



DT Threshold Concepts and Progression

Milestone 1		Milestone 2		Milestone 3	
Design Can generate, develop, model and communicate ideas through talking, drawing, templates and where appropriate using computing technologies.		Design Can communicate ideas through annotated sketches.		Design Can generate model and communicate ideas through a range of platforms including exploded diagrams, cross sectional and computer aided designs.	
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Explore existing products to generate ideas Explain what product they will be designing and making Describe what their product will be used for Explain who their product will be used by Use a given design criteria with additional ideas added as whole class/group work. Draw designs that can be annotated Add labels to plans	Use own knowledge and experiences to generate ideas Explain how products will look and work through talking and annotated drawings Design for a purpose for an intended user Understand and follow a simple design criteria	Gather information about the needs and wants of others Identify design features that will appeal to intended users Describe the purpose of a product and how it will work Create a design that meets a range of requirements Use research and develop own design criteria Represent ideas in diagrams and annotated sketches Design innovative, functional, appealing products that are fit for purpose aimed at particular individuals or groups	Generate realistic ideas that meet the needs of the user and take in to account the availability of resources Design products with a clear purpose aimed at a specific user and explain how they will work Produce a detailed plan with labelled diagrams, a written explanation and step by step guide Make labelled drawings showing specific features Generate, develop, model and communicate ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces, and computer aided design. Look at function and aesthetics of materials	Develop own design criteria based on need using research including surveys, interviews and questionnaire (some computer-based) Communicate ideas through discussion, annotated sketches, cross sectional and exploded diagrams. Introduce using prototypes, pattern pieces and computer aided design. Draw up specification for design – link with maths and science	Use research to inform and develop detailed design criteria Design products fit for purpose, aimed at a target market Use knowledge of a broad range of existing products to generate ideas Design products with a clear purpose and indicate design features of the products that will appeal to intended user Use annotated sketches, cross sectional drawings, exploded diagrams, computer aided designs to develop and communicate ideas Clearly communicate final designs Generate realistic ideas that meet the needs of the user and consider



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					availability and costings of resources Work within constraints refining and justifying plans as necessary
Make Can select from and use a range of tools and select and use materials suitable for their design.		Make Can follow a design and chose the most appropriate tools specific for the task.		Make Can work through each stage of the design process using a systematic approach.	
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Discuss steps for making Represent ideas through talking and drawing Choose suitable tools for making Use construction materials, kits, textiles, food and mechanical components Measure, mark, cut and shape materials Follow safety and hygiene procedures	Select from materials, textiles and components according to characteristics and properties Choose suitable tools for making whilst explaining why they should be used Cut, shape, score materials with some accuracy Join, assemble and combine materials and components Use finishing techniques including skills learnt in art Follow safety and food hygiene procedures	Use a wide range of tools and equipment accurately Begin to explain choices for selecting materials and tools Select components according to functional and aesthetic qualities Follow the main stages of making in a systematic order Use wide range of materials including construction materials, kits, textiles, mechanical and electrical components Begin to measure and mark out to the nearest cm Assemble and join materials and components with some accuracy	Select from a broad range of materials and components according to functional properties and aesthetic qualities Select a wider range of tools and techniques for making a product safely Explain choices for selecting materials and tools Place the main stages of making in a systematic order Begin to measure and mark out to the nearest cm and mm Cut, shape, score with accuracy Join textiles with appropriate sewing techniques	Begin to plan and make more independently Explain choices for tools and equipment Use a blanket stitch to join textiles Explore finishing techniques such as precise cutting skills after roughly cutting out a shape	Plan independently suggesting what to do next Use a wider range of tools and equipment explaining reasons for choice Select materials and components according to functional and aesthetic qualities Create step by step plans as a guide to making Use tools safely and following hygiene procedures Independently take exact measurements and mark out to within 1mm Use construction kits, textiles and mechanical components with accuracy



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		<p>Start to think about ideas as they progress and be willing to change it to make improvements</p> <p>Follow safety and hygiene procedures</p>	<p>Begin to select and use different and appropriate finishing techniques to improve the appearance of a product such as hemming, tie dye, fabric paints and digital graphics.</p>		<p>Measure, make a seam allowance, tape, pin, cut, shape and join fabric with precision to make a more complex product</p> <p>Use backstitch, whip stitch to join textiles</p> <p>Refine the finish using techniques to improve appearance of product such as sanding</p>
<p>Evaluate and Improve Can evaluate ideas and products against own design criteria and suggest how products can be improved.</p>		<p>Evaluate and Improve Can evaluate ideas and products against own design criteria and consider the views of others to improve work to ensure it is fit or purpose.</p>		<p>Evaluate and Improve Can critically evaluate the product against the design process and design criteria, considering the views of others to improve work to ensure it is fit for purpose.</p>	
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
<p>Explore and evaluate existing products through experiences and discussion</p> <p>Suggest what is good and how we could improve on existing products</p> <p>Explore what things are made from</p> <p>Talk about their design ideas and what they have made</p> <p>Explain what is going well/ what could be better</p>	<p>Explore and evaluate existing products through discussions, comparisons, and simple written evaluations</p> <p>Explain positives and things to improve on existing products</p> <p>During the process, start to identify strengths and possible changes they could make to refine existing design</p> <p>Begin to understand that iterative process sometimes involves</p>	<p>Explore materials and ingredients of products and suggest reasons for this</p> <p>Investigate and analyse their own and existing products making judgements on the design meeting the intended purpose</p> <p>Consider design criteria throughout the process</p> <p>Evaluate product against original design criteria</p>	<p>Explore and evaluate existing products, explaining the purpose of the product and whether it is designed well to meet the intended purpose</p> <p>Evaluate the appearance and usability of own and pre-existing products.</p> <p>Consider design criteria as they make progress and are willing to alter their plans, sometimes considering the views of others if this helps them to improve their product</p>	<p>Investigate and analyse existing products</p> <p>Evaluate ideas and products against their own design criteria, considering views of others to make improvements</p> <p>Identify strengths and areas for development</p> <p>Consider the views of others, including intended user, whilst evaluating product</p> <p>Start to evaluate a product against original</p>	<p>Critically evaluate the appearance and test the function of a product (own and pre-existing) against the original criteria saying if it's fit for purpose</p> <p>Evaluate ideas and products against the original design criteria, making changes as needed.</p> <p>Complete detailed competitor analysis of other products on the market</p>



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<p>Make simple judgements on how the product meets design ideas</p>	<p>repeating different stages of the process</p> <p>Evaluate product against existing criteria</p>	<p>Evaluate key events and designs linked to their product</p> <p>Suggest changes to improve the design, linking this to design brief</p> <p>Consider views of others including intended user whilst evaluating the product</p>	<p>Evaluate product against their original design criteria</p> <p>Evaluate work both during and at the end of assignment</p>	<p>design specification and carry out tests.</p> <p>Begin to evaluate the design personally and seek evaluation from others</p> <p>Evaluate key designs of individuals in design and how technology has shaped the world</p>	<p>Suggest improvements that could be made considering materials, methods, sustainability of the product and how much a product costs to make.</p>
<p>Food : Cooking and Nutrition Can safety and hygienically prepare healthy dishes using non-standard measures and explain the origin of the ingredients.</p>		<p>Food : Cooking and Nutrition Can safety and hygienically follow a recipe using standard measurements and select appropriate utensils.</p>		<p>Food : Cooking and Nutrition Can create and refine well-presented recipes using available seasonal produce and calculate ratios of ingredients</p>	
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
<p>Understand food comes from plants or animals</p> <p>Learn to use hand tools and kitchen equipment safely</p> <p>Follow hygiene procedures</p> <p>Use food ingredients</p> <p>Cut and grate ingredients</p>	<p>Explain where food comes from in different parts of the world</p> <p>Understand that food has to be farmed, grown elsewhere or caught</p> <p>Name and sort food into the five groups in the Eat well guide</p>	<p>Start to know when, where and how food is grown in the UK, Europe and the wider world</p> <p>Understand how to prepare and cook a variety of predominantly savoury dishes safely and hygienically</p> <p>With support use a heat source to cook ingredients</p>	<p>Understand to be active and healthy, nutritious food and drink are needed to provide energy for the body</p> <p>Start to understand seasonality</p> <p>Use a broader range of cutting and food preparation techniques</p>	<p>Know, explain and give examples of food that is grown, reared and caught in the UK</p> <p>Learn about seasonality and how this affects the food available</p> <p>Understand how food is processed into ingredients that can be eaten or used in cooking</p>	<p>Know, explain and give examples of food that is grown, reared and caught in the UK, Europe and the wider world</p> <p>Plan recipes according to seasonality</p> <p>Explain that foods contain different substances such as protein that are needed for health and be</p>



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<p>Assemble, join and combine ingredients</p> <p>Measure using non-standard measurements</p> <p>With support follow a recipe</p>	<p>Understand that everyone should eat at least five portions of fruit and vegetables every day start to explain why</p> <p>Use a broader range of hand tools and kitchen equipment safely</p> <p>Follow hygiene procedures</p> <p>Cut, slice, peel and grate ingredients</p> <p>Measure and weigh ingredients using measuring cups</p> <p>Follow a simple plan or recipe</p>	<p>Explain components of a healthy diet and apply in planning and cooking dishes</p> <p>Use what they know about the Eat well Guide to design and prepare dishes</p> <p>Know a balanced diet is made of a variety and a balance of different food and drink as depicted in the 'eat well' plate</p> <p>Use techniques of peeling, chopping, slicing, grating, mashing, whisking, mixing, spreading, kneading and baking</p> <p>Begin to cook food using toasters and microwaves</p>	<p>using different cooking utensils</p> <p>Measure and weigh ingredients to the nearest gram and millimetre</p> <p>Use a heat source and become aware of temperature control of a hob/oven.</p> <p>Start to follow a recipe independently</p>	<p>Begin to understand that different food contain different substances- nutrients, water and fibre – that are needed for health</p> <p>Weigh and measure accurately dry ingredients, liquid and time</p>	<p>able to apply these principles when planning and preparing dishes</p> <p>Understand how food is processed into that can be used in cooking or eaten</p> <p>Prepare and cook a variety of dishes safely and hygienically including the use of a heat source</p> <p>Use a range of cooking techniques such as griddling, grilling, frying and boiling</p> <p>Alter methods, cooking times or temperatures</p> <p>Adapt and refine recipes by adding or substituting one or more ingredients to change appearance, taste, texture and aroma</p> <p>Measure accurately and calculate ratios of ingredients to scale up or down from a recipe</p> <p>Independently follow a recipe</p>
<p>Mechanics Can use levers, wheels and winding mechanisms.</p>		<p>Mechanics Can use gears and linkages in a product</p>		<p>Mechanics Can select from a range of mechanical systems to use in a product (e.g. gears, pulleys, cams, levers and linkages)</p>	



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<p>Create a sliding mechanism</p> <p>Use levers and pivots to explore different moving mechanisms</p> <p>Create a wheel mechanism</p> <p>Design a picture with a moving mechanism</p> <p>Make a themed moving picture</p>	<p>Explore different ways of using mechanisms – levers, sliders, wheels and axles, chassis to create a moving base</p> <p>Design a vehicle with wheels, axles and chassis as well as a body</p> <p>Follow a design to make a moving vehicle</p> <p>Evaluate a moving vehicle</p>	<p>Explore moving parts in storybooks, suggesting how they work and what purpose they serve</p> <p>Explain words linkage, pivot, rotate and lever</p> <p>Use a paper concertina to make an object pop out of a book</p> <p>Arrange and stick paper between pages to create a pop up</p> <p>Use levers to create moving parts</p> <p>Create a moving wheel mechanism to create different effects</p> <p>Experiment with techniques to create moving mechanisms</p> <p>Make a storybook with moving mechanisms using a design</p>	<p>Understand and use mechanical systems in their products (gears, pulleys, cams. Levers and linkages)</p> <p>Understand mechanical and electrical systems have an input, process and output</p> <p>Use correct technical vocabulary for the project they are undertaking</p> <p>Understand how the mechanical systems and the pneumatic systems create movement</p>	<p>Define what a machine is and what kind of machines the ancient Chinese might have used.</p> <p>Investigate the use of water and water wheels to power different machines and their impact and effect on trade and industry</p> <p>Explore the different types of water wheel and how, when connected to different cogs, levers and pulley systems, they were used in many different ways.</p> <p>Explore Su Song's astronomical clock</p> <p>Work with bigger and smaller cogs to gear up and gear down mechanisms in a clock</p> <p>Describe how a transmission of gears move in comparison to each other</p> <p>(Extension) Use a crank to change the movement from circular to linear</p>	<p>Understand the impact that the invention of mechanical systems had in the past</p> <p>Use modular construction kits to explore ways in which gears can be combined to create different movement.</p> <p>Describe how a transmission of gears move in comparison to each other</p> <p>Explore own transmissions and how different movements can be created.</p> <p>Draw a range of mechanisms and describe what they do</p> <p>Know that Charles Babbage created the first mechanical computer</p>



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Textiles Can shape textiles using a template, join using a running stitch and decorate		Textiles Can join by selecting an appropriate stitch and decorate using a taught technique.		Textiles Can select from a wide range of stitches and combine stitches to suit the function of the product.	
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
<p>Identify the textiles used to make the product</p> <p>Choose materials to use based on suitability of their properties</p> <p>Create templates/patterns pieces and explore materials whilst developing ideas</p> <p>Join by selecting an appropriate stitch and decorate using a taught technique.</p>	<p>Explore a variety of puppets, identifying and labelling their features</p> <p>Cut out felt using a simple template</p> <p>Stick felt together to make a finger puppet. Add materials to create features such as eyes, mouth.</p> <p>Use running stitch and overstitch to join fabric.</p> <p>Sew a button on to fabric. Design a glove puppet for a particular purpose.</p> <p>Follow a design to make a glove puppet by sewing two pieces of fabric together and adding decorations.</p> <p>Evaluate the finished glove puppet by identifying what went well and what could be improved</p>	<p>Use research and develop design criteria to inform the design of innovative, functional, appealing product that is fit for purpose, aimed at individuals or groups</p> <p>Explain the difference between the function and visual appeal of a product.</p> <p>Use pins to fasten two pieces of fabric together.</p> <p>Use a template to cut out front and back patterns.</p> <p>Pin and tack fabrics, use patterns and join fabrics with a running stitch, back stitch, overstitch and zigzag stitch.</p> <p>Sew a button, bead, sequin or pipe cleaner. Evaluate the function and visual appeal of the end product.</p>	<p>Measure, tape, cut and join fabric with some accuracy</p> <p>Join textiles using a running stitch</p> <p>Understand seam allowance and create simple patterns</p> <p>Begin to use finishing techniques to strengthen and improve the appearance of their product using a range of equipment.</p> <p>Embroider shapes and patterns</p> <p>Hide a finishing knot</p> <p>Sew a button, bead, sequin, pipe cleaner and use applique to add decoration to fabric</p>	<p>Demonstrate how to measure, tape, cut and join fabric with some accuracy.</p> <p>Create pattern pieces and prototypes.</p> <p>Identify straight stitch, zigzag stitch, whip/blanket stitch, blind stitch, button hole stitch and overlook stitch on readymade garments</p> <p>Sew a basting stitch, whip stitch, hems, back stitch</p> <p>Pin and tack fabrics, use patterns and seams allowances and join fabrics to make quality products</p> <p>Begin to use finishing techniques to strengthen and improve the appearance of their product using a range of equipment and adding</p>	<p>Sew using a range of different stitches to weave and knit.</p> <p>Begin to use finishing techniques to strengthen and improve appearance of their product using a range of equipment</p> <p>Pin and tack fabrics, use patterns and seams allowances and join fabrics to make quality products</p> <p>Understand and use a pattern piece to measure, mark and sew fabric</p>



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				appropriate decoration techniques (e.g. applique)	
Materials Can measure, cut and join using techniques and tools provided Measure using templates / non-standard measures Year 2: Begin to introduce measuring in standard units		Materials Can use selected tools to measure, mark, cut, shape and join materials. -Measure using templates -Specific measurements to the nearest cm		Materials Can cut materials with precision and refine the finish.	
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Mark and cut materials Assemble and combine materials and components Talk about design ideas and what they have made	Select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting and finishing], accurately Select from and use a wider range of materials and components according to their functional properties and aesthetic qualities	Select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately Select from and use a wider range of materials and components according to their functional properties and aesthetic qualities Use sheet materials and construction tools with appropriate supervision. Explain how certain materials are used to make structures more stable.	Apply their understanding of how to strengthen, stiffen and reinforce more complex structures Explore shape of structure and stability Know how weight, shape and width of the base affects security and stability	Measure, mark out, cut, score and assemble components with accuracy. Start to work safely and accurately with a range of simple tools. Choose materials to use based on suitability of their properties. Start to think about their ideas as they make progress and be willing to change things if this helps them improve their work. Start to understand whether products can be recycled or reused.	Use construction materials appropriately. Start to join and combine material and components accurately in temporary and permanent ways. Understand how to reinforce and strengthen a 3D framework. Start to think about their ideas as they make progress and be willing to change things if this helps them improve their work. Start to understand if products can be recycled or reused. Begin to use finishing techniques to strengthen and improve appearance of their product using a range of equipment including ICT.



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		Electronics Can create and use series and parallel circuits		Electronics Can create circuits that use a number of components.	
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
		<p>Understand that simple electrical systems are used in products all around us</p> <p>Programming and Electrical systems</p> <p>Start to understand that electrical systems have an input process and an output.</p> <p>Know how simple electrical circuits and components can be used to create functional products</p> <p>Create a series of simple electrical circuits and parallel circuits to create functional products</p>		<p>Program Electrical Systems</p> <p>Create more complex electrical circuits and components to create functional products</p> <p>Understand that electrical systems have input process and output</p> <p>Develop a design brief for a product</p> <p>Incorporate one or more different electrical component in their system</p> <p>Draw and label a product with an embedded system.</p> <p>Make prototype models to communicate ideas and control them using electronic components</p> <p>Explore prototypes built on a 'breadboard'</p>	
Computing Can use ICT in product designs, where appropriate.		Computing Understand that computers and computer programs are used in a variety of products.		Computing Use a computer to program, monitor and control products.	
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6



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<p>Use simple computer software</p> <p>Purple Mash: To Paint design programmes</p>	<p>Experiment with different fonts and graphic design features</p> <p>Begin to recognise products or devices which might be monitored and controlled by an embedded system</p> <p>Observe how buttons, switches, lights, speakers, motors or sensors are monitored and controlled</p> <p>Communicate and develop ideas by discussing, annotating diagrams and writing instructions</p> <p>Use computer aided designs</p> <p>Use finishing techniques to strengthen and improve appearance of their product using ICT</p>	<p>Program a computer to monitor changes in the environment and control products</p> <p>Develop ideas for a product with an embedded computer system that controls it.</p> <p>Write an algorithm and/or draw a flow chart which describes how the embedded system in the product</p> <p>Write programs to monitor and control a product.</p> <p>Develop prototypes of a computer-controlled system</p> <p>Improve prototype designs by 'debugging' software and/or hardware</p> <p>Explore computer software and programming: Raspberry Pi hardware, Scratch 2 software, Arduino microcontrollers, Picoboards, LEGO WeDo or BBC micro:bit microcontrollers</p> <p>Evaluate a design for a computer-controlled system and consider the views of others to improve work.</p> <p>Explain how computer scientists have helped shape the world: Ada Lovelace, Steve Jobs and Steve Wozniak: Apple Inc</p>
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