



Skills & Knowledge progression: Design & Technology

National Curriculum – Aims and purpose	School aims - skills, attitudes and knowledge that we would like all children to develop on their journey through the school
<p>Purpose of study Design and technology is an inspiring, rigorous and practical subject. Using creativity and imagination, pupils design and make products that solve real and relevant problems within a variety of contexts, considering their own and others' needs, wants and values. They acquire a broad range of subject knowledge and draw on disciplines such as mathematics, science, engineering, computing and art. Pupils learn how to take risks, becoming resourceful, innovative, enterprising and capable citizens. Through the evaluation of past and present design and technology, they develop a critical understanding of its impact on daily life and the wider world. High-quality design and technology education makes an essential contribution to the creativity, culture, wealth and well-being of the nation.</p> <p>Aims The national curriculum for design and technology aims to ensure that all pupils:</p> <ul style="list-style-type: none"> - develop the creative, technical and practical expertise needed to perform everyday tasks confidently and to participate successfully in an increasingly technological world - build and apply a repertoire of knowledge, understanding and skills in order to design and make high-quality prototypes and products for a wide range of users - critique, evaluate and test their ideas and products and the work of others - understand and apply the principles of nutrition and learn how to cook. 	<p>We want our children to become confident, independent problem solvers, who view challenges with curiosity both at school and in their wider life beyond. When presented with practical problems, our children will be able to combine their skills and prior knowledge to come up with a range of possible solutions, and then use their experience and understanding to focus in on what they consider to be the best design choice. They will have the practical and technical skills needed to put that idea into practice - and the means to overcome whatever barriers may present themselves on the way to a completed solution to their initial problem. To that end, children in every class will be given opportunities to explore new materials, tools, mechanisms and designs, and will be encouraged to explore all of these to find both their potential and their limitations. Each unit of work will have a clear, practical goal as its outcome, accompanied by design criteria against which finished products can be tested and evaluated. Our children will also learn how to use these materials and tools safely and responsibly, and over time will begin to consider the impact that products (and material choices) can have on the wider world.</p>

Milestones:
<p>At Stapleford Primary School children are taught in mixed age classes e.g. Years 1 & 2 together etc. Our curriculum sets out progression in the form of three 'Milestones'. The children work towards each Milestone for two years. During the first year pupils attain an understanding of the skills set out in the Milestone and during the second year they develop an advanced or deeper understanding. Each Milestone contains a range of descriptors which provide details of the skills to be covered. Over a two-year period, students become more and more familiar with these details by exploring them in a breadth of contexts. This helps pupils to "know more" and "remember more."</p>

Links to learning in EYFS:	Links to other subjects / curriculum areas:	Experiences every child should have:
<p>EAD : Exploring & using media and materials</p> <ul style="list-style-type: none"> - Manipulates materials to achieve a planned effect - Constructs with a purpose in mind, using a variety of resources - Selects appropriate resources and adapts work where necessary - Selects tools and techniques needed to shape, assemble and join materials they are using. - Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function 	<p>Solving problems linked to materials or contexts being explored in science</p> <ul style="list-style-type: none"> - Measuring, estimating and interpreting scales, calculating costs or capacities links to maths - Exploring foods from different cultures and festivals links to geography and RE topics - Use of electrical systems or discussion of forces involved in movement ties in with science - Large crossover with art skills when considering finish, choice of materials & product appearance - 'Learning to use equipment safely 	<ul style="list-style-type: none"> - Produce something of their own that they are proud of - Have opportunities to use things they have made - recognising that their work really is purposeful and practical - Take things to bits to find out how they're held together and how they work - See something they have constructed move under its own power - Use saws, hammers, hand drills and other 'grown-up' tools (and know how to use them safely) - Build something bigger than them

Skills Progression: Design & Technology – Years 1 & 2



Year groups	Master practical skills This concept involves developing the skills needed to make high quality products		Design, make, evaluate and improve This concept involves developing the process of design thinking and seeing design as a process.	Take inspiration from design throughout history This concept involves appreciating the design process that has influenced the products we use in everyday life.
1 & 2 Milestone 1	Food	<ul style="list-style-type: none"> • Cut, peel or grate ingredients safely and hygienically. • Measure or weigh using measuring cups or electronic scales. • Assemble or cook ingredients. 	<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"> • Explore objects and designs to identify likes and dislikes of the designs. • Suggest improvements to existing designs. • Explore how products have been created.
	Materials	<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). 		
	Textiles	<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). 		
	Electricals and electronics	<ul style="list-style-type: none"> • Diagnose faults in battery operated devices (such as low battery, water damage or battery terminal damage). 		
	Computing	<ul style="list-style-type: none"> • Model designs using software. 		
	Construction	<ul style="list-style-type: none"> • Use materials to practise drilling, screwing, gluing and nailing materials to make and strengthen products. 		
	Mechanics	<ul style="list-style-type: none"> • Create products using levers, wheels and winding mechanisms. 		

Skills Progression: Design & Technology – Years 3 & 4



Year groups	Master practical skills This concept involves developing the skills needed to make high quality products		Design, make, evaluate and improve This concept involves developing the process of design thinking and seeing design as a process.	Take inspiration from design throughout history This concept involves appreciating the design process that has influenced the products we use in everyday life.
3 & 4 Milestone 2	Food	<ul style="list-style-type: none"> • 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). 	<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). • 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"> • 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.
	Materials	<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 joining techniques. 		
	Textiles	<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. 		
	Electricals and electronics	<ul style="list-style-type: none"> • Create series and parallel circuits 		
	Computing	<ul style="list-style-type: none"> • Control and monitor models using software designed for this purpose. 		
	Construction	<ul style="list-style-type: none"> • Choose suitable techniques to construct products or to repair items. • Strengthen materials using suitable techniques. 		
	Mechanics	<ul style="list-style-type: none"> • Use scientific knowledge of the transference of forces to choose appropriate mechanisms for a product (such as levers, winding mechanisms, pulleys and gears). 		

Skills Progression: Design & Technology – Years 5 & 6



Year groups	Master practical skills This concept involves developing the skills needed to make high quality products		Design, make, evaluate and improve This concept involves developing the process of design thinking and seeing design as a process.	Take inspiration from design throughout history This concept involves appreciating the design process that has influenced the products we use in everyday life.
5 & 6 Milestone 3	Food	<ul style="list-style-type: none"> • 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. • Create and refine recipes, including ingredients, methods, cooking times and temperatures. 	<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). • 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. 	<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.
	Materials	<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 sharper scissors than would be used to cut paper). 		
	Textiles	<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). 		
	Electricals and electronics	<ul style="list-style-type: none"> • Create circuits using electronics kits that employ a number of components (such as LEDs, resistors, transistors and chips). 		
	Computing	<ul style="list-style-type: none"> • Write code to control and monitor models or products. 		
	Construction	<ul style="list-style-type: none"> • Develop a range of practical skills to create products (such as cutting, drilling and screwing, nailing, gluing, filing and sanding). 		
	Mechanics	<ul style="list-style-type: none"> • Convert rotary motion to linear using cams. • Use innovative combinations of electronics (or computing) and mechanics in product designs. 		



KS1 (Class 3 – Year 1 & 2) Rolling Programme

Subject	Year A (2022-2023), (2024-2025) (2026-2027) etc.			Year B (2021-2022), (2023-2024), (2025-2026) etc.		
	Autumn Term	Spring Term	Summer Term	Autumn Term	Spring Term	Summer Term
Design and Technology <small>(see Chris Quigley: D & T Curriculum Companion for topic details)</small>	What is Design & Technology? Structures introduction Frame structures	Slider mechanisms Lever mechanisms	Food technology - Portable snacks - Things to remember: i) Sources of food ii) Safety & hygiene	What is Design & Technology? Structures introduction Solid structures	Wheel & axle mechanisms	Food technology - Couscous dish - Things to remember: i) Seasonal food ii) Safety & hygiene

KS2 (Class 2 – Year 3 & 4) Rolling Programme

Subject	Year A (2022-2023), (2024-2025) (2026-2027) etc.			Year B (2021-2022), (2023-2024), (2025-2026) etc.		
	Autumn Term	Spring Term	Summer Term	Autumn Term	Spring Term	Summer Term
Design and Technology <small>(see Chris Quigley: D & T Curriculum Companion for topic details)</small>	What is Design & Technology? App control	Linked levers Frame structures	Food technology - Vegetable soup - Things to remember: i) Balanced diet ii) Seasonal food	What is Design & Technology? Paper circuits	Pneumatics Shell structures	Food technology - Dips - Things to remember: i) Safe storage ii) Seasonal food

KS2 (Class 1 – Year 5 & 6) Rolling Programme

Subject	Year A (2022-2023), (2024-2025) (2026-2027) etc.			Year B (2021-2022), (2023-2024), (2025-2026) etc.		
	Autumn Term	Spring Term	Summer Term	Autumn Term	Spring Term	Summer Term
Design and Technology <small>(see Chris Quigley: D & T Curriculum Companion for topic details)</small>	What is Design & Technology? Artificial intelligence	Arch structures Pulleys and gears	Food technology - Bread - Food throughout the year i) Christmas ii) Diwali	What is Design & Technology? Electronic motors	Frame structures Cams	Food technology - Bolognese - Food throughout the year i) Hanukkah ii) Chinese New Year