

## Design and Technology Progression Document for EYFS

		Terms 1 & 2	Terms 3 & 4	Terms 5 & 6	Year R Development Matters statements applicable to D&T Curriculum
Skills	Design	<ul style="list-style-type: none"> <li>To select various construction materials with confidence</li> <li>Creates simple representations of people or objects using pens, pencils or paint.</li> </ul>	<ul style="list-style-type: none"> <li>To independently represent their own ideas, thoughts and feelings through design.</li> </ul>	<ul style="list-style-type: none"> <li>To express and communicate ideas, thoughts and feelings in a variety of ways through art, design and the creative processes.</li> </ul>	<p><b>Physical Development:</b> Progress towards a more fluent style of moving, with developing control and grace. Develop their small motor skills so that they can use a range of tools competently, safely and confidently. Use their core muscle strength to achieve a good posture when sitting at a table or sitting on the floor</p> <p><b>Expressive Arts and Design:</b> Explore use and refine a variety of artistic effects to express their ideas and feelings. • Return to and build on their previous learning refining ideas and developing their ability to represent them. • Create collaboratively, sharing ideas, resources and skills.</p>
	Make	<ul style="list-style-type: none"> <li>To Join construction pieces together to build and balance</li> <li>To construct with a purpose in mind, using a variety of resources.</li> <li>To explore form in 3D.</li> <li>To begin to achieve small scale fiddly finger tasks (threading, snipping, pegging).</li> <li>Uses simple tools to effect changes to materials such as scissors for cutting</li> <li>Use a fork to pick up pre-cut food and attempt to slice with a knife</li> <li>Uses simple tools to effect changes to materials</li> </ul>	<ul style="list-style-type: none"> <li>Create simple representations of events, people and objects selecting from a range of suitable media.</li> <li>To use materials for a purpose and create an observational representation of an object using construction, junk modelling and arts and craft.</li> <li>Selects appropriate resources and tools, and adapt work where necessary to create a finished end product or piece.</li> <li>Create collaborative pieces of art and/or design work, sharing ideas, resources and skills and evaluate what has been created. Adapt where necessary.</li> <li>Begin to use a fork and knife to hold food and attempt to cut it.</li> <li>To cut foods with a knife use a fork to deliver food to my mouth.</li> </ul>	<ul style="list-style-type: none"> <li>To select tools and techniques needed to shape, assemble and join materials.</li> <li>Create collaboratively, sharing ideas, resources and skills.</li> <li>To construct purposefully using a range of tool and materials.</li> <li>To use a variety of tools, materials and imagination to create images and constructions, including models and constructions, from known events including those in familiar stories and from the world around us.</li> <li>To explore shape, space, form and texture in 2D and 3D.</li> <li>Use a range of small tools and cutlery with developing skill, including painting with brushes, cutting with scissors and using a knife and fork with some success to eat food.</li> <li>Use large scale blocks and equipment to build, balance and climb; demonstrating core body strength and control as well as an awareness of space, form and design.</li> </ul>	
					<p style="text-align: center;"><b>Early Learning Goals</b> applicable to D&amp;T Curriculum</p> <p><b>Physical Development - Fine Motor Skills:</b></p> <ul style="list-style-type: none"> <li>Use a range of small tools, including scissors, paintbrushes and cutlery.</li> </ul> <p><b>Expressive Arts and Design - Creating with Materials:</b></p> <ul style="list-style-type: none"> <li>Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function.</li> </ul>

	Evaluate	<ul style="list-style-type: none"> <li>• Begin to combine media to create different effects</li> <li>• Return to previous constructions, art and design products to add more to them</li> </ul>	<ul style="list-style-type: none"> <li>• Return to previous constructions, art and design products to develop, refine and improve them. Create collaborative pieces of art and/or design work, sharing ideas, resources and skills and evaluate what has been created. Adapt where necessary</li> <li>•</li> </ul>	<ul style="list-style-type: none"> <li>• Return to and build on their previous learning designs and art work, refining ideas and developing their ability to represent them.</li> </ul>	<ul style="list-style-type: none"> <li>• Share their creations, explaining the process they have used.</li> </ul>
Knowledge		<ul style="list-style-type: none"> <li>• To explore what happens when we mix colours</li> <li>• To understand that different media can be combined to achieve new effects.</li> <li>• <b>Understand that tools have to be used safely and with control</b></li> <li>• Shows understanding of the need for safety when tackling new challenges, and considers and manages some risks</li> <li>• To develop fine motor control, using tools to cut, thread, mark, form and join.</li> <li>• Begin to show an understanding of how to transport and store equipment safely.</li> <li>•</li> </ul>	<ul style="list-style-type: none"> <li>• Understands that different media can be combined to create new effects.</li> <li>• Practices some appropriate safety measures without direct supervision.</li> <li>• Shows understanding of how to transport and store equipment safely.</li> <li>• To show an understanding of the need for safety when tackling new challenges and using new tools and equipment. Considering the need for safety.</li> <li>• Begin to know and understand some good practices with regard to health, safety and wellbeing such as eating a healthy diet.</li> </ul>	<ul style="list-style-type: none"> <li>• To use what they have learnt about media and materials in original ways, thinking about uses and purpose.</li> </ul>	

## Design and Technology Progression Document for Aspect: Cooking and Nutrition

		Progression of Skills and Knowledge within the Units for: Food					
		Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
		Fruit and vegetables	A balanced diet	Eating seasonally	Adapting a recipe	What could be healthier?	Come dine with me
<b>Skills</b>	<b>Design</b>	<ul style="list-style-type: none"> <li>Designing smoothie carton packaging by-hand or on ICT software.</li> </ul>	<ul style="list-style-type: none"> <li>Designing a healthy wrap based on a food combination which works well together.</li> </ul>	<ul style="list-style-type: none"> <li>Creating a healthy and nutritious recipe for a savoury tart using seasonal ingredients, considering the taste, texture, smell and appearance of the dish.</li> </ul>	<ul style="list-style-type: none"> <li>Designing a biscuit within a given budget, drawing upon previous taste testing judgements.</li> </ul>	<ul style="list-style-type: none"> <li>Adapting a traditional recipe, understanding that the nutritional value of a recipe alters if you remove, substitute or add additional ingredients.                             <ul style="list-style-type: none"> <li>Writing an amended method for a recipe to incorporate the relevant changes to ingredients.</li> </ul> </li> <li>Designing appealing packaging to reflect a recipe.</li> </ul>	<ul style="list-style-type: none"> <li>Writing a recipe, explaining the key steps, method and ingredients.</li> <li>Including facts and drawings from research undertaken.</li> </ul>
	<b>Make</b>	<ul style="list-style-type: none"> <li>Chopping fruit and vegetables safely to make a smoothie.</li> <li>Identifying if a food is a fruit or a vegetable.</li> <li>Learning where and how fruits and vegetables grow.</li> </ul>	<ul style="list-style-type: none"> <li>Slicing food safely using the bridge or claw grip.</li> <li>Constructing a wrap that meets a design brief.</li> </ul>	<ul style="list-style-type: none"> <li>Knowing how to prepare themselves and a work space to cook safely in, learning the basic rules to avoid food contamination.</li> <li>Following the instructions within a recipe.</li> </ul>	<ul style="list-style-type: none"> <li>Following a baking recipe, from start to finish, including the preparation of ingredients.</li> <li>Cooking safely, following basic hygiene rules.                             <ul style="list-style-type: none"> <li>Adapting a recipe to improve it or change it to meet new criteria (e.g. from savoury to sweet).</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>Cutting and preparing vegetables safely.</li> <li>Using equipment safely, including knives, hot pans and hobs.</li> <li>Knowing how to avoid cross-contamination.</li> <li>Following a step by step method carefully to make a recipe.</li> </ul>	<ul style="list-style-type: none"> <li>Following a recipe, including using the correct quantities of each ingredient.</li> <li>Adapting a recipe based on research.</li> <li>Working to a given timescale.</li> <li>Working safely and hygienically with independence.</li> </ul>
	<b>Evaluate</b>	<ul style="list-style-type: none"> <li>Tasting and evaluating different food combinations.</li> <li>Describing appearance, smell and taste.</li> <li>Suggesting information to be included on packaging.</li> </ul>	<ul style="list-style-type: none"> <li>Describing the taste, texture and smell of fruit and vegetables.</li> <li>Taste testing food combinations and final products.</li> <li>Describing the information that should be included on a label.</li> <li>Evaluating which grip was most effective.</li> </ul>	<ul style="list-style-type: none"> <li>Establishing and using design criteria to help test and review dishes.                             <ul style="list-style-type: none"> <li>Describing the benefits of seasonal fruits and vegetables and the impact on the environment.</li> </ul> </li> <li>Suggesting points for improvement when making a seasonal tart.</li> </ul>	<ul style="list-style-type: none"> <li>Evaluating a recipe, considering: taste, smell, texture and appearance.</li> <li>Describing the impact of the budget on the selection of ingredients.</li> <li>Evaluating and comparing a range of food products.                             <ul style="list-style-type: none"> <li>Suggesting modifications to a recipe (e.g. This biscuit has too many raisins, and it is falling apart, so next time I will use less raisins).</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>Identifying the nutritional differences between different products and recipes.</li> <li>Identifying and describing healthy benefits of food groups.</li> </ul>	<ul style="list-style-type: none"> <li>Evaluating a recipe, considering: taste, smell, texture and origin of the food group.</li> <li>Taste testing and scoring final products.                             <ul style="list-style-type: none"> <li>Suggesting and writing up points of improvements when scoring others' dishes, and when evaluating their own throughout the planning, preparation and cooking process.</li> </ul> </li> <li>Evaluating health and safety in production to minimise cross contamination.</li> </ul>

<p><b>Knowledge</b></p>	<p><b>Cooking and Nutrition</b></p>	<ul style="list-style-type: none"> <li>• Understanding the difference between fruits and vegetables.</li> <li>• To understand that some foods typically known as vegetables are actually fruits (e.g. cucumber).</li> <li>• To know that a blender is a machine which mixes ingredients together into a smooth liquid.</li> <li>• To know that a fruit has seeds and a vegetable does not.</li> <li>• To know that fruits grow on trees or vines.</li> <li>• To know that vegetables can grow either above or below ground.             <ul style="list-style-type: none"> <li>• To know that vegetables can come from different parts of the plant (e.g. roots: potatoes, leaves: lettuce, fruit: cucumber).</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• To know that 'diet' means the food and drink that a person or animal usually eats.</li> <li>• To understand what makes a balanced diet.</li> <li>• To know where to find the nutritional information on packaging.             <ul style="list-style-type: none"> <li>• To know that the five main food groups are: Carbohydrates, fruits and vegetables, protein, dairy and foods high in fat and sugar.</li> </ul> </li> <li>• To understand that I should eat a range of different foods from each food group, and roughly how much of each food group.             <ul style="list-style-type: none"> <li>• To know that nutrients are substances in food that all living things need to make energy, grow and develop.</li> </ul> </li> <li>• To know that 'ingredients' means the items in a mixture or recipe.             <ul style="list-style-type: none"> <li>• To know that I should only have a maximum of five teaspoons of sugar a day to stay healthy.</li> <li>• To know that many food and drinks we do not expect to contain sugar do; we call these 'hidden sugars'.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• To know that not all fruits and vegetables can be grown in the UK.</li> <li>• To know that climate affects food growth.</li> <li>• To know that vegetables and fruit grow in certain seasons.</li> <li>• To know that cooking instructions are known as a 'recipe'.</li> <li>• To know that imported food is food which has been brought into the country.</li> <li>• To know that exported food is food which has been sent to another country..             <ul style="list-style-type: none"> <li>• To understand that imported foods travel from far away and this can negatively impact the environment.</li> <li>• To know that each fruit and vegetable gives us nutritional benefits because they contain vitamins, minerals and fibre.</li> <li>• To understand that vitamins, minerals and fibre are important for energy, growth and maintaining health.</li> </ul> </li> <li>• To know safety rules for using, storing and cleaning a knife safely.             <ul style="list-style-type: none"> <li>• To know that similar coloured fruits and vegetables often have similar nutritional benefits.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• To know that the amount of an ingredient in a recipe is known as the 'quantity.'</li> <li>• To know that it is important to use oven gloves when removing hot food from an oven.</li> <li>• To know the following cooking techniques: sieving, creaming, rubbing method, cooling.</li> <li>• To understand the importance of budgeting while planning ingredients for biscuits.</li> </ul>	<ul style="list-style-type: none"> <li>• To understand where meat comes from - learning that beef is from cattle and how beef is reared and processed, including key welfare issues.</li> <li>• To know that I can adapt a recipe to make it healthier by substituting ingredients.</li> <li>• To know that I can use a nutritional calculator to see how healthy a food option is.</li> <li>• To understand that 'cross-contamination' means bacteria and germs have been passed onto ready-to-eat foods and it happens when these foods mix with raw meat or unclean objects.</li> </ul>	<ul style="list-style-type: none"> <li>• To know that 'flavour' is how a food or drink tastes.             <ul style="list-style-type: none"> <li>• To know that many countries have 'national dishes' which are recipes associated with that country.</li> <li>• To know that 'processed food' means food that has been put through multiple changes in a factory.</li> <li>• To understand that it is important to wash fruit and vegetables before eating to remove any dirt and insecticides.</li> <li>• To understand what happens to a certain food before it appears on the supermarket shelf (Farm to Fork).</li> </ul> </li> </ul>
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<b>Food Curriculum Learning Objectives</b>	
<b>Year 1</b>  <b>Term 2</b>	Fruit and vegetables <ul style="list-style-type: none"> <li>• To identify if a food is a fruit or a vegetable</li> <li>• To identify where plants grow and which parts we eat</li> <li>• To taste and compare fruit and vegetables</li> <li>• To make a fruit and vegetable smoothie</li> </ul>
<b>Year 2</b>  <b>Term 2</b>	A balanced diet <ul style="list-style-type: none"> <li>• To know what makes a balanced diet</li> <li>• To taste test food combinations</li> <li>• To design a healthy wrap</li> <li>• To make a healthy wrap</li> </ul>
<b>Year 3</b>  <b>Term 2</b>	Eating seasonally <ul style="list-style-type: none"> <li>• To know that climate affects food growth</li> <li>• To understand the advantages of eating seasonal foods grown in the UK</li> <li>• To create a recipe that is healthy and nutritious using seasonal vegetables</li> <li>• To safely follow a recipe when cooking</li> </ul>
<b>Year 4</b>  <b>Term 5</b>	Adapting a recipe <ul style="list-style-type: none"> <li>• To follow a baking recipe</li> <li>• To make and test a prototype</li> <li>• To design a biscuit to a given budget.</li> <li>• To make a biscuit that meets a given design brief.</li> </ul>
<b>Year 5</b>  <b>Term 4</b>	What could be healthier <ul style="list-style-type: none"> <li>• To understand where food comes from</li> <li>• To understand the term 'healthy'</li> <li>• To adapt a traditional recipe</li> <li>• To complete a food product</li> </ul>
<b>Year 6</b>  <b>Term 3</b>	Come dine with me <ul style="list-style-type: none"> <li>• To research and design a three-course meal</li> <li>• To prepare a starter meal using a recipe; To understand where their food comes from; To write up a recipe</li> <li>• To prepare a main meal using a recipe; To understand where their food comes from; To write up a recipe*</li> <li>• To prepare a dessert meal using a recipe; To understand where their food comes from; To write up a recipe</li> </ul>

<b>Core Vocabulary Progression for Cooking and Nutrition:</b>					
<b>Year 1:</b> fruit vegetable seed leaf root stem smoothie healthy carton design flavour peel slice	<b>Year 2:</b> balanced diet balance carbohydrate dairy fruit ingredients oils sugar protein vegetable design criteria	<b>Year 3:</b> Climate Dry climate Exported Imported Mediterranean climate Nationality Nutrients Polar climate Recipe Seasonal food Seasons Temperate climate Tropical climate	<b>Year 4:</b> Adapt Budget Cooling rack Creaming Equipment Evaluation Flavour Ingredients Method Net Packaging Prototype Quantity Recipe Rubbing Sieving Target audience Unit of measurement Utilities	<b>Year 5:</b> Beef Cross-contamination Diet Ethical issues Farm Healthy Ingredients Method Nutrients Packaging Reared Recipe Research Substitute Supermarket Vegan Vegetarian Welfare	<b>Year 6:</b> Accompaniment Collaboration Cookbook Cross-contamination Equipment Farm Flavour Illustration Imperative-verb Ingredients Method Nationality Preparation Processed Reared Recipe Research Storyboard Target audience Top tips Unit of measurement

## Design and Technology Progression Document for Aspect: Mechanical systems

		Progression of Skills and Knowledge within the Units for: Mechanisms and Mechanical Systems							
		Year 1	Year 2	Year 3	Year 4	Year 5	Year 6		
		Moving story book	Wheels and axles	Fairground wheel	Moving monster	Pneumatic toys	Making a slingshot car	Making a pop-up book	Automata toys
<b>Skills</b>	<b>Design</b>	<ul style="list-style-type: none"> <li>Explaining how to adapt mechanisms, using bridges or guides to control the movement.</li> <li>Designing a moving story book for a given audience.</li> </ul>	<ul style="list-style-type: none"> <li>Designing a vehicle that includes wheels, axles and axle holders, that when combined, will allow the wheels to move.</li> <li>Creating clearly labelled drawings that illustrate movement.</li> </ul>	<ul style="list-style-type: none"> <li>Selecting a suitable linkage system to produce the desired motion.</li> <li>Designing a wheel.</li> </ul>	<ul style="list-style-type: none"> <li>Creating a class design criteria for a moving monster.</li> <li>Designing a moving monster for a specific audience in accordance with a design criteria.</li> </ul>	<ul style="list-style-type: none"> <li>Designing a toy which uses a pneumatic system.</li> <li>Developing design criteria from a design brief.</li> <li>Generating ideas using thumbnail sketches and exploded diagrams.</li> <li>Learning that different types of drawings are used in design to explain ideas clearly.</li> </ul>	<ul style="list-style-type: none"> <li>Designing a shape that reduces air resistance.</li> <li>Drawing a net to create a structure from.</li> <li>Choosing shapes that increase or decrease speed as a result of air resistance.</li> <li>Personalising a design.</li> </ul>	<ul style="list-style-type: none"> <li>Designing a pop-up book which uses a mixture of structures and mechanisms.</li> <li>Naming each mechanism, input and output accurately.</li> <li>Storyboarding ideas for a book.</li> </ul>	<ul style="list-style-type: none"> <li>Experimenting with a range of cams, creating a design for an automata toy based on a choice of cam to create a desired movement.</li> <li>Understanding how linkages change the direction of a force.</li> <li>Making things move at the same time.</li> <li>Understanding and drawing cross-sectional diagrams to show the inner-workings of my design.</li> </ul>
	<b>Make</b>	<ul style="list-style-type: none"> <li>Following a design to create moving models that use levers and sliders.</li> </ul>	<ul style="list-style-type: none"> <li>Adapting mechanisms, when:                             <ul style="list-style-type: none"> <li>they do not work as they should.</li> <li>to fit their vehicle design.</li> <li>to improve how they work after testing their vehicle.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>Selecting materials according to their characteristics.</li> <li>Following a design brief.</li> </ul>	<ul style="list-style-type: none"> <li>Making linkages using card for levers and split pins for pivots.</li> <li>Experimenting with linkages adjusting the widths, lengths and thicknesses of card used.</li> <li>Cutting and assembling components neatly.</li> </ul>	<ul style="list-style-type: none"> <li>Creating a pneumatic system to create a desired motion.</li> <li>Building secure housing for a pneumatic system.</li> <li>Using syringes and balloons to create different types of pneumatic systems to make a functional and appealing pneumatic toy.</li> <li>Selecting materials due to their functional and aesthetic characteristics.</li> <li>Manipulating materials to create different effects by cutting, creasing, folding and weaving.</li> </ul>	<ul style="list-style-type: none"> <li>Measuring, marking, cutting and assembling with increasing accuracy.</li> <li>Making a model based on a chosen design.</li> </ul>	<ul style="list-style-type: none"> <li>Following a design brief to make a pop up book, neatly and with focus on accuracy.</li> <li>Making mechanisms and/or structures using sliders, pivots and folds to produce movement.</li> <li>Using layers and spacers to hide the workings of mechanical parts for an aesthetically pleasing result.</li> </ul>	<ul style="list-style-type: none"> <li>Measuring, marking and checking the accuracy of the jelutong and dowel pieces required.</li> <li>Measuring, marking and cutting components accurately using a ruler and scissors.</li> <li>Assembling components accurately to make a stable frame.</li> <li>Understanding that for the frame to function effectively the components must be cut accurately and the joints of the frame secured at right angles.</li> <li>Selecting appropriate</li> </ul>

									materials based on the materials being joined and the speed at which the glue needs to dry/set.
	<b>Evaluate</b>	<ul style="list-style-type: none"> <li>• Testing a finished product, seeing whether it moves as planned and if not, explaining why and how it can be fixed.</li> <li>• Reviewing the success of a product by testing it with its intended audience.</li> </ul>	<ul style="list-style-type: none"> <li>• Testing wheel and axle mechanisms, identifying what stops the wheels from turning, and recognising that a wheel needs an axle in order to move.</li> </ul>	<ul style="list-style-type: none"> <li>• Evaluating different designs.</li> <li>• Testing and adapting a design.</li> </ul>	<ul style="list-style-type: none"> <li>• Evaluating own designs against design criteria.</li> <li>• Using peer feedback to modify a final design.</li> </ul>	<ul style="list-style-type: none"> <li>• Using the views of others to improve designs.</li> <li>• Testing and modifying the outcome, suggesting improvements.</li> <li>• Understanding the purpose of exploded-diagrams through the eyes of a designer and their client.</li> </ul>	<ul style="list-style-type: none"> <li>• Evaluating the speed of a final product based on: the effect of shape on speed and the accuracy of workmanship on performance.</li> </ul>	N/A	<ul style="list-style-type: none"> <li>• Evaluating the work of others and receiving feedback on own work.</li> <li>• Applying points of improvement to their toys.</li> <li>• Describing changes they would make/do if they were to do the project again.</li> </ul>
<b>Knowledge</b>	<b>Technical</b>	<ul style="list-style-type: none"> <li>• To know that a mechanism is the parts of an object that move together.</li> <li>• To know that a slider mechanism moves an object from side to side.</li> <li>• To know that a slider mechanism has a slider, slots, guides and an object.</li> <li>• To know that bridges and guides are bits of card that purposefully restrict the movement of the slider.</li> </ul>	<ul style="list-style-type: none"> <li>• To know that wheels need to be round to rotate and move.</li> <li>• To understand that for a wheel to move it must be attached to a rotating axle.</li> <li>• To know that an axle moves within an axle holder which is fixed to the vehicle or toy.</li> <li>• To know that the frame of a vehicle (chassis) needs to be balanced.</li> </ul>	<ul style="list-style-type: none"> <li>• To know that different materials have different properties and are therefore suitable for different uses.</li> </ul>	<ul style="list-style-type: none"> <li>• To know that mechanisms are a collection of moving parts that work together as a machine to produce movement.</li> <li>• To know that there is always an input and output in a mechanism.</li> <li>• To know that an input is the energy that is used to start something working.</li> <li>• To know that an output is the movement that happens as a result of the input.</li> <li>• To know that a lever is something that turns on a pivot.</li> <li>• To know that a linkage mechanism is made up of a series of levers.</li> </ul>	<ul style="list-style-type: none"> <li>• To understand how pneumatic systems work.</li> <li>• To understand that pneumatic systems can be used as part of a mechanism.</li> <li>• To know that pneumatic systems operate by drawing in, releasing and compressing air.</li> </ul>	<ul style="list-style-type: none"> <li>• To know that air resistance is the level of drag on an object as it is forced through the air.</li> <li>• To understand that the shape of a moving object will affect how it moves due to air resistance..</li> </ul>	<ul style="list-style-type: none"> <li>• To know that mechanisms control movement.</li> <li>• To understand that mechanisms can be used to change one kind of motion into another.</li> <li>• To understand how to use sliders, pivots and folds to create paper-based mechanisms.</li> </ul>	<ul style="list-style-type: none"> <li>• To understand that the mechanism in an automata uses a system of cams, axles and followers.</li> <li>• To understand that different shaped cams produce different outputs.</li> </ul>
	<b>Additional</b>	<ul style="list-style-type: none"> <li>• To know that in Design and technology we call a plan a 'design'.</li> </ul>	<ul style="list-style-type: none"> <li>• To know some real-life items that use wheels such as wheelbarrows, hamster wheels and vehicles.</li> </ul>	<ul style="list-style-type: none"> <li>• To know the features of a ferris wheel include the wheel, frame, pods, a base an axle and an axle holder.</li> <li>• To know that it is important to test my design as I go along so that I can solve any problems that may occur.</li> </ul>	<ul style="list-style-type: none"> <li>• To know some real-life objects that contain mechanisms.</li> </ul>	<ul style="list-style-type: none"> <li>• To understand how sketches, drawings and diagrams can be used to communicate design ideas.</li> <li>• To know that exploded-diagrams are used to show how different parts of a product fit together.</li> <li>• To know that thumbnail sketches are small drawings to get ideas down on paper quickly.</li> </ul>	<ul style="list-style-type: none"> <li>• To know that aesthetics means how an object or product looks in design and technology.</li> <li>• To know that a template is a stencil you can use to help you draw the same shape accurately.</li> <li>• To know that a birds-eye view means a view from a high angle (as if a bird in flight).</li> </ul>	<ul style="list-style-type: none"> <li>• To know that a design brief is a description of what I am going to design and make.</li> <li>• To know that designers often want to hide mechanisms to make a product more aesthetically pleasing.</li> </ul>	<ul style="list-style-type: none"> <li>• To know that an automata is a hand powered mechanical toy.</li> <li>• To know that a cross-sectional diagram shows the inner workings of a product.</li> <li>• To understand how to use a bench hook and saw safely.</li> <li>• To know that a set square can be used to help</li> </ul>

## Canterbury Road Primary School – Design and Technology

							<ul style="list-style-type: none"><li>• To know that graphics are images which are designed to explain or advertise something.</li><li>• To know that it is important to assess and evaluate design ideas and models against a list of design criteria.</li></ul>		mark 90° angles.
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<b>Mechanical Systems Learning Objectives</b>	
<b>Year 1</b>  <b>Term 4</b>	Moving Story Book <ul style="list-style-type: none"> <li>To explore making mechanisms</li> <li>To design a moving story book</li> <li>To construct a moving picture</li> <li>To evaluate my finished product</li> </ul>
<b>Year 2</b>  <b>Term 2</b>	Fairground Wheels <ul style="list-style-type: none"> <li>To explore wheel mechanisms and design a wheel</li> <li>To select appropriate materials</li> <li>To build and test a moving wheel</li> <li>To make and evaluate a structure with a rotating wheel</li> </ul>
<b>Year 3</b>  <b>Term 4</b>	Pneumatic toys <ul style="list-style-type: none"> <li>To understand how pneumatic systems work</li> <li>To design a toy that uses a pneumatic system</li> <li>To create a pneumatic system</li> <li>To test and finalise ideas against design criteria</li> </ul>
<b>Year 4</b>  <b>Term 5</b>	Making a slingshot car <ul style="list-style-type: none"> <li>To build a car chassis</li> <li>To design a shape that reduces air resistance</li> <li>To make a model based on a chosen design</li> <li>To assemble and test my completed product</li> </ul>
<b>Year 5</b>  <b>Term 2</b>	Making a pop-up book <ul style="list-style-type: none"> <li>To design a pop-up book</li> <li>To follow my design brief to make my pop up book</li> <li>To use layers and spacers to cover the working of mechanisms</li> <li>To create a high-quality product suitable for a target user</li> </ul>
<b>Year 6</b>  <b>Term 5</b>	Automata toys <ul style="list-style-type: none"> <li>To prepare wood for assembly by measuring, marking and cutting each piece</li> <li>To assemble the automata frame components and supports with the help of an exploded-diagram</li> <li>To explore the relationship between cam profiles and follower movement, to inform a design decision</li> <li>To apply the housing and finishing touches to the automata frame</li> </ul>

**Core Vocabulary Progression for Mechanical Systems:**

<b>Year 1:</b>	<b>Year 1:</b>	<b>Year 2:</b>	<b>Year 2:</b>	<b>Year 3:</b>	<b>Year 5:</b>
Assemble Design Evaluation Mechanism Model Sliders Stencil Target audience Template Test	Axle Axle holder Chassis Design Evaluation Fix Mechanic Mechanism Model Test Wheel	Evaluation Input Lever Linear motion Linkage Mechanical Mechanism Motion Oscillating motion Output Pivot Reciprocating motion Rotary motion Survey	Axle Decorate Evaluation Ferris wheel Mechanism Stable Strong Test Waterproof Weak	Exploded-diagram Function Input Lever Linkage Mechanism Motion Net Output Pivot Pneumatic system Thumbnail sketch	Aesthetic Computer-aided design (CAD) Caption Design Design brief Design criteria Exploded-diagram Function Input Linkage Mechanism Motion Output Pivot Prototype Slider Structure Template

## Design and Technology Progression Document for Aspect: Textiles

		<b>Progression of Skills and Knowledge within the Units for: Textiles</b>			
		<b>Year 1</b>	<b>Year 2</b>	<b>Year 3</b>	<b>Year 4</b>
		<b>Puppets</b>	<b>Pouches</b>	<b>Cross stitch and appliqué Cushions or Egyptian collars</b>	<b>Fastenings</b>
<b>Skills</b>	<b>Design</b>	<ul style="list-style-type: none"> <li>Using a template to create a design for a puppet.</li> </ul>	<ul style="list-style-type: none"> <li>Designing a pouch.</li> </ul>	<ul style="list-style-type: none"> <li>Designing and making a template from an existing cushion and applying individual design criteria.</li> </ul>	<ul style="list-style-type: none"> <li>Writing design criteria for a product, articulating decisions made.</li> <li>Designing a personalised book sleeve.</li> </ul>
	<b>Make</b>	<ul style="list-style-type: none"> <li>Cutting fabric neatly with scissors.</li> <li>Using joining methods to decorate a puppet.</li> <li>Sequencing steps for construction.</li> </ul>	<ul style="list-style-type: none"> <li>Selecting and cutting fabrics for sewing.</li> <li>Decorating a pouch using fabric glue or running stitch.</li> <li>Threading a needle.</li> <li>Sewing running stitch, with evenly spaced, neat, even stitches to join fabric.</li> <li>Neatly pinning and cutting fabric using a template.</li> </ul>	<ul style="list-style-type: none"> <li>Following design criteria to create a cushion or Egyptian collar.</li> <li>Selecting and cutting fabrics with ease using fabric scissors.</li> <li>Threading needles with greater independence.</li> <li>Tying knots with greater independence.</li> <li>Sewing cross stitch to join fabric.</li> <li>Decorating fabric using appliqué.</li> <li>Completing design ideas with stuffing and sewing the edges (Cushions) <i>or</i> embellishing the collars based on design ideas (Egyptian collars).</li> </ul>	<ul style="list-style-type: none"> <li>Making and testing a paper template with accuracy and in keeping with the design criteria.</li> <li>Measuring, marking and cutting fabric using a paper template.</li> <li>Selecting a stitch style to join fabric, working neatly by sewing small, straight stitches.</li> <li>Incorporating fastening to a design.</li> </ul>
	<b>Evaluate</b>	<ul style="list-style-type: none"> <li>Reflecting on a finished product, explaining likes and dislikes.</li> </ul>	<ul style="list-style-type: none"> <li>Troubleshooting scenarios posed by teacher.</li> <li>Evaluating the quality of the stitching on others' work.</li> <li>Discussing as a class, the success of their stitching against the success criteria.</li> <li>Identifying aspects of their peers' work that they particularly like and why.</li> </ul>	<ul style="list-style-type: none"> <li>Evaluating an end product and thinking of other ways in which to create similar items.</li> </ul>	<ul style="list-style-type: none"> <li>Testing and evaluating an end product against the original design criteria.</li> <li>Deciding how many of the criteria should be met for the product to be considered successful.</li> <li>Suggesting modifications for improvement.</li> <li>Articulating the advantages and disadvantages of different fastening types.</li> </ul>

<p><b>Knowledge</b></p>		<ul style="list-style-type: none"> <li>• To know that ‘joining technique’ means connecting two pieces of material together.</li> <li>• To know that there are various temporary methods of joining fabric by using staples, glue or pins.</li> <li>• To understand that different techniques for joining materials can be used for different purposes.</li> <li>• To understand that a template (or fabric pattern) is used to cut out the same shape multiple times.</li> <li>• To know that drawing a design idea is useful to see how an idea will look.</li> </ul>	<ul style="list-style-type: none"> <li>• To know that sewing is a method of joining fabric.</li> <li>• To know that different stitches can be used when sewing.</li> <li>• To understand the importance of tying a knot after sewing the final stitch.</li> <li>• To know that a thimble can be used to protect my fingers when sewing.</li> </ul>	<ul style="list-style-type: none"> <li>• To know that applique is a way of mending or decorating a textile by applying smaller pieces of fabric to larger pieces.</li> <li>• To know that when two edges of fabric have been joined together it is called a seam.</li> <li>• To know that it is important to leave space on the fabric for the seam.</li> <li>• To understand that some products are turned inside out after sewing so the stitching is hidden.</li> </ul>	<ul style="list-style-type: none"> <li>• To know that a fastening is something which holds two pieces of material together for example a zipper, toggle, button, press stud and velcro.</li> <li>• To know that different fastening types are useful for different purposes.</li> <li>• To know that creating a mock up (prototype) of their design is useful for checking ideas and proportions.</li> </ul>
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<b>Textiles Curriculum</b>	
<b>Year 1</b>  <b>Term 6</b>	<p>Puppets</p> <ul style="list-style-type: none"> <li>• To evaluate my finished product</li> <li>• To use a template to create my design</li> <li>• To join two fabrics together accurately</li> <li>• To embellish my design using joining methods</li> </ul>
<b>Year 2</b>  <b>Term 6</b>	<p>Pouches</p> <ul style="list-style-type: none"> <li>• To sew a running stitch</li> <li>• To sew a running stitch</li> <li>• To join fabrics using a running stitch</li> <li>• To decorate a pouch using fabric glue or stitching</li> </ul>
<b>Year 3</b>  <b>Term 6</b>	<p>Cross Stitch and Applique Cushions:</p> <ul style="list-style-type: none"> <li>• To learn how to sew cross-stitch and appliqué</li> <li>• To design a product and its template</li> <li>• To decorate fabric using appliqué and cross stitch</li> <li>• To assemble your cushion</li> </ul>
<b>Year 4</b>  <b>Term 1</b>	<p>Fastenings</p> <ul style="list-style-type: none"> <li>• To identify and evaluate different types of fastenings</li> <li>• To design a product to meet design criteria</li> <li>• To make and test a paper template</li> <li>• To assemble a book jacket</li> </ul>

<b>Core Vocabulary Progression for Textiles:</b>			
<b>Year 1:</b> Decorate Design Fabric Glue Model Hand puppet Safety pin Staple Stencil Template	<b>Year 2:</b> Accurate Fabric Knot Pouch Running-stitch Sew Shape Stencil Template Thimble	<b>Year 3:</b> Accurate Applique Cross-stitch Cushion Decorate Detail Fabric Patch Running-stitch Seam Stencil Stuffing Target audience Target customer Template	<b>Year 4:</b> Aesthetic Assemble Book sleeve Design criteria Evaluation Fabric Fastening Mock-up Net Running-stitch Stencil Target audience Target customer Template

## Design and Technology Progression Document for Aspect: Electrical Systems (KS2 only)

		<b>Progression of Skills and Knowledge within the Units for Electrical Systems:</b>		
		<b>Year 4</b>	<b>Year 5</b>	<b>Year 6</b>
		<b>Torches</b>	<b>Doodlers</b>	<b>Steady hand game</b>
<b>Skills</b>	<b>Design</b>	<ul style="list-style-type: none"> <li>• Designing a torch, giving consideration to the target audience and creating both design and success criteria focusing on features of individual design ideas.</li> </ul>	<ul style="list-style-type: none"> <li>• Identifying factors that could be changed on existing products and explaining how these would alter the form and function of the product.</li> <li>• Developing design criteria based on findings from investigating existing products.</li> <li>• Developing design criteria that clarifies the target user.</li> </ul>	<ul style="list-style-type: none"> <li>• Designing a steady hand game - identifying and naming the components required.</li> <li>• Drawing a design from three different perspectives.</li> <li>• Generating ideas through sketching and discussion.</li> <li>• Modelling ideas through prototypes.</li> </ul>
	<b>Make</b>	<ul style="list-style-type: none"> <li>• Making a torch with a working electrical circuit and switch.</li> <li>• Using appropriate equipment to cut and attach materials.</li> <li>• Assembling a torch according to the design and success criteria.</li> </ul>	<ul style="list-style-type: none"> <li>• Altering a product's form and function by tinkering with its configuration.</li> <li>• Making a functional series circuit, incorporating a motor.</li> <li>• Constructing a product with consideration for the design criteria.</li> </ul>	<ul style="list-style-type: none"> <li>• Constructing a stable base for a game.</li> <li>• Accurately cutting, folding and assembling a net.</li> <li>• Decorating the base of the game to a high quality finish.</li> <li>• Making and testing a circuit.</li> <li>• Incorporating a circuit into a base.</li> </ul>
	<b>Evaluate</b>	<ul style="list-style-type: none"> <li>• Evaluating electrical products.</li> <li>• Testing and evaluating the success of a final product.</li> </ul>	<ul style="list-style-type: none"> <li>• Carry out a product analysis to look at the purpose of a product along with its strengths and weaknesses.</li> <li>• Determining which parts of a product affect its function and which parts affect its form.</li> <li>• Analysing whether changes in configuration positively or negatively affect an existing product.</li> </ul>	<ul style="list-style-type: none"> <li>• Testing own and others finished games, identifying what went well and making suggestions for improvement.</li> </ul>
<b>Knowledge</b>	<b>Technical</b>	<ul style="list-style-type: none"> <li>• To know that an electrical circuit must be complete for electricity to flow.</li> <li>• To know that a switch can be used to complete and break an electrical circuit.</li> </ul>	<ul style="list-style-type: none"> <li>• To know that series circuits only have one direction for the electricity to flow.</li> <li>• To know when there is a break in a series circuit, all components turn off.</li> <li>• To know that an electric motor converts electrical energy into rotational movement, causing the motor's axle to spin.</li> <li>• To know a motorised product is one which uses a motor to function.</li> </ul>	<ul style="list-style-type: none"> <li>• To know that batteries contain acid, which can be dangerous if they leak.</li> <li>• To know the names of the components in a basic series circuit, including a buzzer.</li> </ul>
	<b>Additional</b>	<ul style="list-style-type: none"> <li>• To know the features of a torch: case, contacts, batteries, switch, reflector, lamp, lens.</li> <li>• To know facts from the history and invention of the electric light bulb(s) - by Sir Joseph Swan and Thomas Edison.</li> </ul>	<ul style="list-style-type: none"> <li>• To know that product analysis is critiquing the strengths and weaknesses of a product.</li> <li>• To know that 'configuration' means how the parts of a product are arranged.</li> </ul>	<ul style="list-style-type: none"> <li>• To understand the diagram perspectives 'top view', 'side view' and 'back'.</li> </ul>

<b>Electrical Systems Curriculum</b>	
<b>Year 4</b>  <b>Term 1</b>	<p>Torches</p> <ul style="list-style-type: none"> <li>• To learn about electrical items and how they work</li> <li>• To analyse and evaluate electrical products</li> <li>• To design a product to fit a set of specific user needs</li> <li>• To make and evaluate a torch</li> </ul>
<b>Year 5</b>  <b>Term 2</b>	<p>Doodlers</p> <ul style="list-style-type: none"> <li>• To understand how motors are used in electrical products.</li> <li>• To investigate an existing product to determine the factors that affect the product's form and function.</li> <li>• To put findings from research into practice to develop an improved product.</li> <li>• To develop a DIY kit for another individual to assemble their product.</li> </ul>
<b>Year 6</b>  <b>Term 2</b>	<p>Steady hand game</p> <ul style="list-style-type: none"> <li>• To research and analyse a range of children's toys</li> <li>• To design a steady hand game</li> <li>• To construct a stable base</li> <li>• To assemble electronics and complete an electronic game</li> </ul>

<b>Core Vocabulary Progression for Electrical Systems:</b>		
<b>Year 4:</b> Battery Bulb Buzzer Cell Component Conductor Copper Design criteria Electrical item Electricity Electronic item Function Insulator Series circuit Switch Test Torch Wire	<b>Year 5:</b> Circuit component Configuration Current Develop DIY Investigate Motor Motorised Problem solve Product analysis Series circuit Stable Target user	<b>Year 6:</b> Assemble Battery Battery pack Benefit Bulb Bulb holder Buzzer Circuit Circuit symbol Component Conductor Copper Design Design criteria Evaluation Fine motor skills Fit for purpose Form Function Gross motor skills Insulator LED User

## Design and Technology Progression Document for Aspect: Structures

		<b>Progression of Skills and Knowledge within the Units for Structures:</b>					
		<b>Year 1</b>	<b>Year 2</b>	<b>Year 3</b>	<b>Year 4</b>	<b>Year 5</b>	<b>Year 6</b>
		<b>Constructing windmills</b>	<b>Baby bear's chair</b>	<b>Constructing a castle</b>	<b>Pavilions</b>	<b>Bridges</b>	<b>Playgrounds</b>
<b>Skills</b>	<b>Design</b>	<ul style="list-style-type: none"> <li>• Learning the importance of a clear design criteria.</li> <li>• Including individual preferences and requirements in a design.</li> </ul>	<ul style="list-style-type: none"> <li>• Generating and communicating ideas using sketching and modelling.</li> </ul>	<ul style="list-style-type: none"> <li>• Designing a castle with key features to appeal to a specific person/purpose.</li> <li>• Drawing and labelling a castle design using 2D shapes, labelling: -the 3D shapes that will create the features - materials needed and colours.</li> <li>• Designing and/or decorating a castle tower on CAD software.</li> </ul>	<ul style="list-style-type: none"> <li>• Designing a stable pavilion structure that is aesthetically pleasing and selecting materials to create a desired effect.</li> <li>• Building frame structures designed to support weight.</li> </ul>	<ul style="list-style-type: none"> <li>• Designing a stable structure that is able to support weight.</li> <li>• Creating a frame structure with a focus on triangulation.</li> </ul>	<ul style="list-style-type: none"> <li>• Designing a playground featuring a variety of different structures, giving careful consideration to how the structures will be used, considering effective and ineffective designs.</li> </ul>
	<b>Make</b>	<ul style="list-style-type: none"> <li>• Making stable structures from card, tape and glue.</li> <li>• Learning how to turn 2D nets into 3D structures.</li> <li>• Following instructions to cut and assemble the supporting structure of a windmill.</li> <li>• Making functioning turbines and axles which are assembled into a main supporting structure.</li> </ul>	<ul style="list-style-type: none"> <li>• Making a structure according to design criteria.</li> <li>• Creating joints and structures from paper/card and tape.</li> <li>• Building a strong and stiff structure by folding paper.</li> </ul>	<ul style="list-style-type: none"> <li>• Constructing a range of 3D geometric shapes using nets.</li> <li>• Creating special features for individual designs.</li> <li>• Making facades from a range of recycled materials.</li> </ul>	<ul style="list-style-type: none"> <li>• Creating a range of different shaped frame structures.</li> <li>• Making a variety of free standing frame structures of different shapes and sizes.</li> <li>• Selecting appropriate materials to build a strong structure and cladding.</li> <li>• Reinforcing corners to strengthen a structure.</li> <li>• Creating a design in accordance with a plan.</li> <li>• Learning to create different textural effects with materials.</li> </ul>	<ul style="list-style-type: none"> <li>• Making a range of different shaped beam bridges.</li> <li>• Using triangles to create truss bridges that span a given distance and support a load.</li> <li>• Building a wooden bridge structure.</li> <li>• Independently measuring and marking wood accurately.</li> <li>• Selecting appropriate tools and equipment for particular tasks.</li> <li>• Using the correct techniques to saws safely.</li> <li>• Identifying where a structure needs reinforcement and using card corners for support.</li> <li>• Explaining why selecting appropriating materials is an important part of the design process.</li> <li>• Understanding basic wood functional properties.</li> </ul>	<ul style="list-style-type: none"> <li>• Building a range of play apparatus structures drawing upon new and prior knowledge of structures.</li> <li>• Measuring, marking and cutting wood to create a range of structures.</li> <li>• Using a range of materials to reinforce and add decoration to structures.</li> </ul>

	<b>Evaluate</b>	<ul style="list-style-type: none"> <li>•</li> </ul>	<ul style="list-style-type: none"> <li>• Testing the strength of own structure.</li> <li>• Identifying the weakest part of a structure.</li> <li>• Evaluating the strength, stiffness and stability of own structure.</li> </ul>	<ul style="list-style-type: none"> <li>• Evaluating own work and the work of others based on the aesthetic of the finished product and in comparison to the original design.</li> <li>• Suggesting points for modification of the individual designs.</li> </ul>	<ul style="list-style-type: none"> <li>• Evaluating structures made by the class.</li> <li>• Describing what characteristics of a design and construction made it the most effective.</li> <li>• Considering effective and ineffective designs.</li> </ul>	<ul style="list-style-type: none"> <li>• Adapting and improving own bridge structure by identifying points of weakness and reinforcing them as necessary.</li> <li>• Suggesting points for improvements for own bridges and those designed by others.</li> </ul>	<ul style="list-style-type: none"> <li>• Improving a design plan based on peer evaluation.</li> <li>• Testing and adapting a design to improve it as it is developed.</li> <li>• Identifying what makes a successful structure.</li> </ul>
<b>Knowledge</b>	<b>Technical</b>	<ul style="list-style-type: none"> <li>• To understand that the shape of materials can be changed to improve the strength and stiffness of structures.</li> <li>• To understand that cylinders are a strong type of structure (e.g. the main shape used for windmills and lighthouses).</li> <li>• To understand that axles are used in structures and mechanisms to make parts turn in a circle.</li> <li>• To begin to understand that different structures are used for different purposes.</li> <li>• To know that a structure is something that has been made and put together.</li> </ul>	<ul style="list-style-type: none"> <li>• To know that materials can be manipulated to improve strength and stiffness.</li> <li>• To know that a structure is something which has been formed or made from parts.</li> <li>• To know that a 'stable' structure is one which is firmly fixed and unlikely to change or move.</li> <li>• To know that a 'strong' structure is one which does not break easily.</li> <li>• To know that a 'stiff' structure or material is one which does not bend easily.</li> </ul>	<ul style="list-style-type: none"> <li>• To understand that wide and flat based objects are more stable.</li> <li>• To understand the importance of strength and stiffness in structures.</li> </ul>	<ul style="list-style-type: none"> <li>• To understand what a frame structure is.</li> <li>• To know that a 'free-standing' structure is one which can stand on its own.</li> </ul>	<ul style="list-style-type: none"> <li>• To understand some different ways to reinforce structures.</li> <li>• To understand how triangles can be used to reinforce bridges.</li> <li>• To know that properties are words that describe the form and function of materials.</li> <li>• To understand why material selection is important based on properties.</li> <li>• To understand the material (functional and aesthetic) properties of wood.</li> </ul>	<ul style="list-style-type: none"> <li>• To know that structures can be strengthened by manipulating materials and shapes.</li> </ul>
	<b>Additional</b>	<ul style="list-style-type: none"> <li>• To know that a client is the person I am designing for.</li> <li>• To know that design criteria is a list of points to ensure the product meets the clients needs and wants.</li> <li>• To know that a windmill harnesses the power of wind for a purpose like grinding grain, pumping water or generating electricity.</li> <li>• To know that windmill turbines use wind to turn and make the machines inside work.</li> <li>• To know that a windmill is a structure with sails that are moved by the wind.</li> <li>• To know the three main</li> </ul>	<ul style="list-style-type: none"> <li>• N/A</li> </ul>	<ul style="list-style-type: none"> <li>• To know the following features of a castle: flags, towers, battlements, turrets, curtain walls, moat, drawbridge and gatehouse - and their purpose.</li> <li>• To know that a façade is the front of a structure.</li> <li>• To understand that a castle needed to be strong and stable to withstand enemy attack.</li> <li>• To know that a paper net is a flat 2D shape that can become a 3D shape once assembled.</li> <li>• To know that a design specification is a list of success criteria for a product.</li> </ul>	<ul style="list-style-type: none"> <li>• To know that a pavilion is a decorative building or structure for leisure activities.</li> <li>• To know that cladding can be applied to structures for different effects.</li> <li>• To know that aesthetics are how a product looks.</li> <li>• To know that a product's function means its purpose.</li> <li>• To understand that the target audience means the person or group of people a product is designed for.</li> <li>• To know that architects</li> </ul>	<ul style="list-style-type: none"> <li>• To understand the difference between arch, beam, truss and suspension bridges.</li> <li>• To understand how to carry and use a saw safely.</li> </ul>	<ul style="list-style-type: none"> <li>• To understand what a 'footprint plan' is.</li> <li>• To understand that in the real world, design, can impact users in positive and negative ways.</li> <li>• To know that a prototype is a cheap model to test a design idea.</li> </ul>

		parts of a windmill are the turbine, axle and structure.			consider light, shadow and patterns when designing.		
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<b>Structures Curriculum</b>	
<b>Year 1</b>  <b>Term 4</b>	<p>Constructing windmills</p> <ul style="list-style-type: none"> <li>To include individual preferences and requirements in my design</li> <li>To make a stable structure.</li> <li>To assemble the components of my structure.</li> <li>To evaluate my project and adapt my design.</li> </ul>
<b>Year 2</b>  <b>Term 6</b>	<p>Baby Bear's chair</p> <ul style="list-style-type: none"> <li>To explore the concept and features of structures and the stability of different shapes</li> <li>To understand that the shape of the structure affects its strength</li> <li>To make a structure according to design criteria</li> <li>To produce a finished structure and evaluate its strength, stiffness and stability</li> </ul>
<b>Year 3</b>  <b>Term 4</b>	<p>Constructing a castle</p> <ul style="list-style-type: none"> <li>To recognise how multiple shapes (2D and 3D) are combined to form a strong and stable structure</li> <li>To design a castle</li> <li>To construct 3D nets</li> <li>To construct and evaluate my final product</li> </ul>
<b>Year 4</b>  <b>Term 3</b>	<p>Pavilions</p> <ul style="list-style-type: none"> <li>To make and evaluate a torch</li> <li>To design a structure</li> <li>To build a frame structure</li> <li>To add cladding to a frame structure</li> </ul>
<b>Year 5</b>  <b>Term 6</b>	<p>Bridges</p> <ul style="list-style-type: none"> <li>To explore how to reinforce a beam (structure) to improve its strength</li> <li>To build a spaghetti truss bridge</li> <li>To build a wooden truss bridge</li> <li>To complete, reinforce and evaluate my truss bridge</li> </ul>

<b>Year 6</b>	Playgrounds
<b>Term 2</b>	

- To design a playground with a variety of structures
- To build a range of structures
- To improve and add detail to structures
- To create the surrounding landscape

**Core Vocabulary Progression for Structures:**

<b>Year 1:</b>	<b>Year 2:</b>	<b>Year 3:</b>	<b>Year 4:</b>	<b>Year 5:</b>	<b>Year 6:</b>
Client	Function	2D shapes	Aesthetic Cladding	Abutment	Adapt
Design	Man-made	3D shapes Castle	Design criteria	Accurate Arched	Apparatus
Evaluation	Mould	Design criteria Evaluate	Evaluation	bridge Beam	Bench hook
Net	Natural	Facade	Framestructure Function	bridge Coping	Cladding
Stable	Stable	Feature	Inspiration Pavilion	saw Evaluation	Coping saw
Strong	Stiff	Flag Net	Reinforce	File	Design
Test	Strong	Recyclable Scoring	Stable	Mark out	Dowel
Weak	Structure	Stable	Structure	Material properties	Evaluation
Windmill	Test	Strong Structure	Target audience	Measure	Feedback
	Weak	Tab	Target customer	Predict	Idea
		Weak	Texture Theme	Reinforce	Jelutong
				Research	Landscape
				Sandpaper	Mark out
				Setsquare	Measure
				Suspension bridge Tenon	Modify
				saw	Natural materials
				Test	Plan view
				Truss bridge Wood	Playground
					Prototype
					Reinforce
					Sketch

					Strong Structure Tenon saw Texture User Vice Weak
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## Design and Technology Progression Document for Aspect: Digital World

		Progression of Skills and Knowledge within the Units for: Digital World (KS2 only)		
		Year 3	Year 5	Year 6
		Electronic charm	Monitoring devices	Navigating the world
Skills	Design	<ul style="list-style-type: none"> <li>Problem solving by suggesting potential features on a Micro: bit and justifying my ideas.</li> <li>Developing design ideas for a technology pouch.</li> <li>Drawing and manipulating 2D shapes, using computer-aided design, to produce a point of sale badge.</li> </ul>	<ul style="list-style-type: none"> <li>Researching (books, internet) for a particular (user's) animal's needs.</li> <li>Developing design criteria based on research.</li> <li>Generating multiple housing ideas using building bricks.</li> <li>Understanding what a virtual model is and the pros and cons of traditional and CAD modelling.</li> <li>Placing and maneuvering 3D objects, using CAD.</li> <li>Changing the properties of, or combining one or more 3D objects, using CAD.</li> </ul>	<ul style="list-style-type: none"> <li>Writing a design brief from information submitted by a client.</li> <li>Developing design criteria to fulfil the client's request.</li> <li>Considering and suggesting additional functions for my navigation tool.</li> <li>Developing a product idea through annotated sketches.</li> <li>Placing and maneuvering 3D objects, using CAD.</li> <li>Changing the properties of, or combining one or more 3D objects, using CAD.</li> </ul>
	Make	<ul style="list-style-type: none"> <li>Using a template when cutting and assembling the pouch.</li> <li>Following a list of design requirements.</li> <li>Selecting and using the appropriate tools and equipment for cutting, joining, shaping and decorating a foam pouch.</li> <li>Applying functional features such as using foam to create soft buttons.</li> </ul>	<ul style="list-style-type: none"> <li>Understanding the functional and aesthetic properties of plastics.</li> <li>Programming to monitor the ambient temperature and coding an (audible or visual) alert when the temperature rises above or falls below a specified range.</li> </ul>	<ul style="list-style-type: none"> <li>Considering materials and their functional properties, especially those that are sustainable and recyclable (for example, cork and bamboo).</li> <li>Explaining material choices and why they were chosen as part of a product concept.</li> <li>Programming an N,E, S, W cardinal compass.</li> </ul>
	Evaluate	<ul style="list-style-type: none"> <li>Analysing and evaluating an existing product.</li> <li>Identifying the key features of a pouch.</li> </ul>	<ul style="list-style-type: none"> <li>Stating an event or fact from the last 100 years of plastic history.</li> <li>Explaining how plastic is affecting planet Earth and suggesting ways to make more sustainable choices.</li> </ul>	<ul style="list-style-type: none"> <li>Explaining how my program fits the design criteria and how it would be useful as part of a navigation tool.</li> <li>Developing an awareness of sustainable design.</li> <li>Identifying key industries that utilise 3D CAD modelling and explaining why.</li> </ul>

			<ul style="list-style-type: none"> <li>Explaining key functions in my program (audible alert, visuals).</li> <li>Explaining how my product would be useful for an animal carer including programmed features.</li> </ul>	<ul style="list-style-type: none"> <li>Describing how the product concept fits the client's request and how it will benefit the customers.</li> <li>Explaining the key functions in my program, including any additions.</li> <li>Explaining how my program fits the design criteria and how it would be useful as part of a navigation tool.</li> <li>Explaining the key functions and features of my navigation tool to the client as part of a product concept pitch.</li> <li>Demonstrating a functional program as part of a product concept pitch.</li> </ul>
<b>Knowledge</b>	<b>Technical</b>	<ul style="list-style-type: none"> <li>To understand that, in programming, a 'loop' is code that repeats something again and again until stopped.</li> <li>To know that a Micro:bit is a pocket-sized, codeable computer.</li> </ul>	<ul style="list-style-type: none"> <li>To know that a 'device' means equipment created for a certain purpose or job and that monitoring devices observe and record.</li> <li>To know that a sensor is a tool or device that is designed to monitor, detect and respond to changes for a purpose.</li> <li>To understand that conditional statements (and, or, if booleans) in programming are a set of rules which are followed if certain conditions are met.</li> </ul>	<ul style="list-style-type: none"> <li>To know that accelerometers can detect movement.</li> <li>To understand that sensors can be useful in products as they mean the product can function without human input.</li> </ul>
	<b>Additional</b>	<ul style="list-style-type: none"> <li>To know what the 'Digital Revolution' is and features of some of the products that have evolved as a result.</li> <li>To know that in Design and technology the term 'smart' means a programmed product.                             <ul style="list-style-type: none"> <li>To know the difference between analogue and digital technologies.</li> <li>To understand what is meant by 'point of sale display.'</li> <li>To know that CAD stands for 'Computer-aided design'.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>To understand key developments in thermometer history.</li> <li>To know events or facts that took place over the last 100 years in the history of plastic, and how this is changing our outlook on the future.</li> <li>To know the 6Rs of sustainability.</li> <li>To understand what a virtual model is and the pros and cons of traditional vs CAD modelling.</li> </ul>	<ul style="list-style-type: none"> <li>To know that designers write design briefs and develop design criteria to enable them to fulfil a client's request.</li> <li>To know that 'multifunctional' means an object or product has more than one function.</li> <li>To know that magnetometers are devices that measure the Earth's magnetic field to determine which direction you are facing.</li> </ul>

<b>Digital World Curriculum</b>	
<b>Year 3</b>  <b>Term 6</b>	<p>Electronic Charm</p> <ul style="list-style-type: none"> <li>• To understand the impact of the digital revolution in the world of (D&amp;T) product design.</li> <li>• To write a program to initiate a flashing LED panel after button press and/or automatically initiate using the Micro:bit light sensing, as part of an eCharm</li> <li>• To create and decorate a foam pouch for the eCharm, using a template</li> <li>• To design a display badge and/or stand using CAD (computer-aided design) software for an eCharm product</li> </ul>
<b>Year 5</b>  <b>Term 6</b>	<p>Monitoring devices</p> <ul style="list-style-type: none"> <li>• To carry out research to develop design criteria</li> <li>• To write a program to monitor the ambient temperature including an alert</li> <li>• To generate creative and unique micro:bit case, stand and/or housing ideas</li> <li>• To learn about and practise 3D CAD skills</li> </ul>
<b>Year 6</b>  <b>Term 4</b>	<p>Navigating the World</p> <ul style="list-style-type: none"> <li>• To write a design brief and criteria based on a client request</li> <li>• To write a program to include multiple functions as part of a navigation device</li> <li>• To develop a sustainable product concept</li> <li>• To develop 3D CAD skills to produce a virtual model</li> <li>• To present a pitch to 'sell' the product to a specified client</li> </ul>

**Core Vocabulary Progression for Digital World:**

<b>Year 3:</b>	<b>Year 5:</b>	<b>Year 6:</b>
Analogue	Alert	3D CAD
Badge	Ambient	Application (apps)
CAD	Boolean	Biodegradable
Control	Consumables	Boolean
Design Requirements	Decompose	Cardinal compass
Develop	Development	Client
Digital	Device	Compass
Digital revolution	Duplicate	Concept
Digital World	Durable	Convince
Display	Electronic	Corrode
Electronic	Inventor	Duplicate
Electronic products	Lightweight	Environmentally friendly
Fasten	Man-made	Equipment
Feature	Manipulate	Feature
Function	Manoeuvre	Finite
Initiate	Microplastics	Function
Key Features	Model	Functional
Layers		GPS tracker
Loops		If Statement
		Infinite
		Investment

Micro:bit	Monitor	Lightweight
Monitor	Monitoring device	Loop
Net	Moulded	Manufacture
Point of sale	Plastic	Materials (wood, metal, plastic etc.)
Product	Plastic pollution	Mouldable
Product design	Programming comment	Navigation
Program	Programming loop	Non-recyclable
Sense	Reformed	Product lifecycle
Simulator	Replica	Product lifespan
Smart wearables	Research	Program
Stand	Sensor	Recyclable
Technology	Strong	Smart
Template	Sustainability	Sustainable
Test	Synthetic	Sustainable design
User	Thermometer	Unsustainable design
	Thermoscope	Variable
	Value	Workplane
	Variable	
	Versatile	
	Water-resistant	
	Workplane	