DT Curriculum Map – progression of skills

Class 4 Year B

	Autumn	Spring	Summer	Additional unit
	Digital world: Mindful moments	Digital world: Monitoring	Electrical systems: Doodlers	Textiles: Stuffed toys
	timer	devices		
Skills design	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 and clipart by using computer-aided design (CAD), to produce a logo. Following a list of design requirements.	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. Changing the properties of, or combining one or more 3D objects, using CAD	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.	Designing a stuffed toy, considering the main component shapes required and creating an appropriate template. Considering the proportions of individual components.
Skills make	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.	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.	Creating a 3D stuffed toy from a 2D design. Measuring, marking and cutting fabric accurately and independently . Creating strong and secure blanket stitches when joining fabric. Threading needles independently. Using appliqué to attach pieces of fabric decoration. Sewing blanket stitch to join fabric. Applying blanket stitch so the spaces between the stitches are even and regular.
Skills evaluate	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.	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.	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.	Testing and evaluating an end product and giving point for further improvements.

	Testing my program for bugs (errors in the code). Finding and fixing the bugs (debug) in my code			
Knowledge	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 installing it onto an electronic device. Additional To understand the terms 'ergonomic' and 'aesthetic'. To 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 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. Additional 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 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.	To know that blanket stitch is useful to reinforce the edges of a fabric material or join two pieces of fabric. To understand that it is easier to finish simpler designs to a high standard. To know that soft toys are often made by creating appendages separately and then attaching them to the main body. To know that small, neat stitches which are pulled taut are important to ensure that the soft toy is strong and holds the stuffing securely.
Vocabulary	Research, advantage, disadvantage, criteria, design, ergonomic, timer, program, loop, coding, block, variable, pause, bug, debug, instructions, net, template, develop, join, assemble, test, form, function, prototype, process, cheap	design brief, design criteria, development, inventor, vivarium, programming loop, programming comment, alert, ambient, Boolean, duplicate, copy, value, variable, model, sustainability, plastic, microplastics, decompose, plastic pollution, man- made, synthetic	circuit component, configuration, current, develop, DIY, investigate, motor, motorised, problem solve, product analysis, series circuit, stable, target user	Accurate, annotate, appendage, blanket-stitch, design criteria, detail, evaluation, fabric, sew, shape, stuffed toy, stuffing, template