

DT PROGRESSION OF SKILLS

Area of study		Foundation	Key Stage 1		Lower Key Stage 2		Upper Key Stage 2	
		EYFS	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	Yr 6
DESIGNING	NC OBJECTIVES		<ul style="list-style-type: none"> design purposeful, functional, appealing products for themselves and other users based on design criteria generate, develop, model and communicate their ideas through talking, drawing, templates, mockups and, where appropriate, information and communication technology 		<ul style="list-style-type: none"> 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 generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design 			
	Understanding contexts, users and purposes	3-4Y *Explore different materials freely, in order to develop their ideas about how to use them and what to make	<ul style="list-style-type: none"> work confidently within a range of contexts, such as imaginary, story-based, home, school, gardens, playgrounds, local community, industry and the wider environment state what products they are designing and making say whether their products are for themselves or other users describe what their products are for say how their products will work say how they will make their products suitable for their intended users use simple design criteria to help develop their ideas 		<ul style="list-style-type: none"> work confidently within a range of contexts, such as the home, school, leisure, culture, enterprise, industry and the wider environment describe the purpose of their products indicate the design features of their products that will appeal to intended users explain how particular parts of their products work 			
	Generating, developing, modelling and communicating ideas	Birth – 3 *Use their imagination as they consider what they can do with different materials. 3-4Y *Develop their own ideas and then decide which materials to use to express them Reception *Create collaboratively sharing ideas, resources and skills	<ul style="list-style-type: none"> generate ideas by drawing on their own experiences use knowledge of existing products to help come up with ideas develop and communicate ideas by talking and drawing model ideas by exploring materials, components and construction kits and by making templates and mockups use information and communication technology (paint, simulation software), where appropriate, to develop and communicate their ideas 		<ul style="list-style-type: none"> share and clarify ideas through discussion model their ideas using prototypes and pattern pieces 			
					<ul style="list-style-type: none"> gather information about the needs and wants of particular individuals and groups develop their own design criteria and use these to inform their ideas 	<ul style="list-style-type: none"> carry out research, using surveys, interviews, questionnaires and web-based resources identify the needs, wants, preferences and values of particular individuals and groups develop a simple design specification to guide their thinking 		
Vocabulary	Plan-Draw- Ideas-Design	Prepare-Materials-Ideas-User-Model-Development Market Research-Survey-Template-Product-Function-Purpose		Organise-Prototype-Initial ideas-Criteria-Diagrams-Labels-Annotate-Design Brief-Product-Consumer-Customer-Target audience-Purpose-Application-Constraints-Client-Model-Functional-Innovative-Appelling-Draw-Annotated sketch-Sensory evaluation			Design decision-Functionality-Authentic-Design specification-Design brief-Innovate-Research-Evaluate-Design criteria-Mock up-Prototype-Function-Annotated sketch-Exploded diagram-Cross sectional drawing	

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MAKING	NC OBJECTIVES	ELG *Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function	<ul style="list-style-type: none"> select from and use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing] select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics 	<ul style="list-style-type: none"> 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, including construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities 				
	Planning		<ul style="list-style-type: none"> plan by suggesting what to do next select from a range of tools and equipment, explaining their choices select from a range of materials and components according to their characteristics (functional properties (reflective, strong, waterproof), aesthetic qualities (patterned, shiny), sensory characteristics (appearance, taste, smell)) 	<ul style="list-style-type: none"> select tools and equipment suitable for the task explain their choice of tools and equipment in relation to the skills and techniques they will be using select materials and components suitable for the task explain their choice of materials and components according to functional properties and aesthetic qualities 				
				<ul style="list-style-type: none"> order the main stages of making 	<ul style="list-style-type: none"> produce appropriate lists of tools, equipment and materials that they need formulate step-by-step plans as a guide to making 			
	Practical skills and techniques	Birth to 3 *Make simple models which express their ideas	<ul style="list-style-type: none"> follow procedures for safety and hygiene use a range of materials and components, including construction materials and kits, textiles, food ingredients and mechanical components measure, mark out (nonstandard & standard units), cut and shape materials and components assemble, join and combine materials and components use finishing techniques, including those from art and design 	<ul style="list-style-type: none"> follow procedures for safety and hygiene use a wider range of materials and components than KS1, including construction materials and kits, textiles, food ingredients, mechanical components and electrical components 				
3-4Y *Join different materials and explore different textures		<ul style="list-style-type: none"> measure, mark out, cut and shape materials and components with some accuracy assemble, join and combine materials and components with some accuracy apply a range of finishing techniques, including those from art and design, with some accuracy 		<ul style="list-style-type: none"> accurately measure, mark out, cut and shape materials and components accurately assemble, join and combine materials and components accurately apply a range of finishing techniques, including those from art and design use techniques that involve a number of steps demonstrate resourcefulness when tackling practical problems 				
Vocabulary	Make-Build-Combine-Join-Shape-Tools	Design-Draw-Sketch-Fix-Glue-Attach-Brick-Wood-Stone-Cloth-Metal-Foam-Felt-Paper-Tissue-Newspaper-Cardboard-String-Wool-Clay-Scissors-Tape-Cut-Stick-Decorate-Stencil-Hole punch-Serrated knife-Template-Functional properties-Aesthetic qualities-Sensory characteristics <u>Assemble, join & combine:</u> Masking tape, paper fastener, mixing <u>Finishing techniques:</u> paint, digital texts, graphics, sandpaper, fabric paint, adding parts (Sequins), running stitch, stapling, lacing, gluing	Mould-Form –Shape-Adhesive –Lattice-Hand-made-Machine made-Dimensions-Axle <u>Equipment:</u> Ruler, try square, junior hacksaw, jointing jig, bench hook, sandpaper, PVA glue, electric wires, wire snippers, screwdriver, bulb holder, battery, motor	Adapt-Modify- Manufactured <u>Equipment:</u> Ruler, try square, junior hacksaw, jointing jig, bench hook, sandpaper, PVA glue, electric wires, wire snippers, screwdriver, bulb holder, battery, motor				

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EVALUATING	NC OBJECTIVES	ELG *Share their creations, explaining the process they have used.	<ul style="list-style-type: none"> explore and evaluate a range of existing products evaluate their ideas and products against design criteria 		<ul style="list-style-type: none"> investigate and analyse a range of existing products evaluate their ideas and products against their own design criteria and consider the views of others to improve their work understand how key events and individuals in design and technology have helped shape the world 			
	Own ideas and products		<ul style="list-style-type: none"> talk about their design ideas and what they are making make simple judgements about their products and ideas against design criteria suggest how their products could be improved 		<ul style="list-style-type: none"> identify the strengths and areas for development in their ideas and products consider the views of others, including intended users, to improve their work 		<ul style="list-style-type: none"> critically evaluate the quality of the design, manufacture and fitness for purpose of their products as they design and make evaluate their ideas and products against their original design specification 	
					<ul style="list-style-type: none"> refer to their design criteria as they design and make use their design criteria to evaluate their completed products 			
	Existing products		<ul style="list-style-type: none"> what products are who products are for what products are for how products work how products are used where products might be used what materials products are made from what they like and dislike about products 		<ul style="list-style-type: none"> how well products have been designed how well products have been made why materials have been chosen what methods of construction have been used how well products work how well products achieve their purposes how well products meet user needs and wants 			
					<ul style="list-style-type: none"> who designed and made the products where products were designed and made when products were designed and made whether products can be recycled or reused 		<ul style="list-style-type: none"> how much products cost to make how innovative products are how sustainable the materials in products are what impact products have beyond their intended purpose 	
	Key events and individuals	<ul style="list-style-type: none"> about inventors, designers, engineers, chefs and manufacturers who have developed ground-breaking products 						
•		•	•	•	•	•	•	
			<ul style="list-style-type: none"> how to use learning from science to help design and make products that work how to use learning from mathematics to help design and make products that work that materials have both functional properties and aesthetic qualities that materials can be combined and mixed to create more useful characteristics that mechanical and electrical systems have an input, process and output the correct technical vocabulary for the projects they are undertaking 					
Vocabulary	Change-Like-Dislike-Next time-Better-Worse-Different - Instead	Change-Improve-Prefer-Useful-Unsuccessful-Future-Progress-Modify-Alter-Adapt-Original - Finished article-Evaluate-Graphics	Assess-Edit-Outcome-Develop-Test-Analyse		Effective-Fit for purpose -Design criteria-Alternatives-Models-Quality-Function-Functionality			

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TECHNICAL KNOWLEDGE	NC OBJECTIVES		<ul style="list-style-type: none"> • build structures, exploring how they can be made stronger, stiffer and more stable • explore and use mechanisms [for example, levers, sliders, wheels and axles], in their products. 		<ul style="list-style-type: none"> • apply their understanding of how to strengthen, stiffen and reinforce more complex structures • understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages] • understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors] • apply their understanding of computing to program, monitor and control their products. 			
	Making products work		<ul style="list-style-type: none"> • about the simple working characteristics of materials and components • the correct technical vocabulary for the projects they are undertaking 		<ul style="list-style-type: none"> • how to use learning from science to help design and make products that work • how to use learning from mathematics to help design and make products that work • that materials have both functional properties and aesthetic qualities • that materials can be combined and mixed to create more useful characteristics • that mechanical and electrical systems have an input, process and output • the correct technical vocabulary for the projects they are undertaking 			
	Structures – Skills & Vocabulary	<ul style="list-style-type: none"> • junk modelling with a purpose • experiment with joining for purpose (tape for boxes, PVA for collages, pritt for paper) 		<p>FREESTANDING</p> <ul style="list-style-type: none"> • how freestanding structures can be made stronger, stiffer and more stable • brick bonding • joining sheet material • flute joins to aid stability • creating buttresses 	<p>SHELL</p> <ul style="list-style-type: none"> • how to make strong, stiff shell structures through: Laminating, Corrugating, Ribbing • to create prototypes 		<p>FRAME</p> <ul style="list-style-type: none"> • how to reinforce and strengthen a 3d framework • triangulation • joining techniques • using horizontal, vertical and diagonals to strengthen • to create prototypes 	
			Cut-fold-join-fix structure-wall-tower- framework-weak- strong-base-top- underneath-side- edge-surface-thinner- thicker-corner-point- straight-curved- metal-wood-plastic- gravity-buttress	shell structure-three- dimensional (3-D) shape-net-cube- cuboid-prism-vertex- edge-face-length- width-breadth- capacity-marking out- scoring-shaping-tabs- adhesives-joining- assemble-stiff-strong-		frame structure- stiffen-strengthen- reinforce- triangulation-stability- shape-join- temporary- permanent- corrugating-ribbing- laminating- compression-strut- tension-tie		

	Electrical Systems – Skills & Vocabulary					SIMPLE SERIES CIRCUIT WITH SWITCH & BULB <ul style="list-style-type: none"> • how simple electrical circuits and components can be used to create functional products • how to program a computer to control their product 		COMPLEX CIRCUIT COMPUTER CONTROLLED MOTOR <ul style="list-style-type: none"> • how more complex electrical circuits and components can be used to create functional products • how to program a computer to monitor changes in the environment and control their products
						series circuit-fault-connection-toggle switch-push-to-break switch-battery-battery holder-bulb-bulb holder-wire-insulator-conductor-crocodile clip-control-program-system-input device-output device		reed switch-light dependent resistor (LDR)-tilt switch-light emitting diode (LED)-USB cable-series circuit-parallel circuit-endless loop-sequence-pressure pad-microcontroller-sensors-push to make switch
	Mechanical Systems – Skills & Vocabulary <ul style="list-style-type: none"> • Cut card & paper with accuracy & skill • Simple flap joint (fold 1 piece of card & attached to another) • Bench fold • Investigate fixed axles & rotating wheels 	<ul style="list-style-type: none"> • about the movement of simple mechanisms such as levers, sliders, wheels and axles 		<ul style="list-style-type: none"> • how mechanical systems such as levers and linkages or pneumatic systems create movement 			<ul style="list-style-type: none"> • how mechanical systems such as cams or pulleys or gears create movement • to create prototypes 	
		SLIDERS & LEVERS <ul style="list-style-type: none"> • Hinge joints • Simple slider • Pivot • Simple levers • Levers with linkages (several levers attached to a linkage system) 	WHEELS & AXLES <ul style="list-style-type: none"> • Fixed axle with accurate joining • Rotating axle with fixed wheels 	PNEUMATICS <ul style="list-style-type: none"> • hydraulic system • One way valve • Poppet valve • Electronic control valve • Needle valve • Exhaust valve • Shuttle valve 	LEVER & LINKAGES <ul style="list-style-type: none"> • Fixed pivot • Loose pivot • Movement: linear, reciprocating, rotary, oscillating • Lever: load, effort, fulcrum • Classes of levers 	PULLEYS & GEARS <ul style="list-style-type: none"> • Pulleys: fixed, movable, block & tackle, demo, • Types of gears: kaleidogears, gears for speed, gears for force, worm gears, rack & pinion gears, sun & planet gears • Gearing; idler, compound, compound belt drives 	CAMS <ul style="list-style-type: none"> • Movement-oscillating, reciprocating, rotating, smooth, • Types of cam – egg, off-centre, peg, snail • Self-conjugate cam • Eccentric • Cam & follower 	
		Slider-lever-pivot-slot-bridge/guide, card-masking tape-paper fastener-join-pull-push-up-down-straight-curve-forwards-backwards	Vehicle-wheel-axle-axle holder-chassis-body-cab-assembling-cutting-joining-shaping-finishing-fixed-free-moving-mechanism-names of tools, equipment and materials used	pneumatic system-input movement-process-output-movement-control-compression-pressure-inflate-deflate-pump-seal, air-tight-hydraulic-system-syringe-cylinder-valve	Mechanism-lever-linkage-pivot-slot-bridge-guide system-input-process-output linear-rotary-oscillating-reciprocating	Pulley-drive belt-gear-rotation-spindle-driver-follower-ratio-transmit-axle-motor-mechanical system-teeth-cog	Cam-snail cam-off-centre cam-peg cam-pear shaped cam-follower-axle-shaft-crank-handle-housing-framework-rotation-rotary motion-oscillating motion-reciprocating motion	

	Textiles – Skills & Vocabulary		TEMPLATE & JOINING <ul style="list-style-type: none"> • that a 3-D textiles product can be assembled from two identical fabric shapes 		2D SHAPE TO A 3D SHAPE <ul style="list-style-type: none"> • that a single fabric shape can be used to make a 3D textiles product • to create paper pattern pieces to use as a template 			COMBINING DIFF FABRICS & CAD <ul style="list-style-type: none"> • that a 3D textiles product can be made from a combination of fabric shapes • to create paper pattern pieces to use as a template
			Joining- finishing techniques-tools- fabrics-components- template-pattern pieces-mark out- decorate		names of fabrics- fastening- compartment- zip- button-structure- strength-weakness- stiffening-stitch- seam-seam allowance			Wadding-reinforce- right side-wrong side- hem-name of textiles- name of fastenings used-pins-needles- thread-pinking shears

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COOKING & NUTRITION	NC OBJECTIVES		<ul style="list-style-type: none"> use the basic principles of a healthy and varied diet to prepare dishes understand where food comes from 		<ul style="list-style-type: none"> understand and apply the principles of a healthy and varied diet prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed. 				
	Where food comes from		<ul style="list-style-type: none"> that all food comes from plants or animals that food has to be farmed, grown elsewhere (e.g. home) or caught 		<ul style="list-style-type: none"> that food is grown (such as tomatoes, wheat and potatoes), reared (such as pigs, chickens and cattle) and caught (such as fish) in the UK, Europe and the wider world 		<ul style="list-style-type: none"> that seasons may affect the food available how food is processed into ingredients that can be eaten or used in cooking 		
	Food preparation, cooking and nutrition	<ul style="list-style-type: none"> work hygienically work safely use simple tools to mix ingredients 	<ul style="list-style-type: none"> how to name and sort foods into the five groups in The eatwell plate that everyone should eat at least five portions of fruit and vegetables every day how to prepare simple dishes safely and hygienically, without using a heat source how to use techniques such as cutting, peeling and grating that food ingredients should be combined according to their sensory characteristics 	<ul style="list-style-type: none"> how to prepare and cook a variety of predominantly savoury dishes safely and hygienically including, where appropriate, the use of a heat source how to use a range of techniques such as peeling, chopping, slicing, grating, mixing, spreading, kneading and baking 				<ul style="list-style-type: none"> that recipes can be adapted to change the appearance, taste, texture and aroma that different food and drink contain different substances – nutrients, water and fibre – that are needed for health that a recipe can be adapted by adding or substituting one or more ingredients 	
				<ul style="list-style-type: none"> begin to measure & weight ingredients cut, squeeze, chop, spread, mix 	<ul style="list-style-type: none"> measure & weigh food items using non & standard units cut, peel, slice, grate, mix 	<ul style="list-style-type: none"> measure & weight using standard units spread, peel, slice 	<ul style="list-style-type: none"> grate, chop, mix 	<ul style="list-style-type: none"> measure & weight with precision using standard units knead, bake, rub in, fold, stir 	<ul style="list-style-type: none"> combine, stir, pour, whisk, blend, beat, roll out, sprinkle, crumble
	Vocabulary		fruit & vegetable names- names of equipment & 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- healthy- unhealthy- nonstandard unit- standard unit	texture-taste-sweet-sour-hot-spicy- appearance-smell-preference-greasy-moist-cook-fresh-savoury-hygienic-edible-grown-reared-caught-frozen-tinned-processed-seasonal-harvested-varied diet – balanced-vitamin-disease-nutrition-cross contamination-grams-storage-presentation-flavour-disinfect-bacteria	yeast-dough-bran-flour-wholemeal-unleavened-baking soda-spice-herbs-fat-sugar-carbohydrate-protein-vitamins-nutrients-varied-gluten-dairy-allergy-intolerance-savoury-source-seasonality-combine-fold-knead-stir-pour-mix-rubbing in-whisk-beat-roll out-shape-sprinkle-crumble				