**Progression of skills in Design and Technology**

| **Structures** | | | | | | | |
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| | **EYFS** | **Year 1** | **Year 2** | **Year 3** | **Year 4** | **Year 5** | **Year 6** |
| **Design** | | | • Ideas using sketching and modelling.<br>• Different types of structures in natural everyday world | • Designing, drawing and labelling a castle with key features<br>• Designing and/or decorating a castle tower on CAD. | | • Designing a stable structure.<br>• Creating a frame structure (triangulation). | |
| **Make** | | | • Making a structure according to design criteria.<br>• Creating joints and structures. | • Constructing a range of 3D geometric shapes.<br>• Creating special features for individual designs. | | • Making a range of different shaped beam bridges.<br>• Using triangles to create truss bridges. | |

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| | | | | • Making facades from a range of recycled materials. | | • Building a wooden bridge structure.<br>•Independently measuring and marking wood accurately.<br>• Selecting appropriate tools and equipment.<br>• Using correct techniques to saws safely.<br>• Identifying where a structure needs more support.<br>•Understanding basic wood functional properties. | |
| **Evaluate** | | | • Exploring, comparing, testing and evaluating the effectiveness of structures and shapes. | • Evaluating own work and the work of others based on the aesthetic of | | • Adapting and improving own bridge structure.<br>• Suggesting points for improvements | |

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| | | | | the finished product.<br>• Suggesting points for modification. | | for own and other bridges. | |
| **Technical Knowledge** | | | • To know different stabilities, strength and stiffness of structures and materials. | • To understand that wide and flat based objects are more stable.<br>• To understand the importance of strength and stiffness in structures. | | • To understand ways to reinforce structures.<br>• To understand how triangles can be used to reinforce bridges.<br>• To know what properties are.<br>• To understand material selection.<br>• To understand the material properties of wood. | |

| Mechanisms | | | | | | | |
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| | **EYFS** | **Year 1** | **Year 2** | **Year 3** | **Year 4** | **Year 5** | **Year 6** |
| **Design** | | • Designing a vehicle that includes wheels and axels.<br>• Creating clearly labelled drawings for movement | | • Designing a toy which uses a pneumatic system.<br>• Developing design criteria from a design brief.<br>• Generating ideas using thumbnail sketches and exploded diagrams.<br>• Learning that different types of drawings are used in design to explain ideas clearly | | • Designing a pop-up book which uses a mixture of structures and mechanisms.<br>• Naming each mechanism, input and output accurately.<br>•Storyboarding ideas for a book. | |
| **Make** | | • Adapting mechanisms, when: they don't work as they should, to fit vehicle design, to | | • Creating a pneumatic system to create a desired motion.<br>• Building secure housing | | • Following a design brief to make a popup book.<br>• Making mechanisms and/or structures | |

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| | | improve how they work. | | for a pneumatic system.<br>• Using syringes and balloons to create different types of pneumatic toys.<br>• Selecting materials due to their functional and aesthetic characteristics.<br>• Manipulating materials to create different effects by cutting, creasing, folding and weaving. | | using sliders, pivots and folds to produce movement.<br>• Using layers and spacers. | |
| **Evaluate** | | • Testing wheel and axle mechanisms. | | • Using the views of others to improve designs.<br>• Testing and modifying the outcome, | | • Evaluating the work of others and receiving feedback on own work. | |

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| | | | | suggesting improvements.<br>•Understanding the purpose of exploded diagrams | | • Suggesting points for improvement. | |
| **Technical Knowledge** | | • To know that wheels need to be round to rotate and move.<br>• To understand that for a wheel to move it must be attached to a rotating axle.<br>• To know that an axle moves within an axle holder which is fixed to the vehicle or toy.<br>• To know that the frame of a vehicle (chassis) needs to be balanced. | | • To understand how pneumatic systems work.<br>• To understand that pneumatic systems can be used as part of a mechanism.<br>• To know that pneumatic systems operate by drawing in, releasing and compressing air. | | • To know that mechanisms control movement.<br>• To understand that mechanisms can be used to change one kind of motion into another.<br>• To understand how to use sliders, pivots and folds to create paper-based mechanisms. | |

| Textiles | | | | | | | |
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| | **EYFS** | **Year 1** | **Year 2** | **Year 3** | **Year 4** | **Year 5** | **Year 6** |
| **Design** | | • Using a template to create a design for a puppet. | • Designing a pouch. | | • Writing design criteria for a product, articulating decisions made.<br>• Designing a personalised book sleeve. | | • Designing a waistcoat in accordance to a specification linked to set of design criteria.<br>• Annotating designs, to explain their decisions. |
| **Make** | | • Cutting fabric neatly with scissors.<br>• Using joining methods to decorate a puppet.<br>• Sequencing steps for construction. | • Selecting and cutting fabrics for sewing.<br>• Decorating a pouch using fabric glue or running stitch.<br>• Threading a needle.<br>• Sewing running stitch, with evenly spaced, neat, even | | • Making and testing a paper template with accuracy and in keeping with the design criteria.<br>• Measuring, marking and cutting fabric using a paper template. | | • Using a template when cutting fabric to ensure they achieve the correct shape.<br>• Using pins effectively to secure a template to fabric without creases or bulges. |

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| | | | stitches to join fabric.<br>• Neatly pinning and cutting fabric using a template. | | • Selecting a stitch style to join fabric.<br>• Working neatly by sewing small, straight stitches.<br>•Incorporating a fastening to a design. | | • Marking and cutting fabric accurately, in accordance with their design.<br>• Sewing a strong running stitch, making small, neat stitches and following the edge.<br>• Tying strong knots.<br>• Decorating a waistcoat, attaching features (such as appliqué) using thread.<br>• Finishing the waistcoat with a secure fastening (such as buttons).<br>• Learning different |

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| | | | | | | | decorative stitches.<br>• Sewing accurately with evenly spaced, neat stitches. |
| **Evaluate** | | • Reflecting on a finished product, explaining likes and dislikes. | •Troubleshooting scenarios<br>• Evaluating the quality of the stitching on others' work.<br>• Discussing as a class, the success of their stitching against the success criteria.<br>• Identifying aspects and likes of their peers' work. | | • Testing and evaluating an end product against the original design criteria.<br>• Deciding how many of the criteria should be met for the product to be considered successful.<br>• Suggesting modifications for improvement.<br>• Articulating the advantages and disadvantages | | • Reflecting on their work continually throughout the design, make and evaluate process. |

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| | | | | | of different fastening types | | |
| **Technical Knowledge** | | • To know what is a 'joining technique'.<br>• To know that there are various temporary methods of joining fabric by using staples. glue or pins.<br>• To understand that different techniques for joining materials can be used for different purposes.<br>• To understand that a template (or fabric pattern) | • To know that sewing is a method of joining fabric.<br>• To know that different stitches can be used when sewing.<br>• To understand the importance of tying a knot after sewing the final stitch.<br>• To know that a thimble can be used to protect my fingers when sewing. | | • To know what a fastening is.<br>• To know that different fastening types are useful for different purposes.<br>• To know that creating a mock up (prototype) of their design is useful. | | • To understand that it is important to design clothing for a particular audience<br>• To know that using a template (or clothing pattern) helps accuracy.<br>• To understand the importance of consistently sized stitches. |

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| | | is used to cut out the same shape multiple times.<br>• To know that drawing a design idea is useful to see how an idea will look. | | | | | |

| **Cooking and nutrition** | | | | | | | |
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| | **EYFS** | **Year 1** | **Year 2** | **Year 3** | **Year 4** | **Year 5** | **Year 6** |
| **Design** | | • Designing smoothie carton packaging by-hand.<br>• Learning where and how fruits and vegetables grow | • Designing three wrap ideas. | | • Designing a biscuit within a given budget.<br>• Conducting market research. | | • Writing a recipe, explaining the key steps, method and ingredients.<br>• Including facts and drawings from research undertaken. |
| **Make** | | • Chopping fruit and vegetables | • Chopping foods safely to make a wrap. | | • Following a baking recipe.<br>•Understanding | | • Following a recipe, including using the correct |

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| | | safely to make a smoothie.<br>• Juicing fruits safely to make a smoothie.<br>• Identifying if a food is a fruit. | • Constructing a wrap that meets a design brief.<br>• Grating foods to make a wrap.<br>• Snipping smaller foods instead of cutting.<br>• Spreading soft foods to make a wrap.<br>• Identifying the five food groups.<br>• Learning about balanced diet. | | safety and hygiene rules.<br>• Adapting a recipe. | | quantities of each ingredient.<br>• Adapting a recipe based on research.<br>• Working to a given timescale.<br>• Working safely and hygienically with independence. |
| **Evaluate** | | • Tasting and evaluating different food combinations.<br>• Describing appearance, smell and taste.<br>• Suggesting information to | • Describing appearance, smell and taste.<br>• Taste and evaluating different food combinations.<br>• Describing the | | • Evaluating an adapted recipe.<br>• Evaluating and comparing a range of products.<br>• Suggesting modifications. | | • Evaluating a recipe, considering: taste, smell, texture and origin of the food group.<br>• Taste testing and scoring final products. |

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| | | be included on packaging.<br>• Comparing their own smoothie with someone else's. | information that should be included on a label. | | | | • Suggesting and writing up points of improvements in productions.<br>• Evaluating health and safety in production to minimise cross contamination. |
| **Technical Knowledge** | | • To know what a blender is.<br>• To know that a fruit has seeds and a vegetable does not.<br>• To know that fruits grow on trees or vines.<br>• To know that vegetables can grow either above or below ground.<br>• To know that vegetables is | • To know what 'diet' means.<br>• To know what makes a balanced diet.<br>• To know 5 main food groups<br>• To know that I should eat a range of different foods from each food group, and roughly how much of each food group. | | • To know what 'quantity' means.<br>• To know that safety and hygiene are important when cooking.<br>• To know the following cooking techniques: sieving, measuring, stirring, cutting out and shaping.<br>•To know the importance of | | • To know that 'flavour' is how a food or drink tastes.<br>• To know some 'national dishes'.<br>• To know what 'processed foods' are.<br>• To understand why to wash fruit.<br>• To understand what happens to a certain |

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| | | any edible part of a plant. | • To know what 'ingredients' means.<br>• To know how to cut, grate, snip and spread to prepare foods.<br>• To know how to review and give a score to evaluate. | | budgeting while planning ingredients for a recipe.<br>• To know that products often have a target audience. | | food before it appears on the supermarket shelf (Farm to Fork). |

| **Electrical systems** | | | | | | | |
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| | **EYFS** | **Year 1** | **Year 2** | **Year 3** | **Year 4** | **Year 5** | **Year 6** |
| **Design** | | | | • Carry out research based on a given topic to develop ideas.<br>• Generate a final design for clients needs.<br>• Design an electric poster that fits the requirements | | • Identifying factors that could change and alter a product.<br>• Developing design criteria based on findings from investigating existing products. | |

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| | | | | of a given brief.<br>• Plan the positioning of the bulb (circuit component) and its purpose. | | • Developing design criteria that clarifies the target user. | |
| **Make** | | | | • Create a final design for the electric poster.<br>• Mount the poster onto corrugated card and understand why.<br>• Measure and mark materials out using a template or ruler.<br>• Fit an electrical component (bulb). | | • Altering a product's form and function by tinkering with its configuration.<br>• Making a functional series circuit, incorporating a motor.<br>• Constructing a product with consideration for the design criteria.<br>• Breaking down the construction process into | |

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| | | | | • Learn ways to give the final product a higher quality finish. | | steps so that others can make the product. | |
| **Evaluate** | | | | • To understand what an 'electrical component' is.<br>• To understand common features of an electric product (switch, battery or plug, dials, buttons etc.).<br>• To list examples of common electric products (kettle, remote control etc.).<br>• To understand | | • Carry out a product analysis to look at the purpose of a product along with its strengths and weaknesses.<br>• Determining which parts of a product affect its function and which parts affect its form.<br>• Analysing whether changes in configuration positively or negatively affect an existing product. | |

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| | | | | that an electric product uses an electrical system to work.<br>• To know the name and appearance of a bulb, battery, battery holder and crocodile wire to build simple circuits. | | • Peer evaluating a set of instructions to build a product. | |
| **Technical Knowledge** | | | | | | • To know that series circuits only have one direction for the electricity to flow.<br>• To know when there is a break in a series circuit, all components turn off. | |

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| | | | | | | • To know that an electric motor converts electrical energy into rotational movement, causing the motor's axle to spin.<br>• To know a motorised product is one which uses a motor to function. | |

| Digital world | | | | | | | |
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| | **EYFS** | **Year 1** | **Year 2** | **Year 3** | **Year 4** | **Year 5** | **Year 6** |
| **Design** | | | | | • Writing design criteria for a programmed timer (Micro:bit).<br>• Exploring different mindfulness strategies.<br>• Applying the results of my research to further inform my design criteria.<br>• Developing a prototype case for my mindful moment timer.<br>• Using and manipulating shapes and clipart by using computer-aided design (CAD), to produce a logo.<br>• Following a list of design requirements. | | • Writing a design brief from information submitted by a client.<br>• Developing design criteria to fulfil the client's request.<br>• Considering and suggesting additional functions for my navigation tool.<br>• Developing a product idea through annotated sketches.<br>• Placing and manoeuvring 3D objects, using CAD.<br>• Changing the properties of, or |

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| | | | | | | | combining one or more 3D objects, using CAD. |
| **Make** | | | | | • Developing a prototype case for my mindful moment timer.<br>• Creating 3D structures using modelling materials.<br>• Programming a micro:bit in the Microsoft micro:bit editor, to time a set number of seconds/minutes upon button press. | | Considering materials and their functional properties, especially those that are sustainable and recyclable (for example, cork and bamboo).<br>• Explaining material choices and why they were chosen as part of a product concept.<br>• Programming an N,E, S, W cardinal compass. |
| **Evaluate** | | | | | • Investigating and analysing a range of timers by identifying and comparing their | | • Explaining how my program fits the design criteria and how it |

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| | | | | | advantages and disadvantages.<br>• Evaluating my Micro:bit program against points on my design criteria and amending them to include any changes I made.<br>• Documenting and evaluating my project.<br>• Understanding what a logo is and why they are important in the world of design and business.<br>• Testing my program for bugs (errors in the code).<br>• Finding and fixing the bugs (debug) in my code.<br>• Using an exhibition to | | would be useful as part of a navigation tool.<br>• Developing an awareness of sustainable design.<br>• Identifying key industries that utilise 3D CAD modelling and explaining why.<br>• Describing how the product concept fits the client's request and how it will benefit the customers.<br>• Explaining the key functions in my program, including<br>• Explaining how my program fits the design criteria and how it would be useful |

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| | | | | | gather feedback.<br>• Gathering feedback from the user to make suggested improvements to a product. | | as part of a navigation tool.<br>• Explaining the key functions and features of my navigation tool to the client as part of a product concept pitch.<br>•Demonstrating a functional program as part of a product concept pitch. |
| **Technical Knowledge** | | | | | • To understand variables in programming.<br>• To know some of the features of a Micro: bit.<br>• Know that an algorithm is a set of instructions to be followed by the computer.<br>• Know that it is important to check my code for errors (bugs). | | • Know that accelerometers can detect movement.<br>• Understand that sensors can be useful in products. |

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| | | | | | • Know that a simulator can check a code works. | | |