

## MPPS – Design & Technology Curriculum Narrative (2022-23)

This document shares Design & Technology curriculum narrative from EYFS to Year 6, as well as in a more in-depth look at how each unit builds up on prior learning and concepts. KAPOW materials are used in Key Stage 1 and 2. Whilst the EYFS Framework is structured differently to the national curriculum, we aim to show how physical development aspect (fine motor skills) and Expressive Arts and Designs feeds into the Design & Technology national curriculum programmes of study, and how children in Reception are prepared for Year 1.

| Early Years Framework  |   |   |
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| <p><b>ELG: Fine Motor Skills</b></p> <p>Children at the expected level of development will:</p> <ul style="list-style-type: none"> <li>- Use a range of small tools, including scissors, paint brushes and cutlery</li> <li>- Begin to show accuracy and care when drawing.</li> </ul> | <p><b>Expressive Arts and Design ELG: Creating with Materials</b></p> <p>Children at the expected level of development will:</p> <ul style="list-style-type: none"> <li>- Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function</li> <li>- Share their creations, explaining the process they have used</li> </ul>   |   |
| National Curriculum  |   |   |
| <b>Key Stages</b>  | <p><b>Key Stage 1</b></p> <p>Through a variety of creative and practical activities, pupils should be taught the knowledge, understanding and skills needed to engage in an iterative process of designing and making. They should work in a range of relevant contexts [for example, the home and school, gardens and playgrounds, the local community, industry and the wider environment]. When designing and making, pupils should be taught to</p> | <p><b>Key Stage 2</b></p> <p>Through a variety of creative and practical activities, pupils should be taught the knowledge, understanding and skills needed to engage in an iterative process of designing and making. They should work in a range of relevant contexts [for example, the home, school, leisure, culture, enterprise, industry and the wider environment]. When designing and making, pupils should be taught to</p>    |
| <b>Design</b>  | <ul style="list-style-type: none"> <li>♣ design purposeful, functional, appealing products for themselves and other users based on design criteria</li> <li>♣ generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and, where appropriate, information and communication technology</li> </ul>  | <ul style="list-style-type: none"> <li>♣ use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose, aimed at particular individuals or groups</li> <li>♣ generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design</li> </ul> |

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| <b>Make</b>                  | <ul style="list-style-type: none"> <li>♣ select from and use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing]</li> <li>♣ select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics</li> </ul>                                  | <ul style="list-style-type: none"> <li>♣ select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately</li> <li>♣ select from and use a wider range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities</li> </ul>  |
| <b>Evaluate</b>              | <ul style="list-style-type: none"> <li>♣ explore and evaluate a range of existing products</li> <li>♣ evaluate their ideas and products against design criteria</li> </ul>  | <ul style="list-style-type: none"> <li>♣ investigate and analyse a range of existing products</li> <li>♣ evaluate their ideas and products against their own design criteria and consider the views of others to improve their work</li> <li>♣ understand how key events and individuals in design and technology have helped shape the world</li> </ul>   |
| <b>Technical knowledge</b>   | <ul style="list-style-type: none"> <li>♣ build structures, exploring how they can be made stronger, stiffer and more stable</li> <li>♣ explore and use mechanisms [for example, levers, sliders, wheels and axles], in their products</li> </ul>  | <ul style="list-style-type: none"> <li>♣ apply their understanding of how to strengthen, stiffen and reinforce more complex structures</li> <li>♣ understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages]</li> <li>♣ understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors]</li> <li>♣ apply their understanding of computing to program, monitor and control their products</li> </ul> |
| <b>Cooking and nutrition</b> | <p>As part of their work with food, pupils should be taught how to cook and apply the principles of nutrition and healthy eating. Instilling a love of cooking in pupils will also open a door to one of the great expressions of human creativity. Learning how to cook is a crucial life skill that enables pupils to feed themselves and others affordably and well, now and in later life</p> |  |
|                              | <p>Key stage 1</p> <ul style="list-style-type: none"> <li>♣ use the basic principles of a healthy and varied diet to prepare dishes</li> <li>♣ understand where food comes from</li> </ul>  | <ul style="list-style-type: none"> <li>♣ understand and apply the principles of a healthy and varied diet</li> <li>♣ prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques</li> <li>♣ understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed</li> </ul>  |

Units have been carefully developed to ensure gradual progression towards the National curriculum end of key stage attainment targets and to cover all of the five strands (Design, Make, Evaluate, Technical knowledge and Cooking & nutrition) in enough detail.

Some key areas appear less frequently than others, for example Textiles, and this is deliberate. The National curriculum statements show that working with textiles is only a small element of the Make strand and many of the making techniques covered in our Textiles units are also covered with a range of materials in other units, such as the use of templates, modelling, measuring and marking out, cutting, shaping and joining.

Similarly in Year 2, the coverage of key areas is deliberately imbalanced as there are two Mechanisms units. This is because there is strong progression between the Y1 Structures: Constructing a windmill and the Y2 Mechanisms: Fairground wheel and then again with the Y2 Mechanisms: Making a moving monster. To omit one of these units would negatively impact on the progression.

## Design & Technology Curriculum Long Term Plan

|        | Autumn 1  | Autumn 2   | Spring 1   | Spring 2   | Summer 1 | Summer 2   |
|--------|---|--|--|--|----------|--|
| EYFS   | Children self-select from a range of tools and materials in the continuous provision. Children learn by experimenting with tools such as scissors, staplers and hole punches. They make use of fixing and joining materials such as sellotape, masking tape, string, pipe cleaners and glue. Through questioning children are encouraged to talk about what they like about their work and other children's designs and how they would improve it. Children have the opportunity to prepare food, combine ingredients and bake. |  |  |  |          |  |
|        | Our Design & Technology curriculum is split into 4 key areas of <b>Structures</b> , <b>Mechanisms</b> , <b>Textiles</b> and <b>Food</b> . Below we share how children build up key knowledge and skills progressively each year. In KS2, this is supplemented with <b>Electrical systems</b> and <b>Digital world</b> .   |  |  |  |          |  |
| Year 1 | <b>Structures: Constructing windmills</b><br>Designing, decorating and building a windmill for their mouse client to live in, developing an understanding of different types of windmills, how they work and their key features.  |  | <b>Textiles: Puppets</b><br>Exploring different ways of joining fabrics before creating their own hand puppets based upon characters from a well-known fairy-tale. Children work to develop their technical skills of cutting, gluing, stapling and pinning. |  |          | <b>Food: Fruit and vegetables</b><br>Handling and exploring fruits and vegetables and learning how to identify which category they fall into, before undertaking taste testing to establish their chosen ingredients for the smoothie they will make a design packaging for. |
| Year 2 |   | <b>Structures: Baby bear's chair</b><br>Using the tale of Goldilocks and the Three |  | <b>Mechanisms: Fairground wheel</b><br>Designing and creating their own Ferris wheels, considering how the |          | <b>Mechanisms: Making a moving monster</b><br>After learning the terms: pivot, lever and linkage, children design a monster  |

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|        |   | Bears as inspiration, children help Baby Bear by making him a brand new chair. When designing the chair, they consider his needs and what he likes and explore ways of building it so that it is strong.   |  | different components fit together so that the wheels rotate, and the structures stand freely. Pupils select appropriate materials and develop their cutting and joining skills.  |  | which will move using a linkage mechanism. Children practise making linkages of different types and varying the materials they use to bring their monsters to life.   |
| Year 3 | <b>Food: Eating Seasonally</b><br>Discovering when and where fruits and vegetables are grown. Learning about seasonality in the UK and the relationship between the colour of fruits and vegetables and their health benefits by making three dishes. | <b>Mechanical Systems: Pneumatic toys</b><br>Designing and creating a toy with a pneumatic system, learning how trapped air can be used to create a product with moving parts whilst building upon their own design knowledge. Introduction to thumbnail sketches and exploded diagrams. |  | <b>Digital world: Electronic charm</b><br>Designing, coding, making and promoting a Micro:bit electronic charm to use in low-light conditions. Children develop their understanding of programming to monitor and control their product.                                     |  |   |
| Year 4 | <b>Electrical systems</b><br><b>Torches</b><br>Applying their scientific understanding of electrical circuits, children create a torch, designing and evaluating their product against set design criteria.   |  |  | <b>Mechanical systems: Making a slingshot car</b><br>Transforming lollipop sticks, wheels, dowels and straws into a moving car. Using a glue gun to, making a launch mechanism, designing and making the body of the vehicle using nets and assembling these to the chassis. |  | <b>Structure: Pavilions</b><br>Exploring pavilion structures, children learn about what they are used for and investigate how to create strong and stable structures before designing and creating their own pavilions, complete with cladding. |

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| Year 5 |   |  |  | <p><b>Mechanical systems:</b><br/> <b>Making a pop-up book</b><br/>         Creating a four-page pop-up storybook design incorporating a range of mechanisms and decorative features, including: structures, levers, sliders, layers and spacers.</p> | <p><b>Electrical systems:</b><br/> <b>Doodlers</b><br/>         Exploring series circuits further and introducing motors. Exploring how the design cycle can be approached at a different starting point, by investigating an existing product, which uses a motor, to encourage pupils to problem-solve and work out how the product has been constructed, ready to develop their own.</p> | <p><b>Food: What could be healthier?</b><br/>         Researching and modifying a traditional Bolognese sauce recipe to make it healthier. Children cook their healthier versions, making appropriate packaging and learn about farming cattle.</p> |
| Year 6 | <p><b>Textiles: Waistcoats</b><br/>         Selecting suitable fabrics, using templates, pinning, decorating and stitching to create a waistcoat for a person or purpose of their choice.</p> |  | <p><b>Structure: Playgrounds</b><br/>         Designing and creating a model of a new playground featuring five apparatus, made from three different structures. Creating a footprint as the base, pupils visualise objects in plain view and get creative with their use of natural features.</p> |   | <p><b>Digital world: Navigating the world</b><br/>         Programming a navigation tool to produce a multifunctional device for trekkers. Combining 3D objects to form a complete product in CAD 3D modelling software and presenting a pitch to 'sell' their product.</p>   |   |

**Year 7 (at Moor end Academy)**

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| <p>Graphic design introduction of the illustrator Eric Carle Design and make a package for a new range of sweets. The project will introduce the key concepts of designing from a set brief and link to logo design and mathematical nets.</p> | <p>Design and make a promotional logo to promote a music festival. Student will have an understanding of working to a brief to create a new corporate identity. William Charles Form – key designers used</p> |
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## Design & Technology Skills and Knowledge EYFS to Year 6

### Early Years Framework

The EYFS continuous provision allows plenty of opportunity for children to explore and play with a wide range of media and materials. It also provides opportunities and encouragement for children to share their thoughts, ideas and feelings through a variety of activities in and design and technology.

Children have opportunities to use a range of simple tools and techniques with guidance and support given in how to use these safely and independently. They make use of fixing and joining materials such as sellotape, masking tape, string, pipe cleaners and glue. They have access to a wide variety of creative resources, such as paint, crayons, chalk, pastels etc as well as materials for junk modelling, collage, play dough modelling, paper and fabric art. Children are encouraged to explore the materials, experiment with textures and combine different media to create new and original effects. The process involved is just as important for the children as the finished product. Through questioning children are encouraged to talk about what they like about their work and other children's designs and how they would improve it.

Children are encouraged to use materials and media in original ways, thinking about they might use the materials and put them to purpose. In their art and model making they may create simple representations of events, people and objects, for example using junk modelling to create rockets for their characters.

Children have the opportunity to prepare food, combine ingredients and bake.

| Progression of Skills and Knowledge: Structures |                 |   |  |  |   |
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|   |                 | <b>Year 1<br/>Constructing a Windmill</b>   | <b>Year 2<br/>Baby Bear's Chair</b>  | <b>Year 3<br/>Constructing a Castle</b>  | <b>Year 6<br/>Playgrounds</b>   |
| <b>Skills</b>                                   | <b>Design</b>   | <ul style="list-style-type: none"> <li>Learning the importance of a clear design criteria</li> <li>Including individual preferences and requirements in a design</li> </ul>   | <ul style="list-style-type: none"> <li>Generating and communicating ideas using sketching and modelling</li> </ul>   | <ul style="list-style-type: none"> <li>Designing a castle with key features to appeal to a specific person/purpose</li> <li>Drawing and labelling a castle design using 2D shapes, labelling: -the 3D</li> <li>shapes that will create the features - materials needed and colours</li> <li>• Designing and/or decorating a castle tower on CAD software.</li> </ul> | <ul style="list-style-type: none"> <li>Designing a playground featuring a variety of different structures, giving careful consideration to how the structures will be used, considering effective and ineffective designs.</li> </ul>   |
|   | <b>Make</b>     | <ul style="list-style-type: none"> <li>Making stable structures from card, tape and glue</li> <li>Learning how to turn 2D nets into 3D structures</li> <li>Following instructions to cut and assemble the supporting structure of a</li> <li>windmill</li> <li>• Making functioning turbines and axles which are assembled into a main supporting structure.</li> </ul> | <ul style="list-style-type: none"> <li>Making a structure according to design criteria</li> <li>Creating joints and structures from paper/card and tape</li> <li>Building a strong and stiff structure by folding paper</li> </ul> | <ul style="list-style-type: none"> <li>Constructing a range of 3D geometric shapes using nets</li> <li>Creating special features for individual designs</li> <li>Making facades from a range of recycled materials.</li> </ul>   | <ul style="list-style-type: none"> <li>Building a range of play apparatus structures drawing upon new and prior</li> <li>knowledge of structures</li> <li>Measuring, marking and cutting wood to create a range of structures</li> <li>Using a range of materials to reinforce and add decoration to structures.</li> </ul> |
|   | <b>Evaluate</b> | <ul style="list-style-type: none"> <li>Evaluating a windmill according to the design criteria, testing whether the structure is strong and stable and altering it if it isn't</li> <li>Suggest points for improvements</li> </ul>   | <ul style="list-style-type: none"> <li>Testing the strength of own structures</li> <li>Identifying the weakest part of a structure</li> <li>Evaluating the strength, stiffness and stability of own structure</li> </ul>           | <ul style="list-style-type: none"> <li>Evaluating own work and the work of others based on the aesthetic of the</li> <li>finished product and in comparison to the original design</li> </ul>  | <ul style="list-style-type: none"> <li>Improving a design plan based on peer evaluation</li> <li>Testing and adapting a design to improve it as it is developed</li> <li>Identifying what makes a successful structure.</li> </ul>  |

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|                  |                   |  |   | <ul style="list-style-type: none"> <li>Suggesting points for modification of the individual designs.</li> </ul>  |   |
| <b>Knowledge</b> | <b>Technical</b>  | <ul style="list-style-type: none"> <li>To understand that the shape of materials can be changed to improve the</li> <li>strength and stiffness of structures</li> <li>To understand that cylinders are a strong type of structure (e.g. the main shape used for windmills and lighthouses)</li> <li>To understand that axles are used in structures and mechanisms to make</li> <li>parts turn in a circle</li> <li>To begin to understand that different structures are used for different purposes</li> <li>To know that a structure is something that has been made and put together</li> </ul> | <ul style="list-style-type: none"> <li>To know that materials can be manipulated to improve strength and stiffness</li> <li>To know that a structure is something which has been formed or made from parts</li> <li>To know that a 'stable' structure is one which is firmly fixed and unlikely to change</li> <li>or move</li> <li>To know that a 'strong' structure is one which does not break easily</li> <li>To know that a 'stiff' structure or material is one which does not bend easily</li> </ul> | <ul style="list-style-type: none"> <li>To understand that wide and flat based objects are more stable</li> <li>To understand the importance of strength and stiffness in structures</li> </ul>   | <ul style="list-style-type: none"> <li>To know that structures can be strengthened by manipulating materials and shapes.</li> </ul>   |
|                  | <b>Additional</b> | <ul style="list-style-type: none"> <li>To know that a client is the person I am designing for</li> <li>To know that design criteria is a list of points to ensure the product meets the clients needs and wants</li> <li>To know that a windmill harnesses the power of wind for a purpose like grinding grain, pumping water or generating electricity</li> <li>To know that windmill turbines use wind to turn and</li> </ul>  | N/A   | <ul style="list-style-type: none"> <li>To know the following features of a castle: flags, towers, battlements, turrets,</li> <li>curtain walls, moat, drawbridge and gatehouse - and their purpose</li> <li>To know that a façade is the front of a structure</li> <li>To understand that a castle needed to be strong and stable to withstand enemy attack</li> </ul> | <ul style="list-style-type: none"> <li>To understand what a 'footprint plan' is</li> <li>To understand that in the real world, design , can impact users in positive and negative ways</li> </ul> <p>To know that a prototype is a cheap model to test a design idea.</p> |

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|  |  | <p>make the machines inside work</p> <ul style="list-style-type: none"> <li>To know that a windmill is a structure with sails that are moved by the wind</li> <li>To know the three main parts of a windmill are the turbine, axle and structure</li> </ul> |  | <ul style="list-style-type: none"> <li>To know that a paper net is a flat 2D shape that can become a 3D shape once assembled</li> <li>To know that a design specification is a list of success criteria for a product</li> </ul> |  |
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| Progression of Skills and Knowledge: Mechanisms/ Mechanical systems |               |   |   |  |
|---|---------------|---|---|--|
|   |               | <b>Year 2</b><br><b>Fairground Wheel</b><br><b>Making a Moving Monster</b>  | <b>Year 4</b><br><b>Slingshot Car</b>   | <b>Year 5</b><br><b>Pop Up Book</b>  |
| <b>Skills</b>   | <b>Design</b> | <ul style="list-style-type: none"> <li>Selecting a suitable linkage system to produce the desired motions</li> <li>Designing a wheel Selecting appropriate materials based on their properties</li> <li>Creating a class design criteria for a moving monster</li> <li>Designing a moving monster for a specific audience in accordance with a design criteria</li> </ul> | <ul style="list-style-type: none"> <li>Designing a shape that reduces air resistance</li> <li>Drawing a net to create a structure</li> <li>Choosing shapes that increase or decrease speed as a result of air resistance</li> <li>Personalising a design</li> </ul> | <ul style="list-style-type: none"> <li>Designing a pop-up book which uses a mixture of structures and mechanisms</li> <li>Naming each mechanism, input and output accurately</li> <li>Storyboarding ideas for a book</li> </ul>  |
|   | <b>Make</b>   | <ul style="list-style-type: none"> <li>Selecting materials according to their characteristics</li> <li>Following a design brief Making linkages using card for levers and split pins for pivots</li> <li>Experimenting with linkages adjusting the widths, lengths and thicknesses of card used</li> <li>Cutting and assembling components neatly</li> </ul>              | <ul style="list-style-type: none"> <li>Measuring, marking, cutting and assembling with increasing accuracy</li> <li>Making a model based on a chosen design</li> </ul>  | <ul style="list-style-type: none"> <li>Following a design brief to make a pop up book, neatly and with focus on accuracy</li> <li>Making mechanisms and/or structures using sliders, pivots and folds to produce movement</li> <li>Using layers and spacers to hide the workings of mechanical parts for an aesthetically pleasing result</li> </ul> |

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|                  | <b>Evaluate</b>   | <ul style="list-style-type: none"> <li>Evaluating different designs</li> <li>Testing and adapting a design<br/>Evaluating own designs against design criteria</li> <li>Using peer feedback to modify a final design</li> </ul>   | <ul style="list-style-type: none"> <li>Evaluating the speed of a final product based on: the effect of shape on speed and the accuracy of workmanship on performance</li> </ul>  | N/A   |
| <b>Knowledge</b> | <b>Technical</b>  | <ul style="list-style-type: none"> <li>To know that different materials have different properties and are therefore suitable for different uses</li> <li>To know that mechanisms are a collection of moving parts that work together as a machine to produce movement</li> <li>To know that there is always an input and output in a mechanism</li> <li>To know that an input is the energy that is used to start something working</li> <li>To know that an output is the movement that happens as a result of the input</li> <li>To know that a lever is something that turns on a pivot</li> <li>To know that a linkage mechanism is made up of a series of levers</li> </ul> | <ul style="list-style-type: none"> <li>To know that air resistance is the level of drag on an object as it is forced through the air</li> <li>To understand that the shape of a moving object will affect how it moves due to air resistance.</li> </ul>   | <ul style="list-style-type: none"> <li>To know that mechanisms control movement</li> <li>To understand that mechanisms that can be used to change one kind of motion into another</li> <li>To understand how to use sliders, pivots and folds to create paper-based mechanisms</li> </ul> |
|                  | <b>Additional</b> | <ul style="list-style-type: none"> <li>To know the features of a ferris wheel include the wheel, frame, pods, a base</li> <li>an axle and an axle holder</li> <li>To know that it is important to test my design as I go along so that I can solve any problems that may occur</li> <li>To know some real-life objects that contain mechanisms</li> </ul>  | <ul style="list-style-type: none"> <li>To know that aesthetics means how an object or product looks in design and technology</li> <li>To know that a template is a stencil you can use to help you draw the same shape accurately</li> <li>To know that a birds-eye view means a view from a high angle (as if a bird in flight)</li> <li>To know that graphics are images which are designed to explain or advertise something</li> </ul> | <ul style="list-style-type: none"> <li>To know that a design brief is a description of what I am going to design and make</li> <li>To know that designers often want to hide mechanisms to make a product more aesthetically pleasing</li> </ul>  |

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|  |  |  | <ul style="list-style-type: none"> <li>To know that it is important to assess and evaluate design ideas and models against a list of design criteria.</li> </ul> |  |
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| Progression of Skills and Knowledge: Electrical Systems (KS2 only) |                  |   |  |
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|  |                  | Year 4<br>Torches   | Year 5<br>Doodlers   |
| <b>Skills</b>  | <b>Design</b>    | <ul style="list-style-type: none"> <li>Designing a torch, giving consideration to the target audience and creating both design and success criteria focusing on features of individual design ideas</li> </ul>  | <ul style="list-style-type: none"> <li>Identifying factors that could be changed on existing products and explaining how these would alter the form and function of the product</li> <li>Developing design criteria based on finding from investigating existing products</li> <li>Developing design criteria that clarifies the target user</li> </ul>  |
|  | <b>Make</b>      | <ul style="list-style-type: none"> <li>Making a torch with a working electrical circuit and switch</li> <li>Using appropriate equipment to cut and attach materials</li> <li>Assembling a torch according to the design and success criteria</li> </ul> | <ul style="list-style-type: none"> <li>Altering a product's form and function by tinkering with its configuration.</li> <li>Making a functional series circuit, incorporating a motor</li> <li>Constructing a product with consideration for the design criteria</li> <li>Breaking down the construction process into steps so that others can make the product</li> </ul>   |
|  | <b>Evaluate</b>  | <ul style="list-style-type: none"> <li>Testing and evaluating the success of a final product</li> </ul>   | <ul style="list-style-type: none"> <li>Carry out a product analysis to look at the purpose of a product along with its strengths and weaknesses</li> <li>Determining which parts of a product affect its function and which parts affect its form</li> <li>Analysing whether changes in configuration positively or negatively affect an existing product</li> <li>Peer evaluating a set of instructions to build a product</li> </ul> |
| <b>Knowledge</b>   | <b>Technical</b> | <ul style="list-style-type: none"> <li>To know that an electrical circuit must be complete for electricity to flow</li> <li>To know that a switch can be used to complete and break an electrical circuit</li> </ul>                                    | <ul style="list-style-type: none"> <li>To know that series circuits only have one direction for the electricity to flow</li> <li>To know when there is a break in a series circuit, all components turn off</li> </ul>   |

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|  |                   |  | <ul style="list-style-type: none"> <li>To know that an electric motor converts electrical energy into rotational movement, causing the motor's axle to spin</li> <li>To know a motorised product is one which uses a motor to function</li> </ul> |
|  | <b>Additional</b> | <ul style="list-style-type: none"> <li>To know the features of a torch: case, contacts, batteries, switch, reflector, lamp, lens</li> <li>To know facts from the history and invention of the electric light bulb(s) – by Sir Joseph Swan and Thomas Edison</li> </ul> | <ul style="list-style-type: none"> <li>To know that product analysis is critiquing the strengths and weaknesses of a product</li> <li>To know that 'configuration' means how the parts of a product are arranged</li> </ul>                       |

### Progression of Skills and Knowledge: Cooking and Nutrition

|               |               | <b>Year 1<br/>Fruit and Vegetables</b>  | <b>Year 3<br/>Eating Seasonally</b>  | <b>Year 5<br/>What Could Be Healthier</b>  |
|---------------|---------------|---|--|--|
| <b>Skills</b> | <b>Design</b> | <ul style="list-style-type: none"> <li>Designing smoothie carton packaging by-hand or on ICT software</li> </ul>  | <ul style="list-style-type: none"> <li>Creating a healthy and nutritious recipe for a savoury tart using seasonal ingredients, considering the taste, texture, smell and appearance of the dish</li> </ul>                       | <ul style="list-style-type: none"> <li>Adapting a traditional recipe, understanding that the nutritional value of a recipe alters if you remove, substitute or add additional ingredients</li> <li>Writing an amended method for a recipe to incorporate the relevant changes to ingredients</li> <li>Designing appealing packaging to reflect a recipe</li> </ul> |
|               | <b>Make</b>   | <ul style="list-style-type: none"> <li>Chopping fruit and vegetables safely to make a smoothie</li> <li>Identifying if a food is a fruit or a vegetable</li> <li>Learning where and how fruits and vegetables grow</li> </ul> | <ul style="list-style-type: none"> <li>Knowing how to prepare themselves and a work space to cook safely in, learning the basic rules to avoid food contamination</li> <li>Following the instructions within a recipe</li> </ul> | <ul style="list-style-type: none"> <li>Cutting and preparing vegetables safely</li> <li>Using equipment safely, including knives, hot pans and hobs</li> <li>Knowing how to avoid cross-contamination</li> <li>Following a step by step method carefully to make a recipe</li> </ul>   |

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|------------------|------------------------------|---|--|--|
|                  | <b>Evaluate</b>              | <ul style="list-style-type: none"> <li>• Tasting and evaluating different food combinations</li> <li>• Describing appearance, smell and taste</li> <li>• Suggesting information to be included on packaging</li> </ul>  | <ul style="list-style-type: none"> <li>• Establishing and using design criteria to help test and review dishes</li> <li>• Describing the benefits of seasonal fruits and vegetables and the impact on the environment</li> <li>• Suggesting points for improvement when making a seasonal tart</li> </ul>  | <ul style="list-style-type: none"> <li>• Identifying the nutritional differences between different products and recipes</li> <li>• Identifying and describing healthy benefits of food groups</li> </ul>   |
| <b>Knowledge</b> | <b>Cooking and Nutrition</b> | <ul style="list-style-type: none"> <li>• Understanding the difference between fruits and vegetables</li> <li>• To understand that some foods typically known as vegetables are actually fruits (e.g. cucumber)</li> <li>• To know that a blender is a machine which mixes ingredients together into a smooth liquid</li> <li>• To know that a fruit has seeds and a vegetable does not</li> <li>• To know that fruits grow on trees or vines</li> <li>• To know that vegetables can grow either above or below ground</li> <li>• To know that vegetables can come from different parts of the plant (e.g. roots: potatoes, leaves: lettuce, fruit: cucumber)</li> </ul> | <ul style="list-style-type: none"> <li>• To know that not all fruits and vegetables can be grown in the UK</li> <li>• To know that climate affects food growth</li> <li>• To know that vegetables and fruit grow in certain seasons</li> <li>• To know that cooking instructions are known as a 'recipe'</li> <li>• To know that imported food is food which has been brought into the country</li> <li>• To know that exported food is food which has been sent to another country.</li> <li>• To understand that imported foods travel from far away and this can negatively impact the environment</li> <li>• To know that each fruit and vegetable gives us nutritional benefits because they contain vitamins, minerals and fibre</li> <li>• To understand that vitamins, minerals and fibre are important for energy, growth and maintaining health</li> <li>• To know safety rules for using, storing and cleaning a knife safely</li> <li>• To know that similar coloured fruits and vegetables often have similar nutritional benefits</li> </ul> | <ul style="list-style-type: none"> <li>• To understand where meat comes from - learning that beef is from cattle and how beef is reared and processed, including key welfare issues</li> <li>• To know that I can adapt a recipe to make it healthier by substituting ingredients</li> <li>• To know that I can use a nutritional calculator to see how healthy a food option is</li> <li>• To understand that 'cross-contamination' means that bacteria and germs have been passed onto ready-to-eat foods and it happens when these foods mix with raw meat or unclean object</li> </ul> |

| Progression of Skills and Knowledge: Textiles |          |   |  |
|---|----------|---|--|
|   |          | Year 1<br>Puppets   | Year 6<br>Waistcoats   |
| Skills  | Design   | <ul style="list-style-type: none"> <li>Using a template to create a design for a puppet</li> </ul>  | <ul style="list-style-type: none"> <li>Designing a waistcoat in accordance to specification linked to set of design criteria to fit a specific theme</li> <li>Annotating designs</li> </ul>  |
|   | Make     | <ul style="list-style-type: none"> <li>Cutting fabric neatly with scissors</li> <li>Using joining methods to decorate a puppet</li> <li>Sequencing steps for construction</li> </ul>  | <ul style="list-style-type: none"> <li>Using a template when pinning panels onto fabric</li> <li>Marking and cutting fabric accurately, in accordance with a design</li> <li>Sewing a strong running stitch, making small, neat stitches and following the edge</li> <li>Tying strong knots</li> <li>Decorating a waistcoat -attaching objects using thread and adding a secure fastening</li> <li>Learning different decorative stitches</li> <li>Sewing accurately with even regularity of stitches</li> </ul> |
|   | Evaluate | <ul style="list-style-type: none"> <li>Reflecting on a finished product, explaining likes and dislikes</li> </ul>   | <ul style="list-style-type: none"> <li>Evaluating work continually as it is created</li> </ul>   |
| Knowledge                                     |          | <ul style="list-style-type: none"> <li>To know that 'joining technique' means connecting two pieces of material together</li> <li>To know that there are various temporary methods of joining fabric by using staples. glue or pins</li> <li>To understand that different techniques for joining materials can be used for different purposes</li> <li>To understand that a template (or fabric pattern) is used to cut out the same shape multiple times</li> <li>To know that drawing a design idea is useful to see how an idea will look</li> </ul> | <ul style="list-style-type: none"> <li>To understand that it is important to design clothing with the client/target customer in mind</li> <li>To know that using a template (or clothing pattern) helps to accurately mark out a design on fabric</li> <li>To understand the importance of consistently sized stitches</li> </ul>  |

| Progression of Skills and Knowledge: Digital World (KS2 only) |           |  |   |
|---|-----------|--|---|
|   |           | Year 3<br>Electronic Charm   | Year 6<br>Navigating the World  |
| Skills  | Design    | <ul style="list-style-type: none"> <li>Problem solving by suggesting potential features on a Micro: bit and justifying my ideas</li> <li>Developing design ideas for a technology pouch</li> <li>Drawing and manipulating 2D shapes, using computer-aided design, to produce a point of sale badge</li> </ul>  | <ul style="list-style-type: none"> <li>Writing a design brief from information submitted by a client</li> <li>Developing design criteria to fulfil the client's request</li> <li>Considering and suggesting additional functions for my navigation tool</li> <li>Developing a product idea through annotated sketches</li> <li>Placing and manoeuvring 3D objects, using CAD</li> <li>Changing the properties of, or combine one or more 3D objects, using CAD</li> </ul>   |
|   | Make      | <ul style="list-style-type: none"> <li>Using a template when cutting and assembling the pouch</li> <li>Following a list of design requirements</li> <li>Selecting and using the appropriate tools and equipment for cutting, joining, shaping and decorating a foam pouch</li> <li>Applying functional features such as using foam to create soft buttons</li> </ul> | <ul style="list-style-type: none"> <li>Considering materials and their functional properties, especially those that are sustainable and recyclable (for example, cork and bamboo)</li> <li>Explaining material choices and why they were chosen as part of a product concept</li> <li>Programming an N,E, S,W cardinal compass</li> </ul>   |
|   | Evaluate  | <ul style="list-style-type: none"> <li>Analysing and evaluating an existing product</li> <li>Identifying the key features of a pouch</li> </ul>  | <ul style="list-style-type: none"> <li>Explaining how my program fits the design criteria and how it would be useful as part of a navigation tool</li> <li>Developing an awareness of sustainable design</li> <li>Identifying key industries that utilise 3D CAD modelling and explain why</li> <li>Describing how the product concept fits the client's request and how it will benefit the customers</li> <li>Explaining the key functions in my program, including any additions</li> <li>Explaining how my program fits the design criteria and how it would be useful as part of a navigation tool</li> <li>Explaining the key functions and features of my navigation tool to the client as part of a product concept pitch</li> <li>Demonstrating a functional program as part of a product concept</li> </ul> |
| Knowledge   | Technical | <ul style="list-style-type: none"> <li>To understand that in programming a 'loop' is code that repeats something again and again until stopped</li> </ul>  | <ul style="list-style-type: none"> <li>To know that accelerometers can detect movement</li> <li>To understand that sensors can be useful in products as they mean the product can function without human input</li> </ul>   |

|  |                   |   |  |
|--|-------------------|---|--|
|  |                   | <ul style="list-style-type: none"> <li>• To know that a Microbit is a pocket-sized, codeable computer</li> <li>• • Writing a program to control (button press) and/or monitor (sense light) that will initiate a flashing LED algorithm</li> </ul>  |  |
|  | <b>Additional</b> | <ul style="list-style-type: none"> <li>• To know what the 'Digital Revolution' is and features of some of the products that have evolved as a result</li> <li>• To know that in Design and technology the term 'smart' means a programmed product</li> <li>• To know the difference between analogue and digital technologies</li> <li>• To understand what is meant by 'point of sale display'</li> <li>• To know that CAD stands for Computer-aided design</li> </ul> | <ul style="list-style-type: none"> <li>• To know that designers write design briefs and develop design criteria to enable them to fulfil a client's request</li> <li>• To know that 'multifunctional' means an object or product has more than one function</li> <li>• To know that magnetometers are devices that measure the Earth's magnetic field to determine which direction you are facing</li> </ul> |