



## Design and technology Composites and components Digital World

Unit:	Composite: (unit objective/objectives)	Components
Digital word - electronic charm  LKS2  Cycle A	Write a program as part of the eCharm. Create and decorate a foam pouch for the eCharm.	<ul style="list-style-type: none"><li>• Know how to problem solve by suggesting potential features on a Micro:bit and justifying my ideas.</li><li>• Know how to develop design ideas for a technology pouch.</li><li>• Know how to draw and manipulate 2D shapes, using computer-aided design, to produce a point of sale badge.</li><li>• Know how to use a template when cutting and assembling the pouch.</li><li>• Know how to follow a list of design requirements.</li><li>• Know how to select and use the appropriate tools and equipment for cutting, joining, shaping and decorating a foam pouch.</li><li>• Know how to apply functional features such as using foam to create soft buttons.</li><li>• Know how to analyse and evaluate an existing product.</li><li>• Know how to identify the key features of a pouch.</li><li>• Know that in programming, a loop is code that repeats something again and again until stopped.</li><li>• Know that a Micro:bit is a pocket-sized codeable computer.</li><li>• Know how to write a program to control and/or monitor that will initiate a flashing LED algorithm.</li></ul>



## Design and technology Composites and components Digital World

Unit:	Composite: (unit objective/objectives)	Components
Digital World - Mindful moments timer  LKS2  Cycle B	<ul style="list-style-type: none"> <li>• Write a program that displays a timer on the Micro:bit based on their chosen seconds/minutes.</li> <li>• Design, develop and make a prototype case for the timer.</li> <li>• Design a logo which fits the design brief.</li> </ul>	<ul style="list-style-type: none"> <li>• Know how to write design criteria for a programmed timer (Micro:bit).</li> <li>• Know how to explore different mindfulness strategies and use this research to inform design criteria.</li> <li>• Know how to develop a prototype case for my mindful moment timer.</li> <li>• Know how to use and manipulate shapes and clipart and using computer-aided design (CAD) to produce a logo.</li> <li>• Know how to follow a list of design requirements.</li> <li>• Know how to develop a prototype case for my mindful moment timer.</li> <li>• Know how to create a 3D structure using a net.</li> <li>• Know how to program a Micro:bit to time a set number of seconds/minutes upon button press.</li> <li>• Know how to analyse a range of timers by comparing their advantages and disadvantages.</li> <li>• Know how to evaluate my Micro:bit program against points on my design criteria and amend them to include any changes I made.</li> <li>• Know how to document and evaluate my project.</li> <li>• Know what logos are and why they are important in the world of design and business.</li> <li>• Know how to test my program for bugs (errors in the code).</li> <li>• Know how to find and fix the bugs (debug) in my code.</li> <li>• Know what variables are in programming.</li> <li>• Know some features of a Micro:bit.</li> <li>• Know that an algorithm is a set of instructions to be followed by the computer.</li> <li>• Know that it is important to check my code for errors (bugs)</li> <li>• Know that a simulator can be used as a way of checking that your code works before installing it onto an electronic device.</li> </ul>



Design and technology Composites and components Digital World

Unit:	Composite: (unit objective/objectives)	Components
Digital World: Monitoring devices  UKS2  Cycle A	<ul style="list-style-type: none"> <li>Build a variety of brick models to invent Micro:bit case, housing and stand ideas, evaluating the success of their favourite model.</li> </ul>	<ul style="list-style-type: none"> <li>Know how to research (books, internet) for a particular animal's needs.</li> <li>Know how to develop design criteria based on research.</li> <li>Know how to generate multiple housing ideas using building bricks.</li> <li>Know what a virtual model is and the pros and cons of traditional and CAD modelling.</li> <li>Know how to place and manoeuvre 3D objects, using CAD.</li> <li>Know how to change the properties of, or combine one or more, 3D objects using CAD.</li> <li>Know the functional and aesthetic properties of plastics.</li> <li>Know how to programme to monitor the ambient temperature and code an (audible or visual) alert when the temperature moves out of a specified range.</li> <li>Know how to state an event or fact from the last 100 years of plastic history.</li> <li>Know how plastic is affecting planet Earth and suggest ways to make more sustainable choices.</li> <li>Be able to explain key functions in my program (audible alert, visuals).</li> <li>Be able to explain how my product's programmed features would be useful for an animal carer.</li> <li>Know that a device means equipment created for a certain purpose or job and that monitoring devices observe and record.</li> <li>Know that a sensor is a tool or device that is designed to monitor, detect and respond to changes for a purpose.</li> <li>Know that conditional statements in programming are a set of rules which are followed if certain conditions are met.</li> </ul>



## Design and technology Composites and components Digital World

Unit:	Composite: (unit objective/objectives)	Components
Digital World - Navigating the World  UKS2  Cycle B	<ul style="list-style-type: none"><li>• Write a program that displays an arrow to indicate cardinal compass directions with an 'On start' loading screen.</li><li>• Identify errors (bugs) in the code and suggest ways to fix (debug) them.</li><li>• Identify key industries that use 3D CAD modelling and why.</li><li>• Recall and describe the name and use of key tools used in Tinkercad (CAD) software.</li><li>• Combine more than one object to develop a finished 3D CAD model in Tinkercad.</li></ul>	<ul style="list-style-type: none"><li>• Know how to write a design brief from information submitted by a client.</li><li>• Know how to develop design criteria to fulfil the client's request.</li><li>• Know how to develop a product idea through annotated sketches.</li><li>• Know how to place and manoeuvre 3D objects, using CAD.</li><li>• Know how to change the properties of, or combine one or more 3D objects, using CAD.</li><li>• Know how to consider materials and their functional properties, especially those that are sustainable and recyclable (for example, cork and bamboo).</li><li>• Know how to explain material choices and why they were chosen as part of a product concept.</li><li>• Know how to program an N, E, S,W cardinal compass.</li><li>• Be able to explain how my program fits the design criteria and how it would be useful as part of a navigation tool.</li><li>• Know how to develop an awareness of sustainable design.</li><li>• Know how to explain the key functions and features of my navigation tool to the client as part of a product concept pitch.</li><li>• Know how to demonstrate a functional program as part of a product concept.</li><li>• Know that accelerometers can detect movement.</li><li>• Know that sensors can be useful in products as they mean the product can function without human input.</li><li>• Know that designers write design briefs and develop design criteria to enable them to fulfil a client's request.</li><li>• Know the multifunctional means an object or product has more than one function.</li><li>• Know that magnetometers are devices that measure the Earth's magnetic field to determine which direction you are facing.</li></ul>