

	Units of learning	Design	Make	Evaluate	Technical Knowledge
Year 1	<b>Mechanisms:</b> Making a moving story book	<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>Following a design to create moving models that use levers and sliders.</li> </ul>	<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>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>
Year 1	<b>Structures:</b> Constructing a windmill	<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>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>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>
Year 1	<b>Mechanisms:</b> Wheels and Axles	<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>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</li> <li>testing their vehicle.</li> </ul> </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>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. • To know that the frame of a vehicle (chassis) needs to be balanced.</li> </ul>
Year 1	<b>Textiles:</b> Puppets	<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>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>Reflecting on a finished product, explaining likes and dislikes.</li> </ul>	<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>
Year 1	<b>Cooking and nutrition:</b> Fruit and Vegetables	<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>Chopping fruit and vegetables safely to make a smoothie.</li> <li>Identifying if a food is a fruit or a vegetable.</li> </ul>	<ul style="list-style-type: none"> <li>Tasting and evaluating different food combinations.</li> <li>Describing appearance, smell and taste.</li> </ul>	<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> </ul>

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			<ul style="list-style-type: none"> <li>Learning where and how fruits and vegetables grow.</li> </ul>	<ul style="list-style-type: none"> <li>Suggesting information to be included on packaging.</li> </ul>	<ul style="list-style-type: none"> <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.</li> <li>To know that vegetables can come from different parts of the plant (e.g. roots: potatoes, leaves: lettuce, fruit: cucumber).</li> </ul>
<b>Year 2</b>	<b>Structures:</b> Baby Bear's Chair	<ul style="list-style-type: none"> <li>Generating and communicating ideas using sketching and modelling.</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>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>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>
<b>Year 2</b>	<b>Mechanisms:</b> Fairground Wheel	<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>Selecting materials according to their characteristics.</li> <li>Following a design brief.</li> </ul>	<ul style="list-style-type: none"> <li>Evaluating different designs.</li> <li>Testing and adapting a design.</li> </ul>	To know that different materials have different properties and are therefore suitable for different uses.
<b>Year 2</b>	<b>Mechanisms:</b> Moving Monster	<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>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>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>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>
<b>Year 2</b>	<b>Textiles:</b> Pouches	Designing a pouch.	<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> </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> </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>

	Units of learning	Design	Make	Evaluate	Technical Knowledge
			Neatly pinning and cutting fabric using a template.	Identifying aspects of their peers' work that they particularly like and why.	
<b>Year 2</b>	<b>Cooking and Nutrition:</b> A Balanced Diet	Designing a healthy wrap based on a food combination which works well together.	<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>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>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.</li> <li>To know that the five main food groups are: Carbohydrates, fruits and vegetables, protein, dairy and foods high in fat and sugar.</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.</li> <li>To know that nutrients are substances in food that all living things need to make energy, grow and develop.</li> <li>To know that 'ingredients' means the items in a mixture or recipe.</li> <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>
<b>Year 3</b>	<b>Structures:</b> Constructing a castle	<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>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>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>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>
<b>Year 3</b>	<b>Mechanical systems:</b> Pneumatic Toys	<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>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> </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>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>

	Units of learning	Design	Make	Evaluate	Technical Knowledge
			<ul style="list-style-type: none"> <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>		
<b>Year 3</b>	<b>Digital World:</b> Wearable Technology	<ul style="list-style-type: none"> <li>Problem solving by suggesting which features on a micro:bit might be useful and justifying my ideas.</li> <li>Drawing and manipulating 2D shapes, using computer-aided design, to produce a point of sale badge.</li> <li>Developing design ideas through annotated sketches to create a product concept.</li> <li>Developing design criteria to respond to a design brief.</li> </ul>	<ul style="list-style-type: none"> <li>Following a list of design requirements.</li> <li>Writing a program to control (button press) and/or monitor (sense light) that will initiate a flashing LED algorithm.</li> </ul>	<ul style="list-style-type: none"> <li></li> </ul>	<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> <li>To know that a simulator is able to replicate the functions of an existing piece of technology.</li> </ul>
<b>Year 3</b>	<b>Cooking and Nutrition:</b> Eating Seasonally	<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>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>Establishing and using design criteria to help test and review dishes.</li> <li>Describing the benefits of seasonal fruits and vegetables and the impact on the environment.</li> <li>Suggesting points for improvement when making a seasonal tart.</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..</li> <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> <li>To know safety rules for using, storing and cleaning a knife safely.</li> <li>To know that similar coloured fruits and vegetables often have similar nutritional benefits.</li> </ul>
<b>Year 3</b>	<b>Textiles:</b> Cross Stitch and Applique	<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>Following design criteria to create a cushion or Egyptian collar.</li> <li>Selecting and cutting fabrics with ease using fabric scissors.</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>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> </ul>

	Units of learning	Design	Make	Evaluate	Technical Knowledge
			<ul style="list-style-type: none"> <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) <b>or</b> embellishing the collars based on design ideas (Egyptian collars).</li> </ul>		<ul style="list-style-type: none"> <li>• To understand that some products are turned inside out after sewing so the stitching is hidden.</li> </ul>
<b>Year 4</b>	<b>Mechanical systems:</b> Making a slingshot car	<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>• 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>• Evaluating the speed of a final product based on: the effect of shape on speed and the accuracy of workmanship on performance.</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>
<b>Year 4</b>	<b>Textiles:</b> Fastenings	<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>	<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>	<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>	<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>
<b>Year 4</b>	<b>Structure:</b> Pavilions	<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>• 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> </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>• 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>

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			<ul style="list-style-type: none"> <li>Learning to create different textural effects with materials.</li> </ul>		
<b>Year 4</b>	<b>Electrical Systems:</b> Torches	<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>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>Evaluating electrical products.</li> <li>Testing and evaluating the success of a final product.</li> </ul>	<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>
<b>Year 4</b>	<b>Cooking and Nutrition:</b> Adapting a Recipe	<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>Following a baking recipe, from start to finish, including the preparation of ingredients.</li> <li>Cooking safely, following basic hygiene rules.</li> <li>Adapting a recipe to improve it or change it to meet new criteria (e.g. from savoury to sweet).</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.</li> <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>	<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>
<b>Year 5</b>	<b>Mechanical systems:</b> Pop-up book	<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>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>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>
<b>Year 5</b>	<b>Cooking:</b> What could be Healthier	<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.</li> <li>Writing an amended method for a recipe to incorporate the relevant changes to ingredients.</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>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>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-</li> </ul>

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Year 5	Digital World: Monitoring Devices	<ul style="list-style-type: none"> <li>Designing appealing packaging to reflect a recipe.</li> <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 manoeuvring 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>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>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> <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>	<p>eat foods and it happens when these foods mix with raw meat or unclean objects.</p> <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>
Year 5	Electrical Systems: Doodlers	<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>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>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>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>
Year 5	Structures: Bridges (to go with Brunel in Victorians)	<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>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</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>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>

	Units of learning	Design	Make	Evaluate	Technical Knowledge
			using card corners for support. <ul style="list-style-type: none"> <li>Explaining why selecting appropriating materials is an important part of the design process.</li> <li>Understanding basic wood functional properties.</li> </ul>		
<b>Year 6</b>	<b>Structures:</b> Playgrounds	<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>	<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>	<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>	<ul style="list-style-type: none"> <li>To know that structures can be strengthened by manipulating materials and shapes.</li> </ul>
<b>Year 6</b>	<b>Mechanical Systems:</b> Automata Toys	<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>	<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 materials based on the materials being joined and the speed at which the glue needs to dry/set.</li> </ul>	<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>	<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>Year 6</b>	<b>Digital World:</b> Navigating the World	<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> </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</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> </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>



	Units of learning	Design	Make	Evaluate	Technical Knowledge
		<ul style="list-style-type: none"> <li>Developing a product idea through annotated sketches.</li> <li>Placing and manoeuvring 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>as part of a product concept.</li> <li>Programming an N,E, S, W cardinal compass.</li> </ul>	<ul style="list-style-type: none"> <li>Identifying key industries that utilise 3D CAD modelling and explaining why.</li> <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>Year 6</b>	<b>Electrical Systems:</b> Steady Hand Game	<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>	<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>	<ul style="list-style-type: none"> <li>Testing own and others finished games, identifying what went well and making suggestions for improvement.</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>Year 6</b>	<b>Cooking and Nutrition:</b> Come Dine with Me	<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>	<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>	<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.</li> <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>	<ul style="list-style-type: none"> <li>To know that 'flavour' is how a food or drink tastes.</li> <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>

	Units of learning	Design	Make	Evaluate	Technical Knowledge
				<ul style="list-style-type: none"><li>Evaluating health and safety in production to minimise cross contamination.</li></ul>	