark out different materials when working with them. - Cut and shape a range of materials using different tools and techniques. - Assemble, join, and combine a range of materials using different methods and techniques. - Apply a range of different finishing techniques to their made product.
LKS2	Children will know: - Rules and procedures for keeping themselves safe when making products. - The properties of materials that they are working with and how these determine the tools and techniques that they use. - That a list of the main stages of turning a design into a product will aid the making process. - What different components of a system do and how these can be incorporated into their product to make them work.	Children will know how to: - Follow instructions to ensure that they work safely. - Select suitable tools, equipment, materials, and components for the task. - Explain their choices of materials, techniques and tools when making a product. - Measure, mark out, cut and shape materials with increasing accuracy. - Select and apply a finishing technique to create a quality product. - Identify and implement ways of improving a product whilst making it.
UKS2	Children will know: - Choosing materials, tools and equipment is dependent upon the skills and techniques to be used. - Step-by-step action plans should be created and followed when making complex products. - A range of different finishing techniques and choose ones that are suitable to create a quality product.	Children will know how to: - Work responsibly using guidelines to ensure they keep themselves and others safe. - Write an action plan for the making process including lists of tools, equipment and materials needed. - Accurately assemble, join and combine materials and components to ensure a quality finish to a product. - Apply a range of decorative and finishing techniques following the product design.

Curriculum Pathway: Evaluation		
	Substantive Knowledge	Practical Knowledge Skills
KS1	Children will know: - Evaluating existing products can help them to design and make their own product ideas. - 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. - Evaluating a product is about identifying what is good about the product and ways it could be made better.	Children will know how to: - Explore and identify how products have been created, including the materials that have been used to make the product. - Taste and evaluate different foods using a taste test. - Evaluate a finished product against their design. - Reflect on a finished product explaining their likes, dislikes and suggesting improvements.
LKS2	Children will know: - Design specifications are a list of success criteria for the product. - When evaluating products, it is important to use the design brief and the design specifications as a guide. - The client can be used to evaluate the success of a product. - Peer review of their product is useful in identifying ways in which it could be improved. - To use a range of information sources to identify areas in which their product could be improved. - Stories about iconic designs and designers that have helped to shape the world in which we live. - About a range of inspirational designs and designers throughout history and use this knowledge to support their own work as designers.	Children will know how to: - Identify the characteristics of a design which makes the product useful and successful. - Test for the strength and stability of different structures - List the ways in which a finished product meets the design specifications. - Evaluate their product using a range of sources including client review, peer review, design brief and the design criteria. - Use consumer surveys to evaluate their finished product.
UKS2	Children will know: - To continually reflect on and evaluate their work throughout the stages of designing and making. - As part of the evaluation process, the designer can consider the cost (time and money) of making the finished product. - That evaluating the whole project is an important part of design technology. - About a range of inspirational designs and designers throughout history and use this knowledge to support their own work as designers.	Children will know how to: - Identify strengths and areas for development in their own ideas and products. - List ways of improving a product considering the views of others and intended users. - Evaluate a product against specific design specifications. - Evaluate whether products can be recycled, reused, or repurposed and how sustainable the materials used are.

Curriculum Pathway: Cooking and Nutrition		
	Substantive Knowledge	Practical Knowledge Skills
KS1	Children should know: - Names of a range of different fruit and vegetables - Fruit and vegetables come from different parts of the plant. - That eating fruit and vegetables forms part of a healthy diet. - What is meant by a healthy and balanced diet. - Where some common foods originate from. - Ingredients refers to the items in a food mixture or a recipe. - Some information that is found on food labelling.	Children should know how to: - Describe the taste, texture, and smell of fruit and vegetables Food Preparation Skills: - Cut foods with a vegetable knife using the claw grip. - Cut foods with a vegetable knife using the bridge hold. - Grate soft foods. - Snip ingredients using scissors. - Squeeze the juice from fruit or vegetables. - Peel with a swivel peeler with adult support - Mix with increasing thoroughness to combine ingredients.
LKS2	Children should know: - Food is either grown, reared, or caught for food. - Different foods are grown around the world and that some food is dependent on the seasons. - The different food groups in the Eatwell Guide and how they feature as part of a healthy balanced diet. - That nutrients are substances in foods that living things need to make energy, grow, and develop. - The principles of a healthy and varied diet, particularly the importance of fruit and vegetables. - The importance of food preparation routines that are safe and hygienic.	Children should know how to: - Prepare food in a safe and hygienic way using appropriate utensils. - Create a healthy recipe considering the taste, texture, smell, and appearance of the dish. - Create visually appealing products by shaping and moulding food. - Measure ingredients accurately - Follow a recipe to assemble or cook ingredients. - Shape food with accuracy for a desired effect. - Make bread, and the role of yeast in bread-making. Food Preparation Skills: - Crush garlic using a garlic press or the back of a spoon. - Use a table knife to cut equal dough portions. - Fold ingredients together carefully - Use measuring jugs, spoons and scales to measure ingredients with increasing accuracy. - Use a range of food preparation techniques when following recipes.
UKS2	Children should know: - The importance of correct storage and handling of ingredients using knowledge of micro-organisms to promote hygiene and prevent cross-contamination. - Processed food is food that has undergone multiple changes in a food factory. - People have different food diets for health, religious, cultural, and personal reasons. - Some people are intolerant and/or allergic to certain food substances and that precautions are needed to keep them safe.	Children should know how to: - Follow a recipe accurately. - Measure accurately and calculate ratios of ingredients to scale up or down from a recipe. - Demonstrate a range of baking and cooking techniques. - Create and refine recipes, including ingredients, methods, cooking times and temperatures. - Choose and adapt recipes for dietary reasons. Food Preparation Skills - Cut higher resistance foods using the claw grip or the bridge grip - Use different weighing scales with increasing accuracy. - Use a measuring jug independently and accurately. - Cook using a range of different methods

Curriculum Pathway: Materials / Textiles		
	Substantive Knowledge	Practical Knowledge Skills
KS1	Children should know: Materials • Sheet materials refers to materials that are flat. • Sheet materials can be folded to create three-dimensional shapes. Textiles • Some joining techniques are permanent and others are temporary. • Temporary joining techniques might be used when pinning fabric to hold it together (so it doesn't move around whilst cutting or sewing) • Permanent joining technique might be used to finish a products so it can be used without falling apart. • A template (or fabric pattern) can be used to cut out the same shape multiple times.	Children should know how to: Materials • Measure and mark out to the nearest centimetre. • Cut sheet materials safely using tools provided. • Shape sheet materials through folding, creasing, and curling. • Use shape to increase the strength and stiffness of a structure. • Join materials through gluing and by making slots. Textiles • Thread a needle. • Cut fabrics neatly for sewing. • Pin and cut fabric using a template. • Join fabrics using an evenly spaced running stitch. • Colour and decorate textiles using techniques such as painting, printing and simple stitching.
LKS2	Children should know: Materials • That products are made of materials that are chosen because of their properties. Textiles • That 'joining technique' means connecting two pieces of fabrics together and the methods that are permanent or temporary. • A range of joining techniques to connect two pieces of fabrics together such as sewing and gluing. • Joining two edges of fabrics together creates a seam. • A range of sewing techniques (such as a running stitch for making seams and cross stitch for decoration) • Applique is a way of decorating textiles by adding smaller pieces of fabric to create a picture or a pattern.	Children should know how to: Materials • Measure, mark-out, cut and shape a wide range of materials. • Cut internal shapes and joining slots in sheet materials. • Join and combine materials and components using a variety of methods. • Manipulate different materials to create different effects by cutting, creasing, and folding. Textiles • Measure, mark out and cut fabric using a paper template (pattern) • Join fabrics together using a range of different sewing techniques (such as running stitch and cross stitch) including allowing for a seam. • Create a 3D fabric product by combining fabric pieces and using a seam allowance. • Apply a range of decorative techniques, including embroidery stitches, to different fabric materials.
UKS2	Children should know: Materials • The different properties of materials and how they are considered when designing and making a product. Textiles • Blanket stitch is used to strengthen edges and when joining to fabrics. • The importance of using a template (pattern) to accurately mark out a design on a fabric.	Children should know how to: Materials • Measure and cut materials with precision and refine the finish with appropriate tools. Textiles • Join textiles with a combination of stitching techniques (such as blanket stitch, back stitch for seams and running stitch to attach decoration). • Create products by joining several fabric pieces that employ a seam allowance. • Use the qualities of materials to create suitable visual and tactile effects in the decoration of masks and textile products.

Curriculum Pathway: Structures		
	Substantive Knowledge	Practical Knowledge Skills
KS1	Children should know: • Different types of structures that are found in the natural world and in the man-made world. • Different structures are used for different purposes. • A large base can make a structure stable.	Children should know how to: • Join different materials to create a structure. • Create a simple rectangular framework with corner struts for added strength. • Use shape to increase the strength and stiffness of a structure.
LKS2	Children should know: • Whether a structure is a frame structure or a shell structure • Suitable techniques to strengthen materials. • Suitable techniques of making structures more stable	Children should know how to: • Choose suitable materials, techniques, and tools to construct or repair products. • Apply a range of techniques to create shell structures using paper. • Apply a range of practical skills and techniques to create stable and strong frame structures.
UKS2	Children should know: • Different properties of some common materials and how these properties are used when designing and making structures. • Ways of reinforcing structures, including using triangulation techniques.	Children should know how to: • Make frame structures that can support mechanical systems within a product.

Curriculum Pathway: Mechanical Systems		
	Substantive Knowledge	Practical Knowledge Skills
KS1	Children should know: - Know that mechanisms cause things to move. - Linear movement is movement in a straight line. - Rotational movement is circular movement. - A lever is something that turns on a pivot. - A wheel needs to be attached to an axle to rotate.	Children should know how to: - Use sliders to create linear motion in mechanical products. - Use levers and a pivot to create rotational movement in products. - Create simple folding mechanisms in pop up books. - Add wheels and axles to a frame or chassis to create a moving vehicle.
LKS2	Children should know: - How pop-up mechanisms can be adapted in mechanical books - Levers and linkages work together to create different movements in products such as mechanical books. - Air in pneumatic systems creates movement.	Children should know how to: - Create pop-up mechanisms for mechanical books. - Create different types of movement in products using a range of mechanical systems, including levers and linkages. - Create moving products that include pneumatic systems.
UKS2	Children should know: - Gear systems and pulley systems are used to change the speed and direction of movement in a mechanical system. - Different mechanisms are used to change rotational movement into other forms of motion.	Children should know how to: - Create systems that can change the speed and direction of rotational movement using either gears or pulleys. - Combine a structure with a mechanism to create a product with motion/movement. - Use a cam mechanism in a product to change the motion within the product.

Curriculum Pathway: Electrical & Program Systems		
	Substantive Knowledge	Practical Knowledge Skills
LKS2	Children should know: • Components of an electric product such as a switch, battery, motors, and buzzer, • The importance of a complete circuit when using a series circuit. • Electrical circuits are used in products to make them work.	Children should know how to: • Build simple circuits, including bulbs and switches, into their products. • Use tools and equipment to attach components when creating a simple circuit. • Create products that include simple circuits to make them work. • Troubleshoot a simple circuit to identify components that may be faulty.
UKS2	Children should know: • An electric motor can be incorporated into a product to create movement. • A sensor is a tool that monitors, detects, and responds to changes. • Program systems have an input and an output. • Microcontrollers are small computer processors that turn inputs into outputs and are controlled through computer code.	Children should know how to: • Test a circuit to make sure it functions correctly before including it in a product. • Write procedures and/or computer code to control and monitor models or products. • Make a product device that includes a sensor to monitor change. • Make a product that allows the user to control and monitor the device including lights, sounds and motion. • Create a product with a mechanical system that can operate at varying speeds and with changes in direction controlled through computer code.