



Design and technology Progression Map

EYFS	I wonder what is special about me?	I wonder who lives in my community?	I wonder what it would be like to live in the artic?	I wonder how I can look after the world?	I wonder what moves?	I wonder who lives in my garden?
	<p>To use simple collage techniques e.g. cutting, tearing. To use blocks to create with a purpose on mind.</p> <p>To show good table manners.</p>	<p>To stack blocks to create towers and buildings To use a knife and fork to eat my lunch.</p>	<p>To use scissors to cut zigzag lines and around simple shapes To use bricks and blocks of differing sizes to create models</p>	<p>To add detail to models To combine different media and materials to create a new effect To use scissors to cut zigzag lines and around simple shapes</p>	<p>To create and construct collaboratively. To add moving parts to a model. To use scissors to cut out more intricate shapes and pictures.</p>	<p>To safely use and explore a variety of materials, tools and techniques, choosing the most appropriate resources for the task.</p> <p>To mould and manipulate different materials to create a desired effect</p> <p>To safely use and a variety of materials (e.g. needles and thread)</p>



Design and technology Progression Map

						To select the tools and techniques I need to assemble and join materials, changing or adapting ideas to serve a purpose.
Year 1	Structures – Constructing a windmill	Mechanisms – Moving story book	Cooking and nutrition – smoothies	Textiles - Puppets	Mechanisms – Wheels and axles	
Key Vocabulary	Base, rotate, rotor, rotor blade, sail, stable, structure, Equal, fold, length, rotor blades, sails, scissors, same, width	Sliders, mechanisms, adapt, design, design criteria, input, model, template, assemble, input, model, template	Fruit, plant, seed, bush, leaf, root, soil, stem, tree, vegetable, vine, flavour, select, taste, chopping board, cut, fork, juice, juicer, table knife blend, blender, cut, ingredients, juice, recipe	Design, equipment, glue, hand puppet, safety pin, technique, decorate, fabric, inspiration, model, stencil, template, equipment, glue, safety pin, design criteria	Axle, axle holder, chassis, diagram, dowel, equipment, mechanism, wheel	



Design and technology Progression Map

Substantive Knowledge		<p>To know that a mechanism is the parts of an object that move together.</p> <p>To know that a slider mechanism is the parts of an object that move together.</p> <p>To know that a slide mechanism moves an object from side to side.</p> <p>To know that a slider mechanism moves an object from side to side.</p> <p>To know that a slider mechanism has a slider, slots, guides and an object.</p> <p>To know that bridges and guides are bits of card that purposefully restrict the movement of the slider.</p>	<p>That a blender is a machine which mixes ingredients together into a smooth liquid.</p> <p>That a fruit has seeds and a vegetable does not.</p> <p>That fruits grow on trees or vines.</p> <p>That vegetables can grow either above or below ground.</p> <p>That vegetables are any edible part of a plant.</p>	<p>To know that 'joining technique' meaning connecting two pieces of material together.</p> <p>To know that there are various temporary methods of joining fabric by using staples, glue and pins.</p> <p>To understand that different techniques for joining materials can be used for different purposes.</p> <p>To understand that a template (or fabric pattern) is used to cut out the same shape multiple times.</p> <p>To know that drawing a design idea is useful to see how an idea will look.</p>	<p>To know that wheels need to be round to rotate and move.</p> <p>To understand that for a wheel to move it must be attached to a rotating axle.</p> <p>To know that an axle moves within an axle holder which is fixed to the vehicle or toy.</p> <p>To know that the frame of a vehicle (chassis) need to be balanced.</p> <p>To know some real-life items that use wheels.</p>
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Design and technology Progression Map

<p>Disciplinary Concepts</p>	<p>Design purposeful, functional, appealing products for themselves and other users based on design criteria. Select from and use a range of tools and equipment to perform practical tasks (for example, cutting, shaping, joining and finishing.</p> <p>Select from and use a wide range of materials and components including construction materials according to their characteristics.</p> <p>Explore and evaluate a range of existing products.</p> <p>Evaluate their ideas and products against design criteria.</p>	<p>Identify whether a mechanism is a side-to-side slider or an up-and-down slider and determine what movement the mechanism will make.</p> <p>Clearly label drawings to show which parts of their design will move and in which direction.</p> <p>Make a picture, which meets the design criteria, with parts that move purposefully as planned.</p> <p>Evaluate the main strengths and weaknesses of their design and suggest alterations.</p>	<p>Describe fruits and vegetables and explain how to identify fruits.</p> <p>Name a range of places that fruits and vegetables grow.</p> <p>Describe basic characteristics of fruit and vegetables. Prepare fruits and vegetables to make a smoothie.</p>	<p>Using a template to create a design for a puppet.</p> <p>Cutting fabric neatly with scissors.</p> <p>Using joining methods to decorate a puppet.</p> <p>Sequencing steps for construction.</p> <p>Reflecting on a finished product, explaining likes and dislikes.</p>	<p>Designing a vehicle that includes wheels, axles and axle holders, which will all the wheels to move.</p> <p>Creating clearly labelled drawings that illustrate movement.</p> <p>Adapting mechanisms. Testing mechanisms, identifying what stops wheels from turning, knowing that a wheel needs an axle in order to move.</p>
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Design and technology Progression Map

	<p>Technical Knowledge</p> <p>Build structures, exploring how they can be made stronger, stiffer and more stable.</p>				
Year 2	Mechanisms: Fairground wheel	Cooking and nutrition: a balanced diet	Structures – baby bears chair	Textiles – pouches	Mechanisms: Moving Monster
Key Vocabulary	Design, design criteria, ferris wheel, axle, mechanism	Appearance, balanced, carbohydrates, chopping board, combination, dairy, design brief, diet, evaluate, [eel, grate, grater, ingredients, menu, proteins	Design criteria, man-made, natural, properties, structure, stable, model	Stable, sketching, modelling, stability	Axle, design criteria, input, linkage, mechanical, output, pivot
Substantive Knowledge	To know that different materials have different properties and are therefore suitable for different uses.	That 'diet' means the food and drink that a person or animal usually eats.	To know that shapes and structures with wide, flat bases or legs are the most stable.	To know that shapes and structures with wide, flat bases or legs are the most stable.	To know that mechanisms are a collection of moving parts that work together as a machine to produce movement.



Design and technology Progression Map

	<p>To know the features of a Ferris wheel include the wheel, frame, pods, a base, an axle and an axle holder.</p> <p>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>	<p>What makes a balanced diet.</p> <p>That the five main food groups are: carbohydrates, fruits and vegetables, protein, dairy and oils and spreads.</p> <p>That I should eat a range of different foods from each food group, and roughly how much of each food group.</p> <p>That 'ingredients' means the items in a mixture or recipe.</p> <p>How to cut, grate, snip and spread to prepare foods.</p> <p>How to review and give a score to evaluate.</p>	<p>To understand that the shape of a structure affects its strength.</p> <p>To know that materials can be manipulated to improve strength and stiffness.</p> <p>To know that a structure is something which has been formed or made from parts.</p> <p>To know that a 'stable' structure is one which is firmly fixed and unlikely to change or move.</p> <p>To know that a 'strong' structure is one which does not break easily.</p> <p>To know that a 'stiff' structure or</p>	<p>To understand that the shape of a structure affects its strength.</p> <p>To know that materials can be manipulated to improve strength and stiffness.</p> <p>To know that a structure is something which has been formed or made from parts.</p> <p>To know that a 'stable' structure is one which is firmly fixed and unlikely to change or move.</p> <p>To know that a 'strong' structure is one which does not break easily.</p> <p>To know that a 'stiff' structure or material is one which does not bend easily.</p>	<p>To know that there is always an input and an output in a mechanism.</p> <p>To know that an input is the energy that is used to start something working.</p> <p>To know that an output is the movement that happens as a result of the input.</p> <p>To know that a lever is something that turns on a pivot.</p> <p>To know that a linkage mechanism is made up of a series of levers.</p>
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Design and technology Progression Map

			material is one which does not bend easily.		
Disciplinary Concepts	<p>Selecting a suitable linkage system to produce the desired motions.</p> <p>Designing a wheel.</p> <p>Selecting appropriate materials based on their properties.</p> <p>Selecting materials according to their characteristics.</p> <p>Following a design brief.</p> <p>Evaluating different designs.</p> <p>Testing and adapting a design.</p>	<p>Chopping foods safely to make a wrap.</p> <p>Grating foods to make a wrap.</p> <p>Snipping smaller foods instead of cutting.</p> <p>Spreading soft foods to make a wrap.</p> <p>Identifying the five food groups.</p> <p>Learning about a balanced diet.</p> <p>Tasting and evaluating different food combinations.</p> <p>Describing appearance, smell and taste.</p>	<p>Generating and communicating ideas using sketching and modelling.</p> <p>Learning about different types of structures, found in the natural world and in everyday objects.</p> <p>Making a structure according to design criteria.</p> <p>Creating joints and structures from paper/card and tape.</p> <p>Building a strong and stiff structure by folding paper.</p>	<p>Generating and communicating ideas using sketching and modelling.</p> <p>Learning about different types of structures, found in the natural world and in everyday objects.</p> <p>Making a structure according to design criteria.</p> <p>Creating joints and structures from paper/card and tape.</p> <p>Building a strong and stiff structure by folding paper.</p> <p>Exploring the features of structures.</p>	<p>Creating a design criteria for a moving monster as a class.</p> <p>Designing a moving monster for a specific audience in accordance with a design criteria.</p> <p>Making linkages using card for levers and split pins for pivots.</p> <p>Experimenting with linkages adjusting the widths, lengths and thickness of card used.</p> <p>Cutting and assembling components neatly.</p> <p>Evaluating own designs against design criteria.</p> <p>Using peer feedback to modify a final design.</p>



Design and technology Progression Map

		<p>Designing three wrap ideas.</p>	<p>Exploring the features of structures.</p> <p>Comparing the stability of different shapes.</p> <p>Testing the strength of their own structures.</p> <p>Identifying the weakest part of a structure.</p> <p>Evaluating the strength, stiffness and stability of their own structure.</p>	<p>Comparing the stability of different shapes.</p> <p>Testing the strength of their own structures.</p> <p>Identifying the weakest part of a structure.</p> <p>Evaluating the strength, stiffness and stability of their own structure.</p>	
Year 3	Cooking and nutrition: Eating seasonally	Structures: Building a castle	Digital world: Wearable technology	Mechanical system: Pneumatic toys	Textiles – Cross stitch and applique
Key Vocabulary	Appearance, arid, climate, complementary,	2D, 3D, castle, design, key features, net, scoring, shape,	Electronic, electric products, fastening, feature,	Mechanism, lever, pivot, linkage system, pneumatic system,	Applique, cross-stich, running stitch, embellish,



Design and technology Progression Map

	country, cut, design, evaluate, export, import, Mediterranean, texture, tropical	stable, stiff, strong, structure, tab	feedback, form, function, initiate, monitor, product, simulator	input, output, component, thumbnail, sketch, research, adapt, properties, reinforce, motion	polyester, breathable, biodegrade
Substantive Knowledge	<p>That seasonal means foods that grow in a given season in a given country.</p> <p>Some seasonal foods that grow in the UK and what season they grow in.</p> <p>That eating seasonal foods can have a positive impact on the environment.</p> <p>How to describe the flavour and texture of foods.</p> <p>How to cut and peel safely.</p> <p>That the appearance of food</p>	<p>To understand that wide and flat based objects are more stable.</p> <p>To understand the importance of strength and stiffness in structures.</p> <p>To know the following features of a castle: flags, towers, battlements, turrets, curtain walls, moat, drawbridge and gatehouse – and their purpose.</p> <p>To know that a facade is the front of a structure.</p> <p>To understand that a castle needed to be strong and</p>	<p>To understand that, in programming, a 'loop' is code that repeats something again and again until stopped.</p> <p>To know that a micro bit is a pocket-sized, codable computer.</p> <p>To know that a simulator is able to replicate the functions of an existing piece of technology.</p> <p>To know what the 'Digital revolution' is and features of some of the</p>	<p>To understand how pneumatic systems, work.</p> <p>To understand that pneumatic systems can be used as part of a mechanism.</p> <p>To know that pneumatic systems operate by drawing in, releasing and compressing air.</p>	<p>To know that appliqué is a way of mending or decorating a textile by applying smaller pieces of fabric.</p> <p>To know that when two edges of fabric have been joined together it is called a seam.</p> <p>To know that it is important to leave space on the fabric for the seam.</p> <p>To understand that some products are turned inside out after sewing so the stitching is hidden.</p>



Design and technology Progression Map

	<p>is as important as taste.</p> <p>That similar coloured fruits and vegetables often have similar nutritional benefits.</p>	<p>stable to withstand enemy attack.</p>	<p>products that have evolved as a result.</p> <p>To understand what is meant by 'point of sale display.'</p> <p>To know that CAD stands for 'Computer-aided design'.</p> <p>To know what a focus group is by taking part in one.</p>		
Disciplinary Concepts	<p>Describing how climate affects where foods grow.</p> <p>Identifying seasonal ingredients from the UK.</p> <p>Tasting seasonal ingredients.</p> <p>Describing the texture and flavour of ingredients.</p>	<p>Designing a castle with key features to appeal to a specific person/purpose.</p> <p>Drawing and labelling a castle design using 2D shapes.</p> <p>Designing and/or decorating a castle tower on CAD software.</p>	<p>Problem solving by suggesting potential features on a micro:bit and justifying my ideas.</p> <p>Drawing and manipulating 2D shapes, using computer-aided design, to produce a point of sale badge.</p>	<p>Designing a toy that uses a pneumatic system.</p> <p>Developing design criteria from a design brief.</p> <p>Generating ideas using thumbnail sketches and exploded diagrams.</p> <p>Learning that different types of</p>	<p>Designing and making a template from an existing cushion and applying individual design criteria.</p> <p>Following design criteria to create a cushion.</p> <p>Selecting and cutting fabrics with ease using fabric scissors.</p> <p>Threading needles with greater independence.</p>



Design and technology Progression Map

	<p>Peeling foods by hand or with a peeler.</p> <p>Cutting ingredients safely. Choosing ingredients based on a design brief.</p> <p>Following the instructions within a recipe.</p> <p>Describing the benefits of seasonal fruits and vegetables and their impact on the environment.</p>	<p>Constructing a range of 3D geometric shapes using nets.</p> <p>Creating special features for individual designs.</p> <p>Making facades from a range of recycled materials.</p> <p>Evaluating own work and the work of others based on the aesthetic of the finished product and in comparison to the original design.</p> <p>Suggesting points for modification of the individual designs.</p>	<p>Developing design ideas through annotated sketches to create a product concept.</p> <p>Developing design criteria to respond to a design brief.</p> <p>Following a list of design requirements.</p> <p>Writing a program to control (button press) and/or monitor (sense light) that will initiate a flashing LED algorithm.</p> <p>Analysing and evaluating an existing product. Using feedback from peers to improve a design.</p>	<p>drawings are used in design to explain ideas clearly.</p> <p>Creating a pneumatic system to create a desired motion. Building secure housing for a pneumatic system.</p> <p>Using syringes and balloons to create different types of pneumatic systems to make a functional and appealing pneumatic toy.</p> <p>Selecting materials due to their functional and aesthetic characteristics.</p> <p>Manipulating materials to create different effects by cutting, creasing, folding and weaving.</p>	<p>Tying knots with greater independence.</p> <p>Sewing cross stitch to join fabric.</p> <p>Decorating fabric using appliqué.</p> <p>Completing design ideas with stuffing and sewing the edges.</p> <p>Evaluating an end product and thinking of other ways in which to create similar items.</p>
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Design and technology Progression Map

				<p>Using the views of others to improve designs. Testing and modifying the outcome, suggesting improvements.</p> <p>Understanding the purpose of exploded-diagrams through the eyes of a designer and their client.</p>	
Year 4	Mechanical systems: Making a slingshot car	Textile's: Fastenings	Structures: Pavilions	Cooking and nutrition: Adapting a recipe	Electrical systems: Torches
Key Vocabulary	Chasse, energy, kinetic, mechanism, air resistance, design, structure, graphics, research, model, template	Criteria, fabric, fastening, fit, mock-up, stitch, template	3D shapes, cladding, design criteria, innovative, natural, reinforce, structure	Adapt, addition, appearance, budget, buttery, combine, comment, compare, construct, cream, crunchy, cuboid, cut, design, evaluate, fold, hygiene, ingredients, layout, market research, modify, multiplication, opinion, pounds,	Battery, bulb, buzzer, conductor, circuit, circuit diagram, electricity, insulator, series circuit, switch, component, design, design criteria, diagram, evaluation, LED, model, shape, target audience, input, recyclable, theme, aesthetics, assemble, equipment, ingredients, packaging, properties, sketch, test



Design and technology Progression Map

				sieve, sift, target audience	
Substantive Knowledge	<p>To understand that all moving things have kinetic energy.</p> <p>To understand that kinetic energy is the energy that something (object/person) has by being in motion.</p> <p>To know that air resistance is the level of drag on an object as it is forced through the air.</p> <p>To understand that the shape of a moving object will affect how it moves due to air resistance.</p>	<p>To know that a fastening is something that holds two pieces of material together.</p> <p>To know that different fastening types are useful for different purposes.</p> <p>To know that creating a mock-up (prototype) of their design is useful for checking ideas and proportions.</p>	<p>To understand what a frame structure is.</p> <p>To know that a 'free-standing' structure is one that can stand on its own.</p> <p>To know that a pavilion is a decorative building or structure for leisure activities.</p> <p>To know that cladding can be applied to structures for different effects.</p> <p>To know that aesthetics are how a product looks.</p>	<p>That the amount of an ingredient in a recipe is known as the 'quantity'.</p> <p>That safety and hygiene are important when cooking.</p> <p>The following cooking techniques: sieving, measuring, mixing/stirring, cutting out and shaping.</p> <p>The importance of budgeting while planning ingredients for a recipe.</p> <p>That products often have a target audience.</p>	<p>To understand that electrical conductors are materials which electricity can pass through.</p> <p>To understand that electrical insulators are materials which electricity cannot pass through.</p> <p>To know that a battery contains stored electricity that can be used to power products.</p> <p>To know that an electrical circuit must be complete for electricity to flow.</p> <p>To know that a switch can be used to complete and break an electrical circuit.</p>



Design and technology Progression Map

<p>Disciplinary Concepts</p>	<p>Designing a shape that reduces air resistance.</p> <p>Drawing a net to create a structure from.</p> <p>Personalising a design.</p> <p>Measuring, marking, cutting and assembling with increasing accuracy.</p> <p>Making a model based on a chosen design.</p> <p>Evaluating the speed of a final product based on: the effect of shape on speed and the accuracy of workmanship on performance.</p> <p>Writing design criteria for a product, articulating decisions made.</p>	<p>Making and testing a paper template with accuracy and in keeping with the design criteria.</p> <p>Measuring, marking and cutting fabric using a paper template.</p> <p>Selecting a stitch style to join fabric.</p> <p>Sewing neatly using small regular stitches.</p> <p>Incorporating a fastening to a design.</p> <p>Testing and evaluating an end product against the original design criteria.</p>	<p>Designing a stable pavilion structure that is aesthetically pleasing and selecting materials to create a desired effect.</p> <p>Building frame structures designed to support weight.</p> <p>Creating a range of different shaped frame structures.</p> <p>Making a variety of free-standing frame structures of different shapes and sizes.</p> <p>Selecting appropriate materials to build a strong structure and for the cladding.</p>	<p>Evaluating and comparing a range of products.</p> <p>Following a baking recipe.</p> <p>Understanding safety and hygiene rules.</p> <p>Identifying a target audience.</p> <p>Designing a biscuit within a given budget.</p> <p>Suggesting modifications.</p> <p>Adapting a recipe.</p> <p>Conducting market research.</p> <p>Evaluating an adapted recipe.</p>	<p>Designing a torch, giving consideration to the target audience and creating both design and success criteria focusing on features of individual design ideas.</p> <p>Making a torch with a working electrical circuit and switch.</p> <p>Using appropriate equipment to cut and attach materials.</p> <p>Assembling a torch according to the design and success criteria.</p> <p>Evaluating electrical products.</p> <p>Testing and evaluating the success of a final product.</p>
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Design and technology Progression Map

	Designing a personalised book sleeve.		Reinforcing corners to strengthen a structure. Creating a design in accordance with a plan. Learning to create different textural effects with materials.		
Year 5	Cooking and nutrition: What could be healthier?	Electrical systems: Doodlers	Mechanical systems: Making a pop-up book	Digital world: monitoring devices	Structures: Bridges
Key Vocabulary	Abattoir, adaptation, balanced, beef, brand, cook, cross-contamination, cut, design, enhance, equipment, evaluate, farm, grate, hygiene, ingredients, label, measure, nutrient, nutrition, nutritional value, preference, press, process,	Circuit, component, Configuration, current, develop, DIY, investigate, motor, motorised, problem solve, product analysis, series, circuit, stable, target user	Design, input, motion Mechanism, criteria, research, reinforce, model	monitoring device, electronic, sensor, thermoscope, thermometer, research, design brief, design criteria, development, inventor, vivarium, programming loop, programming comment, alert, ambient, duplicate, copy, value, variable, model, sustainability,	beam bridge, arch bridge, truss bridge, strength, technique, corrugation, lamination, stiffness, rigid, factors, stability, visual appeal, aesthetics, joints, mark out, hardwood, softwood, wood file/rasp, sandpaper/glasspaper, bench hook/vice, tenon saw/coping saw, assemble, material properties, reinforce, wood sourcing,



Design and technology Progression Map

	recipe, safety, theme			plastic, microplastics, decompose, plastic pollution, man-made, synthetic, molecules, reformed, moulded, transparent, opaque, versatile, lightweight, strong, water-resistant, durable, 3D models, consumables, CAD, shape properties, Tinkercad, workplane, group, ungroup	evaluate, quality of finish, accuracy, beam bridge
Substantive Knowledge	<p>That beef comes from cows reared on farms.</p> <p>That recipes can be adapted to suit nutritional needs and dietary requirements.</p> <p>That nutritional information is found on food packaging.</p> <p>That coloured chopping boards can prevent cross-contamination.</p>	<p>To know that, in a series circuit, electricity only flows in one direction.</p> <p>To know when there is a break in a series circuit, all components turn off.</p> <p>To know that an electric motor converts electrical energy into rotational movement, causing</p>	<p>To know that mechanisms control movement.</p> <p>To understand that mechanisms can be used to change one kind of motion into another.</p> <p>To understand how to use sliders, pivots and folds to create paper-based mechanisms.</p>	<p>To know that a 'device' means equipment created for a certain purpose or job and that monitoring devices observe and record.</p> <p>To know that a sensor is a tool or device that is designed to monitor, detect and respond to changes for a purpose.</p> <p>To understand that conditional</p>	<p>To understand some different ways to reinforce structures.</p> <p>To understand how triangles can be used to reinforce bridges.</p> <p>To know that properties are words that describe the form and function of materials.</p> <p>To understand why material selection is important based on their properties.</p>



Design and technology Progression Map

	<p>That food packaging serves many purposes.</p>	<p>the motor's axle to spin.</p> <p>To know a motorised product is one which uses a motor to function.</p>	<p>To know that a design brief is a description of what I am going to design and make.</p> <p>To know that designers often want to hide mechanisms to make a product more aesthetically pleasing.</p>	<p>statements (and, or, if booleans) in programming are a set of rules which are followed if certain conditions are met.</p>	<p>To understand the material (functional and aesthetic) properties of wood.</p>
<p>Disciplinary Concepts</p>	<p>Explaining the farm-to-fork process.</p> <p>Researching existing recipes.</p> <p>Suggesting alternative ingredients.</p> <p>Analysing nutritional content.</p> <p>Writing an alternative recipe.</p> <p>Understanding cross-contamination.</p>	<p>Identifying factors that could be changed on existing products and explaining how these would alter the form and function of the product.</p> <p>Developing design criteria based on findings from investigating existing products.</p>	<p>Designing a pop-up book which uses a mixture of structures and mechanisms.</p> <p>Naming each mechanism, input and output accurately.</p> <p>Storyboarding ideas for a book.</p> <p>Following a design brief to make a pop-up book, neatly and with</p>	<p>Researching (books, internet) for a particular animal's needs.</p> <p>Developing design criteria based on research.</p> <p>Generating multiple housing ideas using building bricks.</p> <p>Understanding what a virtual model is and the pros and cons of traditional and CAD modelling.</p>	<p>Designing a stable structure that is able to support weight.</p> <p>Creating a frame structure with focus on triangulation.</p> <p>Making a range of different shaped beam bridges.</p> <p>Using triangles to create truss bridges that span a given distance and support a load.</p> <p>Building a wooden bridge structure.</p>



Design and technology Progression Map

	<p>Using preparation skills.</p> <p>Designing a jar label. Making a developed recipe.</p>	<p>Developing design criteria that clarifies the target user.</p> <p>Altering a product's form and function by tinkering with its configuration. Making a functional series circuit, incorporating a motor.</p> <p>Constructing a product with consideration for the design criteria.</p> <p>Breaking down the construction process into steps so that others can make the product.</p> <p>Carry out a product analysis to look at the purpose of a product along with its strengths and weaknesses.</p>	<p>focus on accuracy.</p> <p>Making mechanism and/or structures using sliders, pivots and folds to produce movement.</p> <p>Using layer and spaces to hide the workings of mechanical parts for an aesthetically pleasing as a result.</p> <p>Evaluating the work of others and receiving feedback on own work.</p> <p>Suggesting points for improvement.</p>	<p>Placing and manoeuvring 3D objects, using CAD.</p> <p>Changing the properties of, or combining one or more, 3D objects using CAD.</p> <p>Understanding the functional and aesthetic properties of plastics.</p> <p>Programming to monitor the ambient temperature and coding an (audible or visual) alert when the temperature moves out of a specified range.</p> <p>Stating an event or fact from the last 100 years of plastic history.</p> <p>Explaining how plastic is affecting</p>	<p>Independently measuring and marking wood accurately.</p> <p>Selecting appropriate tools and equipment for particular tasks.</p> <p>Using the correct techniques to saw safely.</p> <p>Identifying where a structure needs reinforcement and using card corners for support.</p> <p>Explaining why selecting appropriate materials is an important part of the design process.</p> <p>Understanding basic wood functional properties.</p> <p>Adapting and improving own bridge structure by identifying points of weakness and reinforcing them as necessary.</p> <p>Suggesting points for improvements for own</p>
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Design and technology Progression Map

		<p>Determining which parts of a product affect its function and which parts affect its form.</p> <p>Analysing whether changes in configuration positively or negatively affect an existing product.</p> <p>Peer evaluating a set of instructions to build a product.</p>		<p>planet Earth and suggesting ways to make more sustainable choices.</p> <p>Explaining key functions in my program (audible alert, visuals).</p> <p>Explaining how my product's programmed features would be useful for an animal carer.</p>	<p>bridges and those designed by others.</p>
Year 6	Structures: Playgrounds	Mechanical systems: Automata toys	Electrical systems: Steady hand game	Digital world: Navigating the world	Cooking and nutrition: Come dine with me
Key Vocabulary	Apparatus, design criteria, equipment, playground, landscape, features, cladding	Accurate, assembly-design, automata, axle, bench hook, clamp, component, diagram, dowel, drill bits, function, mark out, measure, mechanism, model, research, right-angle, set square,	Assemble, battery, battery pack, benefit, bulb, component, conductor, evaluation, fine motor skills, fit for purpose, function, gross motor skills, LED, insulator	Smartphone, navigation, cardinal compass, application (apps), pedometer, GPS tracker, duplicate, variable, sustainable design, environmentally friendly, biodegradable, recyclable, product	Balance, bridge method, complement, cross-contamination, enhance, equipment,



Design and technology Progression Map

				lifecycle, product lifespan	
Substantive Knowledge	<p>To know that structures can be strengthened by manipulating materials and shapes.</p> <p>To understand what a 'footprint plan' is.</p> <p>To understand that in the real world, design can impact users in positive and negative ways.</p> <p>To know that a prototype is a cheap model to test a design idea.</p>	<p>To understand that the mechanism is an automata uses a system of cams, axles and followers.</p> <p>To understand that different shaped cams produce different outputs.</p> <p>To know that an automata is a hand-powered mechanical toy.</p> <p>To know that a cross-sectional diagram shows the inner workings of a product.</p>	<p>To know that 'form' means the shape and appearance of an object.</p> <p>To know the difference between 'form' and 'function'.</p> <p>To understand that 'fit for purpose' means that a product works how it should and is easy to use.</p> <p>To know that 'form over purpose' means that a product looks good but does not work very well.</p>	<p>To know that accelerometers can detect movement.</p> <p>To understand that sensors can be useful products as they mean the product can function without human input.</p> <p>To know that designers write design briefs and develop design criteria to enable them to fulfil a client's request.</p> <p>To know that 'multifunctional' means an object or product has more than one function.</p>	<p>That 'flavour' is how a food or drink tastes.</p> <p>That many countries have 'national dishes' which are recipes associated with that country.</p> <p>That 'processed food' means food that has been put through multiple changes in a factory.</p> <p>That it is important to wash fruit and vegetables before eating to remove any dirt and insecticides.</p> <p>What happens to a certain food before it appears on the supermarket shelf (farm to fork).</p>



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			<p>To know the importance of 'form follows function' when designing: the product must be designed primarily with the function in mind.</p> <p>To understand the diagram perspectives 'top view', 'side view' and 'back'.</p>	<p>To know that magnetometers are devices that measure the Earth's magnetic field to determine which direction you are facing.</p>	
Disciplinary Concepts	<p>Designing a playground featuring a variety of different structures, giving consideration to how the structures will be used.</p> <p>Considering effective and ineffective designs.</p> <p>Building a range of apparatus structures drawing upon new and prior knowledge of structures.</p>	<p>Experimenting with a range of cams, creating a design for an automata toy based on a choice of cam to create a desired movement.</p> <p>Understanding how linkages change the direction of a force.</p> <p>Making things move at the same time.</p> <p>Understanding and drawing cross-</p>	<p>Designing a steady hand game, identifying and naming the components required.</p> <p>Drawing a design from three different perspectives.</p> <p>Generating ideas through sketching and discussion.</p>	<p>Writing a design brief from information submitted by a client.</p> <p>Developing design criteria to fulfil the client's request.</p> <p>Developing a product idea through annotated sketches.</p> <p>Placing and manoeuvring 3D objects, using CAD.</p>	<p>Writing a recipe, explaining the key steps, method and ingredients.</p> <p>Including facts and drawings from research undertaken.</p> <p>Following a recipe, including using the correct quantities of each ingredient.</p> <p>Adapting a recipe based on research.</p>



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	<p>Measuring, marking and cutting wood to create a range of structures.</p> <p>Using a range of materials to reinforce and add decoration to structures.</p> <p>Improving a design plan based on peer evaluation.</p> <p>Testing and adapting a design to improve it as it is developed.</p> <p>Identifying what makes a successful structure.</p>	<p>sectional diagrams to show the inner-workings of my design.</p> <p>Measuring, marking and checking the accuracy of the jelutong and dowel pieces required.</p> <p>Measuring, marking and cutting components accurately using a ruler and scissors.</p> <p>Assembling components accurately to make a stable frame.</p> <p>Understanding that for the frame to function effectively the components must be cut accurately and the joints of the frame secured at right angles.</p>	<p>Modelling ideas through prototypes.</p> <p>Understanding the purpose of products (toys), including what is meant by 'fit for purpose' and 'form over function'.</p> <p>Constructing a stable base for a game.</p> <p>Accurately cutting, folding and assembling a net.</p> <p>Decorating the base of the game to a high-quality finish.</p> <p>Making and testing a circuit.</p> <p>Incorporating a circuit into a base.</p>	<p>Changing the properties of, or combine one or more 3D objects, using CAD.</p> <p>Considering materials and their functional properties, especially those that are sustainable and recyclable (for example, cork and bamboo).</p> <p>Explaining material choices and why they were chosen as part of a product concept.</p> <p>Programming an N,E, S,W cardinal compass.</p> <p>Explaining how my program fits the design criteria and how it would be useful as part of a navigation tool.</p>	<p>Working to a given timescale.</p> <p>Working safely and hygienically with independence.</p> <p>Evaluating a recipe, considering: taste, smell, texture and origin of the food group.</p> <p>Taste testing and scoring final products.</p> <p>Suggesting and writing up points of improvements in productions.</p> <p>Evaluating health and safety in production to minimise cross contamination.</p>
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