

# Queenswood Primary School and Nursery

## Design Technology Curriculum Progression



### Design Technology Curriculum Intent and Implementation

At Queenswood, Design Technology is taught as part of a STEM (Science, technology, engineering and mathematics) curriculum, where pupils learn to take risks, become resourceful, innovative, enterprising and capable citizens. STEM lessons happen at least once a week. It is our intent that problem solving is at the heart of learning in this subject area - all STEM lessons are built around the school's progression in thinking skills. It is also encouraged that this thinking approach is developed in all subject areas, when approaching problems. We believe that our children need exposure to risk, challenge and practical problems, in order to ensure they have the skills, knowledge and personal development to meet the challenges that the real-world presents.

All strands of the thinking skills (planning, developing and reflecting) are developed through DT, with a particular focus on making decisions and choosing approaches, valuing unexpected outcomes and monitoring progress as well as thinking logically and critically.

It is our intent that children are exposed to many different designers and styles and develop an appreciation for how particular designs have challenged ideas and introduced new techniques.

There are three strands to the DT curriculum at Queenswood:

**Mastering Practical Skills** – developing the range of skills needed to make high quality end products

**The Design Process** – working through the process of designing, making, evaluating and improving

**Taking Inspiration from Designs throughout History** – being inspired by breakthrough in design in the past, and learning about significant figures who have been responsible for ground-breaking or iconic design

Pupils are taught in cross-curricular topics, making use of links with other subject such as science, computing, literacy, history and geography whenever possible. Our curriculum ensures children gain the knowledge and skills required by the National Curriculum, whilst having plenty of opportunity to re-visit content to ensure it is embedded. The 2-year rolling programme of content coverage is well-designed to promote new learning that is built on prior learning.

The progression below outlines the skills required as children repeat working with different concepts and materials but are taught a greater level of skill, knowledge and understanding as they progress in their design technology learning journey.

To assure that children are retaining the knowledge learned during each unit, where appropriate, a mind-map will be used for children to collect new knowledge and link it with prior learning. At the end of a unit, children will demonstrate their learning by creating 'My Memory Mind-Map' demonstrating the knowledge they have gained, which they will take on to future learning.

#### Safeguarding commitment:

Through our DT curriculum, children will gain independent problem-solving skills, as well as develop the skills for quality teamwork.

Children will be taught explicitly about risks and how to manage them. Through our DT curriculum children will learn and develop greater resilience and perseverance in order to be successful when faced with challenges.

Modern British Values and SMSC are embedded throughout the curriculum at Queenswood, and the DT curriculum allows children to develop their understanding of the democracy, particularly when learning working in groups to make decisions about design brief and approaches to take to solve a problem. Using real-world problems as a contexts can also develop children's understanding of the wider world as well as foster tolerance of different faiths and cultures.

Key Skills and Knowledge		Year 1/2 Expectations	Year 3/4 Expectations	Year 5/6 Expectations
<p><b>Master practical skills</b> This concept involves developing the skills needed to make high quality products (we have highlighted a range of skills but they may be added to or changed)</p>	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>
	Materials	<ul style="list-style-type: none"> <li>• Cut materials safely using tools provided.</li> <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).</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</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</li> </ul>

	<ul style="list-style-type: none"> <li>• Demonstrate a range of joining techniques (such as gluing, hinges or combining materials to strengthen).</li> </ul>	<p>material (such as slots or cut outs).</p> <ul style="list-style-type: none"> <li>• Select appropriate joining techniques.</li> </ul>	<p>fabric may require sharper scissors than would be used to cut paper).</p>
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>
Electricals and electronics	<ul style="list-style-type: none"> <li>• Diagnose faults in battery operated devices (such as low battery, water damage or battery terminal damage).</li> </ul>	<ul style="list-style-type: none"> <li>• Create series and parallel circuits</li> </ul>	<ul style="list-style-type: none"> <li>• Create circuits using electronics kits that employ a number of components (such as LEDs, resistors, transistors and chips).</li> </ul>

	Computing	<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>
	Construction	<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>
	Mechanics	<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 motion to linear using cams.</li> <li>• Use innovative combinations of electronics (or computing) and mechanics in product designs.</li> </ul>
<p><b>Design, make, evaluate and improve</b> This concept involves developing the process of design thinking and seeing design as a process.</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> <li>• Refine work and techniques as work progresses, continually evaluating the product design.</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> </ul>

			<ul style="list-style-type: none"> <li>• Use software to design and represent product designs.</li> </ul>	<ul style="list-style-type: none"> <li>• Use prototypes, cross-sectional diagrams and computer aided designs to represent designs.</li> </ul>
<p><b>Take inspiration from design throughout history</b> This concept 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 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>