

# Design and Technology Curriculum Overview



WORKING TOGETHER TO MAKE A POSITIVE DIFFERENCE FOR EVERY CHILD

# The Curriculum – our approach

## Introduction

Our curriculum raises the ambition of our pupils. It ensures that all pupils have the chance for success, regardless of their starting points. We strive to provide meaningful experiences, allowing children to appreciate the wider world and recognise the opportunities that exist outside of our community. We have a clear focus on progression by carefully sequencing knowledge, providing clarity about what ‘getting better’ at a subject means and making explicit connections and links between the different subjects and experiences. **Key concepts, knowledge and skills** have been identified and organised into subject specific progressive objectives. These are sequenced to ensure they build and develop as pupils’ move through the school; ensuring learning becomes embedded. These progressive objectives are used to inform planning and sequences of lessons across all subjects. Clear end points are identified in all subjects and teaching and learning builds towards achieving these. The whole curriculum is underpinned by 5 Pastoral Drivers (see below). These drivers ensure we meet the holistic needs of our pupils and allow them to **REACH** their full potential.



## **Subject Specific Sequencing:**

Each subject discipline has been planned to ensure that knowledge and skills are sequenced from Early Years to Year 6.

## **Key Concepts:**

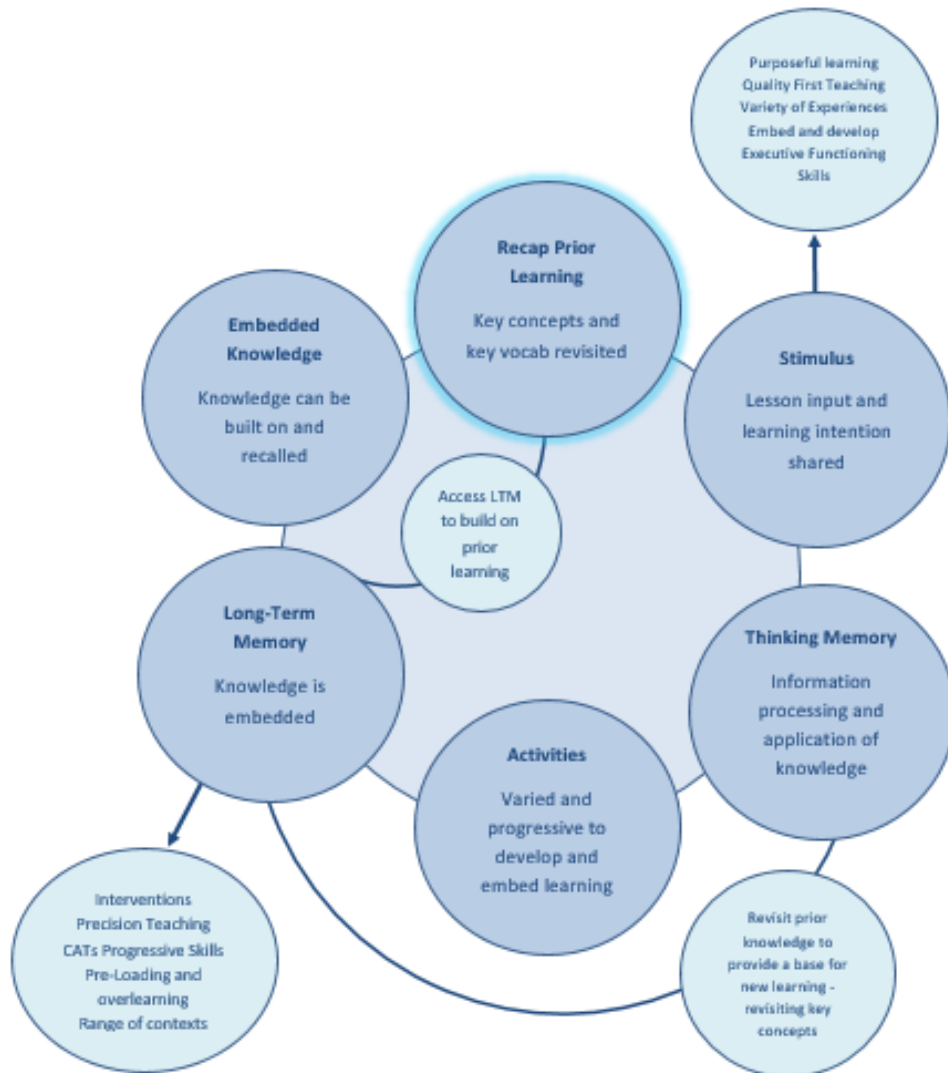
For each subject, a set of key concepts have been identified. These are the subject specific 'big ideas' that children will learn about, return to and revisit and they progress through the school. They will have opportunities to link new learning to prior knowledge within a key concept to build a rich and deep knowledge of the big ideas in each subject. Knowledge is empowering and provides a foundation for success. We accept that the more children know, the more they can learn. The subject overviews provide specific, progressive objectives that allow teachers to be precise in planning. Retrieval practice forms part of regular teaching to allow pupils to secure long-term knowledge.

## **Second Order Concepts:**

These relate to the transferable knowledge that pupils can use and apply across different curriculum subjects. For example, in all areas of the curriculum, children will build an understanding of 'significance'; learning about significant authors, artists, scientific discoveries, pieces of music, figures and events from history etc.... These are summarised on pages 8 to 10 of our whole school curriculum overview to outline how these apply across a range of subjects. They aim to develop **flexible knowledge and skills** that children can apply to multiple curriculum areas.

## Working Memory Model

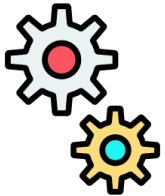
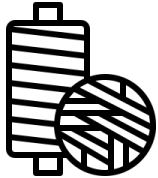
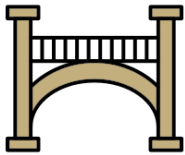
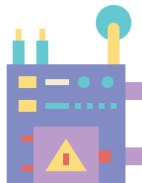

With the collation of all this extensive research, we have generated a 'Working Memory Model' which enables teachers to ensure that learning is robust and that all pupils are using their interconnected schema to their full potential.



## Key Concepts (The Big Ideas)

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.

<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	
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## 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 Mapping

### Design Technology Key Concepts Mapping – LONG TERM PLAN


	Autumn 2	Spring 2	Summer 2
F1	In EYFS children are taught Design and Technology through the 'Expressive Arts and Design' and 'Physical Development' strands. Throughout Foundation Stage 1 and 2, children will be taught an early understanding of Structures and Cooking and Nutrition.		
F2			
1	<b>Mechanics</b> (Kapow: Moving story book and car)	<b>Cooking and Nutrition</b> (Smoothies)	<b>Textiles</b> (Kapow: Puppets)
2	<b>Structures</b> (Kapow: Baby Bear's Chair)	<b>Textiles</b> (Kapow: Easter pouches)	<b>Cooking and Nutrition</b> (Kapow: Healthy Wrap)
3	<b>Structures</b> (Kapow: Constructing a Castle)	<b>Cooking and Nutrition</b> (Pizzas)	<b>Textiles</b> (Kapow: Cushion)
4	<b>Electrical and Digital</b> (Kapow: Electrical Systems- Torches)	<b>Mechanics</b> (Kapow: Slingshot Cars)	<b>Electrical and Digital</b>
5	<b>Cooking and Nutrition</b> (Kapow: What could be healthier?)	<b>Textiles</b> (Kapow: Stuffed toys)	<b>Structures</b> (Bridges)
6	<b>Mechanics</b> (Automata Toys)	<b>Electrical and Digital</b> (Kapow: Digital World- navigating the World)	<b>Electrical and Digital</b> (Kapow: Steady hand game)




Knowledge and Skills Sequencing		DESIGN AND TECHNOLOGY					
	EYFS	Y1	Y2	Y3	Y4	Y5	Y6
<p><b>Mechanics</b></p>  <p>Appraise and Analyse</p> <p>Technical Knowledge</p> <p>Practice</p> <p>Generate Ideas and Design</p> <p>Develop and Make</p> <p>Evaluate</p>		<p>To appraise and analyse mechanisms in existing products (moving story book and match box cars).</p> <p>To identify how mechanisms work in existing products e.g. sliders/levers and wheels/axles.</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 axles.</p>			<p>To analyse slingshots 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 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</p>

		<p>To evaluate my product against function</p>			<p>To evaluate my product and identify ways to improve my design.</p>		<p>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>
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	EYFS	Y1	Y2	Y3	Y4	Y5	Y6
<p><b>Textiles</b></p>  <p>Appraise and Analyse</p> <p>Technical Knowledge</p> <p>Practice</p> <p>Generate Ideas and Design</p> <p>Develop and Make</p> <p>Evaluate</p>		<p>To appraise and analyse a selection of puppets.</p> <p>To identify techniques used to create a puppet (stapling, gluing etc).</p> <p>To practise a range of techniques used to make a puppet to create a prototype (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 appraise and analyse a selection of pouches.</p> <p>To identify techniques used to create a pouch (sewing, threading etc).</p> <p>To practise a range of techniques used to make a pouch (sewing, threading etc).</p> <p>To design a product using pictures and words based on a design criterion.</p> <p>To use a range technical knowledge and skills to create a finished product.</p>	<p>To research a 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</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>	

		To evaluate an end product in terms of aesthetics – puppet.	To evaluate my pouch in terms of design.	<p>give reasons for my choices.</p> <p>To be able to evaluate a finished product against a design brief.</p>		To evaluate a product on appearance and function against an original design criterion and justify decisions made in the design and making process.	
	EYFS	Y1	Y2	Y3	Y4	Y5	Y6
<b>Structures</b> 			To appraise and analyse how a structure is made.	To research castles and consider how		To analyse structural designs in terms of functionality,	

<p>Appraise and Analyse</p> <p>Technical Knowledge</p> <p>Practice</p> <p>Generate Ideas and Design</p> <p>Develop and Make</p> <p>Evaluate</p>			<p>To identify how a net is created using shapes.</p> <p>To practise making stable structures (using nets) to make a chair.</p> <p>To design a structure (chair) using pictures and words based on a design criterion.</p> <p>To make and join together a stable structure (chair).</p> <p>To evaluate my structure in terms of design.</p>	<p>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 (castle).</p> <p>To generate ideas and design a structure including strengthening techniques (castle).</p> <p>To use appropriate tools and construction materials to make a structure (castle).</p>		<p>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>	
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				To evaluate my structure and suggest ways for improvement.		To evaluate a product on appearance and function against an original design criterion and justify decisions made in the design and making process.	
	EYFS	Y1	Y2	<b>Y4</b>	<b>Y4</b>	<b>Y6</b>	<b>Y6</b>
<p><b>Electric and Digital</b></p>  <p>Appraise and Analyse</p> <p>Technical Knowledge</p> <p>Practice</p>				<p><b>DIGITAL</b></p> <p>To explain what a monitoring device is and how they are used in every day life</p> <p>To learn how to use Makecode to program a monitoring device</p>	<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</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><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>Generate Ideas and Design</p>				<p>To learn how to use TinkerCAD to make a prototype for a housing unit</p>	<p>flow of an electric current.</p>		<p>To practise using a range of tools and techniques to create part of a product.</p>
<p>Develop and Make</p>						<p>To know how to use TinkerCAD to make a prototype for a sustainable case.</p>	
<p>Evaluate</p>				<p>To design a monitoring device and housing unit for an animal enclosure</p>	<p>To design a torch based on a user profile.</p>		<p>To generate ideas and design a product that meets the design brief.</p>
					<p>To make a torch based on a user profile.</p>	<p>To create a sustainable design of a navigational device and case considering material decisions.</p>	
				<p>To use Microbit and TinkerCAD to program a monitoring device and design a housing unit</p>	<p>To evaluate my torch and identify any improvements that could be made.</p>	<p>To use Microbit and TinkerCAD to create an advanced program for a navigational tool and design a sustainable case.</p>	<p>To use a range of tools and techniques to make a product.</p>
				<p>To evaluate virtual model against the design requirements</p>			<p>To evaluate their ideas and products against their own design criteria and consider the views of others to improve their work.</p>
						<p>To evaluate virtual model against own design criteria and consider the views of others to improve their work.</p>	

	EYFS	Y1	Y2	Y3	Y4	Y5	Y6
<p><b>Cooking and Nutrition</b></p>  <p>Appraise and Analyse</p> <p>Technical Knowledge</p> <p>Practice</p> <p>Generate Ideas and Design</p> <p>Develop and Make</p> <p>Evaluate</p>	<p>To identify healthy foods.</p> <p>To be able to name some common fruits and vegetables.</p>	<p>To identify where our fruit and vegetables come from to make a healthy product (smoothie).</p> <p>To identify different techniques used to prepare and create a healthy product (mushing, chopping, blending).</p> <p>To practise a range of different techniques to prepare and create a healthy product (mushing, chopping, blending).</p> <p>To design a product using pictures and words.</p>	<p>To identify ingredients from different food groups to create a healthy and balanced product (wrap).</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 balanced product (peeling, chopping, grating, spreading, cooking).</p> <p>To design a healthy, balanced product using simple</p>	<p>To identify seasonal ingredients used in an existing product.</p> <p>To identify techniques used and to write a method to create an existing product (seasonal pizza).</p> <p>To practise a range of different techniques to prepare and create a seasonal product (grating, chopping, slicing, rolling, folding, pinching, egg washing).</p> <p>To design a seasonal dish using exploding diagrams.</p> <p>To use a wider range of technical skills</p>		<p>To appraise and analyse a range of predominantly healthy dishes.</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 healthy, nutritional meal.</p> <p>To use a range of tools and cooking methods to prepare</p>	



		<p>To use a range of technical knowledge and skills to create a finished product (mushing, chopping, blending).</p> <p>To evaluate their healthy product in terms of design and the taste.</p>	<p>drawings and labels (food groups).</p> <p>To use a range of technical knowledge to create a finished product (peeling, chopping, grating, spreading, cooking).</p> <p>To evaluate their product against their original design and a design criterion.</p>	<p>and tools to create a finished product</p> <p>To evaluate their finished product against their original design and a design criterion.</p>		<p>a healthy and nutritional meal.</p> <p>To evaluate their finished product against their original design, a design criteria and consider the views of others. .</p>	
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