

## Amble Links First School – Design and Technology Curriculum Overview

Through the delivery of Design and Technology we encourage the children to develop their thinking and problem solving skills and to use creativity to design and make products within a variety of contexts, focussing on the areas of **structures, mechanisms** and **food**. We enable the children to build and apply their knowledge, understanding and skills year on year in order to design and make high-quality products for a wide range of purposes, and to critique, evaluate and test their ideas and products and the work of others. Each planned Design and Technology project and early years experience includes elements of each of the six key principles of DT: **User, Purpose, Functionality, Design Decisions, Innovation and Authenticity**. Opportunities to draw on other subjects including maths, science and art are built into the curriculum as appropriate. We place a strong emphasis on learning key subject and topic based vocabulary. For children: In Design and Technology lessons we design and make products for a purpose.

	Early Years experiences	Year 1	Year 2	Year 3	Year 4
<b>To generate, develop, model and communicate <u>DESIGN</u> ideas</b>	<ul style="list-style-type: none"> <li>-Talk about what they are going to make</li> <li>-Talk about how they are going to make their model</li> <li>-Draw a picture of what they are going to make</li> </ul>	<ul style="list-style-type: none"> <li>-Generate designs for a given purpose</li> <li>-Explain how their design meets its purpose</li> <li>-Consider how products can be made appealing at the design stage</li> <li>-Develop their designs following discussion with others</li> <li>-Explain their ideas to teachers/peers</li> </ul>		<ul style="list-style-type: none"> <li>-Use research skills to develop design criteria</li> <li>-Develop innovative, functional and appealing products</li> <li>-Develop ideas which are fit for purpose</li> <li>-Develop ideas aimed at particular individuals and groups</li> </ul>	
		<b>By the end of Year 1, children will be able to:</b> <ul style="list-style-type: none"> <li>-Identify the key features of an existing product.</li> <li>-Talk with others to about ideas of their own.</li> <li>-Plan an outcome using simple pictures and labels.</li> </ul>	<b>By the end of Year 2, children will be able to:</b> <ul style="list-style-type: none"> <li>-Compare existing products to inform their own ideas.</li> <li>-Explain their ideas to teachers/peers.</li> <li>-Plan an outcome using pictures, diagrams and words.</li> </ul>	<b>By the end of Year 3, children will be able to:</b> <ul style="list-style-type: none"> <li>-Plan using specific design criteria.</li> <li>-Communicate their design ideas through discussion and accurate diagrams.</li> <li>-Plan the tools and equipment they will need.</li> <li>-Plan the stages of making their product.</li> </ul>	<b>By the end of Year 4, children will be able to:</b> <ul style="list-style-type: none"> <li>-Create a detailed plan considering their target audience/ purpose and design criteria.</li> <li>-Communicate their design ideas through discussion and expanded and cross-sectional diagrams.</li> </ul>
<b>To <u>MAKE</u> high quality prototypes and products for a wide range of users</b>	<ul style="list-style-type: none"> <li>-Practise cutting skills using scissors</li> <li>-Explore a range of construction kits</li> <li>-Junk modelling</li> <li>-Outdoor large scale models</li> </ul>	<ul style="list-style-type: none"> <li>-Select from a range of tools and equipment</li> <li>-Use a range of tools and equipment.</li> </ul>		<ul style="list-style-type: none"> <li>-Select from and use a wider range of tools and equipment to make products with accuracy</li> </ul>	
		<b>By the end of Year 1, children will be able to:</b> <ul style="list-style-type: none"> <li>-Cut, shape, join and finish using a range of tools and techniques</li> <li>-Select from and use a range of materials and components including construction kits, textiles and ingredients</li> <li>-Design and make a simple slider</li> <li>-Build a tower structure, exploring how it can be made stronger, stiffer and more stable</li> </ul>	<b>By the end of Year 2, children will be able to:</b> <ul style="list-style-type: none"> <li>-Refine their cutting, shaping, joining and finishing skills using a range of tools and techniques</li> <li>-Select from and use a range of materials and components including construction kits, textiles and ingredients according to their particular characteristics</li> <li>-Design and make a wheeled vehicle</li> <li>-Build a house structure, exploring how it can be made stronger, stiffer and more stable</li> </ul>	<b>By the end of Year 3, children will be able to:</b> <ul style="list-style-type: none"> <li>-Cut, shape, join and finish using a range of tools and techniques</li> <li>-Realise that the quality of their finished product depends on how well it has been made</li> <li>--Select from and use a wider range of materials and components including pneumatics equipment, textiles and ingredients</li> <li>-Understand and use mechanical systems in their products; make a moving monster.</li> </ul>	<b>By the end of Year 4, children will be able to:</b> <ul style="list-style-type: none"> <li>-Cut, shape, join and finish accurately using a range of tools and techniques to make quality finished products</li> <li>--Select from and use a range of materials and components with accuracy</li> <li>-Understand and use electrical systems in their products; make a simple light switch</li> <li>-Apply their understanding of how to strengthen, stiffen and reinforce more complex structures</li> </ul>
<b>To critique, <u>EVALUATE</u> and test their ideas and products and the work of others</b>	<ul style="list-style-type: none"> <li>-Say what they like about their model and why</li> <li>-Talk about how to make their model better</li> </ul>	<ul style="list-style-type: none"> <li>-Explore and evaluate a range of existing products</li> <li>-Evaluate their own products against design criteria</li> </ul>		<ul style="list-style-type: none"> <li>-Investigate and analyse a range of existing products</li> <li>-Evaluate their own products against design criteria</li> <li>-Consider the views of others when improving their work</li> <li>-Learn how famous designers have helped shape the world.</li> </ul>	
		<b>By the end of Year 1, children will be able to:</b> <ul style="list-style-type: none"> <li>-Talk with others about their own and existing products, saying how they work.</li> <li>-Identify successes and basic improvements/ next steps.</li> </ul>	<b>By the end of Year 2, children will be able to:</b> <ul style="list-style-type: none"> <li>-Explain to others how well their own and existing products work.</li> <li>-Identify successes and improvements/ next steps.</li> </ul>	<b>By the end of Year 3, children will be able to:</b> <ul style="list-style-type: none"> <li>-Evaluate their finished products through discussion with others.</li> <li>-Assess how well their product works in relation to design criteria.</li> <li>-Explain how they could change their design to make it better.</li> </ul>	<b>By the end of Year 4, children will be able to:</b> <ul style="list-style-type: none"> <li>-Produce extended written and verbal explanations of how well products fit design criteria.</li> <li>-Explain how they could improve their design and how this would affect the outcome.</li> </ul>
<b>To understand and apply the principles of <u>NUTRITION</u> and learn how to cook</b>	<ul style="list-style-type: none"> <li>-Apple crumble</li> <li>-Biscuits</li> <li>-Scones</li> <li>-Cakes</li> </ul>	<ul style="list-style-type: none"> <li>-Prepare simple dishes using the basic principles of a healthy diet</li> </ul>		<ul style="list-style-type: none"> <li>-Understand the principles of a healthy and varied diet</li> <li>-Apply these principles in designing and preparing healthy options</li> <li>-Prepare and cook a variety of savoury dishes</li> <li>-Develop an understanding of where food comes from</li> </ul>	
		<b>By the end of Year 1, children will be able to:</b> <ul style="list-style-type: none"> <li>-Make healthy choices from a selection-Combine healthy choices to make dishes varied and appealing</li> <li>-Make healthy portion sizes</li> </ul>	<b>By the end of Year 2, children will be able to:</b> <ul style="list-style-type: none"> <li>-Suggest healthy options.</li> <li>-Begin to show an understanding of where ingredients come from.</li> <li>-Begin to know how ingredients change when they are heated or cooled.</li> </ul>	<b>By the end of Year 3, children will be able to:</b> <ul style="list-style-type: none"> <li>-Suggest and use healthy ingredient choices.</li> </ul>	<b>By the end of Year 4, children will be able to:</b> <ul style="list-style-type: none"> <li>-Design, make and evaluate savoury snacks, drawing on prior knowledge of food groups and nutrition</li> </ul>
<b>Key Design and Technology Vocabulary</b>	cut, stick, build	design, strong, stronger, slide, cut, join	design, appealing, wheel, axle, support	design criteria, fit for purpose, pneumatic, mechanical, reinforce	design criteria, functional, innovative, electrical, accuracy

## DESIGN AND TECHNOLOGY LONG TERM PLANS

	AUTUMN 1	AUTUMN 2	SPRING 1	SPRING 2	SUMMER 1	SUMMER 2
<b>Year 1</b>		<b>Structures</b>  <b>Constructing a Windmill</b> Inspired by the song, ‘Mouse in a windmill’, design and construct a windmill for a client (mouse) to live in. Explore various types of windmill, how they work and their key features.  Our key vocabulary will be: strong, stable, structure, turn, join, design, evaluate.		<b>Mechanisms</b>  <b>Making a moving story book</b> Explore slider mechanisms and the movement they output, to design, make and evaluate a moving storybook from a range of templates.  Our key vocabulary will be: slide, mechanism, template		<b>Food</b>  <b>Fruit and Vegetables</b> Learn to distinguish between fruit and vegetables and where they grow. Design a fruit and vegetable kebab and accompanying packaging.  Our key vocabulary will be: healthy, unhealthy, balanced, preparation, ingredients, recipe, equipment, safety.  Links to PSHE Healthy Me unit
<b>Year 2</b>		<b>Structures</b>  <b>Baby Bear’s Chair</b> The children will explore stability and methods to strengthen structures, to understand Baby Bear’s chair weaknesses and develop an improved solution for him to use.  Key Vocabulary: stability, strengthen, structure, function, support  Links to English: The Three Bears		<b>Food</b>  <b>A Balanced Diet</b> The children will learn about the food groups (carbohydrates, proteins, fruits and vegetables, dairy, oils and spreads) to understand a balanced diet to develop a healthy wrap.  Key Vocabulary: balanced diet, nutrients  Links to Science: Animals, including Humans		<b>Mechanisms</b>  <b>Wheels and Axles</b> The children will learn about the key parts of a wheeled vehicle to develop an understanding of how wheels, axles and axle holders work. They will design and make a moving vehicle.  Key Vocabulary: axle, design, mechanism, chassis, wheel  Links to History: The Great Fire of London
<b>Year 3</b>	<b>Food</b> The children will design, make and evaluate a seasonal flatbread for a healthy tea. We will begin by learning how to make flatbread and where the ingredients come from. Then we will work from a recipe to make our bread. The children will then identify the different climates in which fruit and vegetables grow. They will design a topping for their flatbread, selecting from a variety of seasonal vegetables to provide a range of nutrients.			<b>Structures</b> The children will design and make a desk tidy to help them complete their homework. The children will evaluate a range of pencil pots and desk tidies and rank them according to their functionality. They will plan and make a desk tidy for use at home based on their design criteria, drawing on and extending their prior knowledge of how to make structures more stable.	<b>Mechanical Systems</b> The children will begin by exploring the science of pneumatics using syringes and plastic tubing. They will also use this equipment to compare the power of air with the power of water. The children will then consider examples of pneumatics in the wider world eg drills, bridges, bicycle pumps. Next they will use their knowledge of pneumatics to design and make a toy with a moving part.	

<b>Year 4</b>	<p><b>Structures</b></p> <p>After learning about different types of bridges and exploring how the strength of structures can be affected by the shape used, the children create their own wooden bridge and test its durability. Pupils will be introduced to measuring, sawing and joining wood accurately.</p> <p>Key Vocabulary: structure, compression, reinforce, tension</p>		<p><b>Electrical Systems</b></p> <p>Children apply their scientific understanding to create a torch made from easily available materials and objects. They will design and evaluate their product against set design criteria.</p> <p>Key Vocabulary: conductor, insulator, series circuit, design criteria</p>			<p><b>Food</b></p> <p>Children work in groups to adapt a simple biscuit recipe, to create the tastiest biscuit. While making, they will ensure that their creation comes within the given budget of overheads and costs of ingredients.</p> <p>Key Vocabulary: budget, prototype, utilities, quantity</p>
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National Curriculum Coverage Map - DT

KEY STAGE 1 Y1 Y2	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Design purposeful, functional, products for themselves and other users based on design criteria.		✓✓		✓✓		✓✓
Design 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.		✓✓		✓✓		✓✓
Select from and use a range of tools and equipment to perform practical tasks.		✓✓		✓✓		✓✓
Select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics.		✓✓		✓✓		✓✓
Explore and evaluate a range of existing products.		✓✓		✓✓		✓✓
Evaluate their ideas and products against design criteria		✓✓		✓✓		✓✓
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				✓		✓
Use the basic principles of a healthy and varied diet to prepare dishes.				✓		✓
Understand where food comes from.				✓		✓

KEY STAGE 2 Y3 Y4	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Use research and develop design criteria to inform the design of innovative, functional products that are fit for purpose, aimed at particular individuals or groups	✓✓		✓	✓	✓	✓
Use research and develop design criteria to inform the design of appealing products that are fit for purpose, aimed at particular individuals or groups	✓		✓	✓	✓	✓
generate, develop, model and communicate their ideas through discussion	✓✓		✓	✓	✓	✓
generate, develop, model and communicate their ideas through annotated sketches.	✓✓		✓	✓	✓	✓
generate, develop, model and communicate their ideas through cross-sectional and exploded diagrams.			✓		✓	
generate, develop, model and communicate their ideas through prototypes.	✓		✓		✓	
generate, develop, model and communicate their ideas through computer-aided design.	✓			✓		
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.	✓✓		✓	✓	✓	✓
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	✓					
apply their understanding of how to strengthen, stiffen and reinforce more complex structures	✓					
understand and use mechanical systems in their products.					✓	
understand and use electrical systems in their products			✓			
apply their understanding of computing to program, monitor and control their products.			✓			
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.	✓					✓

