

St Columb Major Academy: Design and Technology Curriculum Progressions



The National Curriculum states:

Design and technology is an inspiring, rigorous and practical subject. Using creativity and imagination, pupils design and make products that solve real and relevant problems within a variety of contexts, considering their own and others' needs, wants and values. They acquire a broad range of subject knowledge and draw on disciplines such as mathematics, science, engineering, computing and art. Pupils learn how to take risks, becoming resourceful, innovative, enterprising and capable citizens. Through the evaluation of past and present design and technology, they develop a critical understanding of its impact on daily life and the wider world. High-quality design and technology education makes an essential contribution to the creativity, culture, wealth and well-being of the nation.

DT Curriculum: NC Programmes of Study							
	FS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Design	Dev Matters: Characteristics of Effective Learning PD: Moving & Handling (30-50 and 40-60)	*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, mock-ups and, where appropriate, information and communication technology		*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			
Make	UW: Technology (30-50 and 40-60) EAD: Exploring & using median and materials (30-50 and 40-60)	*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		*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			
Evaluate	EAD: Being Imaginative (30-50 and 40-60)	*Explore and evaluate a range of existing products. *Evaluate their ideas and products against design criteria		*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			
Technical Knowledge		*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.		*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.			
Cooking & Nutrition		*Use the basic principles of a healthy and varied diet to prepare dishes. *Understand where food comes from.		*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.			

DT Curriculum: Progression of Skills

	FS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Design	<p>PD: Moving & Handling 40-60 Uses simple tools to effect changes to materials. Handles tools, objects, construction and malleable materials safely and with increasing control They handle equipment and tools effectively</p> <p>EAD: Exploring and using media and materials 30-50 Uses various construction materials. Beginning to construct, stacking blocks vertically and horizontally, making enclosures and creating spaces. Joins construction pieces together to build and balance. Realises tools can be used for a purpose</p>	<p>Design appealing and functional product with a purpose for themselves and others to do a specific job.: *Look at similar products & compare what is the same/different *Use a given set of criteria to aid the design process *draw and label their idea *Explain their design choices & materials chosen.</p>	<p>Design an appealing and functional product with a purpose for themselves and others to do a specific job: *Look at similar products & list what is the same/different *Generate a set of criteria to aid the design process through class discussion using comparison lists *Draw, label and make notes on their design ideas *Explain their design choices, materials chosen, tools needed and reasoning for choices</p>	<p>Design an appealing and functional product with a clear purpose and use for a particular audience: *Look at a variety of similar products & discuss who uses them & why. Discuss the features needed by the users. *create own design criteria after class discussion *Use labelled diagrams & notes to explain their design *identify materials, tools and techniques required & reasons for choice</p>	<p>Design an appealing and functional product with a clear purpose and use for a particular audience: *Look at a variety of similar products & consider who uses them & why; & the features needed by the users. *create own design criteria after research tasks *Use sketches, labelled diagrams and notes to explain their design. *identify materials, tools and techniques required & reasons for choice; and identify any possible areas which may cause the design to change.</p>	<p>Design innovative, functional, appealing products aimed at particular individuals or groups: *research products to fulfil a given situation or need *Develop a set of criteria, based on research, to aid design process. *Communicate ideas by using a variety of diagrams to show all elements of the design (sketches, labelled diagrams and notes to support their design) - with specific zoomed in diagrams to show key elements of the design *identify & explain possible complications and how they address these</p>	<p>Design innovative, functional, appealing products aimed at particular individuals or groups: *consider the potential need within a situation & research products to fulfil this need *Develop a set of criteria, based on research, to aid design process, justifying their reasons *Communicate ideas by using a variety of diagrams to show all elements of the design (sketches, labelled diagrams and notes to support their design) - with specific zoomed in diagrams to show key elements of the design & cross-sectional diagrams *pitch design to others . Explain clearly how it meets the criteria & the process involved. Consider feedback and adapt design as needed.</p>
Make	<p>40-60 Experiments to create different textures. Understands that different media can be combined to create new effects. Manipulates materials to achieve a planned effect. Constructs with a purpose in mind, using a variety of resources. Uses simple tools and techniques competently and appropriately. Selects appropriate resources and adapts work where necessary. Selects tools and techniques needed to shape, assemble and join materials they are using.</p>	<p>Name given tools and know how to use them safely. Use given tools to cut, shape, join and finish products. Select from a range of materials/ ingredients based on their design.</p>	<p>Through discussion, plan a simple sequence of tasks needed to complete the product. Know which equipment is used for cutting, shaping, joining and finishing. Select and name the tools they are using and know how to use them safely & explain the reasons for this. Select from a range of materials/ ingredients based on their design, adapting if necessary following discussions with the teacher.</p>	<p>*Plan the main stages of making, following class discussions. *Select and name appropriate tools and equipment needed from a suggested range. *Know and choose which equipment is used for cutting, shaping, joining and finishing and use with increasing skill. *Understand the characteristics of materials and components from their design and select appropriately from the range available.</p>	<p>*Plan & order the main stages of making. *Select & use appropriate tools to measure, mark out, cut, score, shape & combine with some accuracy related to their product. *Explain their choice of materials & components (e.g. electrical, construction & ingredients) according to functional properties & aesthetic qualities.</p>	<p>*Write a simple method to include a detailed list of equipment & materials relevant to their task; & a step-by-step plan of the actions involved for each stage. *Select, name and use appropriate tools and equipment safely, building on skills developed in Y4, using with greater accuracy. *Select from and use a wider range of specific materials and components according to their specific use and appearance/aesthetic properties, justifying their choices.</p>	<p>*Write a detailed method to include a comprehensive list of equipment & materials relevant to their task; & a step-by-step plan to guide the making & provide suggestions for any adaptations that might be needed following complications. *Competently select and use appropriate tools to accurately measure, mark, cut & assemble materials, and securely connect electrical components to produce reliable, functional products. *Use finishing and decorative techniques suitable for the product they are designing and making.</p>
Evaluate	<p>They safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function.</p> <p>EAD: Being Imaginative 40-60 Create simple representations of events, people and objects. Children use what they have learnt about media and materials in original ways, thinking about uses and purposes. They represent their own ideas, thoughts and feelings through design and technology.</p>	<p>*Explore/taste, investigate, use and evaluate existing products: -Say why a product is good (or not) and -say what job it does (and if it is good / bad at this job). -say whether they like the product & why *Evaluate their product throughout and finished products against their design criteria, including the intended user & purpose</p>	<p>*Explore/taste, investigate, use and evaluate existing products related to the specific purpose, stating their opinions and preferences & giving reasons *Evaluate their product by discussing how well it works in relation to the purpose, the user & whether it meets the original design criteria.</p>	<p>*Explore and analyse a range of existing products against a set of criteria. *Test their product against the original design criteria with consideration of the intended user. *Evaluate the ongoing work & the final product with reference to the design criteria & the views of others, suggesting possible improvements.</p>	<p>*Investigate & evaluate a range of existing products, including ingredients, materials, components & techniques that are used against a set of criteria. *Test and evaluate their own products against design criteria & the intended user & purpose. *Evaluate the ongoing work & the final product with reference to the design criteria & the views of others, identifying strengths & suggesting possible improvements in their work. *Consider how some people and products have helped the world.</p>	<p>*Investigate, explore and analyse a range of existing products, considering construction and purpose for their specific situation/need. *Evaluate their ideas, prototypes and products against a specific set of criteria they have devised. *Test products with intended user & critically evaluate the quality of the design, manufacture, functionality & fitness for purpose. *Suggest ways of improving their own and others' work, using specific criteria & the views of others *Consider how their product have helped the world, justifying their reasoning</p>	<p>*Continually evaluate & modify the working features of the product to match the initial design specification. *Critically evaluate their products against the design criteria, intended user & purpose, identifying strengths & areas for development, and carrying out appropriate tests. *Test the system to demonstrate its effectiveness for the intended user & purpose, & present final product to intended user. *Identify and understand how key events and individuals in design and technology have helped shape the world.</p>
Vocabulary		<p>planning, investigating, design, evaluate, make, user, purpose, ideas, product,</p>	<p>investigating, planning, design, make, evaluate, user, purpose, ideas, design criteria, product, function</p>	<p>user, purpose, design, model, evaluate, prototype, annotated sketch, functional, innovative, investigate, label, drawing, function, planning, design criteria, annotated sketch, appealing</p>	<p>evaluating, design brief design criteria, innovative, prototype, user, purpose, function, prototype, design criteria, innovative, appealing, design brief, planning, annotated sketch, sensory evaluations</p>	<p>design decisions, functionality, authentic, user, purpose, design specification, design brief, innovative, research, evaluate, design criteria, annotate, evaluate, mock-up, prototype</p>	<p>function, innovative, design specification, design brief, user, purpose design brief, design specification, prototype, annotated sketch, purpose, user, innovation, research, functional, mock-up, prototype</p>

DT Curriculum: Progression of Skills

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Technical Knowledge: Structures	<p>House for 3 pigs: *Build free-standing structures and explore how they can be made stiffer, stronger & more stable using a range of materials. *Know & use technical vocabulary relevant to the project.</p>		<p>Bridges for Railway: *Explore how to make structures stronger, stiffer and more stable using more / other materials. *Explore different ways of joining things together. *Know & use technical vocabulary relevant to the project.</p>		<p>Spaceships & Satellites: *Design and build more complex 3D frameworks, using a range of materials to support mechanisms (e.g. diagonal struts). *Apply understanding of how to strengthen, stiffen and reinforce more complex structures. *Know & use technical vocabulary relevant to the project.</p>	
Technical Knowledge: Mechanisms	<p>Puppets & Puppet Show Theatre: *Explore and use levers and sliders to move part of their product. *Understand that different mechanisms produce different types of movement *Know & use technical vocabulary relevant to the project.</p>	<p>Tractors: *Explore and use wheels, axels & axel holders. *Distinguish between fixed and feely-moving axels *Know & use technical vocabulary relevant to the project.</p>	<p>Bridges for Railway: *Understand & use lever & linkage mechanisms *Distinguish between fixed and loose pivots *Know & use technical vocabulary relevant to the project</p>		<p>Sailing ship - Sails & Rudders: *Explore and analyse a range of linkages (ways of fixing and joining materials – temporary, fixed and moving) to change movement (e.g. make it larger or varied). *Create models which use gears, pulleys, levers and linkages for a specific purpose.</p>	
Technical Knowledge: Textiles		<p>Animal Soft Toy: *understand how simple 3D textile products are made using a template to create two identical shapes. *Understand how to join fabrics using different techniques : eg. running stitch, glue, over stitch & stapling *Know & use technical vocabulary relevant to the project.</p>		<p>Boudicca Battle Dress: *Know how to strengthen, stiffen & reinforce existing fabrics *understand how to securely join two pieces of fabric together *explore different finishing techniques *Know & use technical vocabulary relevant to the project.</p>		<p>Cushion: *Produce a 3D textile product from a combination of accurately made pattern pieces, fabric shapes & different fabrics. *understand the need for patterns & seem allowances *Know & use technical vocabulary relevant to the project.</p>
Technical Knowledge: Electrical Systems				<p>Miner’s Head Torch: *Explore and investigate simple circuits, bulbs, buzzers and motors and incorporate this into their product. *Know & use technical vocabulary relevant to the project.</p>		<p>Solar Powered Device: *Use ICT to monitor, program and control their products. *Understand and use a range of electrical systems in their products, such as series circuits, incorporating switches, bulbs, buzzers and motors. *Know & use technical vocabulary relevant to the project.</p>
Cooking & Nutrition	<p>Smoothies: *Suggest healthy dishes to prepare and make. *Understand where some foods come from (fruit and veg). *Know and use technical & sensory vocabulary relevant to the project.</p>	<p>Understand what a healthy and varied diet is. Understand where food comes from (plant or animal). *Know and use technical & sensory vocabulary relevant to the project.</p>	<p>Greek Food: *Understand what a healthy, varied and balanced diet is and why we need to eat a balanced diet. *Know about a range of fresh & processed ingredients appropriate for their product & whether they are grown, reared or caught. *Know and use technical & sensory vocabulary relevant to the project. *Choose, prepare and cook dishes using some cooking techniques. *Know how to use appropriate equipment & utensils to prepare & combine food.</p>	<p>Healthy Desserts: *Understand why we need particular food groups. *Know which foods can be grown or reared locally, and how this is affected by seasons. *Choose, prepare and cook dishes using some cooking techniques. *Know how to use appropriate equipment & utensils to prepare & combine food. *Know and use technical & sensory vocabulary relevant to the project.</p>	<p>Seasonal Winter Veg: *Understand which foods will provide a healthy, varied and balanced diet. *Understand which foods are sources of required nutrition (including minerals, vitamins, etc.) *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. *Know how to use utensils & equipment including heat sources to prepare and cook food. *Know and use technical & sensory vocabulary relevant to the project.</p>	<p>Savoury Seafood: *Understand and apply the principles of a healthy and varied diet. *Understand why we can only grow some foods in our country and why we need to get some foods from other countries. *Prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques. *Know how to use utensils & equipment including heat sources to prepare and cook food. *Know and use technical & sensory vocabulary relevant to the project.</p>

DT Curriculum: Progression of Skills

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Vocabulary: Structures	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		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	
Vocabulary: Mechanisms	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	mechanism, lever, linkage, pivot, slot, bridge, guide system, input, process, output linear, rotary, oscillating, reciprocating		age, pivot, slot, bridge, guide system, input, process, output linear, rotary, oscillating, reciprocating pulley, drive belt, gear, rotation, spindle, driver, follower, ratio, transmit, axle	
Vocabulary: Textiles		joining and finishing techniques, tools, fabrics and components, template, pattern pieces, mark out, join, decorate, finish		abric, names of fabrics, fastening, compartment, zip, button, structure, finishing technique, strength, weakness, stiffening, templates, stitch, seam		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,
Vocabulary: Electrical Systems				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		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
Vocabulary: Cooking & Nutrition	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	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	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, seasonal, harvested healthy/varied diet	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, seasonal, harvested healthy/varied diet	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, combine, fold, knead, stir, pour, mix, rubbing in, whisk, beat, roll out, shape, sprinkle, crumble	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, combine, fold, knead, stir, pour, mix, rubbing in, whisk, beat, roll out, shape, sprinkle, crumble