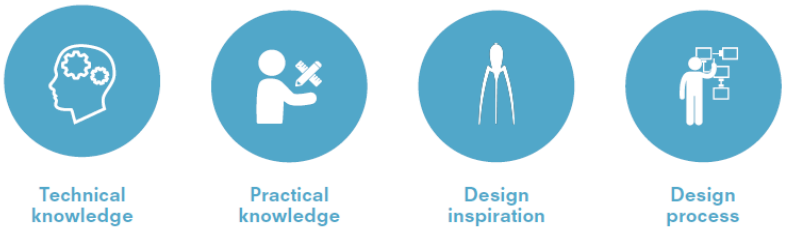
Design & Technology Curriculum Overview

Year group	Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
1 and 2	Mechanism		Structures		Food and nutrition/Fabric	
3 and 4	Mechanism		Structures		Food and nutrition/Fabric	
5 and 6	Mechanism		Structures		Food and nutrition/Fabric	

Master practical techniques	Take inspiration from design	Design, make, evaluate and improve



Design & Technology Curriculum Overview

Milestone 1			
Week	Autumn	Spring	Summer
1	What is Design and Technology?	Year 1 - structures (Stability of structures) Year 2 – structures (Solid structures)	Year 1 - Food and Nutrition (Sandwiches/wraps) Year 2 – Fabric (Sewing)
2	Year 1- Mechanisms (Axles and wheels) Year 2 – Mechanisms (Levers)		
3			
4			
5			
6			

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Milestone 2			
Week	Autumn	Spring	Summer
1	What is Design and Technology?	Year 3 - Structures (Shell/Net structures) Year 4 – Structures (Truss Bridge)	Year 3 - Food and nutrition (Salads/soups) Year 4 – Fabric (Cross stitching)
2	Year 3- Mechanism (Linked levers) Year 4 – Mechanism (Pneumatic)		
3			
4			
5			
6			

Design & Technology Curriculum Overview

Milestone 3			
Week	Autumn	Spring	Summer
1	What is Design and Technology?	Year 5 - Structures (Arches) Year 6 – Structures (Frame structures)	Year 5- Food and Nutrition (bread) Year 6 – Fabric (Create an original design and join to a pillow/T-shirt)
2	Year 5- Mechanism (Electric motors) Year 6 – Mechanism (Pulleys and gears)		
3			
4			
5			
6			

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Food – Fabric – electronics – coding – cams – pulleys/levers - structures

Big Ideas	Milestone 1	Milestone 2	Milestone 3
Master Practical Skills	• Cut, peel or grate ingredients safely and hygienically. • Measure or weigh using measuring cups or electronic scales. • Assemble or cook ingredients. • Cut materials safely using tools provided. • Measure and mark out to the nearest centimetre. • Demonstrate a range of cutting and shaping techniques (such as tearing, cutting, folding and curling). • Demonstrate a range of joining techniques (such as gluing, hinges or combining materials to strengthen). • Shape textiles using templates. • Join textiles using running stitch. • Colour and decorate textiles using a number of techniques (such as dyeing, adding sequins or printing). • Diagnose faults in battery operated devices (such as low battery, water damage or battery terminal damage). • Model designs using software. • Use materials to practise drilling, screwing, gluing and nailing materials to make and strengthen products.	• Prepare ingredients hygienically using appropriate utensils. • Measure ingredients to the nearest gram accurately. • Follow a recipe. • Assemble or cook ingredients (controlling the temperature of the oven or hob, if cooking). • Cut materials accurately and safely by selecting appropriate tools. • Measure and mark out to the nearest millimetre. • Apply appropriate cutting and shaping techniques that include cuts within the perimeter of the material (such as slots or cut outs). • Select appropriate joining techniques. • Understand the need for a seam allowance. • Join textiles with appropriate stitching. • Select the most appropriate techniques to decorate textiles. • Create series and parallel circuits.	• Understand the importance of correct storage and handling of ingredients (using knowledge of micro-organisms). • Measure accurately and calculate ratios of ingredients to scale up or down from a recipe. • Demonstrate a range of baking and cooking techniques. • 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). • 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). • Join textiles with a combination of stitching techniques (such as back stitch for seams and running stitch to attach decoration).

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Take Inspiration from design	• Explore objects and designs to identify likes and dislikes of the designs. • Suggest improvements to existing designs. • Explore how products have been created.	• Disassemble products to understand how they work. • Improve upon existing designs, giving reasons for choices. • Identify some of the great designers in all of the areas of study (including pioneers in horticultural techniques) to generate ideas for designs.	
Design, make, evaluate and improve	• Create products using levers, wheels and winding mechanisms. • Design products that have a clear purpose and an intended user. • Make products, refining the design as work progresses. • Use software to design.	• Control and monitor models using software designed for this purpose. • Choose suitable techniques to construct products or to repair items. • Strengthen materials using suitable techniques. • Use scientific knowledge of the transference of forces to choose appropriate mechanisms for a product (such as levers, winding mechanisms, pulleys and gears). • Design with purpose by identifying opportunities to design. • Make products by working efficiently (such as by carefully selecting materials).	• 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). • Create circuits using electronics kits that employ a number of components (such as LEDs, resistors, transistors and chips). • Write code to control and monitor models or products. • Develop a range of practical skills to create products (such as cutting, drilling and screwing, nailing, gluing, filing and sanding). • Convert rotary motion to linear using cams. • Use innovative combinations of electronics (or computing) and mechanics in product designs.

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		• Refine work and techniques as work progresses, continually evaluating the product design. • Use software to design and represent product designs.	• Design with the user in mind, motivated by the service a product will offer (rather than simply for profit). • Make products through stages of prototypes, making continual refinements. • Ensure products have a high quality finish, using art skills where appropriate. • Use prototypes, cross-sectional diagrams and computer aided designs to represent designs. • Combine elements of design from a range of inspirational designers throughout history, giving reasons for choices. • Create innovative designs that improve upon existing products. • Evaluate the design of products so as to suggest improvements to the user experience. • Create objects (such as a cushion) that employ a seam allowance. • Create and refine recipes, including ingredients, methods, cooking times and temperatures.

Design & Technology Curriculum Overview

Typical project structure:

Design process: think, make, break, repeat

When designers develop products they do four things: thinking, making, breaking and repeating. Thinking involves coming up with ideas for products and what they will do; making is where the product is made in real life; breaking products helps us to see how to improve them; repeating helps us to make the improvements. Designers always go backwards and forwards in this process until they are happy with their products. The diagram below shows how this works.

Example:

Truss bridge:

Think	Research bridges and discuss where the strength comes from
Make	Practice cutting and joining materials together and see what kind of joins are strongest
Break	Review what was easy about cutting and joining and which joins worked best
Think	Use that information to design a model bridge using wood and triangular trusses
Make	Build the bridge
Break	Test the bridge
	Evaluate all the bridges

This could be 5 lessons with one day near the end of term to do the building part.