

Design and Technology

Curriculum Intent:

By the end of Key Stage One, Through 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 and school, gardens and playgrounds, the local community, industry and the wider environment].

By the end of Key Stage Two, Through 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].

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.



		Previous learning	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	KS3
Design		EYFS Early Learning Goal: Children safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function.	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 .		Design and make purposeful, functional and appealing products that are fit for purpose. Generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design.				
	Context, uses and purpose		State the purpose of the design and its intended user.	Gather information about the needs and wants of individuals or groups.	Carry out research using surveys, questionnaires and web based resources. Use this to identify needs, wants and preferences of individuals. Recognise when their product has to fulfil conflicting requirements.				Through 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 domestic and local contexts [for example, the home, health, leisure and culture] and industrial contexts [for example, engineering, manufacturing, construction, food, energy, agriculture (including horticulture) and fashion].

	Ideas	<p>Generate ideas from their own experience or reading.</p> <p>Communicate ideas through pictures, words and where appropriate communication technology</p>	<p>Generate ideas from their own experience or reading.</p> <p>Communicate ideas through pictures, words, templates, mock ups and where appropriate communication technology</p>	<p>Research designs</p> <p>Create their own design criteria</p> <p>Communicate ideas through discussion annotated sketches and diagrams. Model ideas using prototypes and pattern pieces.</p> <p>Use computer aided design. (<i>Word/Sketch up</i>)</p>	<p>Research designs</p> <p>Create their own design criteria</p> <p>Communicate ideas through discussion annotated sketches, diagrams and cross sectional drawing. Model ideas using prototypes and pattern pieces</p> <p>Use computer aided design. (<i>Word/Sketch up</i>)</p>	<p>Generate innovative ideas from research</p> <p>Create design specifications. (all requirements)</p> <p>Communicate ideas through discussion annotated sketches, diagrams and cross sectional drawing. Model ideas using prototypes and pattern pieces.</p> <p>Use computer aided design. (<i>Sketchup</i>)</p>	<p>Generate innovative ideas from research</p> <p>Create design specifications. (all requirements)</p> <p>Make designs based on constraints of time or cost.</p> <p>Communicate ideas through discussion annotated sketches, diagrams and cross sectional drawing. Model ideas using prototypes and pattern pieces.</p> <p>Use computer aided design. (<i>Sketchup pattern making software</i>)</p>	
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		Previous learning	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	KS3
Make		<p>EYFS Early Learning Goal: Children safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function.</p>	<p>Select from and use a range of tools and equipment to perform practical tasks [e.g. cutting, shaping, joining and finishing]</p> <p>Select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics</p>		<p>Select from and use a wider range of tools and equipment to perform practical tasks (e.g. 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>Through 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 domestic and local contexts [for example, the home, health, leisure and culture] and industrial contexts [for example, engineering, manufacturing, construction, food, energy, agriculture (including horticulture) and fashion].</p>
	Planning		<p>State the purpose of the design and its intended user.</p> <p>Select from a range of tools explaining their choices.</p> <p>Select from a range of materials explaining their choices</p>	<p>Think ahead of about the order of work and the materials needed.</p> <p>Consider the working characteristics of materials</p>	<p>Order the main stages of making. Make detailed lists of the equipment and tools required.</p> <p>Explain their choice of tools based on the techniques they will be using. (Safety rulers cutting mats)</p> <p>Explain their choice of materials based on characteristics and aesthetic qualities.</p>				
	Practical		<p>Follow procedures for safety.</p> <p>Use and make own templates.</p>	<p>Follow procedures for safety</p> <p>Use a wider range of materials and components, including construction materials and kits, textiles, food ingredients (Y3), mechanical components and electrical components</p>					

		<p>Measure, mark out, cut out and shape materials and components.</p> <p>Assemble, join and combine materials and components.</p> <p>Use simple fixing materials e.g. temporary – paper clips tape and permanent – glue, staples.</p> <p>Use finishing techniques, including those from art and design</p>	<p>Measure, mark out, cut and shape materials and components with some accuracy.</p> <p>Assemble, join and combine materials and components with some accuracy apply a range of finishing techniques, include those from art and design, with some accuracy.</p>	<p>Accurately measure to nearest mm, mark out, cut and shape materials and components.</p> <p>Accurately assemble, join and combine materials/ components.</p> <p>Accurately apply a range of finishing techniques, including those from art and design.</p> <p>Use techniques that involve a number of steps.</p> <p>Demonstrate resourcefulness, e.g. make refinements.</p>	
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		Previous learning	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	KS3	
Evaluate		<p>EYFS Early Learning Goal: Children safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function.</p>	<p>Explore and evaluate a range of existing products</p> <p>Evaluate their ideas and products against design criteria</p>		<p>Investigate and analyse a range of existing products (Y3)</p> <p>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 (Y3)</p>					<p>Through 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 domestic and local contexts [for example, the home, health, leisure and culture] and industrial contexts [for example, engineering, manufacturing, construction, food, energy, agriculture (including horticulture) and fashion]</p>
	Own ideas and products		<p>Say what they like and do not like about products they have made.</p> <p>Consider and explain how the finished product could be improved</p>	<p>Talk about their developing designs and identify good points and areas to improve throughout the design process.</p> <p>Evaluate their product and its appearance against a design criteria.</p>	<p>Identify strengths and areas to improve in their own design.</p> <p>Identify what does and does not work in the product.</p>	<p>Check their work as it develops and modify approach in light of progress.</p> <p>Discuss how well their product meets the design criteria and the needs of the user.</p>	<p>Justify decisions about materials and methods of construction.</p> <p>Evaluate throughout the making process and adjust planning.</p> <p>Compare their product to their original design specification.</p>	<p>Justify decisions made during the design process.</p> <p>Evaluate throughout the making process and adjust planning.</p> <p>Test and evaluate their product to their original design specification.</p>		

	Existing Products	Explore existing products. <i>Who are they for? What are they made of? How are they made?</i>	Explore and evaluate existing products.	Investigate and analyse a range of existing products	Use investigations of existing products to inform planning of their own product.	Investigate - how well products have been designed, how well products have been made, why materials have been chosen, what methods of construction have been used, how well products work, how well products achieve their purposes and how well products meet user needs and wants.	Investigate - how well products have been designed, how well products have been made, why materials have been chosen, what methods of construction have been used, how well products work, how well products achieve their purposes and how well products meet user needs and wants.	
	Events and individuals	N/A		Investigate who invented the product, when and where.	Investigate who invented the product, when and where. Can the product be reused or recycled?	Investigate - how innovative products are and how sustainable the materials in products are.	Investigate - how much products cost to make, how innovative products are and how sustainable the materials in products are.	
						Identify great designers and use research of designers to influence work.		

Technical Knowledge	Previous learning	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	KS3
	EYFS Early Learning Goal: Children safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and	<p>Build structures, exploring how they can be made stronger, stiffer and more stable</p> <p>Explore and use mechanisms [e.g. levers, sliders, wheels and axles], in their products</p>			<p>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 [e.g. series circuits incorporating switches, bulbs, buzzers and motors]</p> <p>Apply their understanding of computing to program, monitor and control their products</p>			

	Making products work	function.	Make free standing structures and how they can be made more stable. Make models with wheels and axels.	Make models levers and sliders Textiles Use templates and joining techniques.	Make shell or frame structures and strengthen them. Make models with a pneumatic	Incorporate simple circuits and switches into a product. Use lolly sticks/card to make levers and linkages. Textiles Use 2D shapes to make 3D products.	Use a CAM to make an up and down mechanism. Build frameworks using a range of materials e.g. wood, corrugated card, plastic to support mechanisms. Incorporate motor and a switch into a model. (more complex switches)	Use pulleys and gears to generate motion and make movement larger. Build complex frameworks using a range of materials to support mechanisms. Textiles: Combining different fabric shapes	domestic and local contexts [for example, the home, health, leisure and culture] and industrial contexts [for example, engineering, manufacturing, construction, food, energy, agriculture (including horticulture) and fashion]
	Program monitor and control		N/A KS1 study computing separately but develop skills in this area that will help them in KS2	Use computers to design shell and frame structures. Y3 (Linked to shell or frame unit) Children learn to control a product using a computer. Y4 (linked to simple circuits and switches unit) Light up sign	Use computer aided design in textiles Y6 Children learn to use a computer to monitor an environment and control a product. Y5				

		Previous learning	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	KS3
Cooking and Nutrition		EYFS Early Learning Goal: Children safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function.	Use the basic principles of a healthy and varied diet to prepare dishes. Understand where food comes from		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				Through 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 domestic and local contexts [for example, the home, health, leisure and culture] and industrial contexts [for example, engineering, manufacturing, construction, food, energy, agriculture (including horticulture) and fashion].
	Where food comes from		Know where food comes from		Know that food is grown (such as tomatoes, wheat and potatoes), reared (such as pigs, chickens and cattle) and caught (such as fish) in the UK, Europe and the wider world.		Know that seasons may affect the food available Y5 Understand how food is processed into ingredients that can be eaten or used in cooking Y6		
	Food		Use appropriate equipment to weigh and measure ingredients.		How to prepare and cook a variety of predominantly savoury dishes safely and hygienically including, where appropriate, the use of a heat source How to use a range of techniques such as peeling, chopping, slicing, grating, mixing, spreading, kneading.				

		<p>Prepare simple dishes safely and hygienically, without necessarily using heat sources. (Preparing fruits and vegetables)</p> <p>Use techniques such as cutting.</p> <p>Name and sort foods into the five groups of the 'eat well' plate. Y2</p> <p>Know that everyone should eat at least five portions of fruit and vegetables every day. Y2</p>	<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>Consider the people it is intended for and how this might affect the diet. (Yr 4)</p> <p>Know that to be active and healthy, food is needed to provide energy for the body.</p> <p>Measure using grams.</p> <p>Follow a recipe.</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.</p> <p>Understand the need for correct storage</p> <p>Measure accurately.</p> <p>Work out ratios in recipes.</p> <p>Y5- Investigate this with seasonal foods. Y6- Investigate this with cultural foods.</p>	
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