

# Victoria Dock Primary School

## Design Technology Curriculum Overview



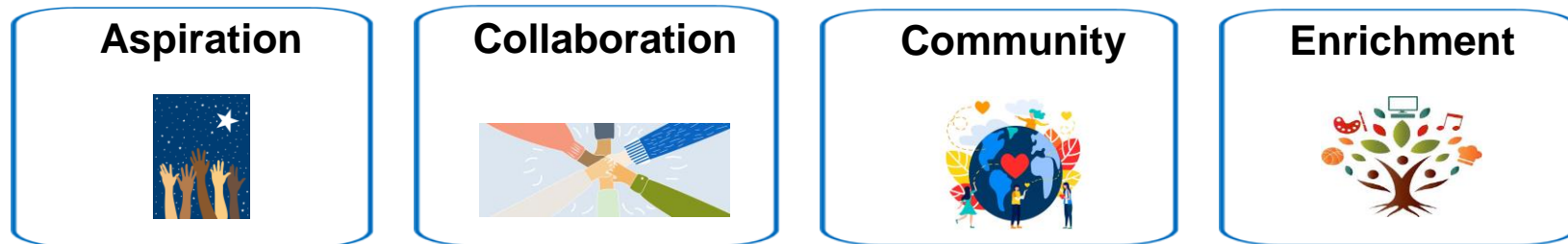
## Contents

The Curriculum – our approach	3
Curriculum Drivers	4
Working Memory Model	5
Key Concepts and Second Order Concepts Overview	6
Key Concepts	7
Key Concepts Year Group Mapping	8
Knowledge and Skills Sequencing	10

# The Curriculum – Our Approach

## Victoria Dock Curriculum – Ambition for All

At Victoria Dock Primary School, we celebrate our rich, multicultural school community through a purposeful and progressive curriculum. Throughout their school journey, our children experience drivers of



Our curriculum is designed to provide a broad and balanced education that meets the needs of each and every one of our pupils. The children are provided with a breadth of learning opportunities, which encourage them to explore and exercise their creativity by growing and developing into enthusiastic and highly motivated learners.

At Victoria Dock Primary School, we acknowledge the importance of developing the whole child instead of solely preparing for academic success. Our curriculum offers excellent opportunities for each child to explore and exercise their passions for sport, music, acting, artistic flair, business and enterprise and much more. These activities are shared regularly with parents, carers and visitors through performances, workshops, exhibitions and assemblies. We consider our local community to be of paramount importance. We believe it is invaluable to educate the children about the area in which they live and learn and to build a sense of pride in our local community.

In addition, we offer the opportunity for children to make a highly influential and tangible contribution to the daily life of the school and the wider community through involvement in our School Council or our Buddy Teams.

# Victoria Dock Primary School

## Curriculum Drivers

### Aspiration

- \* Use prior knowledge as a springboard for new learning
- \* Resilience and perseverance
- \* Listen and learn from others
- \* Leadership skills
- \* Appreciate and use local knowledge
- \* Recognise success for all



### Collaboration

- \* Everyone's contribution has value and worth
- \* Build and maintain healthy relationships with others
- \* Encourage respect and the opinion of others
- \* Confidence in our own voices
- \* Leadership and group work



### Community

- \* Understand and accept differences
- \* Tolerance
- \* Appreciate the uniqueness of others
- \* Compassion
- \* Celebrate equality and diversity



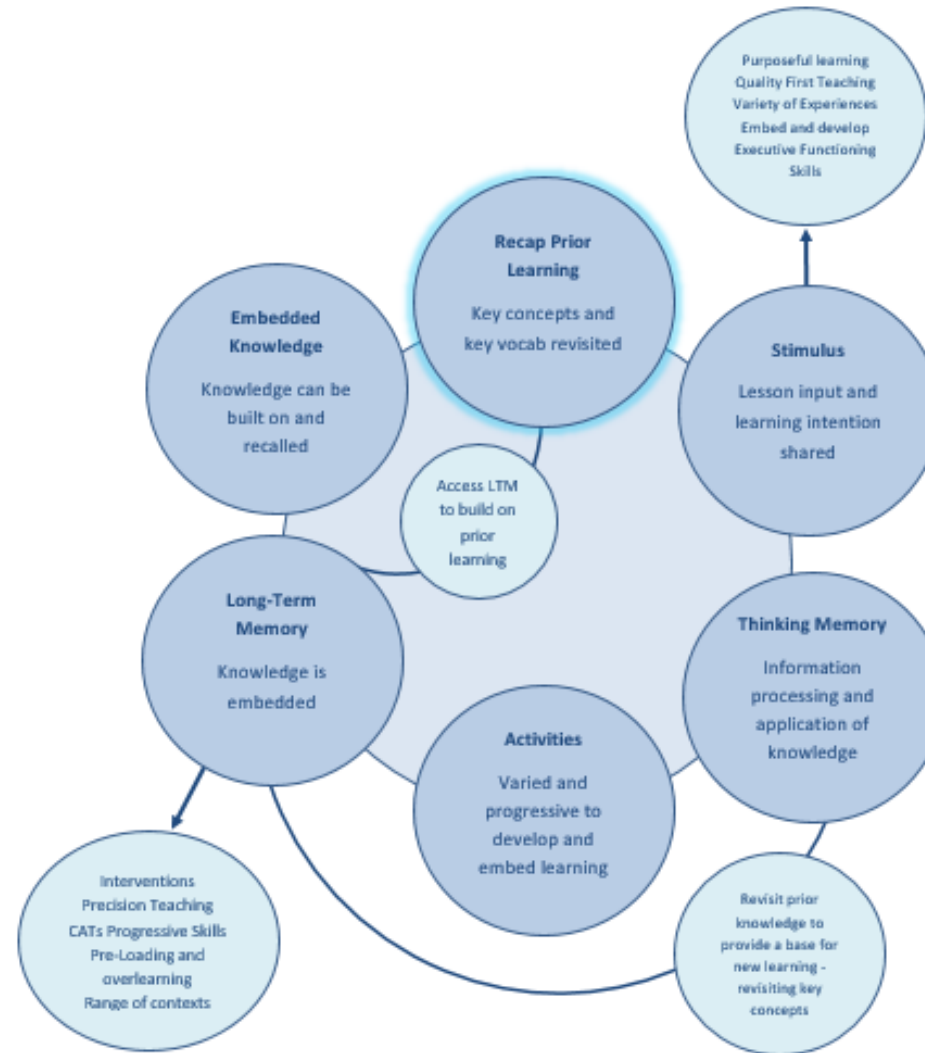
### Enrichment

- \* Celebrate and embrace talent
- \* Appreciate the Arts
- \* Broaden life skills
- \* Have the confidence to learn new and unfamiliar things
- \* Ensure visits and visitors enhance learning



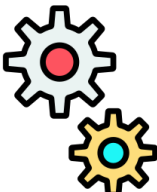
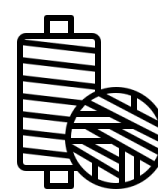
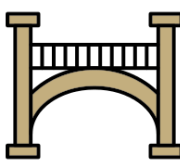
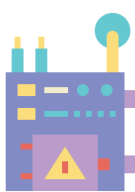

# Working Memory Model

With the collation of all this extensive research, we have generated a 'Working Memory Model' which enables teachers to ensure that learning is robust and that all pupils are using their interconnected schema to their full potential.



## Key Concepts

Through collaboration with subject leaders and subject specialists across our secondary schools, each subject has identified key concepts (big ideas) for their subject. These key concepts are the skills and knowledge essential to pupils achieving and exceeding expected standards in that specific subject. Key concepts are subject specific and build progressively as pupils move through the school. When pupils encounter a key concept, they will revisit other topics where they learnt about the same concept to enable them to make connections between different learning and build the schema they need.

Design Technology				
				
Mechanics	Textiles	Structures	Electric and digital	Cooking and nutrition

## Second Order Concepts

Second order concepts are fundamental knowledge and skills which are transferable across a range of curriculum subjects. For example, we introduce pupils to the concept of 'similarity and difference' early in their education, developing the observational skills and language needed to make comparisons. This is developed and applied as pupils move through the school so they can confidently apply this in all areas of the curriculum by upper Key Stage Two.

A summary of the second order concepts and how they apply to different subjects are provided in the table below.

Curriculum subject	Significance	Similarity and difference	Cause and consequence	Continuity and change	Responsibility	Communication (Oracy & Written)	Enquiry
<b>D&amp;T</b>	Significant designers and designs, real world examples of effective and successful products and designs	Making comparisons between products and designs to inform own plans, noting differences, drawing conclusions	Identifying how things work, how an action can cause change or movement/ strengthen	How design has changed over time	Working safely with different materials, responsibilities to customers to ensure quality products, healthy eating	Using correct terminology, evaluating, communicating designs accurately, labelling and annotating, explaining processes, presenting	

## Key concepts (Big Ideas) in Design and Technology

*Pupils will become increasingly competent in designing, making and evaluating products. They will investigate how design has been used to solve problems and create products and structures in the real world, including the techniques used by designers to improve looks and functionality. They will have the opportunity to design their own products in response to design briefs, learn and experiment with a range of techniques before making and evaluating products.*

**Each unit of work will be based on the following teaching sequence.**



The technical knowledge will be specific to the key concepts outlined below

### Mechanics



Pupils will gain an understanding of how different mechanisms work, evaluate products with different mechanisms and design and make working products to fit a design brief. They will gain the technical knowledge needed to make different mechanisms work effectively.

### Textiles



Pupils will gain the technical knowledge needed to work with textiles such as stitching, sewing and threading. They will study textile designs and how to make products which are practical as well as stylish and then apply this learning to their own designs and products.

### Structures



Pupils will learn the technical knowledge used by designers to make structures which are strong and stable. They will learn and apply strengthening techniques, explore the benefits of different shapes and materials and apply this to their own designs and products.

### Electric and digital

















Pupils will learn how electronics and digital technologies are used when designing and creating products. They will gain the technical knowledge needed to programme devices and to make use of electric circuits including switches to power and control a product.

### Cooking and nutrition

















Pupils will learn where food comes from and how nutritional information can be used to plan a balanced and healthy diet. They will also learn techniques needed to prepare and cook food safely and design dishes and meals for specific purposes.


Design Technology Key Concepts Year Group Mapping – Cycle A


	Autumn	Spring	Summer
EYFS	Art (EAD) – Drawing a self-portrait	Art (EAD) – Colour Mixing	Props for Play and Performance 
Years 1 and 2	A Balanced Diet 	Pouches 	Moving Monsters 
Years 3 and 4	Slingshot Cars 	Torches 	Adapting a Recipe 
Year 5	What Could Be Healthier? 		Pop-Up Books  Doodlers 
Year 6	Waistcoats 		Automata Toys  Navigating the World  Come Dine with Me 




## Design and Technology Key Concepts Year Group Mapping – Cycle B

	Autumn	Spring	Summer
EYFS	Art (EAD) – Drawing a self-portrait	Art (EAD) – Colour Mixing	Props for Play and Performance 
Years 1 and 2		Fruit and Vegetables  Constructing a Windmill 	Moving Story Books 
Years 3 and 4	Cushions 	Constructing a Castle 	Eating Seasonally 
Year 5		Bridges 	What Could Be Healthier?  Monitoring Devices 
Year 6	Automata Toys  Waistcoats 	Come Dine with Me 	Steady Hand Game 

Knowledge and skills sequencing		DESIGN AND TECHNOLOGY			
	EYFS	Year 1/2	Year 3/4	Year 5	Year 6
<p><b>Mechanics</b></p> 	<p>Share their creations, explaining the process they have used</p> <p>Make use of props and materials when role playing characters in narratives and stories</p> <p>Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function</p> <p>Use a range of small tools, including scissors, paintbrushes and cutlery</p>	<p>To appraise and analyse mechanisms in existing products</p> <p>To identify how mechanisms work in existing products e.g., sliders/levers and wheels/axels</p> <p>To be able to make prototype mechanisms</p> <p>To design using pictures and labels</p> <p>To create a product which includes sliders and levers / wheels and axels</p> <p>To evaluate my product against function</p>	<p>To analyse a slingshot and identify how they work</p> <p>To identify how a chassis and launch mechanism works</p> <p>To produce a mechanical prototype – slingshot</p> <p>To design a car with a slingshot mechanism</p> <p>To select appropriate materials to produce a mechanical product – slingshot car</p> <p>To evaluate my product and identify ways to improve my design</p>	<p>To analyse a range of different pop-up products and identify how they work</p> <p>To understand different types of pop-up features</p> <p>To practise a range of techniques to create a pop-up book</p> <p>To design a product, demonstrating my design from different perspectives</p> <p>To select appropriate materials and use a range of techniques to produce a finished product</p> <p>To evaluate a product on appearance and function against an original design criterion and justify decisions made in the design and making process</p>	<p>To appraise and analyse a range of existing products – automata toys</p> <p>To gain an understanding of how cams and followers work</p> <p>To use a range of materials, tools and techniques to create a prototype – cams and followers</p> <p>To design a product that meets the design brief – automata toys</p> <p>To use a range of materials, tools and techniques to make a product</p> <p>To evaluate an end product against a design criterion and consider the views of others to improve their work</p>
Appraise and analyse					
Technical knowledge					
Practice					
Generate ideas and design					
Design and make					
Evaluate					

	EYFS	Year 1/2	Year 3/4	Y5	Y6
<p><b>Textiles</b></p> 	<p>Share their creations, explaining the process they have used</p> <p>Make use of props and materials when role playing characters in narratives and stories</p> <p>Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function</p> <p>Use a range of small tools, including scissors, paintbrushes and cutlery</p>	<p>To appraise and analyse a selection of finished products</p> <p>To identify techniques used to create a finished product (stapling, gluing etc.)</p> <p>To practise a range of techniques to create a prototype of a specific design (stapling, gluing etc.)</p> <p>To design a product using pictures and words</p> <p>To use a range of tools and materials to create a finished product</p> <p>To evaluate an end product in terms of aesthetics</p>	<p>To research design concepts or range of products and appraise them</p> <p>To understand how a cross stitch design is created</p> <p>To practise skills identified to develop a design of my own</p> <p>To be able to generate and develop ideas using exploding diagrams to design an end product</p> <p>To be able to think ahead about the order of my work, select tools needed for a given task and give reasons for my choices</p> <p>To be able to evaluate a finished product against a design brief</p>	<p>To appraise and analyse an existing product commenting on design features</p> <p>To understand how pattern pieces are used to make an end product</p> <p>To experiment with pattern pieces to create a prototype</p> <p>To design a product using pattern pieces to meet a design brief</p> <p>To use pattern pieces, appropriate materials and tools to create an end product</p> <p>To evaluate a product on appearance and function against an original design criterion and justify decisions made in the design and making process</p>	<p>To appraise and analyse a range of existing products and techniques</p> <p>To gain an understanding of a range of sewing techniques</p> <p>To experiment and use a range of materials and techniques to create a product</p> <p>To design a product using pattern pieces that meets the design brief</p> <p>To use pattern pieces and a range of materials and techniques to create an end product</p> <p>To evaluate an end product on appearance and function against a design criterion and consider the views of others to improve the product in the future</p>
Appraise and analyse					
Technical knowledge					
Practice					
Generate ideas and design					
Design and make					
Evaluate					

	EYFS	Year 1/2	Year 3/4	Y5	Y6
<p><b>Structures</b></p>  <p><b>Appraise and analyse</b></p> <p><b>Technical knowledge</b></p> <p><b>Practice</b></p> <p><b>Generate ideas and design</b></p> <p><b>Design and make</b></p> <p><b>Evaluate</b></p>	<p>Share their creations, explaining the process they have used</p> <p>Make use of props and materials when role playing characters in narratives and stories</p> <p>Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function</p> <p>Use a range of small tools, including scissors, paintbrushes and cutlery</p>	<p>To appraise and analyse how a structure is made</p> <p>To identify how a net is created using shapes</p> <p>To practise making stable structures using nets to make a windmill</p> <p>To design a structure (windmill) using pictures and words based on a design criterion</p> <p>To make and join together a stable structure (windmill) using nets</p> <p>To evaluate my structure in terms of design</p>	<p>To research castle structures and consider how these structures work</p> <p>To identify the structure of a castle and analyse the support techniques to make the structure strong</p> <p>To explore suitable materials to create a strong structure</p> <p>To generate ideas and design a structure including strengthening techniques</p> <p>To use appropriate tools and construction materials to make a structure</p> <p>To evaluate my structure and suggest ways for improvement</p>	<p>To analyse structural designs in terms of functionality, aesthetics and materials</p> <p>To understand different methods of strengthening bridges</p> <p>To practise a range of structural designs to create bridges</p> <p>To generate ideas and design a structure (bridge) demonstrating my design from different perspectives</p> <p>To use a range of appropriate tools competently and I can join and combine a range of materials competently</p> <p>To evaluate a product on appearance and function against an original design criterion and justify decisions made in the design and making process</p>	

	EYFS	Year 1/2	Year 3/4	Y5	Y6
<p><b>Electric and digital</b></p>  <p>Appraise and analyse</p> <p>Technical knowledge</p> <p>Practice</p> <p>Generate ideas and design</p> <p>Design and make</p> <p>Evaluate</p>	N/A	N/A	<p><b>Electrical</b></p> <p>To appraise and analyse a range of torches and comment on their features</p> <p>To learn about electrical items and how they work</p> <p>To learn how a switch controls the flow of an electric current</p> <p>To design a torch based on a user profile</p> <p>To make a torch based on a user profile</p> <p>To evaluate my torch and identify any improvements that could be made.</p>	<p><b>Electrical</b></p> <p>To appraise and analyse an existing product to determine the factors that affect the products form and function</p> <p>To learn about electrical systems and how they work</p> <p>To learn how a range of electrical components work in a circuit (wires, motor, switch...)</p> <p>To put findings into practice to design a unique product</p> <p>To use findings to develop a unique product</p> <p>To evaluate my doodler and identify any improvements that could be made.</p> <p><b>Digital</b></p> <p>To appraise and analyse a range of digital and electronic thermometers, and how they have evolved today</p> <p>To develop their 3D CAD skills</p> <p>To know how to use TinkerCAD and essential tools to combine multiple objects</p> <p>To create a sustainable design of a smart thermometer</p>	<p><b>Digital</b></p> <p>To appraise and analyse a selection of navigational tools and consider and suggest additional functions for them</p> <p>To know how to use Makecode to program a navigational tool</p> <p>To know how to use TinkerCAD to make a prototype for a sustainable case</p> <p>To create a sustainable design of a navigational device and case considering material decisions</p> <p>To use Microbit and TinkerCAD to create an advanced program for a navigational tool and design a sustainable case</p> <p>To evaluate virtual model against own design criteria and consider the views of others to improve their work</p> <p><b>Electrical</b></p> <p>To appraise and analyse a range of toys and identify if the form follows its function</p> <p>To create a range of electrical circuits and identify their components</p>

				<p>To use Microbit and TinkerCAD to create a program to monitor the temperatures of animals</p> <p>To evaluate virtual model against own design criteria and consider the views of others to improve their work</p>	<p>To practise using a range of tools and techniques to create part of a product</p> <p>To generate ideas and design a product that meets the design brief</p> <p>To use a range of tools and techniques to make a product</p> <p>To evaluate their ideas and products against their own design criteria and consider the views of others to improve their work</p>
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	EYFS	Year 1/2	Year 3/4	Y5	Y6
<p><b>Cooking and nutrition</b></p> 	<p>Understand the importance of healthy food choices</p> <p>Use a range of small tools and cutlery</p>	<p>To identify ingredients from different food groups, knowing where our fruit and vegetables come from, to create a healthy and balanced product</p> <p>To identify different techniques to prepare a healthy and balanced product (peeling, chopping, grating, spreading, cooking)</p> <p>To practise a range of techniques to prepare a healthy, balanced product (peeling, chopping, grating, spreading, cooking)</p> <p>To design a healthy, balanced product using simple drawings and labels</p> <p>To use a range of technical knowledge to create a finished product (peeling, chopping, grating, spreading, cooking, mashing, blending)</p> <p>To evaluate their product against their original design, taste and the design criterion</p>	<p>To identify seasonal ingredients used in an existing product</p> <p>To identify techniques used and to write a method to create or alter an existing product</p> <p>To practise a range of different techniques to prepare and create a finished product (grating, chopping, slicing, rolling, folding, pinching, egg washing, kneading, crumbing)</p> <p>To design a product using exploded diagrams</p> <p>To use a wider range of technical skills and tools to create a finished product</p> <p>To evaluate their finished product against their original design and a design criterion</p>	<p>To appraise and analyse a range of existing products, focusing upon their ingredients and nutritional information - sauces</p> <p>To identify techniques and ingredients used to create a product, carefully thinking about the nutritional value of the ingredients</p> <p>To practise a range of different techniques to prepare and create a finished product, using a range of ingredients from previous research (grating, chopping, slicing, rolling, folding, pinching, egg washing, kneading, crumbing)</p> <p>To design a product based upon taste and function</p> <p>To use a range of ingredients, technical skills and tools to create a finished product</p> <p>To evaluate their finished product against their original design and a design criterion</p>	<p>To appraise and analyse a range of predominantly savoury dishes within a three-course meal</p> <p>To identify how the different cooking techniques can be used to create a range of healthy and balanced dishes</p> <p>To practise a range of different cooking techniques to decide which is the most appropriate method</p> <p>To work collaboratively to design a three-course menu</p> <p>To use a range of tools and cooking methods to prepare and make a three-course meal</p> <p>To evaluate their finished product against their original design, a design criterion and consider the views of others</p>
Appraise and analyse					
Technical knowledge					
Practice					
Generate ideas and design					
Design and make					
Evaluate					