



The primary intent for our Design Technology Curriculum: (what does ready for KS3 mean?)

- Children to recognise the result of design and technology in everyday life
 - Children to know that DT is a subject – where they learn to make and evaluate things effectively
 - Leave KS2 with a firm grasp of the design, make, evaluate cycle, through the 5 key areas of DT:
 - **Food Technology**
 - **Textiles**
 - **Structures**
 - **Mechanisms**
 - **Electrical Systems** (linked to Computing curriculum)
- Whilst these are discrete strands, the knowledge and skills gained in each are interdisciplinary – and applied and built upon sequentially across the curriculum. The key disciplinary DT aspects of design, make and evaluate are carefully sequenced to ensure progress over time in these knowledge areas.
- The DT Curriculum is delivered through specific units of work, structured through:
 - Investigative and Evaluative Activities
 - Focussed Tasks
 - Design, Make and Evaluate Assignments
 - Is key that food technology is weaved across wider learning opportunities, e.g. creating a cedar plate when learning about Judaism, hot cross buns when learning about Easter symbolism etc), in order to practise the knowledge and skills taught during these discrete units of learning. A progressive 'cooking' curriculum runs alongside the taught units below.
 - Children to be confident and safe with a range of simple tools – able to choose and select them safely and sensibly
 - Know the **key knowledge** identified in each unit, so that they have a firm knowledge base to study at KS3
 - The Design and Technology and Computing curricula are linked – Electrical Systems 'Monitoring and Control' technology is additionally delivered through the computing curriculum planning
 - The curriculum is supported and delivered through the DT Association advocated approach of 'Projects on a Page'

Key Stage 1 and 2 Overview

	Autumn		Spring		Summer	
	1	2	1	2	1	2
Year 1	Food Technology: Preparing Fruit and Vegetables		Structures: Freestanding Structures		Mechanisms: Sliders and Levers	
Year 2		Textiles: Templates and Joining Techniques		Mechanisms: Wheels and Axels		Mechanisms: Pneumatics (KS2 transition unit)
Year 3		Textiles: From 2D to 3D		Structures: Shell Structures		Food Technology: A Healthy and Varied Diet
Year 4	Structures: Shell Structures CAD		Electrical Systems: Simple Programming and Control		Mechanisms: Levers and Linkages	
Year 5	Mechanisms: Cams		Food Technology: Celebrating Culture and Seasonality			Textiles: CAD In Textiles
Year 6		Electrical Systems: Monitoring and Control		Structures: Frame Structures		Mechanisms: Pulleys or Gears

Foundations of Learning – The Early Years

Our Design Technology starts with firm foundations, in Reception. Key knowledge and skills are taught explicitly in order to ensure that children are effectively prepared for the demands of the Key Stage 1 Curriculum. Designing, making and creating are at the heart of strong Early Years provision; we harness this natural creativity in order to develop our youngest children's knowledge and skills.

The Design Technology opportunities below are some of the key opportunities that are afforded to our children, however, as part of our continuous provision, children are designing, trialling, creating and evaluating all of the time – be it in a construction area with a range of building blocks, in the junk modelling area, at the creation station or outside with the large loose parts.

It is important to give our children lots of opportunities to develop the strength in their fingers, hand –eye coordination, to name and know the purpose of common tools as well as precision when using small tools correctly.

Our approach ensures that children are able to meet the demands of the Early Learning Goal: **Creating with Materials** (DT linked strands – this ELG also links to Art and Design)

Children at the expected level of development will:

- Draw and paint using a range of materials, tools and techniques, experimenting with colour, design, texture, form and function
- Share their creations, explaining the process they have used

Importantly, a strong foundation in Design Technology will also support children's development in relation to an aspect of the ELG: **Fine Motor Skills**

- Use a range of small tools, including scissors, paint brushes and cutlery;

In addition, Design Technology is a great subject to support children's development in relation to Personal, Social and Emotional development;

ELG: Self-Regulation

- Set and work towards simple goals, being able to wait for what they want and control their immediate impulses when appropriate

ELG : Managing Self

- Be confident to try new activities and show independence, resilience and perseverance in the face of challenge
- Explain the reasons for rules, know right from wrong and try to behave accordingly

The specific learning opportunities and knowledge aligned to Design Technology strands within the early Years Curriculum are detailed within the 'Progression within Design Technology' document.

The specific and key vocabulary related to design and technology that we wish to develop with our Reception aged children is below:

Designing	Making	Evaluating
design problem person product purpose materials	order joining woodwork carpenter/ joiner tools plan	check evaluate decorate finish plumbers, architects, builders, engineers

Structures	Mechanisms	Electrical Systems and Control	Textiles	Cooking & Nutrition
hammer drive nails wood metal plastic allen key screwdriver screw bolt strong stable weak flimsy brittle magnetic stretchy rough soft detached semi-detached bungalow flat terrace	fastenings zips press studs Velcro Buttons buckle toggles nuts and bolts hinge lock/ key construction kit	electricity power plug battery switch remote control charge	fastenings zips press studs Velcro Toggles Buttons buckle stitch soft stretchy sewing thread needle cotton wool leather clothing material pattern	recipe ingredients instructions senses appearance smell taste texture touch hygiene (washing and keeping clean/ aprons, surfaces)

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Year 1 Curriculum

Food Technology:		Term: Autumn 1
<p>Foundations of previous learning: Early Years Curriculum Name and use of simple cutlery, utensils, equipment (vocabulary – cutlery, knife, fork, spoon, sharp knife, chopping board, wooden spoon, metal spoon, whisk, measuring jug, mixing bowl baking tray, pan, frying pan) To use the tools for cooking safely and with control. Experience of cooking/ baking throughout the year. The children will have made bread, cakes, biscuits, sandwiches, pancakes, smoothies, soup (vocabulary – ingredients, chop, cut, mix, pour, spread) Discussion to describe what it looks like, feels like, how it changes through cooking (vocabulary – colour words, soft, runny, sticky, hard, wet, crunchy, hot, cold, change) Discussion of likes and dislikes (simple evaluation)</p>		
Unit Learning		
Unit Knowledge and Skills:	Key Transferrable Vocabulary	
<p>Designing</p> <ul style="list-style-type: none"> Design appealing products for a particular user based on simple design criteria. Generate initial ideas and design criteria through investigating a variety of fruit and vegetables. Communicate these ideas through talk and drawings. <p>Making</p> <ul style="list-style-type: none"> Use simple utensils and equipment to e.g. peel, cut, slice, squeeze, grate and chop safely. Select from a range of fruit and vegetables according to their characteristics e.g. colour, texture and taste to create a chosen product. <p>Evaluating</p> <ul style="list-style-type: none"> Taste and evaluate a range of fruit and vegetables to determine the intended user's preferences. Evaluate ideas and finished products against design criteria, including intended user and purpose. <p>Technical knowledge and understanding</p> <ul style="list-style-type: none"> Understand where a range of fruit and vegetables come from e.g. farmed or grown at home. 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. 	<p>fruit and vegetable names, names of equipment and utensils</p> <p>sensory vocabulary e.g. soft, juicy, crunchy, sweet, sticky, smooth, sharp, crisp, sour, hard</p> <p>flesh, skin, seed, pip, core, slicing, peeling, cutting, squeezing, healthy diet, choosing, ingredients, planning, investigating, tasting, arranging, popular, design, evaluate, criteria</p>	

Structures: Free Standing Structures		Term: Spring 1
<p>Foundations of previous learning: Early Years Curriculum Name and use of simple tools and equipment (vocabulary – pencil, pen, felt tip, paintbrush, scissors, celotape, masking tape, glue, split pin) To use scissors accurately by knowing which hand (colour of scissors), hold correctly, cut forwards, hold the paper with the other hand, keep looking To use the scissors safely and know how to carry the (blades in hand) and how to store (downwards) (vocabulary – cut, sharp, straight, round, edge) To use glue correctly (stick on the underside, press firmly, amount of glue, orientation) (vocabulary – glue, stick, press) To use tape correctly and efficiently, begin to use a tape dispenser (vocabulary -join, stick, fold) Build models/structures using junk materials using own ideas Build models/structures using junk materials by following a given plan Construct with a purpose in mind using construction equipment Follow a given plan to build a model using construction equipment (vocabulary – idea, plan, build, describe it) To talk about what they have made and improve it if necessary. (simple evaluation)</p>		
Unit Learning		
Unit Knowledge and Skills:	Key Transferrable Vocabulary	
<p>Designing</p> <ul style="list-style-type: none"> Generate ideas based on simple design criteria and their own experiences, explaining what they could make. Develop, model and communicate their ideas through talking, mock-ups and drawings. <p>Making</p> <ul style="list-style-type: none"> Plan by suggesting what to do next. Select and use tools, skills and techniques, explaining their choices. Select new and reclaimed materials and construction kits to build their structures. Use simple finishing techniques suitable for the structure they are creating. <p>Evaluating</p> <ul style="list-style-type: none"> Explore a range of existing freestanding structures in the school and local environment e.g. everyday products and buildings. Evaluate their product by discussing how well it works in relation to the purpose, the user and whether it meets the original design criteria. <p>Technical knowledge and understanding</p> <ul style="list-style-type: none"> Know how to make freestanding structures stronger, stiffer and more stable. Know and use technical vocabulary relevant to the project. 	<p>cut, fold, join, fix</p> <p>structure, wall, tower, framework, weak, strong, base, top, underneath, side, edge, surface, thinner, thicker, corner, point, straight, curved</p> <p>metal, wood, plastic</p> <p>circle, triangle, square, rectangle, cuboid, cube, cylinder</p> <p>design, make, evaluate, user, purpose, ideas, design criteria, product, function</p>	

Mechanisms – Sliders and Levers		Term: Summer 1
<p>Foundations of previous learning: Early Years Curriculum Opportunities to make characters from stories with moving parts, make stick puppets to move around a story scene. Name and use of simple tools and equipment (vocabulary – scissors, celotape, masking tape, glue, blue tack, split pin) To use scissors accurately by knowing which hand (colour of scissors), hold correctly, cut forwards, hold the paper with the other hand, keep looking To use the scissors safely and know how to carry them (blades in hand) and how to store (downwards) (vocabulary – cut, sharp, straight, curved) To use glue correctly (stick on the underside, press firmly, amount of glue, orientation) (vocabulary – glue, stick, press) To use tape correctly and efficiently, begin to use a tape dispenser (vocabulary -join, stick, fold, press)</p>		

To use a split pin correctly by making a hole with a sharp pencil, use blue tack underneath to cushion it, then push split pin through and split it To talk about what they have made and improve it if necessary. (simple evaluation)	
Unit Learning	
Unit Knowledge and Skills:	Key Transferrable Vocabulary
<p>Designing</p> <ul style="list-style-type: none"> • Generate ideas based on simple design criteria and their own experiences, explaining what they could make. • Develop, model and communicate their ideas through drawings and mock-ups with card and paper. <p>Making</p> <ul style="list-style-type: none"> • Plan by suggesting what to do next. • Select and use tools, explaining their choices, to cut, shape and join paper and card. • Use simple finishing techniques suitable for the product they are creating. <p>Evaluating</p> <ul style="list-style-type: none"> • Explore a range of existing books and everyday products that use simple sliders and levers. • Evaluate their product by discussing how well it works in relation to the purpose and the user and whether it meets design criteria. <p>Technical knowledge and understanding</p> <ul style="list-style-type: none"> • Know how to create and use sliders and levers. • Understand that different mechanisms produce different types of movement. • Know and use technical vocabulary relevant to the project. 	<p>slider, lever, pivot, slot, bridge/guide</p> <p>card, masking tape, paper fastener, join</p> <p>pull, push, up, down, straight, curve, forwards, backwards</p> <p>design, make, evaluate, user, purpose, ideas, design criteria, product, function</p>

Year 2 Curriculum

Textiles: Templates and Joining	Term: Autumn 2
<p>Foundations of previous learning: Early Years Curriculum</p> <p>Year 1 Mechanisms – Making a Moving Dinosaur Scene unit – this built upon the key EYFS skills linked to cutting, joining and sticking. Children should now be confident in the design, make and evaluate cycle from their Y1 experiences.</p>	
Unit Learning	
Unit Knowledge and Skills:	Key Transferrable Vocabulary
<p>Designing</p> <ul style="list-style-type: none"> • Design a functional and appealing product for a chosen user and purpose based on simple design criteria. • Generate, develop, model and communicate their ideas as appropriate through talking, drawing, templates, mock-ups and information and communication technology. <p>Making</p> <ul style="list-style-type: none"> • Select from and use a range of tools and equipment to perform practical tasks such as marking out, cutting, joining and finishing. • Select from and use textiles according to their characteristics. <p>Evaluating</p> <ul style="list-style-type: none"> • Explore and evaluate a range of existing textile products relevant to the project being undertaken. • Evaluate their ideas throughout and their final products against original design criteria. <p>Technical knowledge and understanding</p> <ul style="list-style-type: none"> • Understand how simple 3-D textile products are made, using a template to create two identical shapes. • Understand how to join fabrics using different techniques e.g. running stitch, glue, over stitch, stapling. • Explore different finishing techniques e.g. using painting, fabric crayons, stitching, sequins, buttons and ribbons. • Know and use technical vocabulary relevant to the project. 	<p>names of existing products, joining and finishing techniques, tools, fabrics and components</p> <p>template, pattern pieces, mark out, join, decorate, finish</p> <p>features, suitable, quality mock-up, design brief, design criteria, make, evaluate, user, purpose, function</p>

Mechanisms: Wheels and Axels	Term: Spring 2
<p>Foundations of previous learning: Year 1</p> <p>Year 1 Mechanisms – Making a Moving Dinosaur Scene unit – this built upon the key EYFS skills linked to cutting, joining and sticking. Children should now be confident in the design, make and evaluate cycle from their Y1 experiences. The Y1 'Structures' unit should have developed children's understanding of how to make freestanding structures stronger, stiffer and more stable.</p>	
Unit Learning	
Unit Knowledge and Skills:	Key Transferrable Vocabulary
<p>Designing</p> <ul style="list-style-type: none"> • Generate initial ideas and simple design criteria through talking and using own experiences. • Develop and communicate ideas through drawings and mock-ups. <p>Making</p> <ul style="list-style-type: none"> • Select from and use a range of tools and equipment to perform practical tasks such as cutting and joining to allow movement and finishing. • Select from and use a range of materials and components such as paper, card, plastic and wood according to their characteristics. <p>Evaluating</p> <ul style="list-style-type: none"> • Explore and evaluate a range of products with wheels and axles. • Evaluate their ideas throughout and their products against original criteria. <p>Technical knowledge and understanding</p> <ul style="list-style-type: none"> • Know how to use wheels, axles and axle holders in a moving model. • Distinguish between fixed and freely moving axles. • Know and use technical vocabulary relevant to the project. 	<p>vehicle, wheel, axle, axle holder, chassis, body, cab</p> <p>assembling, cutting, joining, shaping, finishing, fixed, free, moving, mechanism</p> <p>names of tools, equipment and materials used</p> <p>design, make, evaluate, purpose, user, criteria, functional</p>

Mechanisms: Pneumatics		Term: Summer 2
Foundations of previous learning: Year 1 Year 1 Mechanisms – Making a Moving Dinosaur Scene unit – this built upon the key EYFS skills linked to cutting, joining and sticking. Children should now be confident in the design, make and evaluate cycle from their Y1 experiences. The Y1 'Structures' unit should have developed children's understanding of how to make freestanding structures stronger, stiffer and more stable. The Spring unit (above) will have further developed children's understanding of creating a moving model – distinguishing between fixed and moving parts.		
Unit Learning		
Unit Knowledge and Skills:	Key Transferrable Vocabulary	
Designing <ul style="list-style-type: none"> • Generate realistic and appropriate ideas and their own design criteria through discussion, focusing on the needs of the user. • Use annotated sketches and prototypes to develop, model and communicate ideas. Making <ul style="list-style-type: none"> • Order the main stages of making. • Select from and use appropriate tools with some accuracy to cut and join materials and components such as tubing, syringes and balloons. • Select from and use finishing techniques suitable for the product they are creating. Evaluating <ul style="list-style-type: none"> • Investigate and analyse books, videos and products with pneumatic mechanisms. • Evaluate their own products and ideas against criteria and user needs, as they design and make. Technical knowledge and understanding <ul style="list-style-type: none"> • Understand and use pneumatic mechanisms. • Know and use technical vocabulary relevant to the project 	components, fixing, attaching, tubing, syringe, plunger, split pin, paper fastener pneumatic system, input movement, process, output movement, control, compression, pressure, inflate, deflate, pump, seal, air-tight user, purpose, function, prototype, design criteria, innovative, appealing, design brief, research, evaluate, ideas, constraints, investigate	

Year 3 Curriculum

Textiles: From 2D to 3D		Term: Autumn 2
Foundations of previous learning: Year 2 In year 2 children completed a textiles unit called templates and joining, with key learning being to Understand how simple 3-D textile products are made, using a template to create two identical shapes and to understand how to join fabrics using different techniques e.g. running stitch, glue, over stitch, stapling. Children have also learned the importance of developing prototypes and evaluating designs against key criteria.		
Unit Learning		
Unit Knowledge and Skills:	Key Transferrable Vocabulary	
Designing <ul style="list-style-type: none"> • Generate realistic ideas through discussion and design criteria for an appealing, functional product fit for purpose and specific user/s. • Produce annotated sketches, prototypes, final product sketches and pattern pieces. Making <ul style="list-style-type: none"> • Plan the main stages of making. • Select and use a range of appropriate tools with some accuracy e.g. cutting, joining and finishing. • Select fabrics and fastenings according to their functional characteristics e.g. strength, and aesthetic qualities e.g. pattern. Evaluating <ul style="list-style-type: none"> • Investigate a range of 3-D textile products relevant to the project. • Test their product against the original design criteria and with the intended user. • Take into account others' views. • Understand how a key event/individual has influenced the development of the chosen product and/or fabric. Technical knowledge and understanding <ul style="list-style-type: none"> • Know how to strengthen, stiffen and reinforce existing fabrics. • Understand how to securely join two pieces of fabric together. • Understand the need for patterns and seam allowances. • Know and use technical vocabulary relevant to the project. 	fabric, names of fabrics, fastening, compartment, zip, button, structure, finishing technique, strength, weakness, stiffening, templates, stitch, seam, seam allowance user, purpose, design, model, evaluate, prototype, annotated sketch, functional, innovative, investigate, label, drawing, aesthetics, function, pattern pieces	

Structures: Shell Structures		Term: Spring 2
Foundations of previous learning: Key Stage 1 Experience of using different joining, cutting and finishing techniques with paper and card. An understanding of how to stiffen structures and the need for stability. A basic understanding of 2-D and 3-D shapes in mathematics and the physical properties and everyday uses of materials in science.		
Unit Learning		
Unit Knowledge and Skills:	Key Transferrable Vocabulary	
Designing <ul style="list-style-type: none"> • Generate realistic ideas and design criteria collaboratively through discussion, focusing on the needs of the user and purpose of the product. • Develop ideas through the analysis of existing products and use annotated sketches and prototypes to model and communicate ideas. Making <ul style="list-style-type: none"> • Order the main stages of making. • Select and use appropriate tools to measure, mark out, cut, score, shape and assemble with some accuracy. • Explain their choice of materials according to functional properties and aesthetic qualities. • Use finishing techniques suitable for the product they are creating. Evaluating	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	

<ul style="list-style-type: none"> Investigate and evaluate a range of existing shell structures including the materials, components and techniques that have been used. Test and evaluate their own products against design criteria and the intended user and purpose. <p>Technical knowledge and understanding</p> <ul style="list-style-type: none"> 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. 	font, lettering, text, graphics, decision, evaluating, design brief design criteria, innovative, prototype
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Food Technology: A Healthy and Varied Diet		Term: Summer 2
<p>Foundations of previous learning: KS1 <i>Know some ways to prepare ingredients safely and hygienically. Have some basic knowledge and understanding about healthy eating and The eatwell plate. Have used some equipment and utensils and prepared and combined ingredients to make a product. Designing meals for a specific purpose.</i></p>		
Unit Learning		
Unit Knowledge and Skills:	Key Transferrable Vocabulary	
<p>Designing</p> <ul style="list-style-type: none"> Generate and clarify ideas through discussion with peers and adults to develop design criteria including appearance, taste, texture and aroma for an appealing product for a particular user and purpose. Use annotated sketches and appropriate information and communication technology, such as web-based recipes, to develop and communicate ideas. <p>Making</p> <ul style="list-style-type: none"> Plan the main stages of a recipe, listing ingredients, utensils and equipment. Select and use appropriate utensils and equipment to prepare and combine ingredients. Select from a range of ingredients to make appropriate food products, thinking about sensory characteristics. <p>Evaluating</p> <ul style="list-style-type: none"> Carry out sensory evaluations of a variety of ingredients and products. Record the evaluations using e.g. tables and simple graphs. Evaluate the ongoing work and the final product with reference to the design criteria and the views of others. <p>Technical knowledge and understanding</p> <ul style="list-style-type: none"> 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. 	<p>name of products, names of equipment, utensils, techniques and ingredients</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, seasonal, harvested</p> <p>healthy/varied diet</p> <p>planning, design criteria, purpose, user, annotated sketch, sensory evaluations</p>	

Year 4 Curriculum

Structures: Shell Structures CAD		Term: Autumn 1
<p>Foundations of previous learning: Year 2 <i>This units builds on Y3 Spring 2 Unit – Shell Structures. Children will have experience of using different joining, cutting and finishing techniques with paper and card. A basic understanding of 2-D and 3-D shapes in mathematics and the physical properties and everyday uses of materials in science. Developed and used knowledge of how to construct strong, stiff shell structures. Developed and used knowledge of nets of cubes and cuboids and, where appropriate, more complex 3D shapes.</i></p>		
Unit Learning		
Unit Knowledge and Skills:	Key Transferrable Vocabulary	
<p>Designing</p> <ul style="list-style-type: none"> Generate realistic ideas and design criteria collaboratively through discussion, focusing on the needs of the user and purpose of the product. Develop ideas through the analysis of existing products and use annotated sketches and prototypes to model and communicate ideas. <p>Making</p> <ul style="list-style-type: none"> Order the main stages of making. Select and use appropriate tools to measure, mark out, cut, score, shape and assemble with some accuracy. Explain their choice of materials according to functional properties and aesthetic qualities. Use computer-generated finishing techniques suitable for the product they are creating. <p>Evaluating</p> <ul style="list-style-type: none"> Investigate and evaluate a range of existing shell structures including the materials, components and techniques that have been used. Test and evaluate their own products against design criteria and the intended user and purpose. <p>Technical knowledge and understanding</p> <ul style="list-style-type: none"> 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 – using CAD design to improve the precision of design. Know and use technical vocabulary relevant to the project. 	<p>shell structure, three-dimensional (3-D) shape, net, cube, cuboid, prism, vertex, edge, face, length, width, breadth, capacity</p> <p>marking out, scoring, shaping, tabs, adhesives, joining, assemble, accuracy, material, stiff, strong, reduce, reuse, recycle, corrugating, ribbing, laminating</p> <p>font, lettering, text, graphics, decision, evaluating, design brief design criteria, innovative, prototype</p>	

Electrical Systems: Simple Programming and Control		Term: Spring 1
<p>Foundations of previous learning: <i>This is the first formal 'Electrical Systems' unit of work in the DT Curriculum, however, children will have constructed a simple series electrical circuit in science, using bulbs, switches and buzzers (Y2 science). The children also cover the Y4 Electricity science unit this half term. Cut and joined a variety of construction materials, such as wood, card, plastic, reclaimed materials and glue.</i></p>		
Unit Learning		
Unit Knowledge and Skills:	Key Transferrable Vocabulary	
<p>Designing</p>	<p>series circuit, fault, connection, toggle switch, push-to-make</p>	

<ul style="list-style-type: none"> Gather information about users' needs and wants, and develop design criteria to inform the design of products that are fit for purpose. Generate, develop, model and communicate realistic ideas through discussion and, as appropriate, annotated sketches, cross-sectional and exploded diagrams. <p>Making</p> <ul style="list-style-type: none"> Order the main stages of making. Select from and use tools and equipment to cut, shape, join and finish with some accuracy. Connect simple electrical components and a battery in a series circuit to achieve a functional outcome. Program a standalone control box, microcontroller or interface box to enhance the way the product works. <p>Evaluating</p> <ul style="list-style-type: none"> Investigate and analyse a range of existing battery-powered products, including pre-programmed and programmable products. Evaluate their ideas and products against their own design criteria and identify the strengths and areas for improvement in their work. <p>Technical knowledge and understanding</p> <ul style="list-style-type: none"> Understand and use computing to program and control products containing electrical systems, such as series circuits incorporating switches, bulbs and buzzers. Know and use technical vocabulary relevant to the project. 	<p>switch, push-to-break switch, battery, battery holder, light emitting diode (LED), bulb, bulb holder, USB cable, wire, insulator, conductor, crocodile clip</p> <p>control, program, system, input device, output device, process</p> <p>user, purpose, function, prototype, design criteria, innovative, appealing, design brief</p>
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Mechanisms: Levers and Linkages		Term: Summer 1
<p>Foundations of previous learning: Explored and used mechanisms such as flaps, sliders and levers. Gained experience of basic cutting, joining and finishing techniques with paper and card. Understand pneumatic systems as an approach to create movement within a model</p>		
Unit Learning		
Unit Knowledge and Skills:	Key Transferrable Vocabulary	
<p>Designing</p> <ul style="list-style-type: none"> Generate realistic ideas and their own design criteria through discussion, focusing on the needs of the user. Use annotated sketches and prototypes to develop, model and communicate ideas. <p>Making</p> <ul style="list-style-type: none"> Order the main stages of making. Select from and use appropriate tools with some accuracy to cut, shape and join paper and card. Select from and use finishing techniques suitable for the product they are creating. <p>Evaluating</p> <ul style="list-style-type: none"> Investigate and analyse books and, where available, other products with lever and linkage mechanisms. Evaluate their own products and ideas against criteria and user needs, as they design and make. <p>Technical knowledge and understanding</p> <ul style="list-style-type: none"> Understand and use lever and linkage mechanisms. Distinguish between fixed and loose pivots. Know and use technical vocabulary relevant to the project. 	<p>mechanism, lever, linkage, pivot, slot, bridge, guide system, input, process, output linear, rotary, oscillating, reciprocating user, purpose, function prototype, design criteria, innovative, appealing, design brief</p>	

Year 5 Curriculum

Mechanisms: Cams		Term: Autumn 1
<p>Foundations of previous learning: Experience of axles, axle holders and wheels that are fixed or free moving. Basic understanding of different types of movement – including Y4 unit, levers and linkages and Y2 unit, pneumatics. Experience of cutting and joining techniques with a range of materials including card, plastic and wood. An understanding of how to strengthen and stiffen structures.</p>		
Unit Learning		
Unit Knowledge and Skills:	Key Transferrable Vocabulary	
<p>Designing</p> <ul style="list-style-type: none"> Generate innovative ideas by carrying out research using surveys, interviews, questionnaires and web-based resources. Develop a simple design specification to guide their thinking. Develop and communicate ideas through discussion, annotated drawings, exploded drawings and drawings from different views. <p>Making</p> <ul style="list-style-type: none"> Produce detailed lists of tools, equipment and materials. Formulate step-by-step plans and, if appropriate, allocate tasks within a team. Select from and use a range of tools and equipment to make products that that are accurately assembled and well finished. Work within the constraints of time, resources and cost. <p>Evaluating</p> <ul style="list-style-type: none"> Compare the final product to the original design specification. Test products with the intended user, where safe and practical, and critically evaluate the quality of the design, manufacture, functionality and fitness for purpose. Consider the views of others to improve their work. Investigate famous manufacturing and engineering companies relevant to the project. <p>Technical knowledge and understanding</p> <ul style="list-style-type: none"> Understand that mechanical systems have an input, process and an output. Understand how cams can be used to produce different types of movement and change the direction of movement. Know and use technical vocabulary relevant to the project. 	<p>cam, snail cam, off-centre cam, peg cam, pear shaped cam</p> <p>follower, axle, shaft, crank, handle, housing, framework rotation, rotary motion, oscillating motion, reciprocating motion annotated sketches, exploded diagrams</p> <p>mechanical system, input movement, process, output movement</p> <p>design decisions, functionality, innovation, authentic, user, purpose, design specification, design brief</p>	

Food Technology: Celebrating Culture and Seasonality		Term: Spring 1
Foundations of previous learning: <i>This unit of work builds on learning from Y3, plus cookery that has taken place across the curriculum offer. Children will: Have knowledge and understanding about food hygiene, nutrition, healthy eating and a varied diet. Be able to use appropriate equipment and utensils, and apply a range of techniques for measuring out, preparing and combining ingredients.</i>		
Unit Learning		
Unit Knowledge and Skills:	Key Transferrable Vocabulary	
Designing <ul style="list-style-type: none"> Generate innovative ideas through research and discussion with peers and adults to develop a design brief and criteria for a design specification. Explore a range of initial ideas, and make design decisions to develop a final product linked to user and purpose. Use words, annotated sketches and information and communication technology as appropriate to develop and communicate ideas. Making <ul style="list-style-type: none"> Write a step-by-step recipe, including a list of ingredients, equipment and utensils Select and use appropriate utensils and equipment accurately to measure and combine appropriate ingredients. Make, decorate and present the food product appropriately for the intended user and purpose. Evaluating <ul style="list-style-type: none"> Carry out sensory evaluations of a range of relevant products and ingredients. Record the evaluations using e.g. tables/graphs/charts such as star diagrams. Evaluate the final product with reference back to the design brief and design specification, taking into account the views of others when identifying improvements. Understand how key chefs have influenced eating habits to promote varied and healthy diets. Technical knowledge and understanding <ul style="list-style-type: none"> 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. 	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	

Textiles: Combining Different Fabric Shapes		Term: Summer 1
Foundations of previous learning: <i>Experience of basic stitching, joining textiles and finishing techniques. Experience of making and using simple pattern pieces. A thorough understanding of the design and make process – including using a design brief and specification.</i>		
Unit Learning		
Unit Knowledge and Skills:	Key Transferrable Vocabulary	
Designing <ul style="list-style-type: none"> Generate innovative ideas by carrying out research including surveys, interviews and questionnaires. Develop, model and communicate ideas through talking, drawing, templates, mock-ups and prototypes and, where appropriate, computeraided design. Design purposeful, functional, appealing products for the intended user that are fit for purpose based on a simple design specification. Making <ul style="list-style-type: none"> Produce detailed lists of equipment and fabrics relevant to their tasks. Formulate step-by-step plans and, if appropriate, allocate tasks within a team. Select from and use a range of tools and equipment to make products that are accurately assembled and well finished. Work within the constraints of time, resources and cost. Evaluating <ul style="list-style-type: none"> Investigate and analyse textile products linked to their final product. Compare the final product to the original design specification. 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. Technical knowledge and understanding <ul style="list-style-type: none"> A 3-D textile product can be made from a combination of accurately made pattern pieces, fabric shapes and different fabrics. Fabrics can be strengthened, stiffened and reinforced where appropriate. 	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, design decisions, functionality, innovation, authentic, user, purpose, evaluate, mock-up, prototype	

Textiles: CAD in Textiles		Term: Summer 2
Foundations of previous learning: This unit of work builds directly on the unit from the previous half term		
Unit Learning		
Unit Knowledge and Skills:	Key Transferrable Vocabulary	
Designing <ul style="list-style-type: none"> Generate innovative ideas through research including surveys, interviews and questionnaires. Develop, model and communicate ideas through talking, drawing, templates, mock-ups and prototypes including using computer-aided design. Design purposeful, functional, appealing products for the intended user that are fit for purpose based on a simple design specification. Making <ul style="list-style-type: none"> Produce detailed lists of equipment and fabrics relevant to their tasks. Formulate step-by-step plans and, if appropriate, allocate tasks within a team. Select from and use a range of tools and equipment, including CAD, to make products that are accurately assembled and well finished. Work within the constraints of time, resources and cost. Evaluating <ul style="list-style-type: none"> Investigate and analyse textile products linked to their final product. 	computer aided design (CAD), computer aided manufacture (CAM) font, lettering, text, graphics, menu, scale, modify, repeat, copy, flip design brief, design criteria, design decisions, innovative, prototype seam, seam allowance, wadding, reinforce, right side, wrong side, hem, template, pattern pieces names of textiles and fastenings used, pins, needles, thread,	

<ul style="list-style-type: none"> • Compare the final product to the original design specification. • Test products with intended user, where safe and practical, and critically evaluate the quality of the design, manufacture, functionality and fitness for purpose. • Consider the views of others to improve their work. <p>Technical knowledge and understanding</p> <ul style="list-style-type: none"> • A 3-D textile product can be made from a combination of accurately made pattern pieces, fabric shapes and different fabrics. • Fabrics can be strengthened, stiffened and reinforced where appropriate. 	<p>pinking shears, fastenings, iron transfer paper, annotate, functionality, innovation, authentic, user, purpose, evaluate, mock-up, prototype</p>
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Year 6 Curriculum

Electrical Systems: Monitoring and Control		Term: Autumn 2
<p>Foundations of previous learning: Children are also covering the Y6 Science Electricity unit this half term. Children will have an understanding of the essential characteristics of a series circuit and experience of creating a battery powered, functional, electrical product. Initial experience of using computer control software and an interface box or a standalone box, e.g. writing and modifying a program to make a light flash on and off. Children will have experienced the crumble controller in Year 4 Electrical Systems Unit – 'Simple Control and Programming'.</p>		
Unit Learning		
Unit Knowledge and Skills:		Key Transferrable Vocabulary
<p>Designing</p> <ul style="list-style-type: none"> • Develop a design specification for a functional product that responds automatically to changes in the environment. • Generate, develop and communicate ideas through discussion, annotated sketches and pictorial representations of electrical circuits or circuit diagrams. <p>Making</p> <ul style="list-style-type: none"> • Formulate a step-by-step plan to guide making, listing tools, equipment, materials and components. • Competently select and accurately assemble materials, and securely connect electrical components to produce a reliable, functional product. • Create and modify a computer control program to enable their electrical product to respond to changes in the environment. <p>Evaluating</p> <ul style="list-style-type: none"> • Continually evaluate and modify the working features of the product to match the initial design specification. • Test the system to demonstrate its effectiveness for the intended user and purpose. <p>Technical knowledge and understanding</p> <ul style="list-style-type: none"> • Understand and use electrical systems in their products. • Understand the use of computer control systems in products. • Apply their understanding of computing to program, monitor and control their products. • Know and use technical vocabulary relevant to the project. 		<p>reed switch, toggle switch, push-to-make switch, push-to-break switch, light dependent resistor (LDR), tilt switch</p> <p>light emitting diode (LED), bulb, bulb holder, battery, battery holder, USB cable, wire, insulator, conductor, crocodile clip</p> <p>control, program, system, input device, output device, series circuit, parallel circuit</p> <p>function, innovative, design specification, design brief, user, purpose</p>

Structures: Frame Structures		Term: Spring 2
<p>Foundations of previous learning: Experience of using measuring, marking out, cutting, joining, shaping and finishing techniques with construction materials. Basic understanding of what structures are and how they can be made stronger, stiffer and more stable. The creation of structures through NET development – including the use of CAD.</p>		
Unit Learning		
Unit Knowledge and Skills:		Key Transferrable Vocabulary
<p>Designing</p> <ul style="list-style-type: none"> • Carry out research into user needs and existing products, using surveys, interviews, questionnaires and web-based resources. • Develop a simple design specification to guide the development of their ideas and products, taking account of constraints including time, resources and cost. • Generate, develop and model innovative ideas, through discussion, prototypes and annotated sketches. <p>Making</p> <ul style="list-style-type: none"> • Formulate a clear plan, including a step-by-step list of what needs to be done and lists of resources to be used. • Competently select from and use appropriate tools to accurately measure, mark out, cut, shape and join construction materials to make frameworks. • Use finishing and decorative techniques suitable for the product they are designing and making. <p>Evaluating</p> <ul style="list-style-type: none"> • Investigate and evaluate a range of existing frame structures. • Critically evaluate their products against their design specification, intended user and purpose, identifying strengths and areas for development, and carrying out appropriate tests. • Research key events and individuals relevant to frame structures. <p>Technical knowledge and understanding</p> <ul style="list-style-type: none"> • Understand how to strengthen, stiffen and reinforce 3-D frameworks. • Know and use technical vocabulary relevant to the project. 		<p>frame structure, stiffen, strengthen, reinforce, triangulation, stability, shape, join, temporary, permanent</p> <p>design brief, design specification, prototype, annotated sketch, purpose, user, innovation, research, functional</p>

Mechanisms: Pulleys or Gears		Term: Summer 2
Foundations of previous learning:		

Experience of axles, axle holders and wheels that are fixed or free moving. An understanding of levers, linkages and pneumatics. Basic understanding of electrical circuits, simple switches and components. Experience of cutting and joining techniques with a range of materials including card, plastic and wood. An understanding of how to strengthen and stiffen structures.

Unit Learning	
Unit Knowledge and Skills:	Key Transferrable Vocabulary
<p>Designing</p> <ul style="list-style-type: none"> Generate innovative ideas by carrying out research using surveys, interviews, questionnaires and web-based resources. Develop a simple design specification to guide their thinking. Develop and communicate ideas through discussion, annotated drawings, exploded drawings and drawings from different views. <p>Making</p> <ul style="list-style-type: none"> Produce detailed lists of tools, equipment and materials. Formulate step-by-step plans and, if appropriate, allocate tasks within a team. Select from and use a range of tools and equipment to make products that are accurately assembled and well finished. Work within the constraints of time, resources and cost. <p>Evaluating</p> <ul style="list-style-type: none"> Compare the final product to the original design specification. 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. Investigate famous manufacturing and engineering companies relevant to the project. <p>Technical knowledge and understanding</p> <ul style="list-style-type: none"> Understand that mechanical and electrical systems have an input, process and an output. Understand how gears and pulleys can be used to speed up, slow down or change the direction of movement. Know and use technical vocabulary relevant to the project. 	<p>pulley, drive belt, gear, rotation, spindle, driver, follower, ratio, transmit, axle, motor</p> <p>circuit, switch, circuit diagram</p> <p>annotated drawings, exploded diagrams</p> <p>mechanical system, electrical system, input, process, output design decisions, functionality, innovation, authentic, user, purpose, design specification, design brief</p>

A Cookery Curriculum

From the outset, our building was designed to include a cookery room, as we believe that children learning to confidently cook is key to their personal development. As such, we have devised additional cooking experiences for children across all year groups – in addition to the taught DT curriculum. The dishes become progressively harder, with more components and ingredients. We aim to show children that tasty can also be healthy – as such, several healthy home versions 'takeaway' meals are represented. These sessions are simple and aim to develop confidence and competence in the kitchen, based around these key 'ingredients':

Following a recipe	Safe Cooking and Hygiene	'Real' Cooking for 'Real People'	Choosing Healthy Ingredients / Options
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The Overview (curriculum link in brackets)

Reception	Crispy Cakes (Bonfire Night)	Pumpkin Soup (Harvest)
Year 1	Pizza (Little Red Hen)	Anzak Biscuits (Possum Magic)
Year 2	Bread (Great Fire of London)	Toad in the Hole (Journeys - Yorkshire)
Year 3	Chop Suey (Shang Dynasty)	Home Made Fish Fingers (Coasts)
Year 4	Home Made Burger (The Americas)	Greek Meze (The Greeks)
Year 5	A Traditional Gurkha Dish (Local Environment)	Stew and Dumplings
Year 6	Lasagne	Sunday Lunch

Key Technical Learning – to revisit, assess and remember

	Food Technology	Structures	Mechanisms	Textiles	Electrical Systems
Year 1	<p>Preparing Fruit and Vegetables</p> <ul style="list-style-type: none"> Know that things that we design and make for others are called products. Know that to use cooking utensils safely we must: have clean hands and equipment, be careful of sharp parts and know how to use them. Know that fruit and vegetables are a key part of a varied diet. 	<p>Freestanding Structures</p> <ul style="list-style-type: none"> Know that a free standing structure is a structure that stand on its own. Know that a 'mock-up' is a 3-D trail of a product. Know that 'stability' in relation to a free standing structure, is how likely it is to fall over and that we can make 	<p>Sliders and Levers</p> <ul style="list-style-type: none"> Know that mechanisms means moving parts working together. Know that a slider is a rigid bar that moves forwards and backwards along a straight line. Know that a lever is a rigid bar that moves around a pivot. 		

		structures more stable by making them stiffer and stronger.			
Year 2			<p>Wheels and Axels</p> <ul style="list-style-type: none"> • Know that an axle is needed in order for a wheel to move. • Know that axels can be freely moving or fixed. • Know that the body of a vehicle is called a chassis <p>Pneumatics</p> <ul style="list-style-type: none"> • Know that pneumatics means to power by air • Know that an input movement, will produce an output movement in a pneumatic system • Know that the larger the syringe, the bigger the movement 	<p>Templates and Joining Techniques</p> <ul style="list-style-type: none"> • Know that a template is used to create identical shapes • Know 2 ways of joining fabric through sewing – running stitch, overstitch • Know that to 'finish' a product, means to colour and decorate it 	
Year 3	<p>A Healthy and Varied Diet</p> <ul style="list-style-type: none"> • Know that we can cut safely by using the bridge or claw cutting techniques • Know that when planning and evaluating foods, we must take in to account taste, texture, smell and appearance • Know that a processed foodstuff is any food that has been altered in some way during preparation. Food processing can be as basic as: freezing; canning; baking; drying 	<p>Shell Structures</p> <ul style="list-style-type: none"> • Know that a net is used to create a shell structure • Know that 'scoring' a material can make it easier to fold • Know that tabs are required to fix together a net 		<p>From 2D to 3D</p> <ul style="list-style-type: none"> • Know that a seam allowance is needed to make a secure join • Know that there are several different ways to 'fasten' fabrics: zips and buttons are the most common • Know that two common sewing techniques are the backstitch, and overstitch 	

Year 4		Shell Structures – CAD <ul style="list-style-type: none"> • Know that CAD stands for computer aided design • Know that CAD programs create accurate plans and nets for construction • Know that materials can be strengthened by laminating them (multi layering). 	Levers and Linkages <ul style="list-style-type: none"> • Know that a lever is bar that moves around a pivot • Know that a pivot can be fixed (attached to the back board), or loose (attached to the fastener) • Know that the term 'mechanism' refers to creating movement in a product (think of mechanic!) 		Simple Programming and Control <ul style="list-style-type: none"> • Know that computer programs can control electrical circuits off screen • Know that an LED is a light emitting diode • Know that all programs require an input and output
Year 5	Celebrating Culture and Seasonality <ul style="list-style-type: none"> • Know that ingredients can be combined through mixing, kneading and rubbing. • Know that 'seasonal produce' means ingredients which are available at that point in the year • Know that organic products are those that have not been grown using pesticides 		Cams <ul style="list-style-type: none"> • Know the associated movements of an off-centre, egg, snail and peg cam. • Know that a rotary motion goes round and round • Know that a 'follower' follows the cam, to create the movement 	CAD in Textiles <ul style="list-style-type: none"> • Know that a chain stitch is deliberately chosen for decorative purposes • Appliqué is where pieces or patches of fabric in different shapes and patterns are sewn or stuck onto a larger piece to form a picture or pattern • Know that Wadding is used as a layer of insulation between fabrics – typically used in quilt making 	
Year 6		Frame Structures <ul style="list-style-type: none"> • Know that triangulation is key strategy to making structures more stiff and stable • Know that a strut is a part of a structure under compression • Know that a Frame structure is a structure made from thin components e.g. tent frame. 	Pulleys or Gears <ul style="list-style-type: none"> • Know that a gear is a wheel with teeth around its circumference • Know that a pulley is a grooved wheel over which drive belt (connects two pulleys) can run • When a small gear or pulley is used to drive a larger one, the rotational speed is reduced. When a large gear or pulley is used to drive a smaller one, the rotational speed is increased. 		Monitoring and Control <ul style="list-style-type: none"> • Know that there are several types of switch, including reed switch, toggle switch, push to make switch, push to break switch, tilt switch • Know that light dependent resistors, LDRs, or photoresistors are electronic components that are used to detect light & change the operation of a circuit dependent upon the light levels. • Know that the two main types of electrical circuit are series and parallel circuits

Key Disciplinary Knowledge – to revisit, assess and remember

Whilst the technical knowledge above is unit specific, the following disciplinary end points are the **core disciplinary learning** to assess children's progress against for each unit. These core end points have been drawn from the detailed MTPs and resultant progression maps. Children are not expected to have mastered these statements until the end of the year, but teachers must highlight on the assessment trackers where children are failing to make progress against the below statements, which may indicate that they are not progressing comfortably towards these curriculum end points.

	Designing	Making	Evaluating
Year 1	Generate ideas based on simple design criteria Communicate ideas through talk and drawings	Plan by deciding what to do next Select and use simple tools and utensils – explaining their choices	Evaluate how well the product works and whether it will be liked by the intended user
Year 2	Generate initial ideas and their own design criteria Use annotated sketches to communicate their ideas	Select tools and resources from a range of equipment Use finishing techniques	Evaluate their products throughout and their final product against the original design criteria
Year 3	Generate realistic ideas and design criteria focusing on the user and purpose of the product Use final product sketches and prototypes to communicate their ideas	Plan the main stages of making Select materials according to their functional and aesthetic properties	Take in to account others' views when evaluating against design criteria
Year 4	Develop ideas and design criteria through the analysis of existing products	Plan and explain the main stages of making Select and use finishing techniques suitable for the product	Evaluate their ideas and products against their design criteria – identifying strengths and weaknesses in their work
Year 5	Gather information about users' needs through research (interviews, questionnaires, surveys etc) Develop a simple design specification	Formulate step by step plans Produce detailed lists of equipment and materials	Compare final products against original design specifications, taking in to account the views of others
Year 6	Develop a design specification taking in to consideration the constraints of time, cost and resources Communicate ideas through exploded drawings and circuit diagrams	Independently select the tools and resources required Work within the constraints of time, resources and cost	Test products with the intended user to critically evaluate the quality of manufacture, functionality and fitness for purpose