



Design & Technology Progression of Skills

		Structures							
		Reception Junk Modelling	Reception Boats	Year 1 Constructing A Windmill	Year 2 Baby Bears Chair	Year 3 Constructing a castle	Year 4 Pavilions	Year 5	Year 6
Skills	Design	<ul style="list-style-type: none"> • Making verbal plans and material choices. • Developing a junk model. 	<ul style="list-style-type: none"> • Designing a junk model boat. • Using knowledge from exploration to inform design. 	<ul style="list-style-type: none"> • Learning the importance of a clear design criteria. • Including individual preferences and requirements in a design. 	<ul style="list-style-type: none"> • Generating and communicating ideas using sketching and modelling. • Learning about different types of structures, found in the natural world and in everyday objects. 	<ul style="list-style-type: none"> • Designing a castle with key features to appeal to a specific person/purpose • Drawing and labelling a castle design using 2D shapes, labelling: <ul style="list-style-type: none"> -the 3D shapes that will create the features - materials needed and colours. • Designing and/or decorating a castle tower on CAD software. 	<ul style="list-style-type: none"> • Designing a stable pavilion structure that is aesthetically pleasing and selecting materials to create a desired effect. • Building frame structures designed to support weight. 		
	Make	<ul style="list-style-type: none"> • Improving fine motor/scissor skills with a variety of materials. • Joining materials in a variety of ways (temporary and permanent). • Joining different 	<ul style="list-style-type: none"> • Making a boat that floats and is waterproof, considering material choices. 	<ul style="list-style-type: none"> • Making stable structures from card, tape and glue. • Learning how to turn 2D nets into 3D structures. • Following instructions to cut and assemble the supporting 	<ul style="list-style-type: none"> • Making a structure according to design criteria. • Creating joints and structures from paper/card and tape. • Building a strong and stiff structure by folding paper. 	<ul style="list-style-type: none"> • Constructing a range of 3D geometric shapes using nets. • Creating special features for individual designs. • Making facades from a range of 	<ul style="list-style-type: none"> • Creating a range of different shaped frame structures. • Making a variety of free standing frame structures of different shapes and sizes. • Selecting appropriate materials to build a strong structure and cladding. • Reinforcing corners to strengthen a structure. 		

		<p>materials together.</p> <ul style="list-style-type: none"> • Describing their junk model, and how they intend to put it together. 		<p>structure of a windmill.</p> <ul style="list-style-type: none"> • Making functioning turbines and axles, which are assembled into a main supporting structure. 		<p>recycled materials.</p>	<ul style="list-style-type: none"> • Creating a design in accordance with a plan. • Learning to create different textural effects with materials 		
	Evaluate	<ul style="list-style-type: none"> • Giving a verbal evaluation of their own and others' junk models with adult support. • Checking to see if their model matches their plan. • Considering what they would do differently if they were to do it again. • Describing their favourite and least favourite part of their model. 	<ul style="list-style-type: none"> • Making predictions about, and evaluating different materials to see if they are waterproof. • Making predictions about, and evaluating existing boats to see which floats best. • Testing their design and reflecting on what could have been done differently. • Investigating the how the shapes and structure of a boat affect the way it moves. 	<ul style="list-style-type: none"> • Evaluating a windmill according to the design criteria, testing whether the structure is strong and stable and altering it if it isn't. • Suggest points for improvements. 	<ul style="list-style-type: none"> • Exploring the features of structures. • Comparing the stability of different shapes. • Testing the strength of own structures. • Identifying the weakest part of a structure. • Evaluating the strength, stiffness and stability of own structure. 	<ul style="list-style-type: none"> • Evaluating own work and the work of others based on the aesthetic of the finished product and in comparison to the original design. • Suggesting points for modification of the individual designs. 	<ul style="list-style-type: none"> • Evaluating structures made by the class. • Describing what characteristics of a design and construction made it the most effective. • Considering effective and ineffective designs. 		
	Technical	<ul style="list-style-type: none"> • To know there are a range to different materials that can 	<ul style="list-style-type: none"> • To know that 'waterproof' materials are those which do 	<ul style="list-style-type: none"> • To understand that the shape of materials can be 	<ul style="list-style-type: none"> • To know that shapes and structures with wide, flat bases or legs are the most stable. 	<ul style="list-style-type: none"> • To understand that wide and flat based 	<ul style="list-style-type: none"> • To understand what a frame structure is. 		

Knowledge		<p>be used to make a model and that they are all slightly different.</p> <ul style="list-style-type: none"> • Making simple suggestions to fix their junk model. 	<p>not absorb water.</p>	<p>changed to improve the strength and stiffness of structures.</p> <ul style="list-style-type: none"> • To understand that cylinders are a strong type of structure (e.g. the main shape used for windmills and lighthouses). • To understand that axles are used in structures and mechanisms to make parts turn in a circle. • To begin to understand that different structures are used for different purposes. • To know that a structure is something that has been made and put together. 	<ul style="list-style-type: none"> • To understand that the shape of a structure affects its strength. • To know that materials can be manipulated to improve strength and stiffness. • To know that a structure is something which has been formed or made from parts. • To know that a 'stable' structure is one which is firmly fixed and unlikely to change or move. • To know that a 'strong' structure is one which does not break easily. • To know that a 'stiff' structure or material is one which does not bend easily. 	<p>objects are more stable.</p> <ul style="list-style-type: none"> • To understand the importance of strength and stiffness in structures. 	<ul style="list-style-type: none"> • To know that a 'free-standing' structure is one which can stand on its own. 		
	Additional		<ul style="list-style-type: none"> • To know that some objects float and others sink. • To know the different parts of a boat. 	<ul style="list-style-type: none"> • To know that a client is the person I am designing for. • To know that design criteria is a list of points to ensure the product meets the client's needs and wants. 	<ul style="list-style-type: none"> • To know that natural structures are those found in nature. • To know that man-made structures are those made by people. 				

				<ul style="list-style-type: none">• To know that a windmill harnesses the power of wind for a purpose like grinding grain, pumping water or generating electricity.• To know that windmill turbines use wind to turn and make the machines inside work.• To know that a windmill is a structure with sails that are moved by the wind.• To know the three main parts of a windmill are the turbine, axle and structure.					
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Mechanisms/Mechanical Systems

		Year 1	Year 2		Year 3	Year 4	Year 5	Year 6
			Fairground Wheel	Making a moving monster		Making a slingshot car	Pop Up Book	
Skills	Design		<ul style="list-style-type: none"> • Selecting a suitable linkage system to produce the desired motion. • Designing a wheel. 	<ul style="list-style-type: none"> • Creating a class design criteria for a moving monster. • Designing a moving monster for a specific audience in accordance with a design criteria. 		<ul style="list-style-type: none"> • Designing a shape that reduces air resistance. • Drawing a net to create a structure from. • Choosing shapes that increase or decrease speed as a result of air resistance. • Personalising a design. 	<ul style="list-style-type: none"> • Designing a pop-up book which uses a mixture of structures and mechanisms. • Naming each mechanism, input and output accurately. • Storyboarding ideas for a book. 	
	Make		<ul style="list-style-type: none"> • Selecting materials according to their characteristics. • Following a design brief. 	<ul style="list-style-type: none"> • Making linkages using card for levers and split pins for pivots. • Experimenting with linkages adjusting the widths, lengths and thicknesses of card used. • Cutting and assembling components neatly. 		<ul style="list-style-type: none"> • Measuring, marking, cutting and assembling with increasing accuracy. • Making a model based on a chosen design. 	<ul style="list-style-type: none"> • Following a design brief to make a pop-up book, neatly and with focus on accuracy. • Making mechanisms and/or structures using sliders, pivots and folds to produce movement. • Using layers and spacers to hide the workings of mechanical parts for an aesthetically pleasing result. 	
	Evaluate		<ul style="list-style-type: none"> • Evaluating different designs. • Testing and adapting a design. 	<ul style="list-style-type: none"> • Evaluating own designs against design criteria. • Using peer feedback to modify a final design. 		<ul style="list-style-type: none"> • Evaluating the speed of a final product based on: the effect of shape on speed and the accuracy of workmanship on performance. 	<ul style="list-style-type: none"> • Evaluating the work of others and receiving feedback on own work. • Suggesting points for improvement. 	

Knowledge	Technical		<ul style="list-style-type: none"> • To know that different materials have different properties and are therefore suitable for different uses. 	<ul style="list-style-type: none"> • To know that mechanisms are a collection of moving parts that work together as a machine to produce movement. • To know that there is always an input and output in a mechanism. • To know that an input is the energy that is used to start something working. • To know that an output is the movement that happens as a result of the input. • To know that a lever is something that turns on a pivot. • To know that a linkage mechanism is made up of a series of levers. 		<ul style="list-style-type: none"> • To understand that all moving things have kinetic energy. • To understand that kinetic energy is the energy that something (object/person) has by being in motion. • To know that air resistance is the level of drag on an object as it is forced through the air. • To understand that the shape of a moving object will affect how it moves due to air resistance. 	<ul style="list-style-type: none"> • To know that mechanisms control movement. • To understand that mechanisms can be used to change one kind of motion into another. • To understand how to use sliders, pivots and folds to create paper-based mechanisms. 	
	Additional		<ul style="list-style-type: none"> • To know the features of a Ferris wheel 	<ul style="list-style-type: none"> • To know some real-life objects that contain 		<ul style="list-style-type: none"> • To understand that products change and evolve over time. 	<ul style="list-style-type: none"> • To know that a design brief is a description of what I am going to design and make. 	

			<p>include the wheel, frame, pods, a base an axle and an axle holder.</p> <ul style="list-style-type: none">• To know that it is important to test my design as I go along so that I can solve any problems that may occur.	<p>mechanisms.</p>		<ul style="list-style-type: none">• To know that aesthetics means how an object or product looks in design and technology.• To know that a template is a stencil you can use to help you draw the same shape accurately.• To know that a birds-eye view means a view from a high angle (as if a bird in flight).• To know that graphics are images which are designed to explain or advertise something.• To know that it is important to assess and evaluate design ideas and models against a list of design criteria.	<ul style="list-style-type: none">• To know that designers often want to hide mechanisms to make a product more aesthetically pleasing.	
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Cooking and Nutrition							
		<u>Year 1</u> <u>Smoothies</u>	<u>Year 2</u>	<u>Year 3</u> <u>Eating Seasonally</u>	<u>Year 4</u>	<u>Year 5</u> <u>Developing a recipe</u>	<u>Year 6</u> <u>Come Dine with me-Pop up restaurant</u>
<u>Skills</u>	<u>Design</u>	<ul style="list-style-type: none"> • Designing smoothie carton packaging by-hand. 		<ul style="list-style-type: none"> • Designing a recipe for a savoury tart. 		<ul style="list-style-type: none"> • Adapting a traditional recipe, understanding that the nutritional value of a recipe alters if you remove, substitute or add additional ingredients. • Writing an amended method for a recipe to incorporate the relevant changes to ingredients. • Designing appealing packaging to reflect a recipe. • Researching existing recipes to inform ingredient choices. 	<ul style="list-style-type: none"> • Writing a recipe, explaining the key steps, method and ingredients. • Including facts and drawings from research undertaken.
	<u>Make</u>	<ul style="list-style-type: none"> • Chopping fruit and vegetables safely to make a smoothie. • Juicing fruits safely to make a smoothie 		<ul style="list-style-type: none"> • Following the instructions within a recipe. • Tasting seasonal ingredients. • Selecting seasonal ingredients. • Peeling ingredients safely. • Cutting safely with a vegetable knife 		<ul style="list-style-type: none"> • Cutting and preparing vegetables safely. • Using equipment safely, including knives, hot pans and hobs. • Knowing how to avoid cross-contamination. • Following a step by step method carefully to make a recipe. 	<ul style="list-style-type: none"> • Following a recipe, including using the correct quantities of each ingredient. • Adapting a recipe based on research. • Working to a given timescale. • Working safely and hygienically with independence.
	<u>Evaluate</u>	<ul style="list-style-type: none"> • Tasting and evaluating different food combinations. • Describing appearance, smell and taste. • Suggesting information to be included on packaging. • Comparing their own smoothie with someone else's 		<ul style="list-style-type: none"> • Establishing and using design criteria to help test and review dishes. • Describing the benefits of seasonal fruits and vegetables and the impact on the environment. • Suggesting points for improvement when making a seasonal tart. 		<ul style="list-style-type: none"> • Identifying the nutritional differences between different products and recipes. • Identifying and describing healthy benefits of food groups. 	<ul style="list-style-type: none"> • Evaluating a recipe, considering: taste, smell, texture and origin of the food group. • Taste testing and scoring final products. • Suggesting and writing up points of improvements when scoring others' dishes, and when evaluating their own throughout the planning, preparation and cooking process.

							<ul style="list-style-type: none"> • Evaluating health and safety in production to minimise cross contamination.
<u>Knowledge</u>	<u>Cooking and Nutrition</u>	<ul style="list-style-type: none"> • To know that a blender is a machine which mixes ingredients together into a smooth liquid. • To know that a fruit has seeds. • To know that fruits grow on trees or vines. • To know that vegetables can grow either above or below ground. • To know that vegetables is any edible part of a plant (e.g. roots: potatoes, leaves: lettuce, fruit: cucumber). 		<ul style="list-style-type: none"> • To know that not all fruits and vegetables can be grown in the UK. • To know that climate affects food growth. • To know that vegetables and fruit grow in certain seasons. • To know that cooking instructions are known as a 'recipe'. • To know that imported food is food which has been brought into the country. • To know that exported food is food which has been sent to another country.. • To know that eating seasonal foods can have a positive impact on the environment. • To know that similar coloured fruits and vegetables often have similar nutritional benefits. • To know that the appearance of food is as important as taste. 		<ul style="list-style-type: none"> • To understand where meat comes from - learning that beef is from cattle and how beef is reared and processed. • To know that recipes can be adapted to suit nutritional needs and dietary requirements. • To know that I can use a nutritional calculator to see how healthy a food option is. • 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. • To know that coloured chopping boards can prevent cross-contamination. • To know that nutritional information is found on food p 	<ul style="list-style-type: none"> • To know that 'flavour' is how a food or drink tastes. • To know that many countries have 'national dishes' which are recipes associated with that country. • To know that 'processed food' means food that has been put through multiple changes in a factory. • To understand that it is important to wash fruit and vegetables before eating to remove any dirt and insecticides. • To understand what happens to a certain food before it appears on the supermarket shelf (Farm to Fork).

Textiles							
		Year 1 Puppets	Year 2	Year 3	Year 4	Year 5	Year 6 Aprons
<u>Skills</u>	<u>Design</u>	<ul style="list-style-type: none"> Using a template to create a design for a puppet. 		<ul style="list-style-type: none"> Designing and making a template from an existing cushion and applying individual design criteria. 			<ul style="list-style-type: none"> Designing an apron in accordance to a specification linked to set of design criteria. Annotating designs, to explain their decisions.
	<u>Make</u>	<ul style="list-style-type: none"> Cutting fabric neatly with scissors. Using joining methods to decorate a puppet. Sequencing the steps taken during construction. 		<ul style="list-style-type: none"> Following design criteria to create a cushion or Egyptian collar. Selecting and cutting fabrics with ease using fabric scissors. Threading needles with greater independence. Tying knots with greater independence. Sewing cross stitch to join fabric. Decorating fabric using appliqué. Completing design ideas with stuffing and sewing the edges (Cushions) or 			<ul style="list-style-type: none"> Using a template when cutting fabric to ensure they achieve the correct shape. Using pins effectively to secure a template to fabric without creases or bulges. Marking and cutting fabric accurately, in accordance with their design. Sewing a strong running stitch, making small, neat stitches and following the edge. Tying strong knots. Decorating a waistcoat, attaching features (such as appliqué) using thread. Finishing the waistcoat with a secure fastening (such as buttons). Learning different decorative stitches. Sewing accurately with evenly spaced, neat stitches.

				embellishing the collars based on design ideas (Egyptian collars).			
	Evaluate	<ul style="list-style-type: none"> • Reflecting on a finished product, explaining likes and dislikes. 		<ul style="list-style-type: none"> • Evaluating an end product and thinking of other ways in which to create similar items. 			<ul style="list-style-type: none"> • Reflecting on their work continually throughout the design, make and evaluate process.
Knowledge		<ul style="list-style-type: none"> • To know that 'joining technique' means connecting two pieces of material together. • To know that there are various temporary methods of joining fabric by using staples, glue or pins. • To understand that different techniques for joining materials can be used for different purposes. • To understand that a template (or fabric pattern) is used to cut out the same shape multiple times. • To know that drawing a design idea is useful to see how an idea will look. 					<ul style="list-style-type: none"> • To understand that it is important to design clothing with the client/ target customer in mind. • To know that using a template (or clothing pattern) helps to accurately mark out a design on fabric. • To understand the importance of consistently sized stitches.

Digital world (KS2 only)

		<u>Year 1</u>	<u>Year 2</u>	<u>Year 3</u>	<u>Year 4</u>	<u>Year 5</u>	<u>Year 6</u> Navigating the World
<u>Skills</u>	Design						<ul style="list-style-type: none"> • Writing a design brief from information submitted by a client. • Developing design criteria to fulfil the client’s request. • Considering and suggesting additional functions for my navigation tool. • Developing a product idea through annotated sketches. • Placing and manoeuvring 3D objects, using CAD. • Changing the properties of or combining one or more 3D objects, using CAD.
	Make						<ul style="list-style-type: none"> • Considering materials and their functional properties, especially those that are sustainable and recyclable (for example, cork and bamboo). • Explaining material choices and why they were chosen as part of a product concept. • Programming an N,E, S, W cardinal compass.
	Evaluate						<ul style="list-style-type: none"> • Explaining how my program fits the design criteria and how it would be useful as part of a navigation tool. • Developing an awareness of sustainable design. • Identifying key industries that utilise 3D CAD modelling and explaining why. • Describing how the product concept fits the client’s request and how it will benefit the customers. • Explaining the key functions in my program, including any additions. • Explaining how my program fits the design criteria and how it would be useful as part of a navigation tool. • Explaining the key functions and features of my navigation tool to the client as part of a product concept pitch. • Demonstrating a functional program as part of a product concept pitch.
<u>Knowledge</u>	Technical						<ul style="list-style-type: none"> • To know that accelerometers can detect movement. • To understand that sensors can be useful in products as they mean the product can function without human input.
	Additional						<ul style="list-style-type: none"> • To know that designers write design briefs and develop design criteria to enable them to fulfil a client’s request. • To know that ‘multifunctional’ means an object or product has more than one function.

							<ul style="list-style-type: none">• To know that magnetometers are devices that measure the Earth's magnetic field to determine which direction you are facing.
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Electrical System (KS2 Only)

		<u>Year 1</u>	<u>Year 2</u>	<u>Year 3</u>	<u>Year 4</u> Torches	<u>Year 5</u> Doodlers	<u>Year 6</u>
<u>Skills</u>	Design				<ul style="list-style-type: none"> • Designing a torch, giving consideration to the target audience and creating both design and success criteria focusing on features of individual design ideas. 	<ul style="list-style-type: none"> • Identifying factors that could be changed on existing products and explaining how these would alter the form and function of the product. • Developing design criteria based on findings from investigating existing products. • Developing design criteria that clarifies the target user. 	
	Make				<ul style="list-style-type: none"> • Making a torch with a working electrical circuit and switch. • Using appropriate equipment to cut and attach materials. • Assembling a torch according to the design and success criteria. 	<ul style="list-style-type: none"> • Altering a product's form and function by tinkering with its configuration. • Making a functional series circuit, incorporating a motor. • Constructing a product with consideration for the design criteria. • Breaking down the construction process into steps so that others can make the product. 	
	Evaluate				<ul style="list-style-type: none"> • Evaluating electrical products. • Testing and evaluating the success of a final product. 	<ul style="list-style-type: none"> • Carry out a product analysis to look at the purpose of a product along with its strengths and weaknesses. • Determining which parts of a product affect its function and which parts affect its form. 	

						<ul style="list-style-type: none"> Analysing whether changes in configuration positively or negatively affect an existing product. Peer evaluating a set of instructions to build a product. 	
<u>Knowledge</u>	<u>Technical</u>				<ul style="list-style-type: none"> To understand that electrical conductors are materials which electricity can pass through. To understand that electrical insulators are materials which electricity cannot pass through. To know that a battery contains stored electricity that can be used to power products. To know that an electrical circuit must be complete for electricity to flow. To know that a switch can be used to complete and break an electrical circuit. 	<ul style="list-style-type: none"> To know that series circuits only have one direction for the electricity to flow. To know when there is a break in a series circuit, all components turn off. To know that an electric motor converts electrical energy into rotational movement, causing the motor's axle to spin. To know a motorised product is one which uses a motor to function 	
	<u>Additional</u>				<ul style="list-style-type: none"> To know the features of a torch: case, contacts, batteries, switch, reflector, lamp, lens. To know facts from the history and invention of the electric light bulb(s) - by Sir Joseph Swan and Thomas Edison. 	<ul style="list-style-type: none"> To know that product analysis is critiquing the strengths and weaknesses of a product. To know that 'configuration' means how the parts of a product are arranged. 	