



Maybury Primary School – Design & Technology Skills Progression KS2



When designing and making at Maybury Primary School pupils should be taught to design, make, evaluate and use technical knowledge through the 6 key principles::

User	Pupils should have a clear idea of who they are designing and making products for, considering their needs, wants, values, interests and preferences. The intended users could be themselves or others, an imaginary or story-based character, a client, a consumer or specific target group.
Purpose	Pupils should be able to clearly communicate the purpose of the products they are designing and making. Each product they create should be designed to perform one or more defined tasks. Pupils' products should be evaluated through use.
Functionality	Pupils should design and make products that work/function effectively in order to fulfil users' needs, wants and purposes.
Design Decisions	<p>Pupils need opportunities to make their own design decisions. Making design decisions allows pupils to demonstrate their creative, technical and practical expertise, and draw on learning from other subjects.</p> <p>Through making design decisions pupils decide on the form their product will take, how their product will work, what task or tasks it will perform and who the product will be for.</p>
Innovation	When designing and making, pupils need some scope to be original with their thinking. Projects that encourage innovation lead to a range of design ideas and products being developed and are characterised by engaging open- ended starting points for learning.
Authenticity	Pupils should design and make products that are believable, real and meaningful to themselves and others.

By the end of Key Stage 2 pupils will have had a variety of creative and practical activities, pupils should be taught the knowledge, understanding and skills needed to engage in an iterative process of designing and making. They should work in a range of relevant contexts (for example, the home, school, leisure, culture, enterprise, industry and the wider environment).



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

Cooking and nutrition.

As part of their work with food, pupils should be taught how to cook and apply the principles of nutrition and healthy eating. Instilling a love of cooking in pupils will also open a door to one of the great expressions of human creativity. Learning how to cook is a crucial life skill that enables pupils to feed themselves and others affordably and well, now and in later life.

Pupils should be taught to:

- understand and apply the principles of a healthy and varied diet.
- prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques.
- understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed.



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	Year 3	Year 4	Year 5	Year 6
Topics Studied	Mechanical Poster (Mechanical systems) Rainforest animal sewing (textiles) The Great Bread Bake off (Cooking and nutrition and packaging-CAD.) Rainforest mechanical poster (mechanical systems)	Torches (Electrical structures) Simple circuit and switches incl programming and controls Fish cakes (cooking and nutrition) 'Marbulous' Structures (structures)	Soup (cooking and nutrition) Design a water feature (Mechanical - pulleys and gears)Structures – designing a room (Computer aided design, frame structure)	Chocolate (cooking and nutrition) Fairground (electrical systems including programming, monitoring and control) Felt phone cases (Textiles - combine different shapes and computer aided design)
Design	Generate ideas for an item, considering its purpose and the user/s. Identify a purpose and establish criteria for a successful product. Plan the order of their work before starting. Explore, develop and communicate design proposals by modelling ideas. Make drawings with labels when designing.	Generate ideas, considering the purposes for which they are designing. Make labelled drawings from different views showing specific features. Develop a clear idea of what has to be done, planning how to use materials, equipment and processes, and suggesting alternative methods of making, if the first attempts fail. Evaluate products and identify criteria that can	Generate ideas through brainstorming and identify a purpose for their product. Draw up a specification for their design. Develop a clear idea of what has to be done, planning how to use materials, equipment and processes, and suggesting alternative methods of making if the first attempts fail. Use results of investigations, information sources, including ICT when	Communicate their ideas through detailed labelled drawings. Develop a design specification. Explore, develop and communicate aspects of their design proposals by modelling their ideas in a variety of ways. Plan the order of their work, choosing appropriate materials, tools and techniques.



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		be used for their own designs.	developing design ideas.	
Make	<p>Select tools and techniques for making their product. Measure, mark out, cut, score and assemble components with more accuracy. Work safely and accurately with a range of simple tools. Think about their ideas as they progress and be willing change things if this improves their work. Measure, tape or pin, cut and join fabric with some accuracy. Demonstrate hygienic food preparation and storage. Use finishing techniques.</p>	<p>Select appropriate tools and techniques for making their product. Measure, mark out, cut and shape a range of materials, using appropriate tools, equipment and techniques. Join and combine materials and components accurately in temporary and permanent ways. Sew using a range of different stitches, weave and knit. Measure, tape or pin, cut and join fabric with some accuracy. Use simple graphical communication techniques.</p>	<p>Select appropriate materials, tools and techniques. Measure and mark out accurately. Use skills in using different tools and equipment safely and accurately. Cut and join with accuracy to ensure a good-quality finish to the product. Accurately apply a range of finishing techniques, including those from art and design. Use techniques that involve a number of steps. Demonstrate resourcefulness, e.g. make refinements.</p>	<p>Select appropriate tools, materials, components and techniques. Assemble components make working models Use tools safely and accurately. Construct products using permanent joining techniques. Make modifications as they go along. Pin, sew and stitch materials together create a product. Achieve a quality product.</p>
Evaluate	<p>Evaluate their product against original design criteria e.g. how well it meets its intended purpose.</p>	<p>Evaluate their work both during and at the end of the assignment. Evaluate their products carrying out appropriate tests.</p>	<p>Evaluate a product against the original design specification. Evaluate it personally and seek evaluation from others.</p>	<p>Evaluate their products, identifying strengths and areas for development, and carrying out appropriate tests.</p>



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	Disassemble and evaluate familiar products.			Record their evaluations using drawings with labels.
Technical Knowledge	<p>Understand how levers and linkages or pneumatic systems create movement.</p> <p>Understand how simple electrical circuits and components can be used to create functional products. Understand how to program a computer to control their products.</p> <p>Know how to make strong, stiff shell structures.</p> <p>Know that a single fabric shape can be used to make a 3D textiles product.</p> <p>Know that food ingredients can be fresh, pre-cooked and processed.</p>			<p>Understand how cams, pulleys and gears create movement.</p> <p>Understand how more complex electrical circuits and components can be used to create functional products. Understand how to program a computer to monitor changes in the environment / control their products.</p> <p>Know how to reinforce/strengthen a 3D framework.</p> <p>Know that a 3D textiles product can be made from a combination of fabric shapes.</p> <p>Know that a recipe can be adapted a by adding or substituting one or more ingredients.</p>
Cooking and Nutrition	<p>Know that a healthy diet is made up from a variety and balance of different foods and drinks, as depicted in the 'eat well' plate.</p> <p>Know that to be active and healthy, food is needed to provide energy for the body.</p> <p>Measure using grams. Follow a recipe.</p> <p>Know that food is grown, reared and caught in the UK, Europe and the wider world.</p> <p>Know that seasons may affect the food available.</p> <p>Understand how food is processed into ingredients that can be eaten or used in cooking.</p>			<p>Know that recipes can be adapted to change the appearance, taste, texture and aroma.</p> <p>Know that different foods contain different substances - nutrients, water and fibre - that are needed for health. Understand the need for correct storage.</p> <p>Measure accurately. Work out ratios in recipes.</p> <p>Know that food is grown, reared and caught in the UK, Europe and the wider world.</p> <p>Know that seasons may affect the food available.</p> <p>Understand how food is processed into ingredients that can be eaten or used in cooking.</p>