

Design and Technology Progression Map

	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Structures	✓ Junk Modelling and Boats	✓ Constructing a Windmill	✓ Baby Bear’s Chair	✓ Constructing a Castle	✓ Pavilions		✓ Playgrounds
Mechanisms and Mechanical System			✓ Making a moving monster ✓ Fairground Wheel		✓ Making a slingshot car	✓ Making a pop up book	
Electrical Systems					✓ Torches	✓ Doodlers	
Cooking and Nutrition		✓ Fruit and Vegetables		✓ Eating Seasonally		✓ What could be healthier?	
Textiles	✓ Bookmarks	✓ Puppets					✓ Waistcoats
Digital World				✓ Electric Charm			✓ Navigating the World

Digital World			
		Year 3 (Electronic World)	Year 6 (Navigating the World)
Digital World	Skills	Design - Problem solving by suggesting potential features on a Micro: bit and justifying my ideas - Developing design ideas for a technology pouch - Drawing and manipulating 2D shapes, using computer-aided design, to produce a point of sale badge. Make - Using a template when cutting and assembling the pouch - Following a list of design requirements - Selecting and using the appropriate tools and equipment for cutting, joining, shaping and decorating a foam pouch - Applying functional features such as using foam to create soft buttons. Evaluate - Analysing and evaluating an existing product - Identifying the key features of a pouch	Design - Writing a design brief from information submitted by a client - Developing design criteria to fulfil the client’s request - Considering and suggesting additional functions for my navigation tool - Developing a product idea through annotated sketches - Placing and manoeuvring 3D objects, using CAD - Changing the properties of, or combine one or more 3D objects, using CAD Make - Considering materials and their functional properties, especially those that are sustainable and recyclable (for example, cork and bamboo) - Explaining material choices and why they were chosen as part of a product concept - Programming an N,E, S,W cardinal compass Evaluate - 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 explain 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
	Knowledge	Technical - To understand that in programming a ‘loop’ is code that repeats something again and again until stopped - To know that a Micro:bit is a pocket-sized, codeable computer - Writing a program to control (button press) and/or monitor (sense light) that will initiate a flashing LED algorithm. Additional - To know what the ‘Digital Revolution’ is and features of some of the products that have evolved as a result - To know that in Design and technology the term ‘smart’ means a programmed product - To know the difference between analogue and digital technologies - To understand what is meant by ‘point of sale display’ - To know that CAD stands for Computer-aided design	Technical - To know that accelerometers can detect movement - To understand that sensors can be useful in products as they mean the product can function without human input Additional - To know that designers write design briefs and develop design criteria to enable them to fulfil a client’s request - To know that ‘multifunctional’ means an object or product has more than one function - To know that magnetometers are devices that measure the Earth’s magnetic field to determine which direction you are facing

Structures		
	Year 4: Torches	Year 5: Doodlers
Skills	Design - Designing a torch, giving consideration to the target audience and creating both design and success criteria focusing on features of individual design ideas. Make - 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. Evaluate - Evaluating electrical products. - Testing and evaluating the success of a final product.	Design - Identifying factors that could be changed on existing products and explaining how these would alter the form and function of the product. - Developing design criteria based on findings from investigating existing products. - Developing design criteria that clarifies the target user. Make - Altering a product's form and function by tinkering with its configuration. - Making a functional series circuit, incorporating a motor. - Constructing a product with consideration for the design criteria. - Breaking down the construction process into steps so that others can make the product. Evaluate - Carry out a product analysis to look at the purpose of a product along with its strengths and weaknesses. - Determining which parts of a product affect its function and which parts affect its form. - Analysing whether changes in configuration positively or negatively affect an existing product. - Peer evaluating a set of instructions to build a product.
Knowledge	Technical - To understand that electrical conductors are materials which electricity can pass through. - To understand that electrical insulators are materials which electricity cannot pass through. - To know that a battery contains stored electricity that can be used to power products. - To know that an electrical circuit must be complete for electricity to flow. - To know that a switch can be used to complete and break an electrical circuit. Additional - To know the features of a torch: case, contacts, batteries, switch, reflector, lamp, lens. - To know facts from the history and invention of the electric light bulb(s) - by Sir Joseph Swan and Thomas Edison.	Technical - To know that series circuits only have one direction for the electricity to flow. - To know when there is a break in a series circuit, all components turn off. - To know that an electric motor converts electrical energy into rotational movement, causing the motor's axle to spin. - To know a motorised product is one which uses a motor to function. Additional - To know that product analysis is critiquing the strengths and weaknesses of a product. - To know that 'configuration' means how the parts of a product are arranged.

Textiles			
	EYFS: Reception Bookmarks	Year 1: Puppets	Year 6: Waistcoats
Skills	Design - Discussing what a good design needs. - Designing a simple pattern with paper. - Designing a bookmark. - Choosing from available materials Make - Developing fine motor/cutting skills with scissors. - Exploring fine motor/threading and weaving (under, over technique) with a variety of materials. - Using a prepared needle and wool to practise threading. Evaluate - Reflecting on a finished product and comparing to their design.	Design - Using a template to create a design for a puppet. Make - Cutting fabric neatly with scissors. - Using joining methods to decorate a puppet. - Sequencing the steps taken during construction. Evaluate - Reflecting on a finished product, explaining likes and dislikes.	Design - Designing a waistcoat in accordance to a specification linked to set of design criteria. - Annotating designs, to explain their decisions. Make - Using a template when cutting fabric to ensure they achieve the correct shape. - Using pins effectively to secure a template to fabric without creases or bulges. - Marking and cutting fabric accurately, in accordance with their design. - Sewing a strong running stitch, making small, neat stitches and following the edge. - Tying strong knots. - Decorating a waistcoat, attaching features (such as appliqué) using thread. - Finishing the waistcoat with a secure fastening (such as buttons). - Learning different decorative stitches. - Sewing accurately with evenly spaced, neat stitches. Evaluate - Reflecting on their work continually throughout the design, make and evaluate process.
Knowledge	- To know that a design is a way of planning our idea before we start. - To know that threading is putting one material through an object.	- To know that ‘joining technique’ means connecting two pieces of material together. - To know that there are various temporary methods of joining fabric by using staples. glue or pins. - To understand that different techniques for joining materials can be used for different purposes. - To understand that a template (or fabric pattern) is used to cut out the same shape multiple times. - To know that drawing a design idea is useful to see how an idea will look.	- To understand that it is important to design clothing with the client/ target customer in mind. - To know that using a template (or clothing pattern) helps to accurately mark out a design on fabric. - To understand the importance of consistently sized stitches.

Cooking and Nutrition			
	Year 1: Fruit and Vegetables	Year 3: Eating Seasonally	Year 5: What could be healthier?
Skills	Design ✓ Designing smoothie carton packaging by-hand or on ICT software. Make ✓ Chopping fruit and vegetables safely to make a smoothie. ✓ Identifying if a food is a fruit or a vegetable. ✓ Learning where and how fruits and vegetables grow. Evaluate • Tasting and evaluating different food combinations. • Describing appearance, smell and taste. • Suggesting information to be included on packaging.	Design • Creating a healthy and nutritious recipe for a savoury tart using seasonal ingredients, considering the taste, texture, smell and appearance of the dish. Make • Knowing how to prepare themselves and a work space to cook safely in, learning the basic rules to avoid food contamination. • Following the instructions within a recipe. Evaluate • Establishing and using design criteria to help test and review dishes. • Describing the benefits of seasonal fruits and vegetables and the impact on the environment. • Suggesting points for improvement when making a seasonal tart.	Design • Adapting a traditional recipe, understanding that the nutritional value of a recipe alters if you remove, substitute or add additional ingredients. • Writing an amended method for a recipe to incorporate the relevant changes to ingredients. • Designing appealing packaging to reflect a recipe. Make • Cutting and preparing vegetables safely. • Using equipment safely, including knives, hot pans and hobs. • Knowing how to avoid cross-contamination. • Following a step by step method carefully to make a recipe. Evaluate • Identifying the nutritional differences between different products and recipes. • Identifying and describing healthy benefits of food groups.
Knowledge	• Understanding the difference between fruits and vegetables. • To understand that some foods typically known as vegetables are actually fruits (e.g. cucumber). • To know that a blender is a machine which mixes ingredients together into a smooth liquid. • To know that a fruit has seeds and a vegetable does not. • To know that fruits grow on trees or vines. • To know that vegetables can grow either above or below ground. • To know that vegetables can come from different parts of the plant (e.g. roots: potatoes, leaves: lettuce, fruit: cucumber).	• To know that not all fruits and vegetables can be grown in the UK. • To know that climate affects food growth. • To know that vegetables and fruit grow in certain seasons. • To know that cooking instructions are known as a 'recipe'. • To know that imported food is food which has been brought into the country. • To know that exported food is food which has been sent to another country.. • To understand that imported foods travel from far away and this can negatively impact the environment. • To know that each fruit and vegetable gives us nutritional benefits because they contain vitamins, minerals and fibre. • To understand that vitamins, minerals and fibre are important for energy, growth and maintaining health. • To know safety rules for using, storing and cleaning a knife safely. • To know that similar coloured fruits and vegetables often have similar nutritional benefits.	• To understand where meat comes from - learning that beef is from cattle and how beef is reared and processed, including key welfare issues. • To know that I can adapt a recipe to make it healthier by substituting ingredients. • To know that I can use a nutritional calculator to see how healthy a food option is. • To understand that 'cross-contamination' means bacteria and germs have been passed onto ready-to-eat foods and it happens when these foods mix with raw meat or unclean objects.

Electrical Systems (KS2 only)		
	Year 4: Torches	Year 5: Doodlers
Skills	Design - Designing a torch, giving consideration to the target audience and creating both design and success criteria focusing on features of individual design ideas. Make - 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. Evaluate - Evaluating electrical products. - Testing and evaluating the success of a final product.	Design - Identifying factors that could be changed on existing products and explaining how these would alter the form and function of the product. - Developing design criteria based on findings from investigating existing products. - Developing design criteria that clarifies the target user. Make - Altering a product’s form and function by tinkering with its configuration. - Making a functional series circuit, incorporating a motor. - Constructing a product with consideration for the design criteria. - Breaking down the construction process into steps so that others can make the product. Evaluate - Carry out a product analysis to look at the purpose of a product along with its strengths and weaknesses. - Determining which parts of a product affect its function and which parts affect its form. - Analysing whether changes in configuration positively or negatively affect an existing product. - Peer evaluating a set of instructions to build a product.
Knowledge	Technical - To understand that electrical conductors are materials which electricity can pass through. - To understand that electrical insulators are materials which electricity cannot pass through. - To know that a battery contains stored electricity that can be used to power products. - To know that an electrical circuit must be complete for electricity to flow. - To know that a switch can be used to complete and break an electrical circuit. Additional - To know the features of a torch: case, contacts, batteries, switch, reflector, lamp, lens. - To know facts from the history and invention of the electric light bulb(s) - by Sir Joseph Swan and Thomas Edison.	Technical - To know that series circuits only have one direction for the electricity to flow. - To know when there is a break in a series circuit, all components turn off. - To know that an electric motor converts electrical energy into rotational movement, causing the motor’s axle to spin. - To know a motorised product is one which uses a motor to function. Additional - To know that product analysis is critiquing the strengths and weaknesses of a product. - To know that ‘configuration’ means how the parts of a product are arranged.

Mechanisms and Mechanical Systems				
	Year 2: Fairground Wheel	Year 2: Making a Moving Monster	Year 4: Making a Slingshot Car	Year 5: Making a Pop Up Book
Skills	Design - Selecting a suitable linkage system to produce the desired motion. - Designing a wheel. Make - Selecting materials according to their characteristics. - Following a design brief. Evaluate - Evaluating different designs. - Testing and adapting a design.	Design - Creating a class design criteria for a moving monster. - Designing a moving monster for a specific audience in accordance with a design criteria. Make - 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. Evaluate - Evaluating own designs against design criteria. - Using peer feedback to modify a final design.	Design - Designing a shape that reduces air resistance. - Drawing a net to create a structure from. - Choosing shapes that increase or decrease speed as a result of air resistance. - Personalising a design. Make - Measuring, marking, cutting and assembling with increasing accuracy. - Making a model based on a chosen design. Evaluate - Evaluating the speed of a final product based on: the effect of shape on speed and the accuracy of workmanship on performance.	Design - Designing a pop-up book which uses a mixture of structures and mechanisms. - Naming each mechanism, input and output accurately. - Storyboarding ideas for a book. Make - Following a design brief to make a pop up book, neatly and with focus on accuracy. - Making mechanisms and/or structures using sliders, pivots and folds to produce movement. - Using layers and spacers to hide the workings of mechanical parts for an aesthetically pleasing result. Evaluate - Evaluating the work of others and receiving feedback on own work. - Suggesting points for improvement.
Knowledge	Technical - To know that different materials have different properties and are therefore suitable for different uses. Additional - To know the features of a ferris wheel include the wheel, frame, pods, a base an axle and an axle holder. - To know that it is important to test my design as I go along so that I can solve any problems that may occur.	Technical - To know that mechanisms are a collection of moving parts that work together as a machine to produce movement. - To know that there is always an input and output in a mechanism. - To know that an input is the energy that is used to start something working. - To know that an output is the movement that happens as a result of the input. - To know that a lever is something that turns on a pivot. - To know that a linkage mechanism is made up of a series of levers. Additional - To know some real-life objects that contain mechanisms.	Technical - To understand that all moving things have kinetic energy. - To understand that kinetic energy is the energy that something (object/person) has by being in motion. - To know that air resistance is the level of drag on an object as it is forced through the air. - To understand that the shape of a moving object will affect how it moves due to air resistance. Additional - To understand that products change and evolve over time. - To know that aesthetics means how an object or product looks in design and technology. - To know that a template is a stencil you can use to help you draw the same shape accurately. - To know that a birds-eye view means a view from a high angle (as if a bird in flight). - To know that graphics are images which are designed to explain or advertise something. - To know that it is important to assess and evaluate design ideas and models against a list of design criteria.	Technical - To know that mechanisms control movement. - To understand that mechanisms can be used to change one kind of motion into another. - To understand how to use sliders, pivots and folds to create paper-based mechanisms. Additional - To know that a design brief is a description of what I am going to design and make. - To know that designers often want to hide mechanisms to make a product more aesthetically pleasing.