



# Curriculum Map

## Design and Technology

### Year 5 and 6

Threshold Concept	Milestone 1 Year 1 and 2	Milestone 2 Year 3 and 4	Milestone 3 Year 5 and 6
To Master Practical Skills: Food	<ul style="list-style-type: none"> <li>• Cut, peel or grate ingredients safely and hygienically.</li> <li>• Measure or weigh using measuring cups or electronic scales.</li> <li>• Assemble or cook ingredients.</li> </ul>	<ul style="list-style-type: none"> <li>• Prepare ingredients hygienically using appropriate utensils.</li> <li>• Measure ingredients to the nearest gram accurately.</li> <li>• Follow a recipe.</li> <li>• Assemble or cook ingredients (controlling the temperature of the oven or hob, if cooking).</li> </ul>	<ul style="list-style-type: none"> <li>• Understand the importance of correct storage and handling of ingredients (using knowledge of micro-organisms).</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> </ul>
To Master Practical Skills: Materials, Mechanics and Construction	<ul style="list-style-type: none"> <li>• Measure and mark out to the nearest centimetre.</li> <li>• Demonstrate a range of cutting and shaping techniques (such as tearing, cutting, folding and curling) in a safe manner using the tools provided.</li> <li>• Demonstrate a range of joining techniques (such as gluing, hinges or combining materials to strengthen).</li> <li>• Create products using levers, sliders and winding mechanisms.</li> <li>• Use materials to practise drilling, screwing, gluing and nailing materials to make and strengthen products.</li> </ul>	<ul style="list-style-type: none"> <li>• Cut materials accurately and safely by selecting appropriate tools.</li> <li>• Measure and mark out to the nearest millimetre.</li> <li>• Apply appropriate cutting and shaping techniques that include cuts within the perimeter of the material (such as slots or cut outs).</li> <li>• Select appropriate joining techniques.</li> <li>• Use scientific knowledge of the transference of forces to choose appropriate mechanisms for a product (such as levers, winding mechanisms, pulleys and gears).</li> <li>• Choose suitable techniques to construct products or to repair items.</li> <li>• Strengthen materials using suitable techniques.</li> </ul>	<ul style="list-style-type: none"> <li>• Cut materials with precision and refine the finish with appropriate tools (such as sanding wood after cutting or a more precise scissor cut after roughly cutting out a shape).</li> <li>• Show an understanding of the qualities of materials to choose appropriate tools to cut and shape (such as the nature of fabric may require sharper scissors than would be used to cut paper).</li> <li>• Create circuits using electronics kits that employ a number of components (such as LEDs, resistors, transistors and chips).</li> <li>• Convert rotary motion to linear using cams.</li> <li>• Use innovative combinations of electronics (or computing) and mechanics in product designs.</li> <li>• Develop a range of practical skills to create products (such as cutting, drilling and screwing, nailing, gluing, filing and sanding).</li> </ul>
To Master Practical Skills: Textiles	<ul style="list-style-type: none"> <li>• Shape textiles using templates.</li> <li>• Join textiles using running stitch.</li> <li>• Colour and decorate textiles using a number of techniques (such as dyeing, adding sequins or printing).</li> </ul>	<ul style="list-style-type: none"> <li>• Understand the need for a seam allowance.</li> <li>• Join textiles with appropriate stitching.</li> <li>• Select the most appropriate techniques to decorate textiles.</li> </ul>	<ul style="list-style-type: none"> <li>• Create objects (such as a cushion) that employ a seam allowance.</li> <li>• Join textiles with a combination of stitching techniques (such as back stitch for seams and running stitch to attach decoration).</li> <li>• Use the qualities of materials to create suitable visual and tactile effects in the decoration of textiles (such as a soft decoration for comfort on a cushion).</li> </ul>

Threshold Concept	Milestone 1 Year 1 and 2	Milestone 2 Year 3 and 4	Milestone 3 Year 5 and 6
To design, make, evaluate and improve	<ul style="list-style-type: none"> <li>• Design products that have a clear purpose and an intended user.</li> <li>• Make products, refining the design as work progresses.</li> <li>• Use software to design.</li> </ul>	<ul style="list-style-type: none"> <li>• Design with purpose by identifying opportunities to design.</li> <li>• Make products by working efficiently (such as by carefully selecting materials).</li> <li>• Refine work and techniques as work progresses, continually evaluating the product design.</li> <li>• Use software to design and represent product designs.</li> </ul>	<ul style="list-style-type: none"> <li>• Design with the user in mind, motivated by the service a product will offer (rather than simply for profit).</li> <li>• Make products through stages of prototypes, making continual refinements.</li> <li>• Ensure products have a high quality finish, using art skills where appropriate.</li> <li>• Use prototypes, cross-sectional Diagrams and computer aided designs to represent designs.</li> </ul>
Threshold Concept	Milestone 1 Year 1 and 2	Milestone 2 Year 3 and 4	Milestone 3 Year 5 and 6
To take inspiration from design throughout history	<ul style="list-style-type: none"> <li>• Explore objects and designs to identify likes and dislikes of the designs.</li> <li>• Suggest improvements to existing designs.</li> <li>• Explore how products have been created.</li> </ul>	<ul style="list-style-type: none"> <li>• Identify some of the great designers in all of the areas of study (including pioneers in horticultural techniques) to generate ideas for designs.</li> <li>• Improve upon existing designs, giving reasons for choices.</li> <li>• Disassemble products to understand how they work.</li> </ul>	<ul style="list-style-type: none"> <li>• Combine elements of design from a range of inspirational designers throughout history, giving reasons for choices.</li> <li>• Create innovative designs that improve upon existing products.</li> <li>• Evaluate the design of products so as to suggest improvements to the user experience.</li> </ul>

Practical Skills			
Milestone:		Understand the importance of correct storage and handling of ingredients.	
Basic	Advancing	Deep	
<ul style="list-style-type: none"> <li>➤ To be able to explain why certain foods should not be stored together.</li> <li>➤ Understand how temperature impacts upon how bacteria breed.</li> </ul>	<ul style="list-style-type: none"> <li>➤ Understand the importance of correct storage and handling of ingredients (using knowledge of micro-organisms), linked to fridge temperature and food poisoning.</li> </ul>	<ul style="list-style-type: none"> <li>➤ To be able to explain how to prolong the shelf life of certain foods by storing them in the correct place. Giving reasons why they stored the item in that way.</li> <li>➤ Make own risk assessments to ensure safe procedures for food safety and hygiene are followed.</li> </ul>	
Milestone:		Measure accurately and calculate ratios of ingredients to scale up or down from a recipe.	
Basic	Advancing	Deep	
<ul style="list-style-type: none"> <li>➤ Understand and measure weights and volumes to the nearest gram or oz. To the nearest ml. According to equipment available.</li> </ul>	<ul style="list-style-type: none"> <li>➤ To understand when increasing/ decreasing the outcome of the recipe the weight/volume of ingredients will change.</li> </ul>	<ul style="list-style-type: none"> <li>➤ To understand and apply their knowledge of calculating ratios of ingredients to a recipe.</li> <li>➤ Modify recipes to your own needs and the needs of your family.</li> </ul>	

Milestone:		Demonstrate a range of baking and cooking techniques.	
Basic		Advancing	Deep
<ul style="list-style-type: none"> <li>➤ To understand and use a range of baking and cooking techniques, including:               <ul style="list-style-type: none"> <li>• Boiling</li> <li>• Frying</li> <li>• Cooling</li> <li>• Folding</li> <li>• Microwaving</li> </ul> </li> <li>➤ To apply these techniques appropriately when following a given a recipe.</li> </ul>		<ul style="list-style-type: none"> <li>➤ To explain why they need to use a certain baking or cooking technique for a desired outcome.</li> <li>➤ To apply their knowledge and understanding of the different techniques when following a recipe.</li> </ul>	<ul style="list-style-type: none"> <li>➤ To overcome and understand the problems that may arise during the cooking/baking.</li> </ul>
Milestone:		Create and refine recipes, including ingredients, methods, cooking times and temperatures.	
Basic		Advancing	Deep
<ul style="list-style-type: none"> <li>➤ To change aspects of a given recipe for a desired outcome.</li> <li>➤ To understand the importance of following the times given on a recipe.</li> </ul>		<ul style="list-style-type: none"> <li>➤ To be able to create a recipe with some support to:               <ul style="list-style-type: none"> <li>• Select equipment</li> <li>• Select ingredients</li> <li>• How to prepare the ingredients hygienically</li> <li>• Devising the method using the correct cooking/baking technique</li> <li>• Taking in to consideration the cooking times and temperatures.</li> </ul> </li> <li>➤ To consider how the food should be best presented.</li> </ul>	<ul style="list-style-type: none"> <li>➤ To evaluate their recipe and suggest changes to suit theirs/others tastes.</li> </ul>

Milestone:		Cut materials with precision and refine the finish with appropriate tools (such as sanding wood after cutting or a more precise scissor cut after roughly cutting out a shape).	
Basic	Advancing	Deep	
<ul style="list-style-type: none"> <li>➤ To measure and cut to the nearest millimetre.</li> <li>➤ To understand and select the appropriate tools to cut materials with precision.</li> <li>➤ To explore different refining techniques such as sanding and filing.</li> </ul>	<ul style="list-style-type: none"> <li>➤ Use refining techniques to strengthen and improve the appearance of their product, using a range of equipment.</li> <li>➤ Measure, mark out, cut and shape a range of materials with precision to meet design specifications.</li> </ul>	<ul style="list-style-type: none"> <li>➤ Apply their knowledge of refining techniques to rework a product to improve its functional properties and aesthetic qualities.</li> </ul>	
Milestone:		Create circuits that employ a number of components (such as LEDs and resistors) by using electronic kits or devising their own.	
Basic	Advancing	Deep	
<ul style="list-style-type: none"> <li>➤ Follow a circuit diagram and instructions to create an electronic project from a kit.</li> <li>➤ To understand the role and purpose of different components, including: <ul style="list-style-type: none"> <li>• battery terminal</li> <li>• light emitting diode</li> <li>• resistors</li> <li>• circuit board</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>➤ To design a circuit and circuit diagram to fulfil their requirement.</li> <li>➤ To construct their designs.</li> </ul>	<ul style="list-style-type: none"> <li>➤ To have an understanding of the resistor colour banding system.</li> </ul>	

Milestone:		Convert rotary motion to linear using cams.	
Basic		Advancing	Deep
➤ To know a different shape cams create different linear movement.		➤ Decide which type of cam they need to create their desired movement.	➤ How to incorporate multiple cams to create a more complex movement.
Milestone:		Develop a range of practical skills to create products (such as cutting, drilling and screwing, nailing, gluing, filing and sanding).	
Basic		Advancing	Deep
➤ To show a basic level in a range of practical skills such as: <ul style="list-style-type: none"> <li>• Cutting</li> <li>• Drilling</li> <li>• Screwing</li> <li>• Nailing</li> <li>• Gluing</li> <li>• Filing</li> <li>• Sanding</li> </ul>		➤ To be more proficient in using a range of practical skills to complete the task accurately and efficiently. ➤ To ensure minimal wastage. ➤ To select and use the appropriate practical skill to create a desired outcome.	➤ To expertly use a range of skills to accomplish different tasks and be able to troubleshoot when issues arise.

<b>Milestone:</b> Create objects (such as a cushion) that employ a seam allowance.		
<b>Basic</b>	<b>Advancing</b>	<b>Deep</b>
<ul style="list-style-type: none"> <li>➤ To know what a seam allowance is and why it must be taken into consideration.</li> <li>➤ To join two materials together employing a seam.</li> <li>➤ To recognise that any pattern must be on the reverse.</li> </ul>	<ul style="list-style-type: none"> <li>➤ To determine the dimensions and measure a piece of material, taking into account the need for the seams.</li> </ul>	<ul style="list-style-type: none"> <li>➤ To design and employ a seam allowance independently.</li> </ul>
<b>Milestone:</b> Join textiles with a combination of stitching techniques (such as back stitch for seams and running stitch to attach decoration).		
<b>Basic</b>	<b>Advancing</b>	<b>Deep</b>
<ul style="list-style-type: none"> <li>➤ To explore different types of stitching techniques, such as:               <ul style="list-style-type: none"> <li>• Back stitch</li> <li>• Running stitch</li> <li>• Overstitch</li> <li>• Cross stitch</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>➤ To choose and use an appropriate stitching technique for a desired outcome.</li> </ul>	<ul style="list-style-type: none"> <li>➤ To critique others' techniques offering constructive feedback.</li> </ul>



Milestone:	Use the qualities of materials to create suitable visual and tactile effects in the decoration of textiles (such as a soft decoration for comfort on a cushion).	
Basic	Advancing	Deep
<ul style="list-style-type: none"> <li>➤ To explore the qualities of materials and decorations.</li> <li>➤ To understand the difference between soft and hard decorations and when they are best to be used.</li> </ul>	<ul style="list-style-type: none"> <li>➤ To select and use a wide range of materials according to their functional properties and aesthetic qualities.</li> </ul>	<ul style="list-style-type: none"> <li>➤ To evaluate the decoration on their products, thinking about the advantages and disadvantages.</li> </ul>

To Design, Make, Evaluate and Improve			
Milestone:		Make products through stages of prototypes, making continual refinements.	
Basic		Advancing	Deep
<ul style="list-style-type: none"> <li>➤ Understand what a prototype is and it's function in design technology.</li> <li>➤ To make a prototype for a product they are creating.</li> </ul>		<ul style="list-style-type: none"> <li>➤ To get feedback on a prototype design.</li> <li>➤ To make changes to the prototype based on design feedback.</li> </ul>	<ul style="list-style-type: none"> <li>➤ To explain the importance of prototypes in industry including details such as:               <ul style="list-style-type: none"> <li>○ Costs</li> <li>○ Efficiency</li> <li>○ Market</li> <li>○ Safety</li> </ul> </li> </ul>
Milestone:		Ensure products have a high quality finish, using art skills where appropriate.	
Basic		Advancing	Deep
<ul style="list-style-type: none"> <li>➤ To explore the different techniques for finishing a product.</li> <li>➤ To use sandpaper correctly taking into account the direction of the grain.</li> </ul>		<ul style="list-style-type: none"> <li>➤ To use the correct medium to get the desired quality of finish e.g. type of paint.</li> <li>➤ To choose the appropriate grade of sand paper to get a smooth finish on wood.</li> </ul>	<ul style="list-style-type: none"> <li>➤ To explain the pros and cons of different techniques and justify their choice on their product.</li> </ul>

Milestone:	Use cross-sectional diagrams and computer aided software to represent designs.	
Basic	Advancing	Deep
<ul style="list-style-type: none"> <li>➤ To use isometric paper to draw basic 3-dimensional shapes.</li> <li>➤ To begin to transfer their hand-drawn designs using computer aided software such as Paint 3D.</li> </ul>	<ul style="list-style-type: none"> <li>➤ To represent the designs, breaking down complex sections.</li> <li>➤ To more accurately use computer aided software to represent their designs.</li> <li>➤ To draw their designs, taking into account scale and perspective.</li> </ul>	<ul style="list-style-type: none"> <li>➤ To achieve quality and accurate diagrams with greater independence.</li> </ul>

TO TAKE INSPIRATION FROM DESIGN THROUGHOUT HISTORY			
Milestone:		Create and improve innovative designs that combine elements of design from a range of inspirational designers throughout history, giving reasons for choices.	
Basic		Advancing	Deep
<ul style="list-style-type: none"> <li>➤ Research designers/inventors and understand why they are so important.</li> <li>➤ To copy from others designs, stating why they chose one design over another.</li> </ul>		<ul style="list-style-type: none"> <li>➤ To select ideas from other designs to incorporate in their own designs, stating reasons for their choices.</li> </ul>	<ul style="list-style-type: none"> <li>➤ To evaluate how designs have changed over time, giving reasons for this.</li> </ul>
Milestone:		Evaluate the design of products so as to suggest improvements to the user experience.	
Basic		Advancing	Deep
<ul style="list-style-type: none"> <li>➤ To decide on the effectiveness of a product including if it meets its design specification.</li> <li>➤ To suggest simple improvements that could be made to the product to improve the user experience.</li> </ul>		<ul style="list-style-type: none"> <li>➤ To thoroughly evaluate a product, considering the advantages and disadvantages of different designs.</li> <li>➤ To take user feedback on different designs and draw conclusions from this.</li> </ul>	<ul style="list-style-type: none"> <li>➤ To consider the manufacturing feasibility of their design improvements such as costs, realism, technological and manufacturing advances etc.</li> </ul>