

# Cunningham Hill Junior School Year D&T Plan

<b>Opportunities</b>	<p>Through a variety of creative and practical activities, pupils should be taught the knowledge, understanding and skills needed to engage in an iterative process of designing and making. They should work in a range of relevant contexts, such as the home, school, leisure, culture, enterprise, industry and the wider environment.</p> <p>When designing and making, pupils should be taught to:</p> <p><b>Design</b></p> <ul style="list-style-type: none"> <li>• 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.</li> <li>• generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design.</li> </ul> <p><b>Make</b></p> <ul style="list-style-type: none"> <li>• select from and use a wider range of tools and equipment to perform practical tasks, such as cutting, shaping, joining and finishing, accurately.</li> <li>• 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.</li> </ul> <p><b>Evaluate</b></p> <ul style="list-style-type: none"> <li>• investigate and analyse a range of existing products.</li> <li>• evaluate their ideas and products against their own design criteria and consider the views of others to improve their work.</li> <li>• understand how key events and individuals in design and technology have helped shape the world</li> </ul> <p><b>Technical knowledge</b></p> <ul style="list-style-type: none"> <li>• apply their understanding of how to strengthen, stiffen and reinforce more complex structures.</li> <li>• understand and use mechanical systems in their products, such as gears, pulleys, cams, levers and linkages.</li> <li>• understand and use electrical systems in their products, such as series circuits incorporating switches, bulbs, buzzers and motors.</li> <li>• apply their understanding of computing to programme, monitor and control their products.</li> </ul> <p><b>Cooking and nutrition</b></p> <ul style="list-style-type: none"> <li>• understand and apply the principles of a healthy and varied diet.</li> <li>• prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques.</li> <li>• understand seasonality and know where and how a variety of ingredients are grown, reared, caught and processed.</li> </ul>		
<b>Characteristics</b>	<ul style="list-style-type: none"> <li>• Significant levels of originality and the willingness to take creative risks to produce innovative ideas and prototypes.</li> <li>• An excellent attitude to learning and independent working.</li> <li>• The ability to use time efficiently and work constructively and productively with others.</li> <li>• The ability to carry out thorough research, show initiative and ask questions to develop an exceptionally detailed knowledge of users' needs.</li> <li>• The ability to act as responsible designers and makers, working ethically, using finite materials carefully and working safely.</li> <li>• A thorough knowledge of which tools, equipment and materials to use to make their products.</li> <li>• The ability to apply mathematical knowledge.</li> <li>• The ability to manage risks exceptionally well to manufacture products safely and hygienically.</li> <li>• A passion for the subject and knowledge of, up-to-date technological innovations in materials, products and systems.</li> </ul>		
	<b>AUTUMN</b>	<b>SPRING</b>	<b>SUMMER</b>
<b>YEAR 3</b>	<p><b><u>Food Glorious Food - Salads</u></b></p> <p><i>Investigating, designing, making and evaluating balanced and healthy salads.</i></p> <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>	<p><b><u>Silhouette Light Cubes - Construction</u></b></p> <p><i>Designing, creating and evaluating French and shadow inspired light boxes.</i></p> <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> <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> <li>• Use software to design and represent product designs.</li> </ul>	<p><b><u>Moving Books – Mechanics</u></b></p> <p><i>Use scientific knowledge of transferring forces to make a moving book using levers and pulleys inspired by the Adventure Island topic.</i></p> <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> <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 material (such as slots or cut outs).</li> <li>• Select appropriate joining techniques.</li> </ul>

<p><b>YEAR 4</b></p>	<p><b><u>Viking Purses – Textiles</u></b></p> <p><i>Designing and making a Viking inspired container using different stitches and thinking about its suitability for purpose.</i></p> <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> <li>• Design with purpose by identifying opportunities to design.</li> <li>• Refine work and techniques as work progresses, continually evaluating the product design.</li> </ul>		<p><b><u>Inventions – Electricity &amp; Construction</u></b></p> <p><i>Inspired by Greek inventions, design, make and evaluate a product powered by an electrical circuit.</i></p> <ul style="list-style-type: none"> <li>• Create series and parallel circuits</li> <li>• Choose suitable techniques to construct products or to repair items.</li> <li>• Strengthen materials using suitable techniques.</li> <li>• Design with purpose by identifying opportunities to design.</li> <li>• Make products by working efficiently (such as by carefully selecting materials).</li> <li>• Disassemble products to understand how they work.</li> </ul>
<p><b>YEAR 5</b></p>	<p><b><u>Outer Space – Mechanisms</u></b></p> <p><i>Inspired by the Earth, Sun and Moon topic, children to design and construct a moving toy with a space theme.</i></p> <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> <li>• Develop a range of practical skills to create products.</li> <li>• Ensure products have a high quality finish, using art skills where appropriate.</li> </ul>	<p><b><u>Journeys – Construction</u></b></p> <p><i>Children to design and create an effective cargo boat ensuring it can carry weight effectively.</i></p> <ul style="list-style-type: none"> <li>• Develop a range of practical skills to create products (such as cutting, drilling and screwing, nailing, gluing, filling and sanding).</li> <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>• Combine elements of design from a range of inspirational designers throughout history, giving reasons for choices.</li> </ul>	<p><b><u>Bread – Food</u></b></p> <p><i>Experience and taste different types of bread that children eat from around the world before designing and creating their own bread product.</i></p> <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>
<p><b>YEAR 6</b></p>	<p><b><u>Controllable vehicles – Electricity &amp; Mechanisms</u></b></p> <p><i>Design and make a moving vehicle with engine, battery and circuit system (link to WW2 and Science).</i></p> <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> <li>• Develop a range of practical skills to create products (such as cutting, drilling and screwing, nailing, gluing, filling and sanding).</li> </ul>	<p><b><u>What a performance – Textiles</u></b></p> <p><i>Studying Mayan festivals and head-dresses using sewing techniques.</i></p> <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>	