Design & Technology Progression Map

	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Design	Making verbal plans and material choices. Developing a junk model. Designing a junk model boat. Using knowledge from exploration to inform design Designing a simple pattern with paper Designing a bookmark.	Designing smoothie carton packaging by-hand or on ICT software. Explaining how to adapt mechanisms, using bridges or guides to control the movement Designing a moving story book for a given audience. Using a template to create a design for a puppet.	Creating a class design criterion for a moving monster. Designing a moving monster for a specific audience in accordance with a design criteria. Generating and communicating ideas using sketching and modelling. Designing a healthy wrap based on a food combination which works well together.	Designing and making a template from an existing cushion and applying individual design criteria. Designing a castle with key features to appeal to a specific person/purpose. Drawing and labelling a castle design using 2D shapes, labelling: -the 3D shapes that will create the features - materials needed and colours.	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 a torch, considering the target audience and creating both design and success	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. Designing a stable structure that is able to support weight. Creating a frame structure with a focus on triangulation researching (books, internet) for a particular	Writing a recipe, explaining the key steps, method and ingredients. Including facts and drawings from research undertaken. Designing a steady hand game - identifying and naming the components required. Drawing a design from three different perspectives. Modelling ideas through prototypes. Designing a playground featuring a variety of

				Designing and/or decorating a castle tower on CAD software. Designing a toy which uses a pneumatic system. Learning that different types of drawings are used in design to explain ideas clearly.	criteria focusing on features of individual design ideas. Writing design criteria for a product, articulating decisions made.	(user's) animal's needs. Developing design criteria based on research. Generating multiple housing ideas using building bricks. Understanding what a virtual model is and the pros and cons of traditional and CAD modelling.	different structures, considering how the structures will be used, considering effective and ineffective designs.
Make	Improving fine motor/scissor skills with a variety of materials. Joining materials in a variety of ways (temporary and permanent).	Chopping fruit and vegetables safely to make a smoothie. Identifying if a food is a fruit or a vegetable. Learning where and how fruits	Making linkages using card for levers and split pins for pivots. Experimenting with linkages adjusting the widths, lengths and	Creating a pneumatic system to create a desired motion. Building secure housing for a pneumatic system.	Following a baking recipe, from start to finish, including the preparation of ingredients. Cooking safely, following basic hygiene rules.	Making a range of different shaped beam bridges. Using triangles to create truss bridges that span a given distance and support a load.	Following a recipe, including using the correct quantities of each ingredient. Adapting a recipe based on research. Working to a given timescale.

	Joining different materials together. Describing their junk model, and how they intend to put it together. Making a boat that floats and is waterproof, considering material choices. Developing fine motor/cutting skills with scissors. Exploring fine motor/threading and weaving (under, over technique) with a variety of materials.	and vegetables grow. Following a design to create moving models that use levers and sliders. Adapting mechanisms, when: • they do not work as they should. • to fit their vehicle design. • to improve how they work after testing their vehicle. Cutting fabric neatly with scissors. Using joining methods to decorate a puppet.	thicknesses of card used. Cutting and assembling components Neatly. 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. Slicing food safely using the bridge or claw grip. Constructing a wrap that	Using syringes and balloons to create different types of pneumatic systems to make a functional and appealing pneumatic toy. Selecting materials due to their functional and aesthetic characteristics. Manipulating materials to create different effects by cutting, creasing, folding and weaving. Following design criteria to create a cushion or	Adapting a recipe to improve it or change it to meet new criteria (e.g. from savoury to sweet). Making and testing a paper template with accuracy and in keeping with the design criteria. Measuring, marking and cutting fabric using a paper template. Selecting a stitch style to join fabric, working neatly by sewing small, straight stitches.	Building a wooden bridge structure. Independently measuring and marking wood accurately. Selecting appropriate tools and equipment for particular tasks. Using the correct techniques to saws safely. Identifying where a structure needs reinforcement and using card corners for support. Explaining why selecting appropriating	Working safely and hygienically with independence. Creating a pneumatic system to create a desired motion. Building secure housing for a pneumatic system. Using syringes and balloons to create different types of pneumatic systems to make a functional and appealing pneumatic toy. Selecting materials due to their functional

	Using a prepared needle and wool to practise threading.	Sequencing steps for construction.	meets a design brief.	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	Incorporating fastening to a design. 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.	materials is an important part of the design process. Understanding basic wood functional properties. Measuring, marking, cutting and assembling with increasing accuracy. Making a model based on a chosen design. Understanding the functional and aesthetic properties of plastics. Programming to monitor the ambient temperature	and aesthetic characteristics. Manipulating materials to create different effects by cutting, creasing, folding and weaving. Constructing a stable base for a game. Accurately cutting, folding and assembling a net. Decorating the base of the game to a high-quality finish. Making and testing a circuit. Incorporating a circuit into a base.

				edges (Cushions) ***or*** embellishing the collars based on design ideas (Egyptian collars). Constructing a range of 3D geometric shapes using nets. Creating special features for individual designs. Making facades from a range of recycled materials.		and coding an (audible or visual) alert when the temperature rises above or falls below a specified range.	
Evaluate	Giving a verbal evaluation of their own and others' junk models with adult support.	Suggesting information to be included on packaging. Testing a finished product, seeing	Selecting materials according to their characteristics. Following a design brief.	Using the views of others to improve designs. Testing and modifying the outcome,	Describing the impact of the budget on the selection of ingredients. Evaluating and comparing a	Adapting and improving own bridge structure by identifying points of weakness and reinforcing	Evaluating a recipe, considering: taste, smell, texture and origin of the food group.

	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. Making predictions about, and evaluating different materials to see if they are waterproof. Making predictions about, and evaluating existing boats	whether it moves as planned and if not, explaining why and how it can be fixed. Reviewing the success of a product by testing it with its intended audience. Testing wheel and axle mechanisms, identifying what stops the wheels from turning, and recognising that a wheel needs an axle in order to move. Reflecting on a finished product, explaining likes and	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. Testing the strength of own structure. Identifying the weakest part of a structure.	suggesting improvements. Understanding the purpose of exploded-diagrams through the eyes of a designer and their client. Evaluating an end product and thinking of other ways in which to create similar items. Evaluating own work and the work of others based on the aesthetic of the finished product and in comparison, to the original design.	range of food products. Testing and evaluating an end product against the original design criteria. Deciding how many of the criteria should be met for the product to be considered successful. Suggesting modifications for improvement. Articulating the advantages and disadvantages of different fastening types.	them as necessary. Suggesting points for improvements for own bridges and those designed by others. Evaluating the speed of a final product based on: the effect of shape on speed and the accuracy of workmanship on performance. Stating an event or fact from the last 100 years of plastic history. Explaining how plastic is affecting planet Earth and	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. Evaluating health and safety in production to minimise cross contamination. Using the views of others to improve designs. Testing and modifying the outcome,

	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. Reflecting on a finished product and comparing to their design.	dislikes.	Evaluating the strength, stiffness and stability of own structure. Taste testing food combinations and final products. Describing the information that should be included on a label. Evaluating which grip was most effective.	Suggesting points for modification of the individual designs.	Evaluating electrical products. Testing and evaluating the success of a final product.	suggesting ways to make more sustainable choices. Explaining key functions in my program (audible alert, visuals). Explaining how my product would be useful for an animal carer including programmed features.	suggesting improvements. Understanding the purpose of exploded-diagrams through the eyes of a designer and their client. 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.
Technical knowledge	To know there are a range to different materials that can be used to make a model and that they are all slightly different. Making simple suggestions to fix their junk model. To know that 'waterproof' materials are those which do not absorb water. Reflecting on a finished product and comparing to their design.	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:	To know that different materials have different properties and are therefore suitable for different uses. 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	To understand how pneumatic systems work. To understand that pneumatic systems can be used as part of a mechanism. To know that pneumatic systems operate by drawing in, releasing and compressing air. To know that applique is a way of mending or decorating a textile by applying smaller pieces of fabric to larger pieces.	To know that the amount of an ingredient in a recipe is known as the 'quantity.' To know that safety and hygiene are important when cooking. To know the following cooking techniques: sieving, measuring, stirring, cutting out and shaping. To understand the importance of budgeting while planning ingredients for biscuits.	To understand some different ways to reinforce structures. To understand how triangles can be used to reinforce bridges. To know that properties are words that describe the form and function of materials. To understand why material selection is important based on properties. To understand the material	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

		potatoes, leaves: lettuce, fruit: cucumber). To know that a mechanism is the parts of an object that move together. To know that a slider mechanism moves an object from side to side. To know that a slider mechanism has a slider, slots , guides and an object. To know that bridges and guides are bits of card that purposefully restrict the	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. To know that materials can be manipulated to improve strength and stiffness. To know that a structure is	To know that when two edges of fabric have been joined together it is called a seam. To know that it is important to leave space on the fabric for the seam. To understand that some products are turned inside out after sewing so the stitching is hidden. To understand that wide and flat based objects are more stable. To understand the importance of strength and	To know that products often have a target audience. To know that a fastening is something which holds two pieces of material together for example a zipper, toggle, button, press stud and velcro. To know that different fastening types are useful for different purposes. To know that creating a mock up (prototype) of their design is	(functional and aesthetic) properties of wood. To understand that the mechanism in an automata uses a system of cams, axles and followers. To understand that different shaped cams produce different outputs. To know that a 'device' means equipment created for a certain purpose or job and that monitoring devices observe and record.	remove any dirt and insecticides. To understand what happens to a certain food before it appears on the supermarket shelf (Farm to Fork). 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

		movement of the slider. To know that wheels need to be round to rotate and move. To understand that for a wheel to move it must be attached to a rotating axle. 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. To know that 'joining	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. To know that 'diet' means the food and drink that a	stiffness in structures.	useful for checking ideas and proportions. 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.	To know that a sensor is a tool or device that is designed to monitor, detect and respond to changes for a purpose. To understand that conditional statements (and, or, if booleans) in programming are a set of rules which are followed if certain conditions are met.	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. To know that batteries contain acid, which can be dangerous if they leak. To know the names of the components in a basic series

		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.	person or animal usually eats. To understand what makes a balanced diet. To know that the five main food groups are: Carbohydrates, fruits and vegetables, protein, dairy and foods high in fat and sugar. To understand that I should eat a range of different foods from each food group, and roughly how much of each food group.				circuit, including a buzzer.

		To know that drawing a design idea is useful to see how an idea will look.	To know that 'ingredients' means the items in a mixture or recipe.				