



# Disciplinary Knowledge Progression -Design and Technology

As **designers** we learn to:

- **Master practical skills** - by developing the skills needed to make high quality products.
- **Design, make, evaluate, and improve** - by understanding that design is a process
- **Take inspiration from design throughout history** - by appreciating how the design process has influenced things we use in everyday life.

Our intention in DT is to teach our children to become creative and innovative thinkers. With an ever-changing world, we aim to provide our pupils with the skills needed to create, design, and build a variety of technology-based products. Throughout the school, the pupils will have opportunities to explore products and raise questions related to design and purpose. They will be taught to select appropriate materials and use equipment safely. They will be encouraged to refine and redraft their ideas and become critical in their craftsmanship to meet the needs of design specifications.

Disciplinary Knowledge & Skills	Milestones EYFS	Milestones KS1	Milestones Year 3&4	Milestones Year 5&6
<p><b>As designers we will learn to-</b></p> <p><b>Master practical skills in food preparation</b> This involves developing the skills needed to make high quality products.</p>	<p><b>ELG Expressive Arts and Design— Creating with Materials</b></p> <ul style="list-style-type: none"> <li>• Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function.</li> <li>• Share their creations, explaining the process they have used.</li> </ul>	<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 cool 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 microorganisms)</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>
<p><b>As designers we will learn to-</b></p> <p><b>Master practical skills in using materials</b> This involves developing the skills needed to make high quality products.</p>	<p><b>ELG Physical Development — Fine Motor Skills</b></p> <ul style="list-style-type: none"> <li>• Hold a pencil effectively in preparation for fluent writing – using the tripod grip in almost all cases.</li> <li>• Use a range of small tools, including scissors, paintbrushes and cutlery, and begin to show accuracy and care when drawing.</li> </ul>	<ul style="list-style-type: none"> <li>• Cut materials safely using tools provided</li> <li>• Measure and mark out to the nearest cm</li> <li>• Demonstrate a range of cutting and shaping techniques (such as: tearing, cutting, folding, and curling)</li> <li>• Demonstrate a range of joining techniques (such as gluing, hinges or combining materials to strengthen)</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 mm</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> </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> </ul>
<p><b>As designers we will learn to-</b></p>		<ul style="list-style-type: none"> <li>• Shape textiles using templates</li> <li>• Join textiles using running stitch</li> </ul>	<ul style="list-style-type: none"> <li>• Understand the need for a seam allowance</li> <li>• Join textiles with appropriate stitching</li> </ul>	<ul style="list-style-type: none"> <li>• Create objects that employ a seam allowance</li> <li>• Join textiles with a combination of stitching techniques</li> </ul>

<p><b>Master Practical Skills in using textiles</b> This involves developing the skills needed to make high quality products.</p>		<ul style="list-style-type: none"> <li>• Colour and decorate textiles using several techniques (such as dyeing, adding sequins or printing)</li> </ul>	<ul style="list-style-type: none"> <li>• Select the most appropriate techniques to decorate textiles</li> </ul>	<ul style="list-style-type: none"> <li>• Use the qualities of materials to create suitable visual and tactile effects in the decoration of textiles (e.g. soft decorations for comfort)</li> </ul>
<p><b>As designers we will learn to-</b></p> <p><b>Master Practical Skills in using electricals &amp; electronics</b> This involves developing the skills needed to make high quality products.</p>		<ul style="list-style-type: none"> <li>• Diagnose faults in battery operated devices</li> </ul>	<ul style="list-style-type: none"> <li>• Create series circuits</li> </ul>	<ul style="list-style-type: none"> <li>• Create circuits using electronics that employ several components</li> </ul>
<p><b>As designers we will learn to-</b></p> <p><b>Master Practical Skills in Computing</b> This involves developing the skills needed to make high quality products.</p>		<ul style="list-style-type: none"> <li>• Model designs using software</li> </ul>	<ul style="list-style-type: none"> <li>• Control and monitor models using software designed for this purpose</li> </ul>	<ul style="list-style-type: none"> <li>• Write code to control and monitor models or products</li> </ul>
<p><b>As designers we will learn to-</b></p> <p><b>Master practical skills in construction</b> This involves developing the skills needed to make high quality products.</p>		<ul style="list-style-type: none"> <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>• 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>• Develop a range of practical skills to create products (such as cutting, drilling and screwing, nailing, gluing, filing and sanding)</li> </ul>
<p><b>As designers we will learn to-</b></p> <p><b>Master practical skills in mechanics</b> This involves developing the skills needed to make high quality products.</p>		<ul style="list-style-type: none"> <li>• Create products using levers, wheels, and winding mechanisms</li> </ul>	<ul style="list-style-type: none"> <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> </ul>	<ul style="list-style-type: none"> <li>• Convert rotary movement to linear using cams</li> <li>• Use innovative combinations of electronics (or computing) and mechanisms in product designs</li> </ul>
<p><b>As designers we will learn to-</b></p> <p><b>Design, Make, Evaluate &amp; Improve</b></p>		<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> </ul>	<ul style="list-style-type: none"> <li>• Design with the user in mind, motivated by the service a product will offer</li> <li>• Make products through stages of prototypes, making continual refinements</li> </ul>

<p>This involves developing the process of design thinking and seeing the design as a process.</p>			<ul style="list-style-type: none"> <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>• 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>
<p><b>As designers we will learn to</b> – <b>Take Inspirations From Designs Throughout History</b> This involves appreciating the design process that has influenced the products we use in everyday life.</p>		<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 the areas of study 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 to suggest improvements to the user experience</li> </ul>
<p><b>Vocabulary to be taught</b></p>		<p>Planning, investigating, design, evaluate, make, purpose, criteria, product, function</p> <p>Equipment, utensils, food - use sensory vocab (soft, sweet, sticky etc) Slicing, peeling, cutting.</p> <p>Cut, fold, join, fix, structure, framework, underneath, techniques, template, pattern,</p> <p>Mechanism, slide, lever, masking tape, paper fastener, join, vehicle, chassis, moving, tools</p>	<p>In addition to previous years –</p> <p>User, purpose, design, model, evaluate, prototype, annotate, sketch, functional, innovative, investigate, planning, brief, criteria.</p> <p>Hygienic, edible, grown, reared, caught, froze, tinned, processed, seasonal, harvested, ingredients, dough, bran, flour, baking soda, gluten, utensils, knead, whisk, beat,</p> <p>Three-dimensional, shape, net, width, breadth, capacity, scoring, marking, accuracy, material, reduce, reuse, recycle, font, text, graphics.</p> <p>Fabrics, fastening, compartment, strength, weakness, templates, stitch, seam.</p>	<p>In addition to previous years –</p> <p>Specification, research, mock-up, authentic, design criteria,</p> <p>Allergy, intolerance, source, utensils,</p> <p>Frame structure, stiffen, strengthen, reinforce, triangulation, stability, shape, join, temporary, permanent.</p> <p>Sew, seam, seam allowance, hem, template, pins, needles, thread,</p> <p>Motor, circuit, switch, diagram, annotated drawing, exploded diagram, mechanical system, electrical system, wire, cams, dowelling, saw, bulb, bulb holder, battery, conductor, crocodile clip</p>