

Great Crosby Catholic Primary School



Design and Technology Curriculum Map

Purpose of study

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.

Aims

The national curriculum for design and technology aims to ensure that all pupils:

- develop the creative, technical and practical expertise needed to perform everyday tasks confidently and to participate successfully in an increasingly technological world
- build and apply a repertoire of knowledge, understanding and skills in order to design and make high-quality prototypes and products for a wide range of users
- critique, evaluate and test their ideas and products and the work of others
- understand and apply the principles of nutrition and learn how to cook.

		Development Matters, Children are learning to...		
	Year Group		What will this look like in Great Crosby?	New Vocabulary
EYFS	Nursery	<ul style="list-style-type: none"> • Explore different materials freely, in order to develop their ideas about how to use them and what to make. 	Children will be given opportunities to explore the 'Workshop Area' and continuous provision with enhancements on a daily basis. Children will be able to develop and explore their own ideas and interests and develop skills alongside focused activities.	Joining skills- fringe, chain, staple, hole punch, attach, tabs, split pin, fold, slot, folded spring Worskhop area- mixed fabric, ribbons, buttons, bottle tops, beads, lolly sticks, boxes, tissue paper, cardboard, tubes,



DT Progression Map

	<ul style="list-style-type: none">• Develop their own ideas and then decide which materials to use to express them.• Create closed shapes with continuous lines, and begin to use these shapes to represent objects.• Select and use activities and resources, with help when needed. This helps them to achieve a goal they have chosen or one which is suggested to them• Choose the right resources to carry out their own plan.• Use one-handed tools and equipment, for example, making snips in paper with scissors.• Make imaginative and complex 'small worlds' with blocks and construction kits, such as a city with different buildings and a park.• Explore different materials freely, in order to develop their	<p>The workshop areas in EYFS have recently been re-organised in order to consider skills we wish the children to learn and to provide the children with a range of materials, tools and techniques e.g one-handed tools-scissors, hole punches etc</p> <p>A variety of constructions sets.</p> <p>During Forest School sessions the children will also be shown a range of tools, skills and techniques.</p>	<p>mark makers, paper fasteners, treasury tags, split pins, scissors, blu-tack, paper clips, string, glue, hole punch, tape, paper bags, wool</p> <p>Hammer, nails, screws, screwdriver, hacksaw, handrails, potato peeler, bowsaws, mallet, cotton sheet, double sided tape, willow weaving</p>
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DT Progression Map

	<p>ideas about how to use them and what to make.</p> <ul style="list-style-type: none"> • Explore different materials freely, in order to develop their ideas about how to use them and what to make. • Explore how things work. • Explore different materials freely, in order to develop their ideas about how to use them and what to make. 		
Reception	<ul style="list-style-type: none"> • Create collaboratively, sharing ideas, resources and skills. • Return to and build on their previous learning, refining ideas and developing their ability to represent them. • 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>Children will be given opportunities to explore the 'Workshop Area' and continuous provision with enhancements on a daily basis. Children will be able to develop and explore their own ideas and interests and develop skills alongside focused activities.</p> <p>The workshop areas in EYFS have recently been re-organised in order to consider skills we wish the children to learn and to provide the children with a range of materials, tools and techniques e.g one-handed tools-scissors, hole punches etc</p> <p>Construction sets- Throughout the year different sets are rotated amongst the classes for variety.</p> <p>During Forest School sessions the children will also be shown a range of tools, skills and techniques.</p>	<p>Joining skills- fringe, chain, staple, hole punch, attach, tabs, split pin, fold, slot, folded spring</p> <p>Worskhop area- mixed fabric, ribbons, buttons, bottle tops, beads, lolly sticks, boxes, tissue paper, cardboard, tubes, mark makers, paper fasteners, treasury tags, split pins, scissors, blu-tack, paper clips, string, glue, hole punch, tape, paper bags, wool</p> <p>Hammer, nails, screws, screwdriver, hacksaw, handrails, potato peeler,</p>



DT Progression Map

	<ul style="list-style-type: none">• Develop their small motor skills so that they can use a range of tools competently, safely and confidently.• Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function.• Use a range of small tools, including scissors, paintbrushes and cutlery.• Use a range of small tools, including scissors, paintbrushes and cutlery.		bowsaws, mallet, cotton sheet, double sided tape, willow weaving
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National Curriculum, Pupils should be taught to....				
		What will this look like in Great Crosby?	New Vocabulary	
KS1	Year 1	<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, mock-ups and, where appropriate, information and communication technology <p style="color: red;">select from and use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing]</p> <p style="color: red;">select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics</p> <p>explore and evaluate a range of existing products</p> <p>evaluate their ideas and products against design criteria</p>	<p>Investigating the uses and purpose of scarecrows (cross curricular links to English).</p> <p>Make whole class large scale scarecrows and applying their knowledge from the large scale scarecrow to designing their own individual smaller scale scarecrows for small world farm.</p> <p>Select and use a variety of materials to make their own scarecrow structure.</p> <p>Investigate uses and purposes of bunting encouraging the children to use their own life experiences.</p> <p>Explore materials and practice different joining techniques.</p> <p>Design and make their own bunting piece to join the whole class' bunting.</p> <p>Investigate and explore a variety of pop up cards and their mechanisms.</p> <p>Design and make their own pop up card.</p> <p>Children will evaluate their creations and consider ways to improve.</p>	<p>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 design, make, evaluate, user, purpose, ideas, design criteria, product, function</p> <p>joining and finishing techniques, tools, fabrics and components template, pattern pieces, mark out, join, decorate, finish features, suitable, quality mock-up,</p> <p>slider, lever, pivot, slot, bridge/guide card, masking tape, paper fastener, join pull, push, up, down, straight, curve, forwards, backwards</p>



DT Progression Map

	<p>build structures, exploring how they can be made stronger, stiffer and more stable</p> <p>☒ explore and use mechanisms [for example, levers, sliders, wheels and axles], in their products.</p> <p>use the basic principles of a healthy and varied diet to prepare dishes</p> <p>☒ understand where food comes from.</p> <ul style="list-style-type: none"> • 		
Year 2	<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, mock-ups and, where appropriate, information and communication technology select from and use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing] 	<p>Sample a variety of fruit considering how they look, taste, come from etc</p> <p>Cut and prepare fruit when making a smoothie</p> <p>Explore different wheels and axels mechanisims.</p> <p>Children will design and make a moving toy fire engine, selecting and fastening different materials together and using wheels and axels to their final product to enable it to move.</p> <p>Evaluate their final products.</p>	<p>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, planning, investigating tasting, arranging, popular,</p> <p>vehicle, wheel, axle, axle holder, chassis, body, cab assembling, cutting, joining, shaping, finishing, fixed, free, moving, mechanism</p>



DT Progression Map

		<p>☒ select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics</p> <p>☒ 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>☒ explore and use mechanisms [for example, levers, sliders, wheels and axles], in their products.</p> <p>☒ use the basic principles of a healthy and varied diet to prepare dishes</p> <p>☒ understand where food comes from.</p> <ul style="list-style-type: none"> • 		
	Year 3	<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 	<p>Invite experts/parents who use DT into school to discuss their expertise with children.</p> <p>Cross curricular links with Science considering healthy balanced diets and food groups.</p> <p>Apply their knowledge to their own diets and lunches.</p>	<p>innovative, appealing, design brief</p> <p>texture, taste, sweet, sour, hot, spicy, appearance, smell, preference, greasy, moist, cook, fresh, savoury</p> <p>hygienic, edible, grown, reared, caught, frozen, tinned, processed,</p>



DT Progression Map

	<ul style="list-style-type: none"> generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design 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 <p>investigate and analyse a range of existing products</p> <ul style="list-style-type: none"> 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 	<p>Learn about the history of sandwiches.</p> <p>Explore and taste a variety of sandwich types (bagels, wraps, bread etc), fillings.</p> <p>Design, make and taste their own sandwiches for a class picnic.</p> <p>Children investigate a range of textile products that have a selection of stitches, joins, fabrics, finishing techniques, fastenings and purposes, linked to purses and wallets</p> <p>Explore how 2D nets are drawn and made into 3D items.</p> <p>Children practise sewing two small pieces of fabric together, demonstrating the use of, and need for, seam allowances.</p> <p>Design and make their own purse/ wallet.</p> <p>Explore and practise different types of linkages and levers.</p> <p>Designing and make their own end of year moving card linking their learning throughout the year.</p>	<p>seasonal, harvested healthy/varied diet</p> <p>mechanism, lever, linkage, pivot, slot, bridge, guide system, input, process, output linear, rotary, oscillating, reciprocating</p> <p>fastening, compartment, zip, button, structure, finishing technique, strength, weakness, stiffening, templates, stitch, seam, seam allowance prototype, annotated sketch, functional, innovative, investigate, label, drawing, aesthetics, function, pattern pieces</p>
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DT Progression Map

		<p>technology have helped shape the world</p> <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. <p>understand and apply the principles of a healthy and varied diet</p> <ul style="list-style-type: none">• 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.		
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	<p>Year 4</p>	<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 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 	<p><u>Simple Circuits and Switches</u> Invite experts/parents who use DT into school to discuss their expertise with children.</p> <p>Recap with the children how to make manually controlled, simple series circuits with batteries and different types of switches, bulbs and buzzers.</p> <p>Children discuss which of the components in the circuit are input devices e.g. switches, and which are output devices e.g. bulbs and buzzers.</p> <p>Children demonstrate how to find a fault in a simple circuit and correct it by practising making a variety of switches by using simple classroom materials e.g. card, corrugated plastic, aluminium foil, paper fasteners and paper clips.</p> <p>Children are encouraged to make switches that operate in different ways e.g. when you press them, when you turn them, when you push them from side to side. Ask the children to test their switches in a simple series circuit.</p> <p>Teach children how to avoid making short circuits.</p> <p>Develop a design brief with the children within a context which is authentic and meaningful.</p>	<p>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 user, purpose, function, prototype, design criteria, innovative, appealing, design brief</p> <p>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,</p>
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DT Progression Map

	<p>investigate and analyse a range of existing products</p> <ul style="list-style-type: none"> • 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 • apply their understanding of how to strengthen, stiffen and reinforce more complex structures <ul style="list-style-type: none"> • 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. understand and apply the principles of a healthy and varied diet 	<p>Discuss with the children the purpose of the battery-powered products that they will be designing and making and who they will be for.</p> <p>The children generate a range of ideas, encouraging realistic responses.</p> <p>Agree on design criteria that can be used to guide the development and evaluation of the children’s products, including safety features.</p> <p>Using annotated sketches, cross-sectional and exploded diagrams, as appropriate, ask the children to develop, model and communicate their ideas.</p> <p>Ask the children to consider the main stages in making and testing before assembling high quality products, drawing on the knowledge, understanding and skills learnt.</p> <p>Evaluate throughout and the final products against the intended purpose and with the intended user, drawing on the design criteria previously agreed.</p> <p><u>Shell Structures</u></p> <p>Children investigate a collection of different shell structures including packaging.</p> <p>Children take a small package apart identify and discuss parts of a net including the tabs e.g.</p>	<p>graphics, decision, evaluating, design brief design criteria, innovative, prototype</p>
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DT Progression Map

	<ul style="list-style-type: none">• 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.	<p>Evaluate existing products to determine which designs children think are the most effective.</p> <p>Children are provided with opportunities to judge the suitability of the shell structures for their intended users and purposes.</p> <p>Children use kit parts with flat faces to construct nets. Practise making nets out of card, joining flat faces with masking tape to create 3-D shapes. Experiment with assembling in nets in numerous ways.</p> <p>Demonstrate skills and techniques of scoring, cutting out and assembling using pre-drawn nets. Then allow children to practise by constructing a simple box. Show how a window could be cut out and acetate sheet added.</p> <p>Demonstrate how to use different ways of stiffening and strengthening their shell structures e.g. folding and shaping, corrugating, ribbing, laminating.</p> <p>Children discuss and explore the graphics techniques and media that could be used to achieve the desired appearance of their products.</p> <p>Practise using computer-aided design (CAD) software to design the net, text and graphics for their products according to purposes.</p>	
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DT Progression Map

			<p>Develop a design brief with the children within a context which is authentic and meaningful.</p> <p>Agree on design criteria that can be used to guide the development and evaluation of children’s products <i>e.g.</i> <i>How will we know that we have designed and made successful products?</i></p> <p>Identify the main stages of making and the appropriate tools and skills they learnt through focused tasks. Encourage the children to work with accuracy, using computer-aided design (CAD) where appropriate.</p> <p>Evaluate throughout and the final products against the intended purpose and with the intended user, drawing on the design criteria previously agreed.</p>	
	Year 5	<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, 	<p><u>Combining Different Fabric Shapes</u></p> <p>Children investigate, analyse and evaluate a range of existing products which have been produced by combining fabric shapes. Investigate work by designers and their impact on fabrics and products.</p> <p>Investigate and analyse how existing products have been constructed. Children disassemble a product and evaluate what the fabric shapes look like, how the parts have been joined, how the product has</p>	<p>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, iron transfer paper design criteria, annotate,</p>



DT Progression Map

		<p>pattern pieces and computer-aided design</p> <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 <p>investigate and analyse a range of existing products</p> <ul style="list-style-type: none"> • 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 • 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] 	<p>been strengthened and stiffened, what fastenings have been used and why.</p> <p>Investigate properties of textiles through investigation e.g. exploring insulating properties, water resistance, wear and strength of textiles.</p> <p>Develop skills of threading needles and joining textiles using a range of stitches. This activity must build upon children’s earlier experiences of stitches e.g. improving appearance and consistency of stitches and introducing new stitches. If available, demonstrate and allow children to use sewing machines to join fabric with close adult supervision.</p> <p>Develop skills of sewing textiles by joining right side together and making seams. Children should investigate how to sew and shape curved edges by snipping seams, how to tack or attach wadding or stiffening and learn how to start and finish off a row of stitches.</p> <p>Develop skills of 2-D paper pattern making using grid or tracing paper to create a 3-D dipryl mock-up of a chosen product. Remind/teach how to pin a pattern on to fabric ensuring limited wastage, how to leave a seam allowance and different cutting techniques.</p> <p>Develop skills of computer-aided design (CAD) by using on-line pattern making software to generate</p>	<p>design decisions, functionality, innovation, authentic, user, purpose, evaluate, mock-up, prototype</p> <p>problem-solving teamwork negotiation</p> <p>consumer awareness organisation</p> <p>motivation</p> <p>persuasion leadership perseverance</p> <p>other – specify</p>
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DT Progression Map

	<ul style="list-style-type: none">• 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.• 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.	<p>pattern pieces. Investigate using art packages on the computer to design prints that can be applied to textiles using iron transfer paper.</p> <p>Set an authentic and meaningful design brief. Children generate ideas by carrying out research using e.g. surveys, interviews, questionnaires and the web. Children develop a simple design specification for their product.</p> <p>Communicate ideas through detailed, annotated drawings from different perspectives and/or computeraided design. Drawings should indicate design decisions made, the methods of strengthening, the type of fabrics to be used and the types of stitching that will be incorporated.</p> <p>Produce step-by-step plans, lists of tools equipment, fabrics and components needed. Allocate tasks within a team if appropriate.</p> <p>Make high quality products applying knowledge, understanding and skills. Incorporate simple computer-aided manufacture (CAM) if appropriate e.g. printing on fabric.</p> <p>Children use a range of decorating techniques to ensure a well-finished final product that matches the intended user and purpose.</p>	
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			<p>Evaluate both as the children proceed with their work and the final product in use, comparing the final product to the original design specification.</p> <p>Critically evaluate the quality of the design, the manufacture, functionality, innovation shown and fitness for intended user and purpose, considering others' opinions. Communicate the evaluation in various forms e.g. writing for a particular purpose, giving a well-structured oral evaluation, speaking clearly and fluently.</p> <p><u>Celebrating Culture And Seasonality</u></p> <p>Invite experts/parents who use DT into school to discuss their expertise with children.</p> <p>Children use first hand and secondary sources to carry out relevant research into existing products to include personal/cultural preferences, ensuring a healthy diet, meeting dietary needs and the availability of locally sourced/seasonal/organic ingredients. This will include a visit to a local bakery, farm, farm shop or supermarket e.g. <i>What ingredients are sourced locally/in the UK/from overseas?</i></p> <p><i>What are the key ingredients needed to make a particular product? How have ingredients been processed? What is the nutritional value of a product?</i></p>	<p>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 design specification, innovative, research, evaluate, design brief</p>
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DT Progression Map

			<p>Children carry out sensory evaluations of a variety of existing food products and ingredients relating to the project. The ingredients could include those that could be added to a basic recipe such as herbs, spices, vegetables or cheese. These could be locally sourced, seasonal, Fair Trade or organic. Present results in e.g. tables/graphs/charts and by using evaluative writing.</p> <p>Research key chefs and how they have promoted seasonality, local produce and healthy eating.</p> <p>Demonstrate how to measure out, cut, shape and combine e.g. knead, beat, rub and mix ingredients.</p> <p>Demonstrate how to use appropriate utensils and equipment that the children may use safely and hygienically.</p> <p>Techniques could be practised following a basic recipe to prepare and cook a savoury food product.</p> <p>Identify which ingredients could be changed or added in a basic recipe such as types of flour, seeds, garlic, vegetables. Consider texture, taste, appearance and smell.</p> <p>Develop a design brief and simple design specification with the children within a context that is authentic and meaningful. This can include design criteria relating to nutrition and healthy eating.</p>	
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DT Progression Map

			<p>Discuss the purpose of the products that the children will be designing, making and evaluating and who the products will be for.</p> <p>Develop a design criteria that can be used to guide the development and evaluation of the children's product.</p> <p>Use annotated sketches.</p> <p>Record the steps, equipment, utensils and ingredients for making the food product drawing on the knowledge, understanding and skills.</p> <p>Evaluate the work as it progresses and the final product against he intended purpose and user reflecting on the design specification previously agreed.</p>	
	Year 6	<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 	<p>Military School provide opportunities to practise their design technology skills such as problem solving, designing, work as team etc)</p> <p><u>Pulleys or Gears</u></p> <p>Investigate, analyse and evaluate existing everyday products and existing or pre-made toys that incorporate gear or pulley systems.</p> <p>Use observational drawings and questions to develop understanding of each product in the collection.</p>	<p>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 design decisions, functionality, innovation, authentic, user, purpose,</p>



DT Progression Map

	<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 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 • 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 	<p>Using a construction kit, investigate combinations of two different sized pulleys to learn about direction. AND/OR Using a construction kit, explore combinations of two different size gears meshed together. Investigate the direction and speed of rotation focusing on how the size of the driver gear affects the speed of the follower gear.</p> <p>Build a working circuit that incorporates a battery, a motor and a handmade switch, such as a reversing switch.</p> <p>Demonstrate the accurate use of tools and equipment including cutting and stripping wire, and making secure electrical connections.</p> <p>Discuss the dangers of mains electricity.</p> <p>Draw a pictorial representation of the circuit or draw a circuit diagram using correct symbols.</p> <p>Develop measuring, marking, cutting, shaping and joining skills using junior hacksaws, G-clamps, bench hooks, square section wood, card triangles and hand drills to construct wooden frames.</p> <p>Demonstrate the accurate use of tools and equipment.</p> <p>Develop an authentic and meaningful design brief.</p>	<p>design specification, design brief</p>
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		<p>[for example, series circuits incorporating switches, bulbs, buzzers and motors]</p> <ul style="list-style-type: none"> • apply their understanding of computing to program, monitor and control their products. <p>understand and apply the principles of a healthy and varied diet</p> <ul style="list-style-type: none"> • 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. 	<p>Generate innovative ideas by carrying out research including surveys, interviews and questionnaires and develop a design specification for their product, carefully considering the purpose and intended user for their product.</p> <p>Communicate ideas through detailed, annotated drawings from different views and/or exploded diagrams. The drawings should indicate the design decisions made, including the location of the mechanical and electrical components, how they work as a system with an input, process and output, and the appearance and finishing techniques for the product.</p> <p>Produce detailed step-by-step plans and lists of tools, equipment and materials needed. If appropriate allocate tasks within a team.</p> <p>Make high quality products, applying knowledge, understanding and skills.</p> <p>Children will use a range of decorative finishing techniques to ensure a well finished final product that matches the intended user and purpose.</p> <p>Evaluate throughout and the final product in use, comparing it to the original design specification. Critically evaluate the quality of the design,</p> <p style="text-align: center;"><u>More Complex Switches</u></p>	
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			<p>Links to other subjects</p> <p>Mathematics – apply understanding and skill To carry out accurate measuring using standard units i.e. cm/mm.</p> <p>Science – apply knowledge and understanding of circuits, switches, conductors and insulators.</p> <p>Research and discuss a range of relevant products that respond to changes in the environment using a computer control program such as automatic nightlights, alarm systems, security lighting.</p> <p>Investigate electrical sensors such as light dependent resistors (LDRs) and a range of switches such as push-to-make switches, push-to-break switches, toggle switches, micro switches and reed switches.</p> <p>Remind children about the dangers of mains electricity. Research famous inventors related to the project e.g. Thomas Edison – light bulb.</p> <p>Recap measuring, marking out, cutting and joining skills with construction materials that children will need to create their electrical products. Practise methods for making secure electrical connections.</p> <p>Develop an authentic and meaningful design brief with the children.</p>	<p>series circuit, parallel circuit, names of switches and components, input device, output device, system, monitor, control, program, flowchart function, innovative, design specification, design brief, user, purpose</p>
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DT Progression Map

			<p>Generate innovative ideas by drawing on research and develop a design specification for their product, carefully considering the purpose and needs of the intended user.</p> <p>Communicate ideas through annotated sketches, pictorial representations of electrical circuits or circuit diagrams.</p> <p>Produce detailed step-by-step plans and lists of tools, equipment and materials needed. If appropriate, allocate tasks within a team.</p> <p>Make high quality products, applying knowledge, understanding and skills from IEAs and FTs. Create and modify a computer control program to enable the product to work automatically in response to changes in the environment.</p> <p>Critically evaluate throughout and the final product, comparing it to the original design specification.</p>	
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