



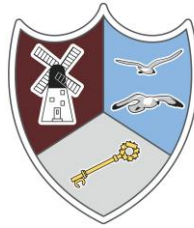
**Marton Primary
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Our Design Technology Curriculum



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Key Characteristics of a Designer

- I can show originality and the willingness to take creative risks to produce innovative ideas and prototypes.
- I can carry out thorough research, show initiative and ask questions to develop a detailed knowledge of my intended users' needs.
- I have the ability to act as a responsible designer by working ethically, using materials carefully and working safely.
- I have a good knowledge of which tools, equipment and materials to use to make products.
- I can apply mathematical knowledge to my designs where needed.
- I can manage risks exceptionally well to manufacture products safely and hygienically.

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Big Ideas

Nursery / Reception

- Mastering practical skills: children need to experiment with a range of techniques to improve their practical skills.
- Designing and making: children come up with some design ideas (think), test them out (make), evaluate (break) and improve (repeat)
- Take inspiration from products: children are encouraged to be curious about how products are made, taking them apart and rebuilding.

Key Stage 1 & 2

- Master practical skills

This concept involves developing the skills needed to make high quality products.

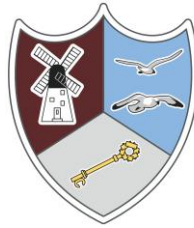
- Design, make, evaluate and improve

This concept involves developing the process of design thinking and seeing design as a process.

- Take inspiration from design throughout history

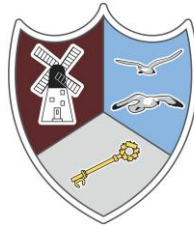
This concept involves appreciating the design process that has influenced the products we use in everyday life.

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Breadth of Study:

Nursery	Reception	Key Stage 1	Key Stage 2
<p>Explores the feel of a range of everyday objects.</p> <p>Develops knowledge about design through play with objects.</p> <p>Can talk about what they are going to make.</p> <p>Manipulates basic tools.</p> <p>Uses trial and error to develop understanding.</p> <p>Reflects on a product, saying what they like</p>	<p>Explores a range of everyday objects and can talk about similarities and differences between them.</p> <p>Makes judgements about properties of materials and their suitability for construction.</p> <p>Tests out the properties of materials</p> <p>Draws out what they are going to make.</p> <p>Experiments with design and materials.</p> <p>Chooses appropriate tools and uses them safely.</p> <p>Describes how a product is made of many different parts.</p>	<p>Technical knowledge</p> <ul style="list-style-type: none"> • build structures, exploring how they can be made stronger, stiffer and more stable. • explore and use mechanisms, such as levers, sliders, wheels and axles, in their products. <p>Cooking and nutrition</p> <ul style="list-style-type: none"> • use the basic principles of a healthy and varied diet to prepare dishes. • understand where food comes from. 	<p>Technical knowledge</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, such as gears, pulleys, cams, levers and linkages. • understand and use electrical systems in their products, such as series circuits incorporating switches, bulbs, buzzers and motors. • apply their understanding of computing to programme, monitor and control their products. <p>Cooking and nutrition</p> <ul style="list-style-type: none"> • 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



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	Explains why they are happy with their product and how they will tweak their design to improve it		are grown, reared, caught and processed.
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Milestones Key Stage 1 & 2

Master practical skills This concept involves developing the skills needed to make high quality products.	Milestone 1 Years 1 & 2	Milestone 2 Years 3 & 4	Milestone 3 Years 5 & 6
Food & Nutrition	<ul style="list-style-type: none"> • Cut, peel or grate ingredients safely and hygienically. • Measure or weigh using measuring cups or electronic scales. 	<ul style="list-style-type: none"> • Prepare ingredients hygienically using appropriate utensils. • Measure ingredients to the nearest gram accurately. 	<ul style="list-style-type: none"> • Understand the importance of correct storage and handling of ingredients (using knowledge of micro-organisms).

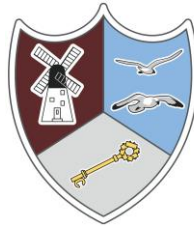
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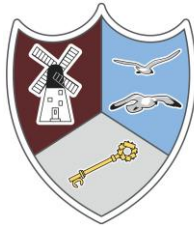
	<ul style="list-style-type: none">• Assemble or cook ingredients.	<ul style="list-style-type: none">• Follow a recipe.• Assemble or cook ingredients (controlling the temperature of the oven or hob, if cooking).	<ul style="list-style-type: none">• Measure accurately and calculate ratios of ingredients to scale up or down from a recipe.• Demonstrate a range of baking and cooking techniques.• Create and refine recipes, including ingredients, methods, cooking times and temperatures.
Materials	<ul style="list-style-type: none">• Cut materials safely using tools provided.• Measure and mark out to the nearest centimetre.• Demonstrate a range of cutting and shaping techniques (such as tearing, cutting, folding and curling).• Demonstrate a range of joining techniques (such as gluing, hinges or combining materials to strengthen).	<ul style="list-style-type: none">• Cut materials accurately and safely by selecting appropriate tools.• Measure and mark out to the nearest millimetre.• Apply appropriate cutting and shaping techniques that include cuts within the perimeter of the material (such as slots or cut outs).• Select appropriate joining techniques.	<ul style="list-style-type: none">• Cut materials with precision and refine the finish with appropriate tools (such as sanding wood after cutting or a more precise scissor cut after roughly cutting out a shape).• Show an understanding of the qualities of materials to choose appropriate tools to cut and shape (such as the nature of fabric may require sharper scissors than would be used to cut paper).



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<p>Structures</p>	<ul style="list-style-type: none"> • Use materials to practise drilling, screwing, gluing and nailing materials to make and strengthen products. 	<ul style="list-style-type: none"> • Choose suitable techniques to construct products or to repair items. • Strengthen materials using suitable techniques. 	<ul style="list-style-type: none"> • Develop a range of practical skills to create products (such as cutting, drilling and screwing, nailing, gluing, filing and sanding).
<p>Mechanisms</p>	<ul style="list-style-type: none"> • Create products using levers, wheels and winding mechanisms. 	<ul style="list-style-type: none"> • Use scientific knowledge of the transference of forces to choose appropriate mechanisms for a product (such as levers, winding mechanisms, pulleys and gears). 	<ul style="list-style-type: none"> • Convert rotary motion to linear using cams. • Use innovative combinations of electronics (or computing) and mechanics in product designs.
<p>Design, make, evaluate and improve This concept involves developing the process of design thinking and seeing design as a process.</p>	<ul style="list-style-type: none"> • Design products that have a clear purpose and an intended user. • Make products, refining the design as work progresses. • Use software to design. 	<ul style="list-style-type: none"> • Design with purpose by identifying opportunities to design. • Make products by working efficiently (such as by carefully selecting materials). • Refine work and techniques as work progresses, continually evaluating the product design. • Use software to design and represent product designs. 	<ul style="list-style-type: none"> • Design with the user in mind, motivated by the service a product will offer (rather than simply for profit). • Make products through stages of prototypes, making continual refinements. • Ensure products have a high quality finish, using art skills where appropriate. • Use prototypes, cross-sectional diagrams and computer



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			aided designs to represent designs.
<p>Take inspiration from design throughout history This concept involves appreciating the design process that has influenced the products we use in everyday life.</p>	<ul style="list-style-type: none"> • Explore objects and designs to identify likes and dislikes of the designs. • Suggest improvements to existing designs. • Explore how products have been created. 	<ul style="list-style-type: none"> • Identify some of the great designers in all of the areas of study (including pioneers in horticultural techniques) to generate ideas for designs. • Improve upon existing designs, giving reasons for choices. • Disassemble products to understand how they work. 	<ul style="list-style-type: none"> • Combine elements of design from a range of inspirational designers throughout history, giving reasons for choices. • Create innovative designs that improve upon existing products. • Evaluate the design of products so as to suggest improvements to the user experience.

<p>Year 1 Autumn – Solid Structures (Focus – how to make structures more stable)</p> <p>Spring – Mechanisms - sliders (Focus –</p>	<p>Start to use technical vocabulary. Join materials in a variety of ways. Decorate using a variety of techniques. Know some ways of making structures stronger.</p>	<p>Select materials from a limited range. Explain what they are making. Name the tools they are using. Use pictures and words to convey what they want to design / make.</p>	<p>Explore existing products and investigate how they have been made (including teacher-made examples). Talk about their design as they develop and identify good and bad points. Say what they like and do not like about items they</p>	<p>Group familiar food products e.g. fruit and vegetables. Cut and chop a range of ingredients. Work safely and hygienically. Know about the need for a variety of foods in a diet.</p>
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<p>Summer - Food- Portable snacks (Focus - Preparing vegetables)</p>	<p>Show how to stiffen some materials. Know how to make a simple structure more stable.</p>	<p>Explore ideas by rearranging materials. Select pictures to help develop ideas. Use mock-ups e.g. recycled material trial models to try out their ideas.</p>	<p>have made and attempt to say why.</p>	
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<p>Year 2 Autumn – Frame Structures) (Focus-making structures more stable)</p> <p>Spring -Mechanics: wheels and axles (Focus- joining materials in different ways)</p> <p>Summer – Food: coucous dish (Focus – cut, peel & grate)</p>	<p>Join materials in a variety of ways. Decorate using a variety of techniques. Know some ways of making structures stronger. Show how to stiffen some materials. Know how to make a simple structure more stable.</p> <p>Attach wheels to a chassis using an axle. Know some different ways of making things move in a 2-D plane.</p>	<p>Discuss their work as it progresses. Select and name the tools needed to work the materials. Explain which materials they are using and why. Propose more than one idea for their product. Use ICT to communicate ideas. Use drawings to record ideas as they are developed. Add notes to drawings to help explanations.</p>	<p>Decide how existing products do / do not achieve their purpose. Discuss how closely their finished product meets their own design criteria.</p>	<p>Cut, peel, grate, chop a range of ingredients. Work safely and hygienically. Know about the Eatwell Plate. Understand where food comes from.</p>
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<p>Year 3 Autumn : Frame Structures (Focus:</p> <p>Spring – mechanisms – linked levers (Focus –)</p> <p>Summer-Food Focus – chop, slice, peel & cook)</p>	<p>Use an increasingly appropriate technical vocabulary for tools materials and their properties. Prototype a product. Strengthen frames with diagonal struts. Measure and mark square section, strip and dowel accurately to 1cm. Use linkages to make movement larger or more varied.</p>	<p>Select from a range of tools for cutting, shaping, joining and finishing. Use tools with accuracy. Select from materials according to their functional properties. Use appropriate finishing techniques. Develop more than one design or adaptation of an initial design. Plan a sequence of actions to make a product.</p> <p>Think ahead about the order of their work and decide upon tools and materials. Propose realistic suggestions as to how they can achieve their</p>	<p>Investigate similar products to the one to be made to give starting points for a design. Research needs of user. Decide which design idea to develop. Consider and explain how the finished product could be improved. Discuss how well the finished product meets the user's design criteria. Investigate key events and individuals in design and technology.</p>	<p>Follow instructions / recipes. Join and combine a range of ingredients. Begin to understand the food groups on the Eatwell Plate.</p>
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<p>Year 4 Autumn – Shell Structures (Spring – Mechanisms: pneumatics (Focus –) Summer - food Focus – chop, slice, peel & cook)</p>	<p>Use an increasingly appropriate technical vocabulary for tools materials and their properties. Prototype a product. Strengthen frames with diagonal struts. Measure and mark square section, strip and dowel accurately to 1cm.</p>	<p>Prepare pattern pieces as templates for their design. Select from techniques for different parts of the process. Record the plan by drawing using annotated sketches. Use prototypes to develop and share ideas. Consider aesthetic qualities of materials chosen.</p>	<p>Draw / sketch existing products in order to analyse and understand how products are made. Identify the strengths and weaknesses of their design ideas in relation to purpose / user. Consider and explain how the finished product could be improved. Investigate key events and individuals in design and technology.</p>	<p>Make healthy eating choices – use the Eatwell plate. Understand seasonality. Know where and how ingredients are reared and caught. Prepare and cook using different cooking techniques</p>
<p>Year 5 Autumn – Frame structures (Focus – reinforce a structure) Spring – Mechanisms: cams Summer - food</p>	<p>Use the correct vocabulary appropriate to the project. Join materials using appropriate methods. Cut strip wood, dowel, square section wood accurately to 1mm. Build frameworks to support mechanisms. Stiffen and reinforce complex structures.</p>	<p>Develop one idea in depth Select from and use a wide range of tools. Cut accurately and safely to a marked line. Select from and use a wide range of materials. Record ideas using annotated diagrams. Use models, kits and drawings to help formulate design ideas. Sketch and model alternative ideas.</p>	<p>Research and evaluate existing products. Consider user and purpose. Consider and explain how the finished product could be improved related to design criteria. Investigate key events and individuals in design and technology.</p>	<p>Join and combine a widening range of ingredients. Select and prepare foods for a particular purpose. Know where and how ingredients are grown and processed.</p>



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		Decide which design idea to develop.		
<p>Year 6 Autumn – Arch structures</p> <p>Spring – mechanisms: gears & pulleys (Focus – use mechanical systems)</p> <p>Summer – Food (Focus- use a broad range of techniques)</p>	<p>Use the correct vocabulary appropriate to the project. Join materials using appropriate methods. Cut strip wood, dowel, square section wood accurately to 1mm. Build frameworks to support mechanisms. Stiffen and reinforce complex structures. Use mechanical systems such as cams, pulleys and gears.</p>	<p>Make prototypes. Use researched information to inform decisions. Produce detailed lists of ingredients / components / materials and tools. Refine their product – review and rework / improve. Plan the sequence of work. Devise step by step plans which can be read / followed by someone else.</p>	<p>Identify the strengths and weaknesses of their design ideas. Report using correct technical vocabulary. Discuss how well the finished product meets the design criteria having tested on/discussed outcomes with the user. Understand how key people have influenced design in a variety of contexts. Investigate key events and individuals in design and technology.</p>	<p>Understand and apply the principles of a healthy and varied diet. Choose ingredients to support healthy eating choices when designing their food products. Prepare and cook a variety of mostly savoury dishes using a range of cooking techniques.</p>



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