

Progression of Skills and Knowledge and Curriculum Overview

Aims

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

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

Key Stage 2








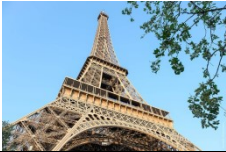





Through a variety of creative and practical activities, pupils should be taught the knowledge, understanding and skills needed to engage in an interactive process of designing and making. They should work in a range of relevant contexts [for example, the home, school, leisure, culture, enterprise, industry and the wider environment].

	Across KS2	Lower KS2	Upper KS2
<p>Designing</p> <p>-Use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose, aimed at particular users for a specific purpose within a given context.</p> <p>-Generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design</p>	<ul style="list-style-type: none"> ● Design confidently for a range of contexts, such as home, school, leisure, culture, enterprise, industry and the wider environment. ● Describe the purpose of their product. ● Indicate the design features of their products that will appeal to the intended user. ● Explain how particular parts of their product work. ● Share and clarify ideas through discussion. ● Use prototypes and pattern pieces to model their ideas and make necessary improvements. ● Communicate their ideas through annotated sketches, cross-sectional drawings and exploded diagrams. 	<ul style="list-style-type: none"> ● Use knowledge of existing products to inform own design. ● Develop their own design criteria, based on class discussion, to inform their ideas. ● Gather information about the needs and wants of particular individuals and groups. ● Generate realistic ideas, focusing on the needs of the user. ● Make design decisions that take account of the resources available. ● Use paper and card to make prototypes to model their ideas. 	<ul style="list-style-type: none"> ● Carry out research, using surveys, interviews, questionnaires and web-based resources. ● Identify the needs, wants, preferences and values of a particular individual or groups. ● Develop individual design specifications to guide their ideas. ● Generate innovative ideas based on research undertaken. ● Make design decisions, taking into account constraints such as time, resources and cost. ● Use computer-aided design to model a product.
<p>Making</p> <p>-Planning</p>	<ul style="list-style-type: none"> ● Select tools and equipment suitable for the task. ● Explain their choice of tools and equipment in relation to the skills 	<ul style="list-style-type: none"> ● Order the main stages of the making process ● Create the design in accordance with the plan. 	<ul style="list-style-type: none"> ● Make careful and precise measurements and cuts so that components fit exactly. ● Accurately, assemble, join and

<p>-Select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately</p> <p>-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>and techniques they will be using.</p> <ul style="list-style-type: none"> ● Select materials and components suitable for the task. ● Explain their choice of materials and components according to the functional properties and aesthetic qualities. ● Follow procedures for safety and hygiene. ● Use a range of materials and components including construction materials and textiles, food ingredients, mechanical and electrical components. 	<ul style="list-style-type: none"> ● Measure, mark out, cut and shape materials and components with some accuracy. ● Assemble, join and combine materials and components with some accuracy. ● Apply a range of finishing techniques, including those from art and design, with some accuracy. ● To begin to use technical knowledge and practical skills to problem solve during the making process. 	<p>combine materials and components .</p> <ul style="list-style-type: none"> ● Accurately , apply a range of finishing techniques, including those from art and design ● Use techniques that involve a number of steps. ● Demonstrate existing knowledge of materials and techniques when problem solving by modifying during the making process.
<p>Evaluating</p> <p>-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</p> <p>-Understand how key events and individuals in design and technology have helped shape the world</p>	<p>Existing product</p> <ul style="list-style-type: none"> ● Research and evaluate inventors, designers, engineers, chefs and manufacturers who have developed innovative products. ● Evaluate how well products have been designed. ● Evaluate how well products have been made. ● Evaluate why materials have been chosen. ● Evaluate what methods of construction have been used. ● Evaluate how well a product works. ● Evaluate how well a product achieves its purpose. ● Evaluate how well a product meets the needs and wants of the user. 	<p>Existing product</p> <ul style="list-style-type: none"> ● Consider who designed and made the product. ● Evaluate where products were designed and made. ● Evaluate when products were designed and made. ● Evaluate whether products can be recycled or reused. 	<p>Existing product</p> <ul style="list-style-type: none"> ● Evaluate how much products cost to make. ● Evaluate how innovative products are. ● Evaluate how sustainable the materials in products are. ● Evaluate the impact products have beyond their intended purpose. (e.g. the social/environmental impact of producing clothes)
	<p>Own product</p> <ul style="list-style-type: none"> ● Identify the strengths and areas for development in their ideas and products. ● Consider the views of others, including 	<p>Own product</p> <ul style="list-style-type: none"> ● Refer to their design criteria as they design and make <p>Use their design criteria to evaluate their completed products.</p>	<p>Own product</p> <ul style="list-style-type: none"> ● Critically evaluate (This means being analytical, not just descriptive) the quality of the design, manufacture and fitness for purpose of their

	intended users, to improve their work.		products as they design and make. Evaluate their ideas and products against their original individual design specification.
<p>Technical Knowledge -Apply their understanding of how to strengthen, stiffen and reinforce more complex structures</p> <p>-Understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages]</p> <p>-Understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors]</p> <p>-Apply their understanding of computing to program, monitor and control their products.</p>	<ul style="list-style-type: none"> ● To apply learning taken from science to help design and make products that work. ● To apply learning from maths to help design and make a product that works. ● To know that materials have both functional and aesthetic properties. ● To understand that materials can be combined and mixed to create more useful characteristics. <p>To learn that mechanical and electrical systems have an input and output.</p>	<ul style="list-style-type: none"> ● To know how mechanical systems such as levers and linkages or pneumatic systems create movement. ● To learn how simple electrical circuits and components can be used to create functional products. ● Investigate how to make strong, stiff shell structures. ● To program a computer to control their product. 	<ul style="list-style-type: none"> ● To use mechanical systems such as CAMS, pulleys are gears to create movement. ● To learn how to programme a computer to monitor changes in the environment and control their products. ● To investigate how to reinforce and strengthen a 3D framework.
<p>Cooking and Nutrition -Understand and apply the principles of a healthy and varied diet</p> <p>-Prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques</p>	<ul style="list-style-type: none"> ● Know that food is grown, reared and caught in the UK, Europe and the wider world. ● To learn how to prepare and cook a variety of savoury dishes safely and hygienically including, where appropriate, the use of a heat source. 	<p>SEWING</p> <ul style="list-style-type: none"> ● Know that a single fabric shape can be used to make a 3D textiles product. ● Measure, pin, cut and join fabric with some accuracy. ● Use running stitch to join fabric. ● Use cross stitch to create simple decorative designs. <p>To understand that to be active and healthy, food and drink are needed to provide energy for the body.</p>	<p>SEWING</p> <ul style="list-style-type: none"> ● Know that a 3D textiles product can be made from a combination of fabric shapes. ● Measure, pin, cut and join fabric with increasing accuracy. ● Use back stitch and/or blanket stitch to join fabrics. ● Use a range of embroidery stitches to add simple decorative designs. ● (e.g. French knot, blanket stitch, split stitch.) <ul style="list-style-type: none"> ● To know that seasons may affect the food availability. ● To know how food is processed into ingredients that can be eaten or used in cooking. ● To investigate how recipes can be adapted to change the appearance

<p>-Understand seasonality and know where and how a variety of ingredients are grown, reared, caught and processed.</p>	<p>To learn how to use a range of techniques such as weighing ingredients, peeling, chopping, slicing, grating, mixing, spreading, kneading and baking.</p>		<p>taste, texture and aroma.</p> <ul style="list-style-type: none">● To know that different food and drink contain different substances – nutrients, water and fibre – that are needed for health.
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Year	Autumn	Spring	Summer
3	Food- flavoured scones	Shell structure- pyramids	Textiles- decorative bookmark
	<p>John More- Sconezone Experiments with flavour combinations in scone and entrepreneur</p> 	<p>Thomas Heatherwick- English designer from London, UK</p>  	
4	Food- Mediterranean dips	Mechanical system- pop up books	Electronic system- Lights
	 <p>Jamie Oliver- championing simple ingredients and childhood nutrition</p>	<p>Colette Fu- Photographer, artist and paper engineer</p> 	<p>Bec Brittain – lighting designer/architect.</p> 
5	Food- Mexican/ South America	Frame structure- shelters	Mechanical system- moving toys
	<p>Diana Kennedy- culinary anthropologist and native edible plant specialist</p> 	<p>Gustav Eiffel- The Eiffel tower is an example of a frame structure (Work began 1887)</p> 	  <p>Dug North- create contemporary automata- sculptures made primarily of wood that use a hand-cranked mechanism to animate a scene or creature.</p>
6	Food- Couscous	Textiles- Make Do and Mend	Electrical system- alarm system
	 <p>Heston Blumenthal- pioneer of multi-sensory cooking. Presentation, tastes, smells.</p>	 <p>Freya Simone- Using only materials that are already in existence, Freya Simone reworks and upcycles pre-loved textiles.</p>	 <p>JP Knight- inventor of the traffic lights in 1866.</p>