

Design Technology - Curriculum Milestones Early Years to Year 6

	Nursery (3-4 years)	Reception	Early Learning Goals
Threshold concepts <i>The big ideas that pupils need to understand.</i>	The development of children’s artistic and cultural awareness supports their imagination and creativity. It is important that children have regular opportunities to engage with the arts, enabling them to explore and play with a wide range of media and materials. The quality and variety of what children see, hear and participate in is crucial for developing their understanding, self-expression, vocabulary and ability to communicate through the arts. The frequency, repetition and depth of their experiences are fundamental to their progress in interpreting and appreciating what they hear, respond to and observe.		
Expressive Arts and Design	<p>Make imaginative and complex ‘small worlds’ with blocks and construction kits, such as a city with different buildings and a park.</p> <p>Explore different materials freely, to develop their ideas about how to use them and what to make. Develop their own ideas and then decide which materials to use to express them. Join different materials and explore different textures.</p>	<p>Return to and build on their previous learning, refining ideas and developing their ability to represent them. Create collaboratively, sharing ideas, resources and skills.</p>	<p>ELG: Creating with Materials. Children at the expected level of development will: Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function; Share their creations, explaining the process they have used;</p>

	Year 1	Year 2	End of KS1 (NC)
Threshold concepts <i>The big ideas that pupils need to understand.</i>	Follow simple instructions to make a product and comment on their likes/dislikes.	Take ownership in designing and making a product that meets a simple design criteria. To express their ideas in appropriate methods e.g talking, ICT etc.	Design purposeful, functional, appealing products for themselves and other users based on design criteria.
Design	<ul style="list-style-type: none"> Follow simple instructions to create a product. 	<ul style="list-style-type: none"> Design appealing products based on 	

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<p><i>Knowledge and/or skills</i></p>	<ul style="list-style-type: none"> Design products based on simple given design criteria. Generate initial ideas from their own experiences. Communicate these ideas through talk and simple drawings. <p><i>planning, investigating design, evaluate, make, user, purpose, ideas, product</i></p>	<p>simple given design criteria for a particular user/purpose.</p> <ul style="list-style-type: none"> Generate initial ideas from their own experiences. Develop, model and communicate their ideas through talking, mock-ups and drawings and where appropriate, ICT. <p><i>investigating, planning, design, make, evaluate, user, purpose, ideas, design criteria, product, function</i></p>	<p>Generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and, where appropriate, information and communication technology.</p> <p>Select from and use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing].</p>
<p>Make</p> <p><i>Knowledge and/or skills</i></p> <p><i>planning, investigating design, evaluate, make, user, purpose, ideas, product, design criteria, product, function</i></p>	<p>Construction</p>	<ul style="list-style-type: none"> Select and use simple equipment and tools to perform a job e.g. cutting, shaping, joining and explain their choices Safely and accurately cut materials with increasing accuracy and safely using scissors. Select from a range of materials according to their characteristics to create a chosen product. Use simple decoration suitable for the products they are creating. Know how to make freestanding structures stronger, stiffer and more stable. Begin to use key vocabulary accurately. <p><i>cut, fold, structure, side, edge, surface, three-dimensional (3-D) shape, net, cube, marking out, scoring, shaping, adhesives, joining, assemble, accuracy, material</i></p>	<p>Select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics.</p> <p>Use the basic principles of a healthy and varied diet to prepare dishes.</p> <p>Understand where food comes from. Explore and evaluate a range of existing products.</p> <p>Evaluate their ideas and products against design criteria.</p> <p>Build structures, exploring how they can be made stronger, stiffer and more stable.</p>
	<p>Textiles</p>	<ul style="list-style-type: none"> Understand how simple 3-D textile products are made, using a template to create two identical shapes. Understand how to join fabrics using different techniques e.g. glueing, stapling. Introduce and begin to practise simple stitches e.g threading. <p><i>joining and finishing techniques, tools, fabrics and components, template, pattern pieces, mark out, join, decorate, finish</i></p>	
	<p>Mechanisms</p>	<ul style="list-style-type: none"> Explore and use sliders and levers. Understand that different mechanisms produce different types of movement. Explore and use wheels and axles. 	

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	<p>Cooking and Nutrition</p>	<ul style="list-style-type: none"> ● Distinguish between fixed and freely moving axles. <ul style="list-style-type: none"> ● Understand and use basic principles of a healthy and varied diet, including how the food groups are part of The Eatwell Plate. ● Understand where food has come from e.g. foods that come from plants and animals. ● Follow simple instructions to prepare simple dishes safely and hygienically using simple cooking techniques. ● Know and use technical and sensory vocabulary. <p><i>fruit and vegetable names, names of equipment and utensils sensory vocabulary e.g. soft, juicy, crunchy, sweet, sticky, smooth, sharp, crisp, sour, hard flesh, skin, seed, pip, core, slicing, peeling, cutting, squeezing, healthy diet, choosing, ingredients.</i></p>	<p>Explore and use mechanisms [for example, levers, sliders, wheels and axles], in their products.</p>
<p>Evaluate <i>Knowledge and/or skills</i></p>	<ul style="list-style-type: none"> ● Taste, explore and comment on their likes and dislikes for the product. ● Check their ideas and finished product against the given design criteria. 	<ul style="list-style-type: none"> ● Compare their product to existing products. ● Taste, explore and comment on their likes and dislikes based on simple given design criteria for a particular user/purpose. ● Comment on how they could improve their product/skills next time. ● Check their ideas and finished product against a given design criteria, including intended user and purpose 	

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	Year 3	Year 4	Year 5	Year 6	End of KS2 (NC)
<p>Threshold concepts <i>The big ideas that pupils need to understand.</i></p>	<p>To create a product following a design criteria that is fit for purpose.</p> <p>To generate ideas and plan.</p>	<p>Follow a specific design brief to create a product that meets the intended user.</p> <p>To generate ideas and plan using different techniques.</p>	<p>To begin to develop a design criteria to create a product with an intended purpose.</p> <p>To use research to gather ideas.</p> <p>Develop an understanding of design and technologies impact on daily life and the wider world</p>	<p>Using creativity to design and make products that solve real life problems</p> <p>Consider the user's needs as well as their own needs, wants and values.</p> <p>Make explicit links to other subjects such as maths, science, computing and art.</p> <p>Evaluate past and present design and technology</p> <p>Develop a critical understanding of design and technologies impact on daily life and the wider world</p>	<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 [for example, the home, school, leisure, culture, enterprise, industry and the wider environment].</p>
<p>Design <i>Knowledge and skills</i></p>	<ul style="list-style-type: none"> ● Follow design criteria to create an appealing, functional product fit for purpose. ● Generate realistic ideas through classroom discussion. ● Use annotated sketches and 	<ul style="list-style-type: none"> ● Generate ideas through discussion with peers to develop a design criteria. ● Create a design criteria that is fit for purpose, aimed at particular individuals or groups. ● Use annotated sketches, cross-sectional and exploded diagrams to further develop and 	<ul style="list-style-type: none"> ● Generate ideas through research including surveys, interviews and questionnaires. ● Create a design brief and criteria for a design specification. ● Design purposeful, functional, 	<ul style="list-style-type: none"> ● Generate ideas using surveys, interviews, questionnaires and web-based resources to develop a design specification for a range of functional products. ● Develop a simple design specification to guide the development of their ideas and products, 	<p>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</p>

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	<p>prototypes to design their product.</p> <ul style="list-style-type: none"> • Plan the main stages of making. • Select from and use a range of appropriate utensils, tools and equipment with some accuracy related to their product. • Use technology to research and further develop ideas. • Identify famous designers and the impact they have had on the world. 	<p>communicate their ideas.</p> <ul style="list-style-type: none"> • Use technology to research and further develop ideas. • Generate, develop, model and communicate realistic ideas through discussion with peers. • Identify and study famous designers and the impact they have had on the world. • Order the main stages of making. • Select and use appropriate tools to measure, mark out, cut, score, shape and combine with some accuracy related to their products. • Explain their choice of materials according to functional properties and aesthetic qualities. • Select from and use materials and components, including ingredients, construction and electrical components according to their function and properties 	<p>appealing products for the intended user that are fit for purpose based on a simple design specification.</p> <ul style="list-style-type: none"> • Develop and communicate ideas through discussion, annotated drawings, exploded drawings and drawings from different views. and, where appropriate, computer-aided design. • Develop a simple design specification to guide the development of their ideas and products, taking account of constraints including time, resources and cost. • Formulate a plan with a step-by-step list of tasks and resources. • Identify and study famous designers and the impact they have had on 	<p>taking account of constraints including time, resources and cost.</p> <ul style="list-style-type: none"> • Generate and develop innovative ideas and share and clarify these through discussion. • Communicate ideas through annotated sketches, pictorial representations of electrical circuits or circuit diagrams. • Formulate a step-by-step plan to guide making, listing tools, equipment, materials and components. • Competently select from and use appropriate tools to accurately measure, mark, cut and assemble materials, and securely connect electrical components to produce reliable, functional products. • Research user needs and existing products to develop and model innovative ideas into their design. • Identify famous designers and the impact they have had on the world. 	<p>groups.</p> <p>Generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design</p> <p>Select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately</p> <p>Select from and use a wider range of materials and components, including construction materials, textiles and ingredients, according to their functional</p>
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			<p>the world. Use their work to generate ideas.</p> <ul style="list-style-type: none"> • Select from and use, a range of appropriate utensils, tools and equipment accurately to measure and combine appropriate ingredients, materials and resources. 	<p>properties and aesthetic qualities</p> <p>Identify famous designers and the impact they have had on the world.</p> <p>Apply their understanding of how to strengthen, stiffen and reinforce more complex structures</p>
<p>Make <i>Knowledge and skills</i></p> <p><i>user, purpose, design, model, evaluate, prototype, annotated sketch, functional, innovative, investigate, label, drawing, function, planning, design criteria, annotated sketch, appealing, evaluating, design brief design criteria, prototype, design criteria, innovative, appealing, design brief, annotated</i></p>	<p>Construction</p> <ul style="list-style-type: none"> • Develop and use knowledge of how to construct strong, stiff shell structures (hollow shape structures). • Develop and use knowledge of basic nets, where appropriate. • Know and use technical vocabulary relevant to the project. • Generate and develop realistic ideas and design criteria collaboratively (verbal, drawn with labels) • Begin to understand/research user needs and apply this to their end product. • Order the stages of making; selecting tools and using with some accuracy. • Use tools with increasing accuracy to measure, mark out, cut, shape and join materials to make frameworks. • Test and evaluate own products against design criteria and intended user and purpose 	<ul style="list-style-type: none"> • Develop and use knowledge of how to construct strong, stiff shell structures which might include complex nets for 3D shapes. • Know and use a wide range of technical vocabulary relevant to the project. • Show a clear understanding/knowledge of user needs and apply this to their end product. • Use a range of tools to accurately measure, mark out, cut, shape and join materials to make frameworks. • Use finishing techniques suitable for the product. • Critically evaluate their products against a range of criteria. • Research key events and individuals relevant to frame structures - link to how we use construction nowadays. 	<p>Understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages]</p> <p>Understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors]</p>	
	<p>Textiles</p> <ul style="list-style-type: none"> • Develop and use knowledge for how to strengthen, stiffen and reinforce existing fabrics. • Develop knowledge for how to securely join two 	<ul style="list-style-type: none"> • Produce a 3-D textile product from a combination of accurately made pattern pieces, fabric shapes and different fabrics. 	<p>Apply their understanding of computing to</p>	

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<p><i>sketch, sensory evaluations</i></p> <p><i>design decisions, functionality, authentic, user, purpose, design specification, design brief, innovative, research, evaluate, design criteria, annotate, evaluate, mock-up, prototype, function, design brief, annotated sketch, innovation, research, functional, mock-up, prototype</i></p>		<p>pieces of fabric together (using simple stitches, e.g. running stitch).</p> <ul style="list-style-type: none"> Understand the need for patterns and seam allowances. <p><i>fabric, names of fabrics, fastening, compartment, structure, finishing technique, strength, weakness, stiffening, templates, stitch, seam, seam allowance</i></p>	<ul style="list-style-type: none"> Know how to strengthen, stiffen and reinforce existing fabrics. Understand how to securely join two pieces of fabric together (using a variety of stitches, e.g. running stitch, over stitch) <p><i>seam, seam allowance, wadding, reinforce, right side, wrong side, hem, template, pattern pieces, name of textiles and fastenings used, pins, needles, thread, pinking shears, fastenings,</i></p>	<p>program, monitor and control their products.</p> <p>Investigate and analyse a range of existing products</p> <p>Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work</p> <p>Understand how key events and individuals in design and technology have helped shape the world.</p>
	Mechanisms	<ul style="list-style-type: none"> Understand and use lever and linkage mechanisms. Distinguish between fixed and loose pivots. Know and use technical vocabulary relevant to the project. <p><i>mechanism, lever, linkage, pivot, slot, bridge, guide system, input, process, output linear, rotary, oscillating, reciprocating</i></p>	<ul style="list-style-type: none"> Understand that mechanical and electrical systems have an input, process and an output. Understand how gears and pulleys can be used to speed up, slow down or change the direction of movement. Know and use technical vocabulary relevant to the project. <p><i>pulley, drive belt, gear, rotation, spindle, driver, follower, ratio, transmit, axle, motor, circuit, switch, circuit diagram, annotated drawings, exploded diagrams, mechanical system, electrical system, input, process, output</i></p>	
	Cooking and Nutrition	<ul style="list-style-type: none"> Know about a range of fresh and processed ingredients and whether they are grown, reared or caught. Use appropriate equipment and utensils to prepare and combine food following recipes. Know and use relevant technical and sensory vocabulary appropriately. <p><i>name of products, names of equipment, utensils, techniques and ingredients texture, taste, sweet, sour, hot, spicy, appearance, smell, preference, greasy, moist, cook, fresh, savoury, hygienic, edible,</i></p>	<ul style="list-style-type: none"> Understand about seasonality in relation to food products and the source of different food products. Know how to use utensils and equipment including heat sources to prepare and cook food. Know and use relevant technical and sensory vocabulary. <p><i>ingredients, yeast, dough, bran, flour, wholemeal, unleavened, baking soda, spice, herbs, fat, sugar, carbohydrate, protein, vitamins, nutrients, nutrition, healthy, varied, gluten, dairy, allergy, intolerance, savoury, source, seasonality utensils,</i></p>	

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		<i>grown, reared, caught, frozen, tinned, processed, seasonal, harvested healthy/varied diet</i>	<i>combine, fold, knead, stir, pour, mix, rubbing in, whisk, beat, roll out, shape, sprinkle, crumble</i>		
	Electrical Components	<ul style="list-style-type: none"> Understand and use electrical systems in their products linked to science coverage. Apply their understanding of computing to program and control their products. Know and use technical vocabulary relevant to the project. <p><i>series circuit, fault, connection, toggle switch, push-to-make switch, push-to-break switch, battery, battery holder, bulb, bulb holder, wire, insulator, conductor, crocodile clip, control, program, system, input device, output device</i></p>			
Evaluate <i>Knowledge and skills</i>	<ul style="list-style-type: none"> Investigate a range of 3-D textile products, ingredients and levers and linkage products relevant to their project. Test their product against the original design criteria and with the intended user. Evaluate the ongoing work and the final product with reference to the design criteria and then views of others. 	<ul style="list-style-type: none"> Investigate and evaluate a range of products including the ingredients, materials, components and techniques that are used. Test and evaluate their own products against design criteria and the intended user and purpose. Evaluate their ideas and products against their own design criteria and identify the strengths and areas for improvement in their work. 	<ul style="list-style-type: none"> Investigate and analyse products linked to their final product. Compare the final product to the original design specification and record the evaluations. Test products with intended user and critically evaluate the quality of the design, manufacture, functionality and fitness for purpose. Consider the views of others to improve their work. 	<ul style="list-style-type: none"> Continually evaluate and modify the working features of the product to match the initial design specification. Critically evaluate their products against their design specification, intended user and purpose, identifying strengths and areas for development, and carrying out appropriate tests. Test the system to demonstrate its effectiveness for the intended user and purpose. Pitch/present their product to an audience and consider their views to improve their work. 	