




# **DESIGN & TECHNOLOGY CURRICULUM**

Our Design and Technology Curriculum includes broad concepts that are embedded throughout the curriculum so that each one can be encountered multiple times. It also has a clear focus on disciplinary concepts so that pupils learn how to design, create and evaluate. These components enable pupils to develop and communicate their personal ideas, observations and creations.

KEY SUBSTANTIVE CONCEPTS - GENERATIVE KNOWLEDGE			
COOKING AND NUTRITION	TEXTILES	MECHANISMS	STRUCTURES
Knowledge of food, how to prepare it and the principles of a healthy diet.	Knowledge of a range of fabrics and sewing techniques, in order to make informed choices linked to suitability for product.	Knowledge of varying design and technology mechanisms, including how they built a model or structure with the mechanism, and which tools and products they used to do it.	Knowledge of different structures and how they can be stabilised and strengthened. Know a range of finishing techniques that can be used to improve physical appearance.

DISCIPLINARY KNOWLEDGE AND SKILLS: How we 'work' and 'think' like an expert in DT.				
DESIGNING	MAKING	TECHNICAL KNOWLEDGE	EVALUATING AND ANALYSING	FOOD AND NUTRITION
Understanding Contexts, Users and Purposes. Generating, developing, modelling and communicating ideas	Planning, Practical Skills and Techniques.	Applying their knowledge of specific materials to meet the criteria listed in the design, make and evaluation stages.	Evaluate and analyse a range of existing products and their own designs based on a specific design criteria. Know how key individuals have helped to shape the world in which we live in.	Understand and apply the principles of nutrition and learn how to cook.

# Design & Technology Curriculum Topics of Study and Substantive Concepts

	SUBSTANTIVE CONCEPTS			
	COOKING AND NUTRITION	TEXTILES	MECHANISMS	STRUCTURES
YEAR 1 - Making a Smoothie	✓			
YEAR 1 - Moving Storybook			✓	
YEAR 1 - Windmills				✓
YEAR 2 - Healthy Wrap	✓			
YEAR 2 - Ferris Wheel			✓	
YEAR 2 - Treasure Pouch		✓		
YEAR 3 - Seasonal Tarts	✓			
YEAR 3 - Moving Monsters			✓	
YEAR 3 - Monument				✓
YEAR 4 - Alternative Biscuits	✓			
YEAR 4 - Book Sleeve		✓		
YEAR 4 - Torches			✓	
YEAR 5 - Create a Healthier Burger	✓			
YEAR 5 - Bridges				✓
YEAR 5 - Automata Toys			✓	
YEAR 6 - Come Dine with Me	✓			
YEAR 6 - Computer Controlled Buggy			✓	✓
YEAR 6 - Stuffed Toy		✓		



# Curriculum Overview: Design & Technology

	Autumn	Spring	Summer
Nursery	<b>Food and Nutrition:</b> Bake Christmas Biscuits <b>Structures:</b> Create a hen house	<b>Food and Nutrition:</b> Bake Gingerbread Men <b>Structures:</b> Make a house for the 3 Little Pigs	<b>Food and Nutrition:</b> Bake Birthday biscuits <b>Structures:</b> Make a bridge and a house linked to 3 Billy Goats Gruff
Reception	<b>Food and Nutrition:</b> Seasonal Apple Crumble, Goldilocks Porridge. <b>Structures:</b> Create model cottage.	<b>Structures/Mechanisms:</b> Make a 3D model wheeled vehicle. Create a 3D folding caterpillar. Design and make biscuits.	<b>Food and Nutrition:</b> Summer Garden Food-flavoured muffins. <b>Structures/Mechanisms:</b> Golden carriage.
Year 1	<b>Mechanisms</b> -Moving Story Books <i>English Link</i> -Traditional Tales	<b>Food and Nutrition</b> -Smoothies PSHE-Healthy Me	<b>Structures/Mechanisms:</b> Windmills
Year 2	<b>Textiles</b> -Create a pouch to hold a pirate's treasure. <i>History Link</i> -Captain Cook	<b>Mechanisms</b> -Ferris Wheel <i>Inspirational Inventor</i> – George Washington Gale Ferris	<b>Food and Nutrition</b> -Healthy Wraps PSHE-Healthy Me
Year 3	<b>Structures</b> - Monuments <i>History Links</i> -Stone Age-Bronze Age	<b>Food and Nutrition</b> -Seasonal Tarts PSHE-Healthy Me	<b>Mechanisms</b> -Moving Monsters <i>English Link</i> -Where's My Monster?
Year 4	<b>Electrical Systems</b> -Torches <i>Science Link</i> -Electricity	<b>Textiles</b> -Book Sleeves with Fasteners <i>Wider curriculum link</i> -World Book Day	<b>Food and Nutrition</b> - Alternative Biscuits
Year 5	<b>Structures</b> -Bridges <i>Geography Link</i> -Local Area <i>Middlesbrough</i> -Transporter Truss Bridge	<b>Food and Nutrition</b> - Healthier Burgers	<b>Mechanisms</b> -Automata Toy
Year 6	<b>Textiles</b> -Stuffed Toys <i>History Links</i> -World War Two	<b>Food and Nutrition</b> -Come Dine With Me	<b>Mechanical and Electrical Systems</b> - Computer controlled buggy

## SUBSTANTIVE KNOWLEDGE OVERVIEW

	COOKING AND NUTRITION	TEXTILES	MECHANISMS	STRUCTURES
<b>EYFS- FFDT</b>	<ul style="list-style-type: none"> <li>Know that fruit is part of a healthy diet.</li> <li>Know that some fruit comes from trees.</li> <li>Know that fruit can be used in other products.</li> <li>Know that a recipe can be followed to make products with different ingredients.</li> </ul>	<ul style="list-style-type: none"> <li>Know how to thread beads onto string</li> <li>Know that fabric can be added for decorative purposes.</li> </ul>	<ul style="list-style-type: none"> <li>Know that wheels are circular and need to be able to rotate to move.</li> </ul>	<ul style="list-style-type: none"> <li>Know that card can be folded to make structures different.</li> <li>Know that solid object can be joined together to make different 3D structures</li> </ul>
<b>Year 1</b>	<ul style="list-style-type: none"> <li>Know that food comes from plants and animals.</li> <li>Know that fruit and vegetables come from all different plants and that we grow them.</li> <li>Know a range of fruit and vegetables and their characteristics.</li> <li>Know that 5 portions of fruit or vegetables per day are part of a healthy diet.</li> <li>Know about the features of hygienic food preparation.</li> </ul>	<ul style="list-style-type: none"> <li>Know that fabric is a material. Know some of its basic properties and uses.</li> </ul>	<ul style="list-style-type: none"> <li>Know that different mechanisms produce different types of movement. Know that simple mechanisms move in a straight line, backwards and forwards, round and round or in a curve.</li> <li>Know that a slider is a rigid bar which can be moved backwards and forwards along a straight line.</li> <li>Know that a guide or a bridge is used to keep sliders in place and control movement.</li> <li>Know how to create wheels that move using an axle.</li> </ul>	<ul style="list-style-type: none"> <li>Know the correct tools to cut, shape and join paper and card.</li> <li>Know that paper can be folded to make a hinge.</li> <li>Know how to use scissors correctly and safely.</li> <li>Know how to join two pieces of paper with glue or tape.</li> <li>Know that paper can be rolled loosely to make a spiral or tightly to be a strong tube shape.</li> <li>Know that a 2D net can be used to make a 3D structure.</li> </ul>
<b>Year 2</b>	<ul style="list-style-type: none"> <li>Know that food can be divided into five groups and how much of each food group is recommended per day.</li> <li>Know that wraps can form part of a healthy diet if they have the right combination of fillings.</li> <li>Know how to design and plan a sandwich for a particular purpose.</li> <li>Know how to prepare food hygienically and safely.</li> </ul>	<ul style="list-style-type: none"> <li>Know that textiles are flexible materials which are woven from fibres. Know some uses for textiles.</li> <li>Know how to join fabrics together and how to attach different materials and/or decorations.</li> <li>Know that some joining techniques such as pinning or stapling are quick but not as secure as sewing or gluing.</li> <li>Know how to use a template to create a fabric treasure pouch.</li> <li>Know how to sew textiles together using a simple stitching technique.</li> </ul>	<ul style="list-style-type: none"> <li>Know that a mechanism is a system of parts working together to form a purpose, movement or series of steps in a product.</li> <li>Know that a wheel mechanism is made up of a wheel, an axle, an axle holder and a frame or base.</li> <li>Know that a wheel is a circular object that revolves on an axle</li> <li>Know that an axle is a rod that enables a wheel to rotate. The wheel can rotate freely on the axle or be fixed to, and turn with, the axle.</li> </ul>	<ul style="list-style-type: none"> <li>Know how to create joints and structures from paper/card and tape.</li> <li>Know how to use tabs and joins as techniques for making a structure more stable.</li> </ul>

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<b>Year 3</b>	<ul style="list-style-type: none"> <li>Know that seasonality of food refers to the time of year when a given type of food is at its peak, either in terms of harvest or its flavour.</li> <li>Know that different parts of the world have different seasonal food.</li> <li>Know the benefits and problems with seasonal food being available in shops all year round.</li> <li>Know how to follow a recipe using seasonal ingredients.</li> <li>Know how to use a range of cooking utensils and equipment safely.</li> </ul>		<ul style="list-style-type: none"> <li>Know that there is always an input and an output in a mechanism.</li> <li>Know that a linkage is a system of levers that are connected by pivots.</li> <li>Know that a lever is something that turns on a pivot, which enables things to move on a curve.</li> <li>Identify the parts in different linkage mechanisms.</li> <li>Know how simple linkages change the direction of motion.</li> </ul>	<ul style="list-style-type: none"> <li>Know that the shape of a structure affects its strength.</li> <li>Know that the shape of materials can be changed to improve their strength and stiffness.</li> <li>Know how to turn 2D nets into 3D structures.</li> <li>Know how to create a frame structure for support.</li> <li>Know that some frame structures are used to protect or hold things.</li> <li>Know that other materials can be added to them to help reinforce them.</li> </ul>
<b>Year 4</b>	<ul style="list-style-type: none"> <li>Know why each of the food groups is important for a balanced diet.</li> <li>Know the importance of clearly stating ingredients on packaging for nutrition and allergy safety.</li> <li>Know how to identify which food group a variety of alternative biscuit ingredients belong to.</li> <li>Know about the different sensory characteristics of these alternative ingredients.</li> </ul>	<ul style="list-style-type: none"> <li>Know that different fabrics have different properties which makes them good for different purposes.</li> <li>Know that there are a variety of different stitches that can be used to join fabrics together. Some are easier and quicker e.g. running stitch; some are more secure e.g. backstitch and others are more aesthetically pleasing e.g. blanket stitch.</li> <li>Know that aesthetics is highly important in textiles.</li> </ul>	<ul style="list-style-type: none"> <li>Know the different components within an electrical circuit in a torch and what their function is.</li> <li>Know how to create a labelled diagram of the inside and outside of a torch to show the pathway of the electricity.</li> <li>Know about the different types of switches used within torches and how they work.</li> <li>Know how to create their own electrical circuit and how to incorporate it into a functional product e.g. a torch.</li> <li>Know how to work safely with electrical components.</li> </ul>	

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	COOKING AND NUTRITION	TEXTILES	MECHANISMS	STRUCTURES
Year 5	<ul style="list-style-type: none"> <li>Know that calories come from fats, proteins and carbohydrates.</li> <li>Know how to interpret a nutritional label to evaluate how healthy a burger is.</li> <li>Know what cross-contamination means and how to avoid it.</li> <li>Know that beef comes from cattle and how it is reared and processed.</li> <li>Know that there are different cooking processes and that burger patties can be cooked using baking, grilling or frying.</li> </ul>		<ul style="list-style-type: none"> <li>Know how a cams mechanism creates movement.</li> <li>Know the different components within a cams mechanism and how they function.</li> <li>Understand how cams can be used to make a model move.</li> <li>Know that a cams profile causes a follower to rise, fall or remain static at different points depending on its shape.</li> </ul>	<ul style="list-style-type: none"> <li>Know that frame structures are rigid support structures that use beams, columns and slabs to hold large forces of gravity and weight.</li> <li>Know different ways to reinforce structures including, factors that can be changed to increase strength, stability and stiffness of a bridge.</li> <li>Understand how triangles and arches can be used to reinforce bridges.</li> </ul>
Year 6	<ul style="list-style-type: none"> <li>Know that a planned 3 course meal should include food from different groups in order for it to be healthy.</li> <li>Know the different ways to prepare food and select the appropriate techniques for each course of the planned meal.</li> <li>Know the different ways to cook food and select the most appropriate process for each course of the planned meal.</li> <li>Know the importance of using seasonal foods for eating sustainably and the environment.</li> </ul>	<ul style="list-style-type: none"> <li>Know how to create a paper template making sure that it is proportional.</li> <li>Know how to sew accurately with even regularity of stitches.</li> <li>Know how to use a blanket stitch to reinforce the edge of a fabric material or securely join two pieces of fabric together.</li> <li>Know how to use applique or decorative stitching to decorate the front of a stuffed toy.</li> <li>Know how to use strong and secure stitches, threading a needle and tying knots with greater independence.</li> <li>Know how to repair gaps and holes that may appear after stuffing.</li> </ul>	<ul style="list-style-type: none"> <li>Know that mechanical and electrical systems have an input, process and output.</li> <li>Know how more complex electrical circuits and components can be used to create functional products</li> <li>Know the different components needed for an electrical circuit and how to connect up the circuit using these components.</li> <li>Know that mechanisms, including levers, pulleys and gears, allow us to use a smaller force to have a greater effect and change motion.</li> <li>Know that a pulley is a wheel on a fixed axle with a groove in it to guide a rope or cable.</li> <li>Know that a motor can be used to drive a pulley.</li> <li>Know that smaller pulleys go faster on flat surfaces and that larger pulleys usually go better up hill.</li> </ul>	