

# **Progression of skills, knowledge and concepts within the Design and Technology Curriculum**



## **Curriculum Intent for Design and Technology**

Through our design and technology curriculum we intend for our pupils to be able to make an essential contribution to the creativity, culture, wealth and well-being of the nation. Pupils at Lady Bay School will use their creativity and imagination to design and make products that solve real and relevant problems within a variety of contexts, considering their own and others' needs, wants and values. Our aim is for all pupils to acquire a broad range of subject knowledge and draw on disciplines such as mathematics, science, engineering, computing and art. We will encourage them to take risks and they will learn how to be resourceful, innovative, enterprising and capable citizens. Through the evaluation of past and present design and technology, they will develop a critical understanding of its impact on daily life and the wider world.

Our curriculum intent for Design and Technology is for all pupils to:

- 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

## **Implementation**

## **Evaluation**

## Progression of skills in Design and Technology

One overarching word needs to be used and remembered and used at every year group.

Everything they make should be considered a **prototype**. There are always ways to improve it – James Dyson claims his bagless vacuum cleaner has had 5,000 re-designs and it is still improving. The iPhone has gone through numerous changes and improvements.

	<u>Designing</u>	<u>Making</u>	<u>Evaluating</u>	<u>Cooking And Nutrition</u>
	Every design is a prototype (even final designs) Understanding context, users and purpose (This is the <b><u>WHY</u></b> ) Communicating ideas	Working with tools, equipment and materials Develop [practical skills and techniques	Evaluate: - own ideas Existing Products Key individuals and events (KS2 only)	Where food comes from Food preparation Cooking Nutrition
<b>FS Stage</b>	Learning about planning and adapting initial ideas to make them better, e.g. a child might choose to use scissors, a stapler, elastic bands and glue to join bits together to make a toy vehicle. But they might then modify their initial idea by using masking tape.	Children should use a range of tools including scissors, hole punch, stapler, glue spreader, rolling pin, cutter and grater and make decisions about what tools and techniques they need to shape, assemble and join materials they are using	Talk about ways they could make their finished product better.	Beginning to understand some of the tools, techniques and processes involved in food preparation. E.g. taking turns stirring the mixture for a cake and then watching it rise while cooking. Children should practise stirring, mixing, pouring and

				blending ingredients during cookery activities.
<b>Year 1</b>	<p>Begin to draw on their own experience to help generate ideas and research conducted on criteria.</p> <p>Begin to understand the development of existing products: What they are for, how they work, materials used.</p> <p>Start to suggest ideas and explain what they are going to do.</p> <p>Understand how to identify a target group for what they intend to design and make based on a design criteria.</p> <p>Begin to develop their ideas through talk and drawings. Make templates and mock ups of their ideas in card and paper or using ICT.</p>	<p>Begin to make their design using appropriate techniques.</p> <p>Begin to build structures, exploring how they can be made stronger, stiffer and more stable.</p> <p>Explore and use mechanisms [for example, levers, sliders, wheels and axles], in their products.</p> <p>With help, measure, mark out, cut and shape a range of materials.</p> <p>Explore using tools e.g. scissors and a hole punch safely.</p> <p>Begin to assemble, join and combine materials and components together using a variety of temporary methods e.g. glues or masking tape.</p>	<p>Start to evaluate their product by discussing how well it works in relation to the purpose (design criteria).</p> <p>When looking at existing products explain what they like and dislike about products and why.</p> <p>Begin to evaluate their products as they are developed, identifying strengths and possible changes they might make.</p>	<p>Begin to understand that all food comes from plants or animals.</p> <p>Explore the understanding that food has to be farmed, grown elsewhere (e.g. home) or caught.</p> <p>Start to understand how to name and sort foods into the five groups in 'The Eat well plate'</p> <p>Begin to understand that everyone should eat at least five portions of fruit and vegetables every day.</p> <p>Know how to prepare simple dishes safely and hygienically, without using a heat source.</p> <p>Know how to use techniques such as cutting, peeling and grating. Understand that all food comes from plants or animals.</p>

		Begin to use simple finishing techniques to improve the appearance of their product.		Know that food has to be farmed, grown elsewhere (e.g. home) or caught.
<b>Year 2</b>	<p>Start to generate ideas by drawing on their own and other people's experiences.</p> <p>Begin to develop their design ideas through discussion, observation, drawing and modelling.</p> <p>Identify a purpose for what they intend to design and make.</p> <p>Understand how to identify a target group for what they intend to design and make based on a design criteria.</p> <p>Develop their ideas through talk and drawings and label parts.</p> <p>Make templates and mock ups of their ideas in card and paper or using ICT.</p>	<p>Begin to select tools and materials; use correct vocabulary to name and describe them.</p> <p>Build structures, exploring how they can be made stronger, stiffer and more stable.</p> <p>With help measure, cut and score with some accuracy. Learn to use hand tools safely and appropriately.</p> <p>Start to assemble, join and combine materials in order to make a product.</p> <p>Demonstrate how to cut, shape and join fabric to make a simple product. Use basic sewing techniques.</p> <p>Start to choose and use appropriate finishing techniques</p>	<p>Evaluate their work against their design criteria.</p> <p>Look at a range of existing products explain what they like and dislike about products and why.</p> <p>Start to evaluate their products as they are developed, identifying strengths and possible changes they might make.</p> <p>With confidence talk about their ideas, saying what they like and dislike about them.</p>	<p>Understand how to name and sort foods into the five groups in 'The Eat well plate'</p> <p>Know that everyone should eat at least five portions of fruit and vegetables every day.</p> <p>Demonstrate how to prepare simple dishes safely and hygienically, without using a heat source.</p> <p>Demonstrate how to use techniques such as cutting, peeling and grating.</p>

		based on own ideas.		
<b>Year 3</b>	<p>With growing confidence generate ideas for an item, considering its purpose and the user/s.</p> <p>Start to order the main stages of making a product.</p> <p>Identify a purpose and establish criteria for a successful product.</p> <p>Understand how well products have been designed, made, what materials have been used and the construction technique.</p> <p>Learn about inventors, designers, engineers, chefs and manufacturers who have developed ground-breaking products. Start to understand whether products can be recycled or reused.</p>	<p>Select a wider range of tools and techniques for making their product i.e. construction materials and kits, textiles, food ingredients, mechanical components and electrical components.</p> <p>Explain their choice of tools and equipment in relation to the skills and techniques they will be using.</p> <p>Start to understand that mechanical and electrical systems have an input, process and output.</p> <p>Start to understand that mechanical systems such as levers and linkages or pneumatic systems create movement.</p> <p>Know how simple electrical circuits and components can be used to create functional products.</p>	<p>Start to evaluate their product against original design criteria <i>e.g. how well it meets its intended purpose</i></p> <p>Begin to disassemble and evaluate familiar products and consider the views of others to improve them.</p> <p>Evaluate the key designs of individuals in design and technology has helped shape the world.</p>	<p>Start to 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.</p> <p>Understand how to prepare and cook a variety of predominantly savoury dishes safely and hygienically including, where appropriate, the use of a heat source.</p> <p>Begin to understand how to use a range of techniques such as peeling, chopping, slicing, grating, mixing, spreading, kneading and baking.</p> <p>Start to understand that a healthy diet is made up from a variety and balance of different food and drink, as depicted in 'The Eat well plate'</p>

	<p>Know to make drawings with labels when designing.</p> <p>When planning explain their choice of materials and components including function and aesthetics.</p>	<p>Measure, mark out, cut, score and assemble components with more accuracy.</p> <p>Start to work safely and accurately with a range of simple tools.</p> <p>Start to think about their ideas as they make progress and be willing to change things if this helps them to improve their work.</p> <p>Start to measure, tape or pin, cut and join fabric with some accuracy.</p>		<p>Begin to know that to be active and healthy, food and drink are needed to provide energy for the body.</p>
--	---	---	--	---

<p><b>Year 4</b></p>	<p>Start to generate ideas, considering the purposes for which they are designing- link with Mathematics and Science.</p> <p>Confidently make labelled drawings from different views showing specific features.</p> <p>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.</p> <p>Identify the strengths and areas for development in their ideas and products.</p> <p>When planning, consider the views of others, including intended users, to improve their work.</p> <p>Learn about inventors, designers, engineers, chefs</p>	<p>Select a wider range of tools and techniques for making their product i.e. construction materials and kits, textiles, food ingredients, mechanical components and electrical components.</p> <p>Explain their choice of tools and equipment in relation to the skills and techniques they will be using.</p> <p>Start to understand that mechanical and electrical systems have an input, process and output.</p> <p>Start to understand that mechanical systems such as levers and linkages or pneumatic systems create movement.</p> <p>Know how to program a computer to monitor changes in the environment and control their products.</p>	<p>Evaluate their products carrying out appropriate tests.</p> <p>Start to evaluate their work both during and at the end of the assignment.</p> <p>Be able to disassemble and evaluate familiar products and consider the views of others to improve them.</p> <p>Evaluate the key designs of individuals in design and technology has helped shape the world.</p>	<p>Understand 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.</p> <p>Understand how to prepare and cook a variety of predominantly savoury dishes safely and hygienically including, where appropriate, the use of a heat source.</p> <p>Know how to use a range of techniques such as peeling, chopping, slicing, grating, mixing, spreading, kneading and baking.</p> <p>Know that a healthy diet is made up from a variety and balance of different food and drink, as depicted in 'The Eat well plate'</p> <p>Know that to be active and healthy, food and drink are needed to provide energy for the body.</p>
--------------------------	---	---	---	--

	<p>and manufacturers who have developed ground-breaking products.</p> <p>When planning, explain their choice of materials and components according to function and aesthetic.</p>	<p>Understand how to reinforce and strengthen a 3D framework.</p> <p>Sew using a range of different stitches, to weave and knit.</p> <p>Demonstrate how to measure, tape or pin, cut and join fabric with some accuracy.</p> <p>Begin to use finishing techniques to strengthen and improve the appearance of their product using a range of equipment including ICT.</p>		
<b>Year 5</b>	<p>Start to generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces.</p> <p>Begin to use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose.</p>	<p>Select appropriate materials, tools and techniques 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>Start to evaluate a product against the original design specification and by carrying out tests.</p> <p>Evaluate their work both during and at the end of the assignment.</p> <p>Begin to evaluate it personally and seek evaluation from others.</p> <p>Evaluate the key designs of individuals in design and</p>	<p>Understand 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.</p> <p>Begin to understand 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>With growing confidence apply a range of finishing techniques, including those from art and design.</p> <p>Draw up a specification for their design- link with Mathematics and Science. Use results of investigations, information sources, including ICT when developing design ideas. With growing confidence select appropriate materials, tools and techniques. Start to understand how much products cost to make, how sustainable and innovative they are and the impact products have beyond their intended purpose.</p>	<p>Understand how mechanical systems such as cams or pulleys or gears create movement. Autumn 1</p> <p>Know how more complex electrical circuits and components can be used to create functional products and how to program a computer to monitor changes in the environment and control their products. Autumn 1</p> <p>Understand that mechanical and electrical systems have an input, process and output. Autumn 1</p> <p>Begin to measure and mark out more accurately.</p> <p>Demonstrate how to use skills in using different tools and equipment safely and accurately with growing confidence cut and join with accuracy to ensure a good-quality finish to the product.</p>	<p>technology has helped shape the world.</p>	<p>Know how to prepare and cook a variety of predominantly savoury dishes safely and hygienically including, where appropriate, the use of a heat source.</p> <p>Start to understand how to use a range of techniques such as peeling, chopping, slicing, grating, mixing, spreading, kneading and baking.</p> <p>Begin to understand that different food and drink contain different substances – nutrients, water and fibre – that are needed</p>
--	--	--	---	---

		<p>Weigh and measure accurately (time, dry ingredients, liquids).</p> <p>Use finishing techniques to strengthen and improve the appearance of their product using a range of equipment including ICT.</p>		
<b>Year 6</b>	<p>Generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces.</p> <p>Use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose.</p> <p>Accurately apply a range of finishing techniques, including those from art and design.</p>	<p>Confidently select appropriate tools, materials, components and techniques and use them.</p> <p>Use tools safely and accurately.</p> <p>Assemble components to make working models. Aim to make and to achieve a quality product.</p> <p>With confidence, pin, sew and stitch materials together to create a product.</p> <p>Demonstrate when make modifications as they go along.</p>	<p>Evaluate their products, identifying strengths and areas for development, and carrying out appropriate tests. Evaluate their work both during and at the end of the assignment.</p> <p>Record their evaluations using drawings with labels. Evaluate against their original criteria and suggest ways that their product could be improved.</p> <p>Evaluate the key designs of individuals in design and technology has helped shape the world.</p>	<p>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.</p> <p>Understand 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 how to prepare and cook a variety of predominantly savoury dishes safely and hygienically</p>

	<p>Draw up a specification for their design- link with Mathematics and Science. Autumn 1</p> <p>Generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces.</p> <p>Use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose.</p> <p>Accurately apply a range of finishing techniques,</p>	<p>Construct products using permanent joining techniques.</p> <p>Understand how mechanical systems such as cams or pulleys or gears create movement.</p> <p>Know how more complex electrical circuits and components can be used to create functional products</p> <p>Know how to reinforce and strengthen a 3D framework.</p> <p>Understand that mechanical and electrical systems have an input, process and output.</p> <p>Use finishing techniques to strengthen and improve the appearance of their product using a range of equipment including ICT.</p>		<p>including, where appropriate, the use of a heat source.</p> <p>Understand how to use a range of techniques such as peeling, chopping, slicing, grating, mixing, spreading, kneading and baking.</p> <p>Know different food and drink contain different substances – nutrients, water and fibre – that are needed for health.</p>
--	---	--	--	---

	<p>including those from art and design.</p> <p>Draw up a specification for their design- link with Mathematics and Science.</p> <p>Plan the order of their work, choosing appropriate materials, tools and techniques.</p> <p>Suggest alternative methods of making if the first attempts fail.</p> <p>Identify the strengths and areas for development in their ideas and products.</p> <p>Know how much products cost to make, how sustainable and innovative they are and the impact products have beyond their intended purpose.</p>			
--	--	--	--	--