

Mount Primary School
Design Technology
Curriculum Design
Long Term Plan & Progression



Design Technology Intent

At Mount Primary School, we follow the National Curriculum for Design and Technology.

Through the DT curriculum, children become engineers, designers, chefs and architects which enables them to create a range of structures, mechanisms, textiles, electrical systems and food products with a real life purpose. Presenting children with a design brief relating to skills they have learned, allows them to apply these skills, along with technical knowledge, to create functional products. These experiences imitate realistic challenges which may be faced in these career paths. Successfully completing these challenges builds confidence as well as inspiring children to explore careers in technology.

Design Technology Implementation

We teach Design and Technology through investigative and evaluative activities, focus skills tasks and the design, make and evaluate process. Children learn technical knowledge and skills which are then applied to create functional products with specific purposes.

In EYFS, children are beginning to learn knowledge and skills through play which become the foundation for each of the aspects of DT. Through practical activities, F2 children experiment with tools, materials and joining methods as well as familiarising themselves with different types of foods.

Throughout KS1 and KS2, children are learning through a cycle of investigative and evaluative activities, focus tasks and the design, make, evaluate process.

Investigative and evaluative activities involve analysing current products to assess whether they are fit for purpose and decide which positive aspects of the products could be used for our own designs.

Focus tasks are short activities specifically designed to allow children to experiment with and practise the skills they will need to complete the construction of their final product.

When pupils arrive at the designing stage of the process, they are able to make informed design decisions considering the knowledge they have acquired from studying current products and practising skills during focus tasks. During the making stage, pupils are able to practically apply what they've learned and evaluate and adapt their designs as they make.

DT is split into 5 aspects; structures, food technology, textiles, mechanisms/mechanical systems and electrical systems. Children complete one project each term covering three of these aspects within a year. Projects are planned to include progression within each aspect so that prior skills and knowledge are built upon and extended.

Design Technology Impact

Teaching using this model has allowed teachers to assess children’s understanding throughout each project. Investigative and evaluative activities highlight gaps in knowledge which can be a focus moving forward during the project. Focus Tasks give a clear opportunity for teachers to isolate and assess specific technical knowledge and skills and also allow children to identify their own strengths and weaknesses therefore make more informed design choices. Children are not afraid to make changes to their designs during their making process and are consequently more comfortable making mistakes before finding solutions. Children are able to confidently reflect on their own finished products and that a finished product does not have to be perfect to show that knowledge has been learned; correctly reflecting on what went wrong and how to fix it also indicates understanding. At the end of every topic the children will complete an end of unit assessment.

Design Technology Long Term Plan							
Key Concepts	Subject Specific Vocabulary	Research & Design	Making & Technical Knowledge				Evaluate
			Structures	Mechanisms	Textiles	Electrical Systems	
	F2	Y1/2 A	Y1/2 B	Y3/4 A	Y3/4 B	Y5/6 A	Y5/6 B
Autumn	Structures Construction Building and balancing Junk modelling (kapow)	Structures Constructing a Windmill (Kapow)	Structures Baby Bear Chair (Kapow)	Mechanical systems - Pneumatic toys (Kapow)	Food Adapting a recipe: Making biscuits (Kapow)	Structures - Frame Structures Playground (Kapow)	Textiles - Combining different fabric shapes Fabric Christmas decoration 'Textiles - stuffed toys'. (Kapow)
Spring	Food Making soup (Kapow)	Textiles Puppets (Kapow)	Textiles Pouches (Kapow)	Food - Eating seasonally (Kapow)	Structures Pavilions (Kapow)	Food - Cooking and nutrition - come dine with me. Focus on the starter (stuffed peppers) (Kapow)	'Mechanical systems - automata toys' (Kapow)

Summer	Structures boats (floating and sinking) (Kapow)	Food Smoothies (Kapow)	Food Balanced diet (Kapow)	Textiles - Cross stitch Pillow cases (Kapow)	Electrical systems Torches (Kapow)	Electrical Systems Electrical systems - steady hand game (Kapow)	Food - 'Cooking and nutrition - developing a recipe spaghetti bolognese (Kapow)
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Statutory Coverage

N a t i o n a l C u r r i c u l u m & E Y	F2	KS1	KS2
	<p>Physical Development: .Develop their small motor skills so that they can use a range of tools competently, safely and confidently. Use their core muscle strength to achieve a good posture when sitting at a table or sitting on the floor.</p> <p>Expressive Art and Design: Explore, use and refine a variety of artistic effects to express their ideas and feelings. Return to and build on their previous learning, refining ideas and developing their ability to represent them. Create collaboratively, sharing ideas, resources and skills.</p> <p>ELG Physical Development: Use a range of small tools, including scissors, paintbrushes and cutlery.</p> <p>ELG Expressive Art and Design: Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function.</p>	<p>Design 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> <p>Make Select from and use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing] select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics</p> <p>Evaluate Explore and evaluate a range of existing products evaluate their ideas and products against design criteria</p> <p>Technical knowledge Build structures, exploring how they can be made stronger, stiffer and more stable, explore and use mechanisms [for example, levers, sliders, wheels and axles], in their products.</p>	<p>Design 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> <p>Make 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> <p>Evaluate 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</p> <p>Technical knowledge 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]</p>

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Share their creations, explaining the process they have used.

apply their understanding of computing to program, monitor and control their products.

=Progression Map

Key Concept - Use subject specific vocabulary						
F2	Y1/2A	Y1/2B	Y3/4A	Y3/4B	Y5/6A	Y5/6B
<p>Structures prediction variable fair test experiment investigation float Sink boat ship watercraft junk reeds waterproof float sink types of boats and ships e.g. fishing boat, canoe, cruise ship</p> <p>Food seeds roots leaves stem plant flower bud Juicy heavy bumpy rough smooth hard spiky Big</p>	<p>Structures base centre design equal evaluate middle rotate rotor rotor blades sails same stable strong structure test weak wind Windmill</p> <p>Textiles decorate design fabric glue model hand puppet safety pin staple stencil Template</p> <p>Food</p>	<p>Structures design criteria man-made natural properties structure stable shape model Test better cut design dislike even explain freestanding join like product stable structure unstable user worse</p> <p>Textiles Accurate fabric knot pouch Running-stitch sew shape stencil template Thimble</p>	<p>Mechanisms mechanism lever pivot linkage system pneumatic system input output component thumbnail sketch research adapt properties reinforce motion</p> <p>Food appearance arid climate complementary country cut design evaluate export fruit grate import ingredients Mediterranean Mock-up mountain peel polar seasonal seasons snip taste temperate texture</p>	<p>Food adapt addition appearance budget buttery combine comment compare construct cream crunchy cuboid cut design evaluate fold hygiene ingredients layout market research modify multiplication opinion pounds sieve sift target audience taste texture unique wooden spoon</p> <p>Structures 3D shapes cladding design criteria</p>	<p>Structures apparatus design criteria equipment playground landscape features cladding</p> <p>Food balance bitter bridge method complement cookbook cross-contamination enhance equipment farm to fork flavours ingredients method pairing preparation recipe research salty sour storyboard sweet umami</p> <p>Electrical Systems assemble battery battery pack benefit</p>	<p>Textiles accurateK annotate appendage blanket-stitch design criteria detail evaluation fabric sew shape stuffed toy stuffing template</p> <p>Mechanisms accurate automata axle bench hook cam cam profile component cross-sectional diagram diagram dowel evaluate exploded diagram follower form frame function housing mechanism storefront visual</p> <p>Food abattoir</p>

	<p>blend blender chopping board</p> <p>compare cut design evaluate flavour fork fruit healthy ingredients juice juicer leaf plant recipe root seed select smoothie stem table knife taste tree vegetable vine</p>	<p>Food</p> <p>appearance balanced carbohydrates chopping board combination cut dairy design design brief diet evaluate feel fruit grate grater ingredients menu oils proteins review scissor smell snip spread spreads table knife taste vegetables</p>	<p>tropical vegetable weather</p> <p>Textiles</p> <p>asymmetrical appliqué cotton cut cross-stitch embellish fabric patch pinking polyester running stitch silk symmetrical template thread unique</p>	<p>innovative natural reinforce structure</p> <p>Electrical Systems</p> <p>battery bulb buzzer circuit diagram component conductor electrical item electricity electronic item insulator series circuit switch target audience test torch wire</p>	<p>bulb bulb holder buzzer circuit circuit symbol component conductor copper design design criteria evaluation fine motor skills fit for purpose form function gross motor skills insulator LED user</p>	<p>adaptation balanced beef brand cook cross-contamination cut design enhance equipment evaluate farm grate hygiene ingredients label measure nutrient nutrition nutritional value preference press process recipe safety theme</p>
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Key concepts - structures			
F2	Year 1/2	Year 3/4	Year 5/6
<p>Making predictions about, and evaluating different materials to see if they are waterproof.</p> <p>Making predictions about, and evaluating existing boats to see which floats best.</p> <p>Testing their design and reflecting on what could have been done differently.</p>	<p>Thinking about what others might want from a design.</p> <p>Beginning to recognise how products and designs in the world around us solve certain needs.</p> <p>Choosing between a small number of materials, ingredients or components..</p> <p>Requesting equipment appropriate to the purpose. (e.g. scissors for cutting, glue for joining)</p> <p>Beginning to use objects with a fixed width or length to create even spacing of markings or cuts (e.g. a lolly stick).</p> <p>Refining their grip to cut competently and confidently.</p> <p>Cutting straight lines and evenly spaced lines.</p> <p>Beginning to cut large shapes and thicker materials like card.</p> <p>Making stable structures from card.</p> <p>Following instructions to cut and assemble the supporting structure of a windmill.</p>	<p>Creating simple design criteria that outline basic functionality and appeal to individual users or target audiences.</p> <p>Creating accurate shapes from templates.</p> <p>Cutting out more complex shapes accurately.</p> <p>Choosing shapes to suit the function of a product.</p> <p>Constructing a range of 3D geometric shapes using nets .</p> <p>Creating special features for individual designs.</p> <p>Making facades from a range of recycled materials</p> <p>Selecting materials, components or ingredients based on their form as well as their functional properties.</p> <p>Explaining choices with regard to function and form</p>	<p>Using a range of materials to reinforce and add decoration to structures.</p> <p>Producing lists of equipment, materials and tools that they need for a task.</p> <p>Selecting materials, components or ingredients based on research or user needs.</p> <p>Assessing risks associated with different tools and equipment.</p> <p>Understanding and explaining the importance of each safety rule.</p> <p>Consistently apply safety instructions.</p> <p>Using a ruler to accurately measure and draw lines and marks.</p> <p>In small groups, cutting harder wood with a saw.</p> <p>Cutting in a back-and-forth sawing motion where appropriate.</p> <p>Balancing aesthetics and functionality when creating parts of a design.</p> <p>Considering when best to apply finishing effects.</p>

Key concepts - Mechanisms / Mechanical systems

F2	Year 1/2	Year 3/4	Year 5/6
	<p>Thinking about what others might want from a design.</p> <p>Beginning to recognise how products and designs in the world around us solve certain needs.</p> <p>Considering who they are designing for by identifying the user.</p> <p>Choosing between a small number of materials, ingredients or components.</p> <p>Explaining their choices based on personal experiences.</p> <p>Requesting equipment appropriate to the purpose. (e.g. scissors for cutting, glue for joining).</p> <p>explaining in simple terms why certain tools must be handled carefully.</p> <p>Following and recalling simple safety instructions.</p> <p>Beginning to use objects with a fixed width or length to create even spacing of markings or cuts. (e.g. a lolly stick).</p>	<p>Creating simple design criteria that outline basic functionality and appeal to individual users or target audiences.</p> <p>Taking part in structured idea blasting sessions.</p> <p>Coming up with more ideas and considering the feasibility of their ideas in the classroom.</p> <p>Selecting equipment required for a series of tasks based on the plan.</p> <p>Explain why each piece is suitable for each stage.</p> <p>Suggesting simple safety rules based on their understanding of tool dangers.</p> <p>Participating in discussions about classroom safety procedures.</p> <p>Cutting out more complex shapes accurately.</p> <p>Handle different sizes and types of scissors with confidence.</p>	<p>Noticing wider-reaching problems or needs in the community.</p> <p>Identifying a wide range of needs and potential barriers through market research.</p> <p>Writing more complex problem statements that consider multiple factors and constraints.</p> <p>Creating more complex design criteria that require considering detailed user needs, environmental impact, materials and cost</p> <p>Consistently apply safety instructions.</p> <p>Selecting appropriate scissors to handle delicate cutting tasks and challenging materials.</p> <p>Cutting patterns and drawings accurately.</p> <p>In supervised groups, using hot glue guns safely.</p>

Key concepts - Electrical systems

F2	Year 1/2	Year 3/4	Year 5/6
		<p>Carrying out research based on a given topic (e.g. the Romans) to develop a range of initial ideas.</p> <p>Generating a final design for the electric poster with consideration to the client's needs and design criteria.</p> <p>Designing an electric poster that fits the requirements of a given brief.</p> <p>Creating a final design for the electric poster.</p> <p>Mounting the poster onto a corrugated card to improve its strength and allow it to withstand the weight of the circuit.</p> <p>Measuring and marking materials out using a template or ruler.</p> <p>Fitting an electrical component (bulb).</p>	<p>Identifying factors that could be changed on existing products and explaining how these would alter the form and function of the product.</p> <p>Developing design criteria based on findings from investigating existing products.</p> <p>Developing design criteria that clarify the target user</p> <p>Altering a product's form and function by tinkering with its configuration.</p> <p>Making a functional series circuit, incorporating a motor.</p> <p>Constructing a product with consideration for the design criteria.</p> <p>Breaking down the construction process into steps so that others can make the product.</p> <p>Constructing a stable base for a game.</p>

Key concepts - Cooking and nutrition

F2	Year 1/2	Year 3/4	Year 5/6
<p>Designing a soup recipe as a class. Designing soup packaging. Chopping plasticine safely. Chopping vegetables with support. Tasting the soup and giving opinions. Describing some of the following when tasting food: look, feel, smell and taste. Choosing their favourite packaging design and explaining why.</p>	<p>Designing smoothie carton packaging by-hand. Learning where and how fruits and vegetables grow. Designing three wrap ideas. Chopping fruit and vegetables safely to make a smoothie. Juicing fruits safely to make a smoothie. Identifying if a food is a fruit. Chopping foods safely to make a wrap. Constructing a wrap that meets a design brief. Grating foods to make a wrap. snipping smaller foods instead of cutting.</p>	<p>Describing how climate affects where foods grow. Designing a biscuit within a given budget. Conducting market research. Identifying seasonal ingredients from the UK. Following the instructions within a recipe. Tasting seasonal ingredients. Peeling foods by hand or with a peeler. Cutting ingredients safely. Choosing ingredients based on a design brief. Following a baking recipe. Understanding safety and hygiene rules. Adapting a recipe.</p>	<p>Researching existing recipes. Researching existing recipes. Designing a jar label. Writing a recipe, explaining the key steps, method and ingredients. Including facts and drawings from research undertaken. Writing an alternative recipe. Understanding cross-contamination. Using preparation skills. Making a developed recipe. Following a recipe, including using the correct quantities of each ingredient. Adapting a recipe based on research. Working to a given timescale. Working safely and hygienically with independence.</p>

Key concepts - Textiles

F2	Year 1/2	Year 3/4	Year 5/6
<p>Discussing what a good design needs.</p> <p>Designing a simple pattern with paper.</p> <p>Designing a bookmark.</p> <p>Choosing from available materials.</p> <p>Developing fine motor/cutting skills with scissors.</p> <p>Exploring fine motor/threading and weaving (under, over technique) with a variety of materials.</p> <p>Using a prepared needle and wool to practise threading.</p> <p>Reflecting on a finished product and comparing it to their design.</p>	<p>Stating what they intend to make and why - identifying the purpose.</p> <p>Talking about ideas, with purpose and user in mind.</p> <p>Using basic drawing skills to communicate ideas.</p> <p>Using a template to create a design for a puppet.</p> <p>Designing a pouch.</p> <p>Choosing between a small number of materials, ingredients or components.</p> <p>Explaining their choices based on personal experiences.</p> <p>Explaining in simple terms why certain tools must be handled carefully.</p> <p>Following and recalling simple safety instructions.</p> <p>Using a straightedge to draw a straight line.</p>	<p>Designing and making a template from an existing cushion and applying individual design criteria.</p> <p>Writing design criteria for a product, articulating decisions made.</p> <p>Designing a personalised book sleeve.</p> <p>Following design criteria to create a cushion or Egyptian collar.</p> <p>Selecting and cutting fabrics with ease using fabric scissors.</p> <p>Threading needles with greater independence.</p> <p>Tying knots with greater independence</p> <p>Sewing cross stitch to join fabric.</p> <p>Completing design ideas with stuffing and sewing the edges</p>	<p>Designing a stuffed toy, considering the main component shapes required and creating an appropriate template.</p> <p>Developing annotated sketches to communicate design ideas.</p> <p>Creating a 3D stuffed toy from a 2D design.</p> <p>Measuring, marking and cutting fabric accurately and independently.</p> <p>Creating strong and secure blanket stitches when joining fabric.</p> <p>Threading needles independently.</p> <p>Using appliqué to attach pieces of fabric decoration.</p> <p>Sewing blanket stitch to join fabric.</p> <p>Applying blanket stitch so the spaces between the stitches are even and regular.</p>