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AQUEDUCT PRIMARY SCHOOL DESIGN TECHNOLOGY PROGRESSION GRID

Coverage Year 1/2		AUTUMN	SPRING	SUMMER
Cycle 1		Mechanisms	Textiles and Materials	Food Technology
Cycle 2		Construction	Food Technology	Mechanisms
Coverage Year 3/4		AUTUMN	SPRING	SUMMER
Cycle 1		Electrical systems	Structures	Food Technology
Cycle 2		Food Technology	Mechanisms	Textiles
Coverage Year 5/6		AUTUMN	SPRING	SUMMER
Cycle 1		Food Technology	Structures	Mechanisms
Cycle 2		Textiles	Electric Systems	Food Technology
AREAS OF LEARNING	Cooking and Nutrition	Structures	Mechanisms	Textiles/ Materials
<u>Substantive and disciplinary knowledge</u> <i>Substantive knowledge</i> in design and technology is based on the knowledge of key elements of the process of design (design, make and evaluate). All of these elements will be taught from Reception to Year 6 and vocabulary is taught explicitly and will be deliberately practised and applied through the key elements. <i>Disciplinary knowledge</i> in design and technology is the process of enabling children to use their substantive knowledge of products and materials around them to make links between and across different areas of the curriculum. Knowledge in design and technology will equip the children with the opportunity to explain how and why products have changed over time and how they might be further improved in the future. They can use their knowledge and understanding to suggest how existing products may be improved with the advances in modern technology.				
END POINTS FOR THE END OF RECEPTION KEY STAGE ONE		By the end of reception: Expressive Arts and Design 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; • Make use of props and materials when role playing characters in narratives and stories. By the end of KSI: • To engage in the process of designing, making and evaluating. • To identify design criteria. • To evaluate ideas/products against the design criteria. • To design purposeful, functional and appealing products for themselves and others. • To communicate ideas through talking, drawing, templates and mock-ups. • To learn the skills needed to perform basic practical tasks (cutting, shaping, modelling, joining and finishing)		



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- To select and use a range of materials.
- To explore and evaluate a range of existing products and the work of others.
- To begin to apply knowledge, understanding and skills to make purposeful products.
- To begin to develop the creative, technical and practical skills need to perform everyday tasks confidently.
- To use the basic principles of a healthy diet to prepare food dishes and begin to learn how to cook.
- To understand where food comes from.

	EYFS	YEAR 1	YEAR 2
DESIGN	Makes something that they give meaning to. Makes something with clear intentions. Plans how they will fasten things together. Gives meaning to the marks that they make. Use drawing to represent ideas	Children design appealing products for a particular user based on a simple design criterion. Taste, explore and evaluate a range of products to determine the intended user's preferences for the product Generate initial ideas and design criteria through own experiences. Develop and communicate these ideas through talk and drawings and mock ups where relevant. Discuss and communicate design outcomes with peers/teachers.	Generate ideas based on simple design criteria. Explore a range of existing products related to their design criteria Develop, model and communicate their ideas through talking, Mock-up/draw a range of ideas labelled with key features. Discuss and communicate design outcomes with peers/teachers.
MAKE	Joins items together. Explores the way tools create different textures. Builds simple models using walls, roofs and towers. Joins items in a variety of ways - E.g. sellotape, masking tape, string, ribbon. Uses a variety of techniques and shapes to sculpt. Able to use tools to manipulate dough/clay to add detail.	Select and use simple utensils, tools and equipment to perform a job e.g. peel, cut, slice, squeeze, grate and chop safely; marking out, Cutting, joining and finishing; cut, shape and join paper and card. Select from a range of ingredients and materials according to their characteristics to create a chosen product.	Plan by suggesting what to do next. Select and use tools, equipment, skills and techniques to perform Practical tasks, explaining their choices. Select materials, components, reclaimed materials and construction kits to build and create their products. Use simple finishing techniques suitable for the products they are creating.



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EVALUATE	Evaluate through expressing likes/dislikes of their own product. Evaluate others work by saying their likes/dislikes. Express their feelings and consider the feelings of others.	Evaluate their ideas throughout and finished products against design criteria, including intended user and purpose.	Evaluate their product by discussing how well it works in relation to the purpose, the user and whether it meets the original design criteria.
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	EYFS	YEAR 1	YEAR 2
FOOD TECHNOLOGY	Showing they can make decisions about healthy practices - food, drink, activities including hand washing and why they are important. Understand basic principles of healthy eating. Knowing that we all need to be safe when cooking. Using utensils and that the hob and oven get hot.	Understand where a range of fruit and vegetables come from e.g. farmed or grown at home. Select appropriate ingredients to create a healthy snack/meal. Understand and use basic principles of a healthy and varied diet to prepare dishes, including how fruit and vegetables are part of The Eatwell plate. Know and use technical and subject specific vocabulary relevant to the project. Use a range of cooking skills to create planned design. (cutting, slicing, mixing, peeling, squeezing) Begin to understand how to stay safe in the kitchen. Understand that a cooker has a hob and oven and controls. Know the names of the basic functions of an oven and hob	Understand where a range of fruit and vegetables come from e.g. farmed or grown at home. Select appropriate ingredients to create a healthy snack/meal. Understand and use basic principles of a healthy and varied diet to prepare dishes, including how fruit and vegetables are part of The Eatwell plate. Know and use technical and sensory vocabulary relevant to the project. Use a range of cooking skills to create planned design. (cutting, slicing, mixing, peeling, squeezing) Show a good understanding of how to stay safe in the kitchen. Know the different functions of a cooker- can label the different parts, including knowing the controls are used to differentiate the temperature.



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Vocabulary	Names of common fruit and vegetables. Vocabulary to describe and of sensory experiences - sweet, sour, juicy, crunchy, hard, soft.	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, oven, hob,	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, oven, hob, temperature, grill, boil, bake
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	EYFS	YEAR 1	YEAR 2
STRUCTURES	See above	Build a structure using a planned design. • Select and use a range of materials and tools to construct with. • Finish structure by colouring/painting/decorating. • Understand how to make a structure stronger	Select a chosen design and build a structure. • Select and use a range of materials and tools to construct with. • Finish structure by colouring/painting/decorating. • Explore how structures can be made,
Vocabulary	Cut, join, fold, stack, tower, tall, short, thick, thin, rectangle, square, curved, straight, sides, triangle, corner, top, under, behind, above, in between, below, in front.	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 circle, triangle, square, rectangle, cuboid, cube, cylinder	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 circle, triangle, square, rectangle, cuboid, cube, cylinder

	EYFS	YEAR 1	YEAR 2
TEXTILES	N/A	Select and use a range of materials to create a planned design. • Understand how simple 3-D textile products are made, using a template to create two identical shapes.	Select and use a range of materials to create a planned design.



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		- Understand how to join fabrics using different techniques e.g. running stitch, glue, over stitch, stapling. - Explore different finishing techniques - Know and use technical vocabulary relevant to the project.	Select and use a range of materials to create a chosen design. - Join materials using different techniques e.g. gluing, sewing, taping - Finish product by adding detail.
Vocabulary		joining and finishing techniques, tools, fabrics and components, template, pattern pieces, mark out, join, decorate, finish	

	EYFS	YEAR 1	YEAR 2
MECHANISMS	N/A	Explore and use sliders and levers. Understand that different mechanisms produce different types of movement. Know and use technical vocabulary relevant to the project	Explore and use wheels, axles and axle holders. Distinguish between fixed and freely moving axles. Know and use technical vocabulary relevant to the project.
Vocabulary		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



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AQUEDUCT PRIMARY SCHOOL DESIGN TECHNOLOGY PROGRESSION GRID KEY STAGE 2					
AREAS OF LEARNING	Cooking and Nutrition	Structures	Mechanisms	Textiles/ Materials	Electrical Systems
	<u>Substantive and disciplinary knowledge</u> Substantive knowledge in design and technology is based on the knowledge of key elements of the process of design (design, make and evaluate). All of these elements will be taught from Reception to Year 6 and vocabulary is taught explicitly and will be deliberately practised and applied through the key elements. Disciplinary knowledge in design and technology is the process of enabling children to use their substantive knowledge of products and materials around them to make links between and across different areas of the curriculum. Knowledge in design and technology will equip the children with the opportunity to explain how and why products have changed over time and how they might be further improved in the future. They can use their knowledge and understanding to suggest how existing products may be improved with the advances in modern technology.				
END POINTS FOR THE END OF KEY STAGE TWO	By the end of KS2: • To research and develop design criteria. • To investigate and analyse a range of existing products. • To design innovative, functional, appealing products that are purposeful aimed at particular individuals or groups. • To develop, model and communicate ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design. • To select and use materials/components according to their functional properties and aesthetic qualities. • To use a wide range of tools and equipment to perform practical tasks used in everyday life. • To evaluate their ideas and products against design criteria and consider the views of others to improve their work. • To understand how key events and individuals in design and technology have helped shape the world. • To apply understanding of mechanical and electrical systems to a product. • To understand how to strengthen, stiffen and reinforce structures. • To develop a range of cooking skills and techniques needed to cook healthy meal. • To understand seasonality and know where and how a variety of ingredients are grown, reared, caught and processed.				



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	Year 3	YEAR 4	YEAR 5	YEAR 6
DESIGN	Generate realistic ideas through discussion and design criteria for an appealing, functional product fit for purpose and specific user/s. Use annotated sketches, prototypes, final product sketches and pattern pieces; communication technology, such as web-based recipes, to develop and communicate ideas	Generate and clarify ideas through discussion with peers to develop design criteria to inform the design of products that are fit for purpose, aimed at particular individuals or groups. Use annotated sketches and appropriate information and communication technology, such as web-based recipes, to develop and communicate ideas. Generate, develop, model and communicate realistic ideas through discussion and, as appropriate, annotated sketches, cross-sectional and exploded diagrams.	Generate innovative ideas through research including surveys, interviews and questionnaires and discussion with peers to develop a design brief and criteria for a design specification. Design purposeful, functional, appealing products for the intended user that are fit for purpose based on a simple design specification. Develop and communicate ideas through discussion, annotated drawings, exploded drawings and drawings from different views. and, where appropriate, computer-aided design.	Use research 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, taking account of constraints including time, resources, and cost. 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.
MAKE	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. Select from and use finishing techniques suitable for the product they are creating.	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.	Produce detailed lists of equipment and fabrics relevant to their tasks. Write a step-by-step plan, including a list of resources required. Select from and use, a range of appropriate utensils, tools and equipment accurately to measure and combine	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



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		Select from and use materials and components, including ingredients, construction and electrical components according to their function and properties.	appropriate ingredients, materials and resources.	products. Use finishing and decorative techniques suitable for the product they are designing and making.
EVALUATE	Investigate a range of 3-D textile products, ingredients and lever 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 the views of others.	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.	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	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.
KEY VOCAB	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, innovative, prototype, user, purpose, function, prototype, design criteria, innovative, appealing, design brief, planning, annotated sketch, sensory evaluations	design decisions, functionality, authentic, user, purpose, design specification, design brief, innovative, research, evaluate, design criteria, annotate, evaluate, mock-up, prototype	unction, innovative, design specification, design brief, user, purpose design brief, design specification, prototype, annotated sketch, purpose, user, innovation, research, functional, mock-up, prototype



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	YEAR 3	YEAR 4	YEAR 5	YEAR 6
FOOD TECHNOLOGY	Know how to use appropriate equipment and utensils to prepare and combine food. Know about a range of fresh and processed ingredients appropriate for their product, and whether they are grown, reared or caught. Know and use relevant technical and sensory vocabulary appropriately. Know all the controls on a cooker and able to label them and know the difference between the hob and the oven and the times that they would select them.	Know how to use appropriate equipment and utensils to prepare and combine food. Know about a range of fresh and processed ingredients appropriate for their product, and whether they are grown, reared or caught. Know and use relevant technical and sensory vocabulary appropriately. Know when you would select to bake, simmer, fry, grill by selecting the different functions on a cooker.	Know how to use utensils and equipment including heat sources to prepare and cook food Understand about seasonality in relation to food products and the source of different food products. Know and use relevant technical and sensory vocabulary. Be able to select the appropriate cooking method and independently bake, cook their own product safely.	Know how to use utensils and equipment including heat sources to prepare and cook food Understand about seasonality in relation to food products and the source of different food products. Know and use relevant technical and sensory vocabulary Design a product, recipe, dish independently considering the balance of the ingredients. Know the appropriate cooking method to gain the best from selected ingredients and cook them independently.
Vocabulary	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, grown, reared, caught,	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, grown, reared, caught, frozen, tinned, processed,	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,	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,



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	frozen, tinned, processed, seasonal, harvested healthy/varied diet, temperature	seasonal, harvested healthy/varied diet, bake, simmer, fry, grill	combine, fold, knead, stir, pour, mix, rubbing in, whisk, beat, roll out, shape, sprinkle, crumble	source, seasonality utensils, combine, fold, knead, stir, pour, mix, rubbing in, whisk, beat, roll out, shape, sprinkle, crumble
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	YEAR 3	YEAR 4	YEAR 5	YEAR 6
STRUCTURES	Develop and use knowledge of how to construct strong, stiff shell structures. Develop and use knowledge of nets of cubes and cuboids and, where appropriate, more complex 3D shapes. Know and use technical vocabulary relevant to the project.		Understand how to strengthen, stiffen and reinforce 3-D frameworks. Know and use technical vocabulary relevant to the project.	
Vocabulary	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, accuracy, material, stiff, strong, reduce, reuse, recycle, corrugating, ribbing, laminating, font, lettering, text, graphics, decision,		frame structure, stiffen, strengthen, reinforce, triangulation, stability, shape, join, temporary, permanent	

	YEAR 3	YEAR 4	YEAR 5	YEAR 6
TEXTILES	Know how to strengthen, stiffen and reinforce existing fabrics. Understand how to securely join two pieces of fabric together. Understand the need for patterns and seam allowances. Know and use technical vocabulary relevant to the project.		Produce a 3-D textile product from a combination of accurately made pattern pieces, fabric shapes and different fabrics. Understand how fabrics can be strengthened, stiffened and reinforced where appropriate. Know and use technical vocabulary relevant to the project.	



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Vocabulary	<i>fabric, names of fabrics, fastening, compartment, zip, button, structure, finishing technique, strength, weakness, stiffening, templates, stitch, seam, seam allowance</i>	<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>
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	YEAR 3	YEAR 4	YEAR 5	YEAR 6
MECHANISMS	<i>Understand and use lever and linkage mechanisms. Distinguish between fixed and loose pivots. Know and use technical vocabulary relevant to the project.</i>		<i>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.</i>	
Vocabulary	<i>mechanism, lever, linkage, pivot, slot, bridge, guide system, input, process, output linear, rotary, oscillating, reciprocating</i>		<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>	

	YEAR 3	YEAR 4	YEAR 5	YEAR 6
ELECTRICAL SYSTEMS	<i>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.</i>		<i>Understand and use electrical systems in their products linked to science coverage. Apply their understanding of computing to program, monitor and control their products. Know and use technical vocabulary relevant to the project</i>	



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Vocabulary	<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>	<i>reed switch, toggle switch, push-to-make switch, push-to-break switch, light dependent resistor (LDR), tilt switch, light emitting diode (LED), bulb, bulb holder, battery, battery holder, USB cable, wire, insulator, conductor, crocodile clip control, program, system, input device, output device, series circuit, parallel circuit</i>
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