Design and Technology Progression of skills – **Digital World (KS2 only)**

		Year 1		Year 2		Year 3	Year 4	Year 5	Year 6
						Electronic charm	Mindful moments timer	Monitoring devices	Navigating the 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	• Writing design criteria for a programmed timer (Micro:bit) • Exploring different mindfulness strategies • Applying the results of my research to further inform my design criteria • Developing a prototype case for my mindful moment timer • Using and manipulating shapes	• Researching (books, internet) for a particular (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 • Placing and manoeuvring 3D objects, using CAD	• 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

							and clipart, using computer-aided design (CAD), to produce a logo • Following a list of design requirements	• Changing the properties of, or combine one or more 3D objects, using CAD	annotated sketches • Placing and manoeuvring 3D objects, using CAD • Changing the properties of, or combine one or more 3D objects, using CAD
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	• Developing a prototype case for my mindful moment timer • Creating a 3D structure using a net • Programming a micro:bit in the Microsoft micro:bit editor, to time a set number of seconds/minutes upon button press	• Understanding the functional and aesthetic properties of plastics • Programming to monitor the ambient temperature and coding an (audible or visual) alert when the temperature rises above or falls below a specified range	• 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						• Analysing and evaluating an existing product • Identifying the key features of a pouch	• Investigating and analysing a range of timers by identifying and comparing their advantages and disadvantages • Evaluating my micro:bit program against points on my design criteria and amending them to include any changes I made • Documenting and evaluating my project • Understanding what a logo is and why they are important in the world of design and business • Testing my program for bugs (errors in the code) • Finding and fixing the bugs (debug) in my code	• Stating an event or fact from the last 100 years of plastic history • Explaining how plastic is affecting planet Earth and 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	• 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

Design and Technology Progression of Knowledge - **Digital World (KS2 only)**

		Year 1		Year 2		Year 3	Year 4	Year 5	Year 6
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	• To understand what variables are in programming • To know some of the features of a Micro:bit • To know that an algorithm is a set of instructions to be followed by the computer • To know that it is important to check my code for errors (bugs) • To know that a simulator can be used as a way of checking your code works before	• To know that a 'device' means equipment created for a certain purpose or job and that monitoring devices observe and record • 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	• 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

							installing it onto an electronic device		
	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	•Understand the terms 'ergonomic' and 'aesthetic' •Know that a prototype is a 3D model made out of cheap materials, that allows us •To test design ideas and make better decisions about size, shape and materials	• To understand key developments in thermometer history • To know events or facts that took place over the last 100 years in the history of plastic, and how this is changing our outlook on the future • To know the 6Rs of sustainability • To understand what a virtual model is and the pros and cons of traditional vs CAD modelling	• 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