

Design & Technology Progression Map

Subject Intent

Our intent at St Oswald's is to encourage learners to become designers, fostering their creative thinking, developing children's capacity to think, imagine, invent, design and enjoy the experience. Through the implementation of a thorough and progressive design & technology curriculum our children will be equipped with the necessary knowledge, skills and cultural capital to be contributing, well rounded citizens with high expectations and ambition.

To achieve this, our curriculum will provide the learning for children to become designers who have:

- Significant levels of originality and the willingness to take creative risks to produce innovative ideas and prototypes.
- An excellent attitude to learning and independent working.
- The ability to use time efficiently and work constructively and productively with others.
- The ability to carry out thorough research, show initiative and ask questions to develop an exceptionally detailed knowledge of users' needs.
- The ability to act as responsible designers and makers, working ethically, using finite materials carefully and working safely.
- A thorough knowledge of which tools, equipment and materials to use to make their products.
- The ability to apply mathematical knowledge.
- The ability to manage risks exceptionally well to manufacture products safely and hygienically.
- A passion for the subject and knowledge of up-to-date technological innovations in materials, products and systems.

National Curriculum	Threshold Concepts	Year Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
			Milestone 1		Milestone 2		Milestone 3	
KS1 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	Master practical skills This concept involves developing the skills needed to make high quality products.	Develop their small motor skills so that they can use a range of tools competently, safely and confidently	Food: • Cut, peel or grate ingredients safely and hygienically • Measure or weigh using measuring cups or electronic scales • Assemble or cook ingredients			Food: • Prepare ingredients hygienically using appropriate utensils • Measure ingredients to the nearest gram accurately • Follow a recipe. • Assemble or cook ingredients (controlling the	Food: • Understand the importance of correct storage and handling of ingredients (using knowledge of microorganisms) • Measure accurately and calculate ratios of ingredients to	

<p>appropriate, information and communication technology</p> <p>Make</p> <ul style="list-style-type: none"> • select from and use a range of tools and equipment to perform practical tasks such as 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 <p>Evaluate</p> <ul style="list-style-type: none"> • explore and evaluate a range of existing products • evaluate their ideas and products against design criteria <p>Technical knowledge</p> <ul style="list-style-type: none"> • build structures, exploring how they can be made stronger, stiffer and more stable • explore and use mechanisms, such as levers, 						<p>temperature of the oven or hob, if cooking)</p> <p>scale up or down from a recipe</p> <ul style="list-style-type: none"> • Demonstrate a range of baking and cooking techniques • Create and refine recipes, including ingredients, methods, cooking times and temperatures 	
	<p>Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function</p> <p>Use scissors effectively</p> <p>Experiment with a range of joining techniques and reflect on their decisions</p>	<p>Materials:</p> <ul style="list-style-type: none"> • 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) 	<p>Materials:</p> <ul style="list-style-type: none"> • 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 	<p>Materials:</p> <ul style="list-style-type: none"> • 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 			

<p>sliders, wheels and axles, in their products</p> <p>Cooking and nutrition</p> <ul style="list-style-type: none"> • use the basic principles of a healthy and varied diet to prepare dishes • understand where food comes from <p>KS2</p> <p>Design</p> <ul style="list-style-type: none"> • 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 <p>Make</p> <ul style="list-style-type: none"> • select from and use a wider range of tools and 						joining techniques	sharper scissors than would be used to cut paper)	
			<p>Textiles:</p> <ul style="list-style-type: none"> • 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) 		<p>Textiles:</p> <ul style="list-style-type: none"> • Understand the need for a seam allowance • Join textiles with appropriate stitching • Select the most appropriate techniques to decorate textiles 			<p>Textiles:</p> <ul style="list-style-type: none"> • Create objects (such as a cushion) that employ a seam allowance • Join textiles with a combination of stitching techniques (such as back stitch for seams and running stitch to attach decoration) • 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)
			<p>Electricals and electronics:</p> <ul style="list-style-type: none"> • Diagnose faults in battery operated devices (such as low battery, water 	<p>Electricals and electronics:</p> <ul style="list-style-type: none"> • Diagnose faults in battery operated devices (such as low battery, water 		<p>Electricals and electronics:</p> <ul style="list-style-type: none"> • Create series and parallel circuits 		<p>Electricals and electronics:</p> <ul style="list-style-type: none"> • Create circuits using electronics kits that employ a number of components

<p>equipment to perform practical tasks, such as cutting, shaping, joining and finishing, accurately</p> <ul style="list-style-type: none"> 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 <p>Evaluate</p> <ul style="list-style-type: none"> 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 <p>Technical knowledge</p> <ul style="list-style-type: none"> apply their understanding of how to strengthen, 			damage or battery terminal damage)	damage or battery terminal damage)			(such as LEDs, resistors, transistors and chips)	
			Computing: • Model designs using software	Computing: • Model designs using software		Computing: • Control and monitor models using software designed for this purpose	Computing: • Write code to control and monitor models or products	
		Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function		Construction: • Use materials to practise drilling, screwing, gluing and nailing materials to make and strengthen products	Construction: • Choose suitable techniques to construct products or to repair items • Strengthen materials using suitable techniques		Construction: • Develop a range of practical skills to create products (such as cutting, drilling and screwing, nailing, gluing, filing and sanding)	
			Mechanics: • Create products using levers, wheels and winding mechanisms		Mechanics: • Use scientific knowledge of the transference of forces to choose appropriate mechanisms for a product (such as levers, winding mechanisms, pulleys and gears)		Mechanics: • Convert rotary motion to linear using cams • Use innovative combinations of electronics (or computing) and mechanics in product designs	
	Design, make, evaluate and improve This concept involves	Return to and build on their previous learning, refining ideas	<ul style="list-style-type: none"> Design products that have a clear purpose and an intended user Make products, refining the design as work progresses Use software to design 	<ul style="list-style-type: none"> Design with purpose by identifying opportunities to design Make products by working efficiently (such as by carefully selecting materials) 	<ul style="list-style-type: none"> Design with the user in mind, motivated by the service a product will offer (rather than simply for profit) 			

<p>stiffen and reinforce more complex structures</p> <ul style="list-style-type: none"> • understand and use mechanical systems in their products, such as gears, pulleys, cams, levers and linkages • understand and use electrical systems in their products, such as series circuits incorporating switches, bulbs, buzzers and motors 	<p>developing the process of design thinking and seeing design as a process.</p>	<p>and developing their ability to represent them</p> <p>Create collaboratively, sharing ideas, resources and skills</p> <p>Share their creations, explaining the process they have used</p>		<ul style="list-style-type: none"> • Refine work and techniques as work progresses, continually evaluating the product design • Use software to design and represent product designs 	<ul style="list-style-type: none"> • 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
<p>Cooking and nutrition</p> <ul style="list-style-type: none"> • 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 	<p>Take inspiration from design throughout history This concept involves appreciating the design process that has influenced the products we use in everyday life.</p>		<ul style="list-style-type: none"> • Explore objects and designs to identify likes and dislikes of the designs • Suggest improvements to existing designs • Explore how products have been created 	<ul style="list-style-type: none"> • Identify some of the great designers in all of the areas of study (including pioneers in horticultural techniques) to generate ideas for designs • Improve upon existing designs, giving reasons for choices • Disassemble products to understand how they work 	<ul style="list-style-type: none"> • 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