



DT Progression at Meanwood C of E Primary School



<b>CURRICULUM SUBJECT:</b>		<b>Design and Technology</b>	<b>SUBJECT LEADS:</b>	<b>Debbie Johnson</b>
What are the Y6 end of school end goals?		<p>To have practical skills to perform tasks independently which prepares them for life.          Be able to successfully follow the design, make and evaluate process, applying an innovative and creative approach.          To create high-quality finished products that meet a design rationale.          To have a good knowledge of what makes a healthy diet and nutrition.          Have resilience in their approach to testing and have the confidence to take risks.          To have an evaluative mindset and be critical in their thinking.          To have a 'can do' mindset in solving design problems.</p>		
How is the curriculum at Meanwood C of E Primary School sequenced towards these end points?				
<b>EYFS</b>				
<p>The following DT skills will be taught within the EYFS curriculum:</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> <li>• Make use of props and materials when role playing characters in narratives and stories.</li> </ul>				
<b>Year 1</b>			<b>Year 2</b>	
<b>Structures</b>	<p><u>Baby Bear's Chair</u>          To design and make a strong chair for Baby Bear to be able to sit at the table and eat his porridge.</p> <p><b>Designing</b>          Identify different types of structures: man-made and natural.          Identify stable and unstable structural shapes.          Generate design ideas and design a chair, against a set of design criteria, with features that make it stable.</p>			



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	<p><b>Making</b> Make a chair that supports baby bear, using appropriate materials and construction techniques.</p> <p><b>Evaluating</b> Evaluate the chair and explain how you made the model strong, stiff and stable.</p> <p><b>Technical Knowledge</b></p> <ul style="list-style-type: none"><li>• Structures with wide flat bases/legs are the most stable.</li><li>• The shape of a structure affects its strength.</li><li>• A structure is an object that has been made with parts.</li><li>• Materials can be manipulated to improve strength.</li><li>• A stable structure is firmly fixed and unlikely to change.</li><li>• A strong structure is one that doesn't break easily.</li><li>• A stiff structure is one that does not bend easily.</li></ul>	
<b>Mechanisms</b>	<p><u>Christmas Cards with levers/sliders</u></p> <p><b>Designing</b> Generate designs for a functional and appealing Christmas card with a moving mechanism (slider/lever) against a set of design criteria. Generate design ideas through discussion and drawing.</p> <p><b>Making</b> Make the design by assembling the parts and use marking, cutting and joining skills. Use basic tools safely.</p>	<p><u>Ice-cream Vans</u></p> <p><b>Designing</b> Design an ice-cream van that meets design criteria including functioning wheels, axles and axle holders. Create labelled drawings that illustrate movement.</p> <p><b>Making</b> Test and adapt different designs and make a moving vehicle with working wheels and axles, adapting mechanisms when not working and to improve performance.</p>



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	<p><b>Evaluating</b> Review and evaluate the success of the mechanism by testing it to see if it moves as planned and explaining how it can be improved.</p> <p><b>Technical Knowledge</b></p> <ul style="list-style-type: none"> <li>To know that a mechanism is the parts of an object that move together.</li> <li>To know a slider moves an object from side to side and a lever moves an object around a pivot.</li> <li>To know the characteristics that make a successful slider and lever.</li> </ul>	<p><b>Evaluating</b> Evaluate the ice-cream van against design criteria.</p> <p><b>Technical Knowledge</b> Understand that wheels move because they are attached to an axle and identify what stops wheels turning. Know how wheels move: wheels need to be round and attached to a rotating axle. Know that an axle moves within an axle holder which is fixed to the vehicle. Know that the frame of the vehicle needs to be balanced. Recognise where wheels and axels are used in everyday life.</p>
<p><b>Cooking and Nutrition</b></p>	<p><b>Fruit Kebabs</b></p> <p><b>Designing</b> Design a functional and appealing product for themselves using a given set of design criteria, generating design ideas.</p> <p><b>Making</b> Select fruit and vegetables to assemble the product. Use tools safely to cut and prepare fruit/vegetables.</p> <p><b>Evaluating</b> Evaluate the success in relation to taste and appearance and suggest one improvement.</p> <p><b>Technical Knowledge</b></p> <ul style="list-style-type: none"> <li>Know if a food is a fruit or a vegetable.</li> <li>Know where and how fruit and vegetables grow and be able to explain some nutritional benefits.</li> </ul>	<p><b>Wraps</b></p> <p><b>Designing</b> Design a functional and appealing wrap for a specific user using a given set of design criteria. Generate design ideas through drawings and label simple parts. Plan the ingredients and method using a recipe.</p> <p><b>Making</b> Make the design by using a range of tools and ingredients, following the method and using the correct skills. Taste test the product and use finishing techniques to improve the final wrap e.g. seasoning.</p> <p><b>Evaluating</b> Evaluate against the design criteria and suggest a range of improvements</p> <p><b>Technical Knowledge</b> To know how to use tools safely and follow basic food hygiene.</p>



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	<ul style="list-style-type: none"><li>• Know how to use simple techniques to peel, chop, slice and grate.</li><li>• Know how to prepare a simple dish hygienically.</li></ul>	<p>To know what a recipe is and understand a method has a number of steps in order.</p> <p>To understand the Eatwell plate, the five food groups and know the elements of a healthy, balanced diet.</p> <p>To understand where food comes from (plants/animals) and to know food comes from different places around the world.</p>
<b>Textiles</b>		<p><b><u>Making Puppets</u></b></p> <p><b>Designing</b> Design a functional and appealing puppet, using a given set of design criteria for a specific user. Generate design ideas through drawings, label, simple parts and plan the components and stages using a method.</p> <p><b>Making</b> Make a design by using a range of different materials and assembling parts in order Use a wider range of tools safely to cut, join and sew, using finishing techniques to improve the product.</p> <p><b>Evaluating</b> Evaluate against a set of design criteria and suggest a range of improvements</p> <p><b>Technical Knowledge</b> To know what textiles are and to be able to name different fabrics and general uses of fabrics e.g., clothing, tablecloths, bags, curtains. To know how to use simple stitch techniques., e.g running stitch. To know what a template is and why designers use templates.</p>



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Year 3		Year 4
Structures	<p><u>Wooden Framed Christmas Decoration</u></p> <p><b>Designing</b> Design a functional and appealing wooden framed Christmas decoration for a specific user and begin to create own design criteria. Generate design ideas using detailed annotated sketches, diagrams or models. Plan the component parts and method from a given list.</p> <p><b>Making</b> Make the design by following a method, selecting appropriate tools and using safely and accurately to measure/cut/prepare/join. Use finishing techniques to improve the performance of the product e.g. strengthen.</p> <p><b>Evaluating</b> Evaluate against the design criteria, suggest a range of improvements and explain why.</p> <p><b>Technical Knowledge</b> To know how to use tools safely and which tools to use to make the structure successfully. To know methods for strengthening, stiffening and finishing techniques for structures. To know what a net is and the names of complex 3D shapes To know why engineers, use certain structures for certain purposes and simple facts about a structural engineer.</p>	



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Mechanisms	<u>Pneumatic Toys</u>	<u>Slingshot Cars</u>
	<p><b>Designing</b></p> <p>Identify 3 design criteria, design a pneumatic toy and generate ideas by drawing thumbnail sketches and exploded diagrams.</p> <p><b>Making</b></p> <p>Select appropriate equipment and materials to build a working pneumatic system, assemble secure housing and create a pneumatic toy to fulfil the design brief.</p> <p>Select materials due to functional and aesthetic characteristics</p> <p><b>Evaluating</b></p> <p>Test and adapt different designs to improve performance.</p> <p>Evaluate the final pneumatic toy against design criteria.</p> <p><b>Technical Knowledge</b></p> <p>Understand how pneumatic systems work.</p> <p>Understand that pneumatic systems can be used as part of a mechanism.</p> <p>Know that pneumatic systems operate by drawing in, releasing and compressing air.</p> <p>Know that thumbnail sketches get ideas down on paper quickly.</p> <p>Know that exploded diagrams are used to show how different parts of a product fit together</p>	<p><b>Designing</b></p> <p>Develop 5 design criteria to meet client needs and generate ideas by drawing accurate diagrams.</p> <p>Design a slingshot car to meet a design brief with a shape that reduces air resistance. Draw a net to create a structure and personalise the design to meet aesthetic needs.</p> <p>Test and modify different designs and develop a final design.</p> <p><b>Making</b></p> <p>Make the final design by measuring, marking, cutting and assembling all parts accurately.</p> <p><b>Evaluating</b></p> <p>Conduct accurate tests, evaluate the car's performance and draw conclusions, suggesting improvements.</p> <p><b>Technical Knowledge</b></p> <p>Understand that kinetic energy is the energy an object has by being in motion and that all moving things have kinetic energy.</p> <p>Understand that air resistance is the level of drag on an object as it is forced through the air.</p> <p>Know that the shape of an object will affect how it moves due to air resistance.</p> <p>Understand aesthetics is how a product looks.</p>



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<b>Cooking and Nutrition</b>	<p><b><u>Pizza</u></b></p> <p><b>Designing</b> Design a functional and appealing pizza product and packaging for a specific user and begin to create design criteria. Generate design ideas using detailed annotated sketches, diagrams or sample products Plan the ingredients and method from a given list</p> <p><b>Making</b> Make the pizza and packaging by following a method. Select appropriate tools and use safely and accurately to measure, mix, knead, roll, cook, slice and grate. Use finishing techniques to improve the performance of the product e.g. taste</p> <p><b>Evaluating</b> Evaluate against the design criteria, suggest a range of improvements and explain why.</p> <p><b>Technical Knowledge</b> To understand the Eatwell plate and know how to create a healthy meal.</p> <p>To know what a food source is and to know that to get food we need to grow it, raise it, catch it.</p> <p>To know some foods are made from ingredients.</p>	
<b>Textiles</b>		<p><b><u>Book Cover</u></b></p> <p><b>Designing</b> Research existing products and use this to inform the design of a functional and appealing product aimed at a set audience, creating own design criteria</p>



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		<p>Generate design ideas using a mood board, detailed annotated sketches or samples, and use this to design the shape and pattern of the book cover.</p> <p>Plan the most suitable fabric and method</p> <p><b>Making</b></p> <p>Make the design by following a multi-stage method and adapting it to improve it. Select techniques and tools and use safely with increased accuracy to measure/mark/cut/sew (including running, back or blanket stitch.</p> <p>Use finishing techniques to improve the performance of the product e.g., strengthen</p> <p><b>Evaluating</b></p> <p>Evaluate against the design criteria, suggest a range of improvements and explain why, comparing with existing products to discuss strengths and weaknesses.</p> <p><b>Technical Knowledge</b></p> <p>To know that different fabrics have different properties which make them suitable for different purposes.</p> <p>To know. different stitches join fabrics together for different functions e.g., running stitch is quicker, blanket stitch is aesthetically pleasing.</p> <p>To know textiles are flexible materials woven from fibre with a wide range of uses.</p> <p>To know that sewing is joining textile fabrics using a needle and thread.</p>
Electrical Circuits		<p><b><u>Torches</u></b></p> <p><b>Designing</b></p> <p>Research existing products and design a functional and appealing torch aimed at a set audience, creating own design criteria.</p> <p>Generate design ideas using, detailed annotated sketches or models and use these to develop your final design.</p> <p>Plan the component parts and the method</p>





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		<p><b>Making</b>          Make the torch with a working electrical circuit and a switch by following a multi-stage method to assemble components and meet the design criteria.. Select techniques and tools and use safely with increased accuracy to measure/mark/cut/join.          Use finishing techniques/adjustments to improve the performance of the product</p> <p><b>Evaluating</b>          Evaluate the success of the final product, against the design criteria,, suggest a range of improvements and explain why, comparing with existing products to discuss strengths and weaknesses.</p> <p><b>Technical Knowledge</b>          To understand that electrical conductors are materials that electricity can pass through.          To understand that electrical insulators are materials that electricity cannot pass through.          To know that a battery contains stored electricity that can be used to power products.          To know that an electrical circuit must be complete for electricity to flow.          To know that a switch can be used to complete and break a circuit.          To know the features of a torch: case, contacts, batteries, switch, reflector, lamp, lens.</p>
<b>Year 5</b>		<b>Year 6</b>
<b>Structures</b>	<p><b>Bridge Making</b></p> <p><b>Designing</b>          Develop design criteria to meet client needs and generate ideas by drawing accurate diagrams.          Design a bridge that has a stable structure and is able to support weight, developing annotated sketches and detailed diagrams          Test and modify different designs and develop a final design.</p>	



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	<p><b>Making</b> Make a range of different shaped beam and truss bridges that span a distance and support a load. Build a wooden bridge structure by measuring, marking, cutting and assembling all parts accurately. Select appropriate tools and use correct sawing techniques safely.</p> <p><b>Evaluating</b> Identify where a structure needs reinforcement, and adapt the bridge to improve performance. Evaluate the bridge against design criteria.</p> <p><b>Technical Knowledge</b> Understand ways to reinforce structures. Understand how triangles can be used to reinforce bridges. Understand why material selection is important based on properties. Understand the difference between arch, beam, truss and suspension bridges.</p>	
<b>Mechanisms</b>	<p><u><b>Make a Crane</b></u></p> <p><b>Designing</b> Design a crane with a lever, gear and pulley system that can lift a weight and move it from A to B. Experiment with a range of different designs.</p>	<p><u><b>Automata Toys</b></u></p> <p><b>Designing</b> Conduct market research and generate design criteria. Experiment with a range of cams, creating a design for an automata toy, based on a choice of cam to create a desired movement.</p>



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	<p><b>Making</b> Make the final design by measuring, marking and cutting each component. Assemble the gear and pulley system and adjust to ensure effective performance.</p> <p><b>Evaluating</b> Test and evaluate the performance of the crane and make a suggestion for improvement.</p> <p><b>Technical Knowledge</b> Understand mechanisms are devices we create to help us: they are designed to change smaller input forces and motion into greater output force and motion. Know that a lever has a long arm and a fulcrum (a turning point). Understand the object being lifted is the load and the force applied to the load is the effort. Know that a pulley is a wheel joined to another wheel by a belt, the wheels are on a fixed axle and have grooves to guide a rope/cable. The pulley changes the direction of or the amount of force that is needed to lift an object. Understand that a wheel and axle change circular motion into straight motion, decrease effort and increase force. Know that gears are toothed wheels that lock together and turn one another. Gears are used to change the direction of movement.</p>	<p>Draw cross-sectional diagrams to show the inner workings of the automata toy design. Test different designs and make modifications to improve performance and produce the final design</p> <p><b>Making</b> Make the final design by measuring, marking and cutting components accurately to make a stable frame, Assemble the cams, axles and followers to create the desired movement</p> <p><b>Evaluating</b> Evaluate the automata toy and gain client feedback, suggesting improvements.</p> <p><b>Technical Knowledge</b> Know that an automata is a hand powered mechanical toy. Understand that the mechanism in an automata uses a system of cams, axles and followers. Understand that different shaped cams produce different outputs. Understand how linkages change the direction of a force. Know how to use a saw and a set square, safely and accurately</p>
Cooking and Nutrition	<p><b>Bread Making</b></p> <p><b>Designing</b> Research existing bread products and users and use this to inform the product design, and to create own design criteria, aimed at a set audience. Generate, develop and model design ideas using test products/exploding diagrams. Plan the recipe and adapt it to improve/change it, explaining rationale.</p>	



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	<p><b>Making</b> Select ingredients and tools, weigh accurately using different units and follow a given method, using mixing, kneading and cutting skills to safely make the bread. Use a range of finishing techniques to improve the performance and explain why.</p> <p><b>Evaluating</b> Evaluate the end product against design criteria and against a range of existing products on the market, suggesting improvements and explain why.</p> <p><b>Technical Knowledge</b> To know how to use tools safely (including the oven) and follow basic food hygiene. To know how to knead and rub ingredients. To know the nutritional differences of different food groups.</p>	
Textiles		<p><u>Mobile Phone Case</u></p> <p><b>Designing</b> Use a design brief to define research and use this to inform the design of a mobile phone case, aimed at a set audience. Create own design criteria to meet the needs of the audience. Generate and test design ideas using, models, prototypes or ICT software. Plan the component parts and develop own method and explain why.</p> <p><b>Making</b> Make a design by following own method, selecting materials, techniques and tools and demonstrate higher level skills and accuracy to safely measure/mark/cut/sew. (Including cross, stem or chain stitch.)</p>



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		<p>Use a range of finishing techniques, making modifications as you go, to improve the performance of the product. E.g., adding a fastening</p> <p><b>Evaluating</b> Evaluate against the design criteria, suggest a range of improvements and explain why, testing against existing products with the end user</p> <p><b>Technical Knowledge</b> To know how that textile designers use stitches and other techniques (e.g., embroidery) to add aesthetic appeal, and add features to improve functionality (e.g., adding fasteners) To know different textile products (e.g. clothes, bags) can be made from different fabrics to fulfil different functions (e.g. a bag made from leather to be strong, shorts made from cotton to be cool) To know a wide range of fabric properties and their purpose (e.g., wool is an insulator to keep warm, PUL is waterproof).</p>
Electrical Circuits		<p><u>Electrical Traffic Lights</u></p> <p><b>Designing</b> Use a design brief and market research to inform the design of a set of traffic lights with a switch and a circuit., creating own design criteria to meet the needs of a set audience. Generate and test design ideas using models, prototypes or ICT software. Plan the component parts and write a sequence of instructions using a control programme. (Flow chart).</p> <p><b>Making</b> Make the design by following own method, selecting materials, tools and techniques and demonstrate higher level skills and accuracy to safely measure, mark, cut and join. Use a range of finishing techniques, making modifications as you go, to improve performance.</p> <p><b>Evaluating</b></p>



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		<p>Evaluate against a set of design criteria, suggest a range of improvements and explain why. Test final product against existing products/the end user.</p> <p><b>Technical Knowledge</b></p> <ul style="list-style-type: none"><li>To know how to incorporate self-made switches in a circuit.</li><li>To know how simple switches can be made.</li><li>To know how to assess faults in their own electrical systems</li><li>To know the features of a series circuit and a parallel circuit and know how to test components in a series circuit or parallel circuit.</li><li>To know why materials, make good conductors and insulators</li><li>To know how electrical systems are controlled (e.g., flow charts)</li><li>To know that a circuit has to be closed for electricity to flow through it.</li></ul>
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