

**Kapow**  
Primary™

# *Design and technology*

**Progression of skills and knowledge**

Subject leader overview from EYFS (Reception) to Year 6

# Introduction

An overview of the skills and knowledge covered in each year group and strand and how these are developed through Kapow Primary's Design and technology scheme of work.

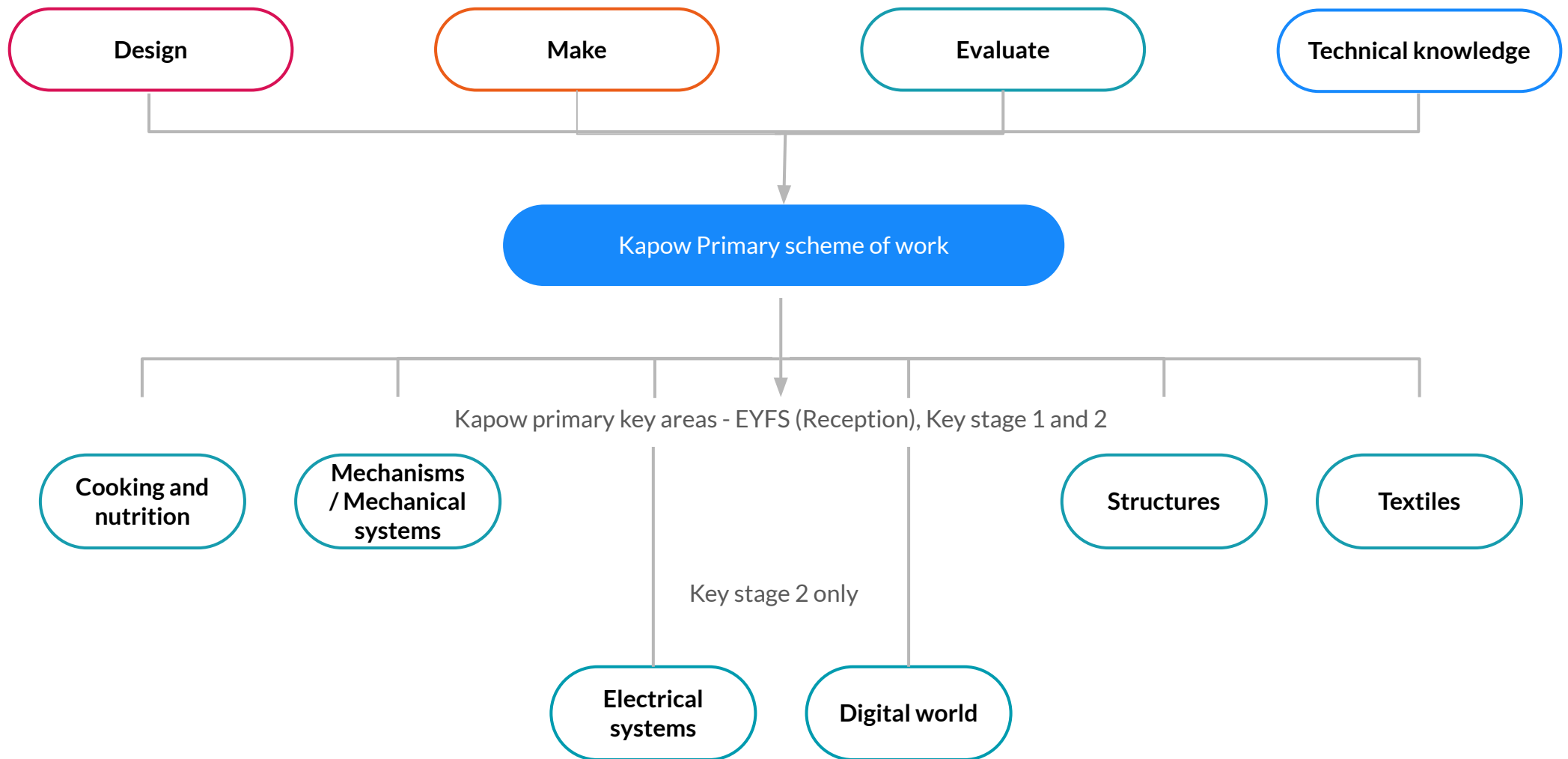
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## Related documents

- If you follow the Mixed-age long-term plan, use the accompanying: [D&T Progression of skills and knowledge - Mixed-age version](#).
- If you follow the Condensed long-term plan, use the accompanying: [D&T Progression of skills and knowledge - Condensed version](#).
- If you also subscribe to Art and follow the alternating Art and DT long-term plan, use the accompanying: [Art and DT Progression of skills and knowledge](#).

# How is the Design and technology scheme organised?



|           |            | EYFS (Reception)                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                               |
|-----------|------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|           |            | <u>Junk modelling</u>                                                                                                                                                                                                                                                                                                                                                   | <u>Boats</u>                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Skills    | Design     | <ul style="list-style-type: none"> <li>• Making verbal plans and material choices.</li> <li>• Developing a junk model.</li> </ul>                                                                                                                                                                                                                                       | <ul style="list-style-type: none"> <li>• Designing a junk model boat.</li> <li>• Using knowledge from exploration to inform design.</li> </ul>                                                                                                                                                                                                                                                                                |
|           | Make       | <ul style="list-style-type: none"> <li>• Improving fine motor/scissor skills with a variety of materials.</li> <li>• Joining materials in a variety of ways (temporary and permanent).</li> <li>• Joining different materials together.</li> <li>• Describing their junk model, and how they intend to put it together.</li> </ul>                                      | <ul style="list-style-type: none"> <li>• Making a boat that floats and is waterproof, considering material choices.</li> </ul>                                                                                                                                                                                                                                                                                                |
|           | Evaluate   | <ul style="list-style-type: none"> <li>• Giving a verbal evaluation of their own and others' junk models with adult support.</li> <li>• Checking to see if their model matches their plan.</li> <li>• Considering what they would do differently if they were to do it again.</li> <li>• Describing their favourite and least favourite part of their model.</li> </ul> | <ul style="list-style-type: none"> <li>• Making predictions about, and evaluating different materials to see if they are waterproof.</li> <li>• Making predictions about, and evaluating existing boats to see which floats best.</li> <li>• Testing their design and reflecting on what could have been done differently.</li> <li>• Investigating how the shape and structure of a boat affect the way it moves.</li> </ul> |
| Knowledge | Technical  | <ul style="list-style-type: none"> <li>• To know there are a range to different materials that can be used to make a model and that they are all slightly different.</li> <li>• Making simple suggestions for how to fix their junk model.</li> </ul>                                                                                                                   | <ul style="list-style-type: none"> <li>• To know that 'waterproof' materials are those which do not absorb water.</li> </ul>                                                                                                                                                                                                                                                                                                  |
|           | Additional |                                                                                                                                                                                                                                                                                                                                                                         | <ul style="list-style-type: none"> <li>• To know that some objects float and others sink.</li> <li>• To know the different parts of a boat.</li> </ul>                                                                                                                                                                                                                                                                        |

Year 1

Option 1: Stable structures

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|-----------|------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Skills    | Design     | <ul style="list-style-type: none"> <li>Thinking about what others might want from a design.</li> <li>Beginning to recognise how products and designs in the world around us solve certain needs.</li> <li>Considering who they are designing for – identifying the user.</li> <li>Stating what they intend to make and why – identifying the purpose.</li> <li>Talking about ideas, with purpose and user in mind.</li> <li>Talking about existing products when generating ideas.</li> <li>Using basic drawing skills to communicate ideas.</li> </ul>                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|           | Make       | <ul style="list-style-type: none"> <li>Choosing between a small number of materials, ingredients or components.</li> <li>Explaining their choices based on personal experiences.</li> <li>Requesting equipment appropriate to the purpose (e.g. scissors for cutting, glue for joining).</li> <li>Beginning to use objects with a fixed width or length to create even spacing of markings or cuts (e.g. a lolly stick).</li> <li>Refining their grip to cut competently and confidently.</li> <li>Cutting straight lines and evenly spaced lines.</li> <li>Beginning to cut large shapes and thicker materials like card.</li> </ul>                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|           | Evaluate   | <ul style="list-style-type: none"> <li>Discussing existing products, saying what they like about them.</li> <li>Comparing two products and discuss which is better for a specific purpose.</li> <li>Saying what they like about their peers' designs and products.</li> <li>Accepting feedback and understanding it is meant to improve their work.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Knowledge | Technical  | <ul style="list-style-type: none"> <li>Recognising that different structures are used for different purposes.</li> <li>Exploring the features of structures.</li> <li>Describing structures as buildings or freestanding structures.</li> <li>Making stable structures from card.</li> <li>Creating supporting structures to aid stability.</li> <li>Using stable objects like cylinders to create structures.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|           | Additional | <ul style="list-style-type: none"> <li>To know that the 'user' is the person who will use the product.</li> <li>To know that different users may want different things from a design.</li> <li>To know that who they are designing for makes a difference to what they design.</li> <li>To know that the purpose is what something is for.</li> <li>To know that existing products can help when deciding what to design.</li> <li>To know that drawings are a way to explain ideas.</li> <li>To know that a plan is deciding what to do first and next.</li> <li>To know that different equipment does different things.</li> <li>To know the names of common pieces of equipment.</li> <li>To know that some products will be better than others.</li> <li>To know that their ideas or products can be made better.</li> <li>To know that their ideas can improve someone else's work.</li> </ul> | <ul style="list-style-type: none"> <li>To know that other people's ideas can help make their work better.</li> <li>To know that a structure is something that has been made and put together.</li> <li>To know that stable structures do not topple.</li> <li>To know that shapes and structures with wide, flat bases or legs are the most stable.</li> <li>To know that adding weight to the base of a structure can make it more stable.</li> </ul> |

Year 1

Option 2: Constructing a windmill

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|-----------|------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Skills    | Design     | <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>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|           | Make       | <ul style="list-style-type: none"> <li>• Making stable structures from card.</li> <li>• Following instructions to cut and assemble the supporting structure of a windmill.</li> <li>• Making functioning turbines and axles which are assembled into a main supporting structure.</li> <li>• Finding the middle of an object.</li> <li>• Puncturing holes.</li> <li>• Adding weight to structures.</li> <li>• Creating supporting structures.</li> <li>• Cutting evenly and carefully.</li> </ul>                                                                                                                                                                                                                                                                               |
|           | Evaluate   | <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 needed.</li> <li>• Suggest points for improvements.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Knowledge | Technical  | <ul style="list-style-type: none"> <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 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> <li>• To know that the sails or blades of a windmill are moved by the wind.</li> <li>• To know that a structure is something built for a reason.</li> <li>• To know that stable structures do not topple.</li> <li>• To know that adding weight to the base of a structure can make it more stable.</li> </ul> |
|           | Additional | <ul style="list-style-type: none"> <li>• To know that design criteria are 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 make the machines inside work.</li> <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> <li>• To know that windmills are used to generate power and were used for grinding flour.</li> </ul>                                                                                      |

Year 2

Option 1: A chair for a bear

|           |            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|-----------|------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Skills    | Design     | <ul style="list-style-type: none"> <li>• Using a simple design brief that outlines the intended use, target user, and key features of the product, to create simple design criteria.</li> <li>• Creating ideas with design criteria in mind.</li> <li>• Referring to specific parts of existing products when generating ideas.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|           | Make       | <ul style="list-style-type: none"> <li>• Choosing materials, ingredients or components from a wider range of materials, ingredients or components.</li> <li>• Explaining their choices based on the properties of materials and components.</li> <li>• Looking for ways to make cutting easier, like turning the material they are cutting, not fully closing scissors etc.</li> <li>• Choosing known geometric shapes when making.</li> <li>• Beginning to shape objects to improve how they work.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|           | Evaluate   | <ul style="list-style-type: none"> <li>• Discussing a range of existing products and saying what they like and dislike about them.</li> <li>• Comparing a range of products and explaining why some better meet different design criteria than others.</li> <li>• Evaluating their ideas and creations against simple design criteria.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Knowledge | Technical  | <ul style="list-style-type: none"> <li>• Recognising that different structures are used for different purposes.</li> <li>• Exploring the features of structures.</li> <li>• Making stable structures from card.</li> <li>• Creating supporting structures to aid stability.</li> <li>• Using stable objects like cylinders to create structures.</li> <li>• Building a strong and stiff structure by folding paper.</li> <li>• Folding to strengthen or stiffen.</li> <li>• Comparing the stability of different shapes.</li> <li>• Identifying the weakest part of a structure.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|           | Additional | <ul style="list-style-type: none"> <li>• To know that a design brief helps to decide what to make.</li> <li>• To know that design criteria are the steps for making a product successful.</li> <li>• To know that design criteria help when thinking of ideas.</li> <li>• To know that different products work in different ways and have parts that make them work.</li> <li>• To know some properties of materials like hard, soft, flexible, waterproof, strong etc.</li> <li>• To know the names of some geometric shapes, triangle, pyramid, square, cube, circle, sphere.</li> <li>• To know that existing products can be evaluated against design criteria.</li> <li>• To know that design criteria help to decide if their product is a success.</li> <li>• To know that improve means to make something better.</li> </ul> <ul style="list-style-type: none"> <li>• To know that a structure is something that has been made and put together.</li> <li>• To know that the shape of a structure affects its strength.</li> <li>• To know that materials can be manipulated to improve strength and stiffness.</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> |

|           |            | Year 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
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|           |            | Option 2: <u>Baby bear's chair</u>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Skills    | Design     | <ul style="list-style-type: none"> <li>• Generating and communicating ideas using sketching and modelling.</li> <li>• Learning about different types of structures, found in the natural world and in everyday objects.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|           | Make       | <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>                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|           | Evaluate   | <ul style="list-style-type: none"> <li>• Exploring the features of structures.</li> <li>• Comparing the stability of different shapes.</li> <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>                                                                                                                                                                                                                                                                                                                                                      |
| Knowledge | Technical  | <ul style="list-style-type: none"> <li>• To know that shapes and structures with wide, flat bases or legs are the most stable.</li> <li>• To understand that the shape of a structure affects its strength.</li> <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 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> |
|           | Additional | <ul style="list-style-type: none"> <li>• To know that natural structures are those found in nature.</li> <li>• To know that man-made structures are those made by people.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |

|           |            | Year 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Year 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|-----------|------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|           |            | Option 1: <u>Product packaging</u>                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Option 2: <u>Constructing a castle</u>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Skills    | Design     | <ul style="list-style-type: none"> <li>Creating simple design criteria that outline basic functionality and appeal to individual users or target audiences.</li> <li>Beginning to use 2D CAD software to communicate their ideas.</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 shapes that will create the features - materials needed and colours.</li> <li>Designing and/or decorating a castle tower on CAD software.</li> </ul>                                                                                                                                                                                                |
|           | Make       | <ul style="list-style-type: none"> <li>Creating accurate shapes from templates.</li> <li>Cutting out more complex shapes accurately.</li> <li>Choosing shapes to suit the function of a product.</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>                                                                                                                                                                                                                                                                                                                           |
|           | Evaluate   | <ul style="list-style-type: none"> <li>Explaining why they think certain aspects of a peer's design are effective or why they suggested specific improvements.</li> <li>Investigating and analysing a range of existing products by looking at their functionality and appeal.</li> <li>Reflecting on feedback to decide if and how it could be used to improve future iterations.</li> </ul>                                                                                                         | <ul style="list-style-type: none"> <li>Evaluating own work and the work of others based on the aesthetic of the finished product and in comparison to the original design.</li> <li>Suggesting points for modification of the individual designs.</li> </ul>                                                                                                                                                                                                                                                                                               |
| Knowledge | Technical  | <ul style="list-style-type: none"> <li>Beginning to understand how different structures are built.</li> <li>Strengthening structures by ribbing.</li> <li>Constructing a range of 3D shapes.</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>                                                                                                                                                                                                                                                                                                                                                           |
|           | Additional | <ul style="list-style-type: none"> <li>To know that creating accurate shapes improves how they look and sometimes their function.</li> <li>To know good suggestions help give better feedback.</li> <li>To know that they can choose to use feedback or not.</li> <li>To know that a shell structure is a hollow shape with a thin outer layer.</li> <li>To know that 3D shapes can form structures.</li> <li>To know structures can be strengthened by manipulating materials and shapes.</li> </ul> | <ul style="list-style-type: none"> <li>To know the following features of a castle: flags, towers, battlements, turrets, 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> <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> |

|           |            | Year 4                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
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|           |            | Option 1: <u>Helmets</u>                                                                                                                                                                                                                                                                                                                                                                                  | Option 2: <u>Pavilions</u>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Skills    | Design     | <ul style="list-style-type: none"> <li>• Creating simple design criteria that outline basic functionality and appeal to individual users or target audiences.</li> <li>• Noticing simple problems or needs in everyday life.</li> <li>• Developing drawing and sketching skills with a focus on clarity and simplicity.</li> </ul>                                                                        | <ul style="list-style-type: none"> <li>• Designing a stable pavilion structure that is aesthetically pleasing and selecting materials to create a desired effect.</li> <li>• Building frame structures designed to support weight.</li> </ul>                                                                                                                                                                                                                                                                                                                      |
|           | Make       | <ul style="list-style-type: none"> <li>• Selecting materials, components or ingredients based on their form as well as their functional properties.</li> <li>• Explaining choices with regard to function and form.</li> <li>• Choosing shapes to suit the function of a product.</li> </ul>                                                                                                              | <ul style="list-style-type: none"> <li>• Creating a range of different shaped frame structures.</li> <li>• Making a variety of free standing frame structures of different shapes and sizes.</li> <li>• Selecting appropriate materials to build a strong structure and cladding.</li> <li>• Reinforcing corners to strengthen a structure.</li> <li>• Creating a design in accordance with a plan.</li> <li>• Learning to create different textural effects with materials.</li> </ul>                                                                            |
|           | Evaluate   | <ul style="list-style-type: none"> <li>• Evaluating designs by comparing them against design criteria.</li> <li>• Considering feedback from peers to suggest improvements.</li> <li>• Evaluating how effective the chosen materials were in fulfilling the design brief.</li> </ul>                                                                                                                       | <ul style="list-style-type: none"> <li>• Evaluating structures made by the class.</li> <li>• Describing what characteristics of a design and construction made it the most effective.</li> <li>• Considering effective and ineffective designs.</li> </ul>                                                                                                                                                                                                                                                                                                         |
| Knowledge | Technical  | <ul style="list-style-type: none"> <li>• Strengthening structures by layering materials (lamination).</li> <li>• Strengthening structures by ribbing.</li> <li>• To know how some different structures are built.</li> <li>• To know that structures can be strengthened by manipulating materials and shapes.</li> <li>• To know a shell structure is a hollow shape with a thin outer layer.</li> </ul> | <ul style="list-style-type: none"> <li>• To understand what a frame structure is.</li> <li>• To know that a 'free-standing' structure is one which can stand on its own.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                |
|           | Additional | <ul style="list-style-type: none"> <li>• To know form is the look and shape of something.</li> <li>• To know function is what something does and how it works.</li> <li>• To know that creating accurate shapes improves how they look and sometimes their function.</li> <li>• To know choices of materials and equipment can affect the final product.</li> </ul>                                       | <ul style="list-style-type: none"> <li>• To know that a pavilion is a decorative building or structure for leisure activities.</li> <li>• To know that cladding can be applied to structures for different effects.</li> <li>• To know that aesthetics are how a product looks.</li> <li>• To know that a product's function means its purpose.</li> <li>• To understand that the target audience means the person or group of people a product is designed for.</li> <li>• To know that architects consider light, shadow and patterns when designing.</li> </ul> |

|           |            | Year 5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Year 6                                                                                                                                                                                                                                                                                                                     |
|-----------|------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|           |            | <u>Bridges</u>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | <u>Playgrounds</u>                                                                                                                                                                                                                                                                                                         |
| Skills    | Design     | <ul style="list-style-type: none"> <li>• Designing a stable structure that is able to support weight.</li> <li>• Creating a frame structure with a focus on triangulation.</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>                                                                                    |
|           | Make       | <ul style="list-style-type: none"> <li>• Making a range of different shaped beam bridges.</li> <li>• Using triangles to create truss bridges that span a given distance and support a load.</li> <li>• Building a wooden bridge structure.</li> <li>• Independently measuring and marking wood accurately.</li> <li>• Selecting appropriate tools and equipment for particular tasks.</li> <li>• Using the correct techniques to saw safely.</li> <li>• Identifying where a structure needs reinforcement and using card corners for support.</li> <li>• Explaining why selecting appropriating materials is an important part of the design process.</li> <li>• Understanding basic wood functional properties.</li> </ul> | <ul style="list-style-type: none"> <li>• Building a range of play apparatus structures drawing upon new and prior 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> |
|           | Evaluate   | <ul style="list-style-type: none"> <li>• Adapting and improving own bridge structure by identifying points of weakness and reinforcing them as necessary.</li> <li>• Suggesting points for improvements for own bridges and those designed by others.</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>                                                                                 |
| Knowledge | Technical  | <ul style="list-style-type: none"> <li>• To understand some different ways to reinforce structures.</li> <li>• To understand how triangles can be used to reinforce bridges.</li> <li>• To know that properties are words that describe the form and function of materials.</li> <li>• To understand why material selection is important based on properties.</li> <li>• To understand the material (functional and aesthetic) properties of wood.</li> </ul>                                                                                                                                                                                                                                                               | <ul style="list-style-type: none"> <li>• To know that structures can be strengthened by manipulating materials and shapes.</li> </ul>                                                                                                                                                                                      |
|           | Additional | <ul style="list-style-type: none"> <li>• To understand the difference between arch, beam, truss and suspension bridges.</li> <li>• To understand how to carry and use a saw safely.</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> <li>• To know that a prototype is a cheap model to test a design idea.</li> </ul>                                        |

Year 1

Option 1: Matching slider game

|           |            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
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| Skills    | Design     | <ul style="list-style-type: none"> <li>Thinking about what others might want from a design.</li> <li>Beginning to recognise how products and designs in the world around us solve certain needs.</li> <li>Considering who they are designing for – by identifying the user.</li> <li>Stating what they intend to make and why – by identifying the purpose.</li> <li>Talking about ideas with purpose and user in mind.</li> <li>Talking about existing products when generating ideas.</li> <li>Creating mock-ups to communicate designs.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|           | Make       | <ul style="list-style-type: none"> <li>Planning more than one step ahead.</li> <li>Choosing between a small number of materials, ingredients or components.</li> <li>Explaining their choices based on personal experiences.</li> <li>Requesting equipment appropriate to the purpose. (e.g. scissors for cutting, glue for joining).</li> <li>Explaining in simple terms why certain tools must be handled carefully.</li> <li>Following and recalling simple safety instructions.</li> <li>Beginning to use objects with a fixed width or length to create even spacing of markings or cuts. (e.g. a lolly stick).</li> <li>Refining their grip to cut competently and confidently.</li> <li>Cutting straight lines and evenly spaced lines.</li> <li>Beginning to cut large shapes and thicker materials like card.</li> <li>Puncturing holes.</li> <li>Applying masking tape to fix something in place or join to edges.</li> <li>Using tools, like scissors, to create shapes.</li> <li>Beginning to cut large shapes and thicker materials like card.</li> </ul> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|           | Evaluate   | <ul style="list-style-type: none"> <li>Discussing existing products, saying what they like about them.</li> <li>Discussing how their products could be improved based on personal preferences.</li> <li>Saying what they like about their peers' designs and products.</li> <li>Accepting feedback and understanding it is meant to improve their work.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Knowledge | Technical  | <ul style="list-style-type: none"> <li>Recognising and exploring everyday objects that have mechanisms.</li> <li>Recognising everyday objects that use a slider mechanism (e.g. drawers, sliding doors, paper trimmer).</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|           | Additional | <ul style="list-style-type: none"> <li>To know that the 'user' is the person who will use the product.</li> <li>To know that different users may want different things from a design.</li> <li>To know that designers usually design and make something to solve a problem.</li> <li>To know that who they are designing for makes a difference to what they design.</li> <li>To know that the purpose is what something is for.</li> <li>To know that a mock-up is a model of how something works.</li> <li>To know that choosing different materials or components will have an effect on what their product does or looks like.</li> <li>To know that different equipment does different things.</li> <li>To know the names of common pieces of equipment.</li> <li>To know that some tools are sharp like scissors and knives.</li> <li>To know that following instructions helps with safety.</li> </ul>                                                                                                                                                          | <ul style="list-style-type: none"> <li>To know that cutting in a straight line can be helpful when making.</li> <li>To know that some products will be better than others.</li> <li>To know that their ideas or products can be made better.</li> <li>To know that many things that move have parts inside to help them work.</li> <li>To know that mechanisms usually limit unwanted movement.</li> <li>To know that a slider mechanism moves an object in a straight line (e.g. left/right, up/down).</li> <li>To know that sliding mechanisms are designed to keep movement in one direction (e.g. using guides/rails etc).</li> </ul> |

|           |            | Year 1                                                                                                                                                                                                                                                                                                                                                                                                     |
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|           |            | Option 2: <a href="#">Making a moving storybook</a>                                                                                                                                                                                                                                                                                                                                                        |
| Skills    | Design     | <ul style="list-style-type: none"> <li>Explaining how to adapt mechanisms, using bridges or guides to control the movement.</li> <li>Designing a moving story book for a given audience.</li> </ul>                                                                                                                                                                                                        |
|           | Make       | <ul style="list-style-type: none"> <li>Following a design to create moving models that use levers and sliders.</li> </ul>                                                                                                                                                                                                                                                                                  |
|           | Evaluate   | <ul style="list-style-type: none"> <li>Testing a finished product, seeing whether it moves as planned and if not, explaining why and how it can be fixed.</li> <li>Reviewing the success of a product by testing it with its intended audience.</li> </ul>                                                                                                                                                 |
| Knowledge | Technical  | <ul style="list-style-type: none"> <li>To know that a mechanism is the parts of an object that move together.</li> <li>To know that a slider mechanism moves an object from side to side.</li> <li>To know that a slider mechanism has a slider, slots , guides and an object.</li> <li>To know that bridges and guides are bits of card that purposefully restrict the movement of the slider.</li> </ul> |
|           | Additional | <ul style="list-style-type: none"> <li>To know that in Design and technology we call a plan a 'design'.</li> </ul>                                                                                                                                                                                                                                                                                         |

|           |            | Year 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
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|           |            | Option 1: <u>Wheels and axles</u>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Skills    | Design     | <ul style="list-style-type: none"> <li>Thinking about what others might want from a design.</li> <li>Beginning to recognise how products and designs in the world around us solve certain needs.</li> <li>Considering who they are designing for - by identifying the user.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | <ul style="list-style-type: none"> <li>Stating what they intend to make and why - by identifying the purpose.</li> <li>Talking about ideas with purpose and user in mind.</li> <li>Talking about existing products when generating ideas.</li> <li>Using basic drawing skills to communicate ideas.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|           | Make       | <ul style="list-style-type: none"> <li>Planning more than one step ahead.</li> <li>Choosing between a small number of materials, ingredients or components.</li> <li>Explaining their choices based on personal experiences.</li> <li>Requesting equipment appropriate to the purpose (e.g. scissors for cutting and glue for joining).</li> <li>Explaining in simple terms why certain tools must be handled carefully.</li> <li>Following and recalling simple safety instructions.</li> </ul>                                                                                                                                                                                                                                                                                         | <ul style="list-style-type: none"> <li>Finding the middle of an object.</li> <li>Refining their grip to cut competently and confidently.</li> <li>Cutting straight lines and evenly spaced lines.</li> <li>Beginning to cut large shapes and thicker materials like card.</li> <li>Puncturing holes.</li> <li>Recognising the edges of paper and card need to be stuck firmly using a glue stick.</li> <li>Using tools, like scissors, to create shapes.</li> <li>Beginning to cut large shapes and thicker materials like card.</li> <li>Beginning to use controlled painting or colouring techniques to finish a product.</li> <li>Adding texture to create visual interest.</li> </ul>                                                                                                                                                                                                             |
|           | Evaluate   | <ul style="list-style-type: none"> <li>Discussing existing products, saying what they like about them.</li> <li>Comparing two products and discussing which is better for a specific purpose.</li> <li>Discussing how their products could be improved based on personal preferences.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | <ul style="list-style-type: none"> <li>Comparing their finished products with their original designs.</li> <li>Saying what they like about their peers' designs and products.</li> <li>Accepting feedback and understanding it is meant to improve their work.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Knowledge | Technical  | <ul style="list-style-type: none"> <li>Recognising and exploring everyday objects that have mechanisms.</li> <li>Many things that move have parts inside to help them work.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | <ul style="list-style-type: none"> <li>Mechanisms usually limit unwanted movement.</li> <li>An axle allows the wheel to turn without falling off.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|           | Additional | <ul style="list-style-type: none"> <li>To know that the 'user' is the person who will use the product.</li> <li>To know that different users may want different things from a design.</li> <li>To know that designers usually design and make something to solve a problem.</li> <li>To know that who they are designing for makes a difference to what they design.</li> <li>To know that the purpose is what something is for.</li> <li>To know that existing products can help when deciding what to design.</li> <li>To know that drawings are a way to explain ideas.</li> <li>To know that a plan is deciding what to do first and next.</li> <li>To know that choosing different materials or components will have an effect on what their product does or looks like.</li> </ul> | <ul style="list-style-type: none"> <li>To know that different equipment does different things.</li> <li>To know the names of common pieces of equipment.</li> <li>To know that some tools are sharp like scissors and knives.</li> <li>To know that following instructions helps with safety.</li> <li>To know that cutting in a straight line can be helpful when making.</li> <li>To know that tools can be used to shape objects.</li> <li>To know that different materials can be shaped by different tools.</li> <li>To know that some products will be better than others.</li> <li>To know that their ideas or products can be made better.</li> <li>To know that their final product might be different to their original idea.</li> <li>To know that their ideas can make someone else's work better.</li> <li>To know that other people's ideas can help make their work better.</li> </ul> |

|           |            | Year 1                                                                                                                                                                                                                                                                                                                                                                                   |
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|           |            | Option 2: <u>Wheels and axles</u>                                                                                                                                                                                                                                                                                                                                                        |
| Skills    | Design     | <ul style="list-style-type: none"> <li>• Designing a vehicle that includes wheels, axles and axle holders, that when combined, will allow the wheels to move.</li> <li>• Creating clearly labelled drawings that illustrate movement.</li> </ul>                                                                                                                                         |
|           | Make       | <ul style="list-style-type: none"> <li>• Adapting mechanisms: <ul style="list-style-type: none"> <li>• when they do not work as they should;</li> <li>• to fit their vehicle design;</li> <li>• to improve how they work after testing their vehicle.</li> </ul> </li> </ul>                                                                                                             |
|           | Evaluate   | <ul style="list-style-type: none"> <li>• Testing wheel and axle mechanisms, identifying what stops the wheels from turning and recognising that a wheel needs an axle in order to move.</li> </ul>                                                                                                                                                                                       |
| Knowledge | Technical  | <ul style="list-style-type: none"> <li>• To know that wheels need to be round to rotate and move.</li> <li>• To understand that for a wheel to move, it must be attached to a rotating axle.</li> <li>• To know that an axle moves within an axle holder which is fixed to the vehicle or toy.</li> <li>• To know that the frame of a vehicle (chassis) needs to be balanced.</li> </ul> |
|           | Additional | <ul style="list-style-type: none"> <li>• To know some real-life items that use wheels such as wheelbarrows, hamster wheels and vehicles.</li> </ul>                                                                                                                                                                                                                                      |

|           |            | Year 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
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|           |            | <u>Fairground wheel</u>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | <u>Making a moving monster</u>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Skills    | Design     | <ul style="list-style-type: none"> <li>• Conducting simple surveys or discussions to gather opinions on what others need or like in a design.</li> <li>• Knowing that a survey is used to find out what people like.</li> <li>• Using a simple design brief that outlines the intended use, target user, and key features of the product, to create simple design criteria.</li> <li>• Knowing that a design brief helps to decide what to make.</li> <li>• Knowing that design criteria are the steps for making a product successful.</li> <li>• Creating ideas with design criteria in mind.</li> <li>• Referring to specific parts of existing products when generating ideas.</li> <li>• Knowing that the design criteria help when thinking of ideas.</li> <li>• Using labels to explain parts of a design, label materials, etc.</li> <li>• Using labels to explain parts of a design, label materials, etc.</li> <li>• Knowing that drawings can help explain how something works.</li> <li>• Knowing that a label explains part of a drawing.</li> </ul> | <ul style="list-style-type: none"> <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>                                                                                                                                                                                                                                                                                                                                                                   |
|           | Make       | <ul style="list-style-type: none"> <li>• Choosing materials, ingredients or components from a wider range of materials, ingredients or components.</li> <li>• Explaining their choices based on the properties of materials and components.</li> <li>• Knowing some properties of materials like hard, soft, flexible, waterproof, strong etc.</li> <li>• Following and recalling simple safety instructions.</li> <li>• Knowing that some tools are sharp like scissors and knives.</li> <li>• Choosing known geometric shapes when making.</li> <li>• Beginning to shape objects to improve how they work.</li> <li>• Knowing the names of some geometric shapes: triangle, pyramid, square, cube, circle, sphere.</li> <li>• Considering balance in their finishing, like evenly spaced decoration.</li> </ul>                                                                                                                                                                                                                                                 | <ul style="list-style-type: none"> <li>• 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>                                                                                                                                                                                                                                                                                                     |
|           | Evaluate   | <ul style="list-style-type: none"> <li>• Discussing a range of existing products and saying what they like and dislike about them.</li> <li>• Evaluating existing products against design criteria.</li> <li>• Evaluating their ideas and creations against simple design criteria.</li> <li>• Knowing that design criteria help to decide if their product is a success.</li> <li>• Suggesting improvements to their peers' designs and products.</li> <li>• Knowing that improve means to make something better.</li> <li>• Knowing that their suggestions can improve someone else's work.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                          | <ul style="list-style-type: none"> <li>• Evaluating own designs against design criteria.</li> <li>• Using peer feedback to modify a final design.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Knowledge | Technical  | <ul style="list-style-type: none"> <li>• To know everyday objects have mechanisms.</li> <li>• To know many things that move have parts inside to help them work.</li> <li>• To know mechanisms usually limit unwanted movement.</li> <li>• To know everyday objects utilise wheels and axles.</li> <li>• To know wheels must be able to turn to work effectively.</li> <li>• To know axles allow wheels to turn without falling off.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | <ul style="list-style-type: none"> <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> |
|           | Additional | <ul style="list-style-type: none"> <li>• To know the features of a fairground wheel include the wheel, frame, pods, a base an axle and an axle holder.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | <ul style="list-style-type: none"> <li>• To know some real-life objects that contain mechanisms.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |

Year 3

Option 1: Pneumatic toys

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| Skills    | Design     | <ul style="list-style-type: none"> <li>• Creating simple design criteria that outline basic functionality and appeal to individual users or target audiences.</li> <li>• Taking part in structured idea blasting sessions.</li> <li>• Coming up with more ideas and considering the feasibility of their ideas in the classroom.</li> <li>• Developing drawing and sketching skills with a focus on clarity and simplicity.</li> <li>• Developing designs by adding detail and justifications about materials, tools, methods.</li> <li>• Beginning to recognise the benefit of a range of diagram types or prototypes to communicate ideas. (e.g. sketches, cross-sectional diagram, thumbnail sketches and exploded diagrams).</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|           | Make       | <ul style="list-style-type: none"> <li>• Selecting equipment required for a series of tasks based on the plan. Explain why each piece is suitable for each stage.</li> <li>• Suggesting simple safety rules based on their understanding of tool dangers.</li> <li>• Participating in discussions about classroom safety procedures.</li> <li>• Cutting out more complex shapes accurately.</li> <li>• Handle different sizes and types of scissors with confidence.</li> <li>• Using PVA glue to join corrugated card and light wood (e.g. balsa wood).</li> <li>• Choosing shapes to suit the function of a product.</li> <li>• Painting or colouring precisely to improve the finish.</li> <li>• Making facades from a range of materials.</li> <li>• Sealing edges with tape to cover gaps in joins.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|           | Evaluate   | <ul style="list-style-type: none"> <li>• Analysing why specific products, designers or inventors are successful.</li> <li>• Evaluating their designs by comparing them against design criteria and considering feedback from peers to suggest improvements.</li> <li>• Explaining why they think certain aspects of a peer's design are effective or why they suggested specific improvements.</li> <li>• Reflecting on feedback to decide if and how it could be used to improve future iterations.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Knowledge | Technical  | <ul style="list-style-type: none"> <li>• Beginning to understand how mechanisms work.</li> <li>• Recognising pneumatic systems in everyday objects (e.g. car boot, adjustable chair.)</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|           | Additional | <ul style="list-style-type: none"> <li>• To know that a problem or need is something that a designer can help to solve.</li> <li>• To know that extra information on drawings or diagrams can help the user understand a design or idea.</li> <li>• To know that thumbnail sketches are less detailed quick sketches.</li> <li>• To know that a cross-sectional diagram shows the inside of a product.</li> <li>• To know that an exploded diagram shows how the parts of a product fit together.</li> <li>• To know that different pieces of equipment will be used at different stages in a plan.</li> <li>• To know that different tools and equipment have different dangers.</li> <li>• To know that scissors are useful for cutting out complex shapes,</li> <li>• To know that designers and inventors create products.</li> <li>• To know that choices of materials and equipment can affect the final product.</li> <li>• To know that feedback is ideas and suggestions from other people that can help improve their work.</li> <li>• To know that they can choose to use feedback or not.</li> <li>• To understand that a mechanical system can allow us to move something more easily.</li> <li>• To know that mechanical systems have more than one mechanism that moves to make them work.</li> <li>• To know that mechanical systems are often hidden in products to make them look more appealing.</li> <li>• To know that pushing air can be used to move a mechanism.</li> <li>• To know that pivots can be used to create more movement in the mechanical system.</li> <li>• To know that a combination of mechanisms can improve a product.</li> </ul> |

|           |            | Year 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
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|           |            | Option 2: <u>Pneumatic toys</u>                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Skills    | Design     | <ul style="list-style-type: none"> <li>• Designing a toy which uses a pneumatic system.</li> <li>• Developing design criteria from a design brief.</li> <li>• Generating ideas using thumbnail sketches and exploded diagrams.</li> <li>• Learning that different types of drawings are used in design to explain ideas clearly.</li> </ul>                                                                                                                                                                   |
|           | Make       | <ul style="list-style-type: none"> <li>• Creating a pneumatic system to create a desired motion.</li> <li>• Building secure housing for a pneumatic system.</li> <li>• Using syringes and balloons to create different types of pneumatic systems to make a functional and appealing pneumatic toy.</li> <li>• Selecting materials due to their functional and aesthetic characteristics.</li> <li>• Manipulating materials to create different effects by cutting, creasing, folding and weaving.</li> </ul> |
|           | Evaluate   | <ul style="list-style-type: none"> <li>• Using the views of others to improve designs.</li> <li>• Testing and modifying the outcome, suggesting improvements.</li> <li>• Understanding the purpose of exploded-diagrams through the eyes of a designer and their client.</li> </ul>                                                                                                                                                                                                                           |
| Knowledge | Technical  | <ul style="list-style-type: none"> <li>• To understand how pneumatic systems work.</li> <li>• To understand that pneumatic systems can be used as part of a mechanism.</li> <li>• To know that pneumatic systems operate by drawing in, releasing and compressing air.</li> </ul>                                                                                                                                                                                                                             |
|           | Additional | <ul style="list-style-type: none"> <li>• To understand how sketches, drawings and diagrams can be used to communicate design ideas.</li> <li>• To know that exploded-diagrams are used to show how different parts of a product fit together.</li> <li>• To know that thumbnail sketches are small drawings to get ideas down on paper quickly.</li> </ul>                                                                                                                                                    |

|           |            | Year 4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
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|           |            | <u>Mechanical cars</u>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Skills    | Design     | <ul style="list-style-type: none"> <li>• Taking part in structured brainstorming sessions.</li> <li>• Developing drawing and sketching skills with a focus on clarity and simplicity.</li> <li>• Beginning to recognise the benefit of a range of diagram types or prototypes to communicate ideas. (e.g. sketches, cross-sectional diagram, thumbnail sketches and exploded diagrams)</li> <li>• Creating prototypes using materials with similar properties to their final design.</li> <li>• Creating simple design criteria that outline basic functionality and appeal to individual users or target audiences.</li> <li>• Developing designs by adding detail and justifications about materials, tools, methods.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                     |
|           | Make       | <ul style="list-style-type: none"> <li>• Following detailed safety instructions.</li> <li>• Using a ruler as a measuring tool with increasing accuracy by creating spaced marks using millimetres and measuring lengths of objects.</li> <li>• Handle different sizes and types of scissors with confidence.</li> <li>• With close supervision using a hot glue gun to join wooden materials (e.g. lolly sticks).</li> <li>• Selecting equipment required for a series of tasks based on the plan. Explain why each piece is suitable for each stage.</li> <li>• Selecting materials, components or ingredients from a wider choice but within a limited design space (e.g. seasonal ingredients from May and June in the UK).</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                              |
|           | Evaluate   | <ul style="list-style-type: none"> <li>• Explaining why they think certain aspects of a peer's design are effective or why they suggested specific improvements.</li> <li>• Reflecting on feedback to decide if and how it could be used to improve future iterations.</li> <li>• Investigating and analysing a range of existing products by looking at their functionality and appeal.</li> <li>• Analysing why specific products, designers or inventors are successful.</li> <li>• Evaluating their designs by comparing them against design criteria and considering feedback from peers to suggest improvements.</li> <li>• Evaluating how effective their chosen materials and tools were in fulfilling the design brief.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                            |
| Knowledge | Technical  | <ul style="list-style-type: none"> <li>• To understand that a mechanical system can allow us to move something more easily.</li> <li>• To know that mechanical systems have more than one mechanism that moves to make them work.</li> <li>• To know that mechanical systems are often hidden in products to make them look more appealing.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|           | Additional | <ul style="list-style-type: none"> <li>• To know that extra information on drawings or diagrams can help the user understand a design or idea.</li> <li>• To know that an exploded diagram shows how the parts of a product fit together.</li> <li>• To know that a prototype is a detailed model that helps a user understand how a product will work.</li> <li>• To know that a target audience is a group of people that might like the idea.</li> <li>• To know that different tools and equipment have different dangers.</li> <li>• To know that a ruler can be used to measure length.</li> <li>• To know that a hot glue gun can be used to join materials.</li> <li>• To know that better suggestions of improvements mean better feedback.</li> <li>• To know that they can choose to use feedback or not.</li> <li>• To know that some products are more successful than other because of their function.</li> <li>• To know that choices of materials and equipment can affect the final product.</li> <li>• To know that feedback is ideas and suggestions from other people that can help improve their work.</li> </ul> |

|           |            | Year 5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|-----------|------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|           |            | <u>Gears and pulleys</u>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Skills    | Design     | <ul style="list-style-type: none"> <li>Noticing wider-reaching problems or needs in the community.</li> <li>Identifying a wide range of needs and potential barriers through market research.</li> <li>Writing more complex problem statements that consider multiple factors and constraints.</li> <li>Creating more complex design criteria that require considering detailed user needs, environmental impact, materials and cost.</li> <li>Coming up with a broader range of ideas and deeper innovation, requiring pupils to think critically about their ideas' practicality and originality.</li> <li>Beginning to use more complex annotated sketches, such as cross-sectional and exploded diagrams and pattern pieces in design.</li> <li>Using a series of prototypes to refine and improve their designs.</li> </ul>                                                                                                                                                                                                                                                                      |
|           | Make       | <ul style="list-style-type: none"> <li>Consistently apply safety instructions.</li> <li>Select appropriate scissors to handle delicate cutting tasks and challenging materials.</li> <li>Cutting patterns and drawings accurately.</li> <li>In supervised groups, using hot glue guns safely.</li> <li>Recognising that hot glue is useful for joining materials that need a strong bond that sets quickly.</li> <li>Choosing PVA glue over hot glue for its safety when joining materials in less intensive projects.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|           | Evaluate   | <ul style="list-style-type: none"> <li>Reflecting on the usability, aesthetics, innovation and sustainability of products and discussing how design choices impact these aspects.</li> <li>Assessing their designs against a more complex set of design criteria that includes functionality, aesthetics, user experience, sustainability and cost.</li> <li>Considering alternative materials, tools or techniques that could enhance the product.</li> <li>Providing feedback that is helpful, specific, and encouraging.</li> <li>Incorporating feedback from peers or users improves their product further, explaining the changes they made and the impact they had.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Knowledge | Technical  | <ul style="list-style-type: none"> <li>That mechanical systems that use gears in everyday objects (e.g. bicycle, clock).</li> <li>That gears and pulleys allow us to transfer movement and force from one part of a mechanical system to another.</li> <li>That gears allow us to increase the output of a mechanism.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|           | Additional | <ul style="list-style-type: none"> <li>That market research is a way of collecting information about problems or needs.</li> <li>That constraints are things that might stop our ideas being successful.</li> <li>That original and innovative ideas are different from what has been made before.</li> <li>That annotations are detailed labels and comments on diagrams.</li> <li>That risks are things that might happen.</li> <li>That hot glue creates a strong bond quickly.</li> <li>That is often better to choose safer equipment.</li> <li>That sustainability means thinking about the materials that were used to make a product and how the product was made.</li> <li>That their final product can still be improved by different materials or techniques.</li> <li>That evaluating their designs in detail will help them understand its successful and less successful parts.</li> <li>That feedback should be positive, helpful and specific.</li> <li>That explaining how they used feedback to improve their design can help them create better products in the future.</li> </ul> |

|           |            | Year 6                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|-----------|------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|           |            | <u>Automata toys</u>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Skills    | Design     | <ul style="list-style-type: none"> <li>• Noticing wider-reaching problems or needs in the community.</li> <li>• Coming up with a broader range of ideas and deeper innovation, requiring pupils to think critically about their ideas' practicality and originality.</li> <li>• Beginning to use more complex annotated sketches, such as cross-sectional and exploded diagrams and pattern pieces in design.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|           | Make       | <ul style="list-style-type: none"> <li>• Producing lists of equipment, materials and tools that they need for a task.</li> <li>• Selecting materials, components or ingredients based on research or user needs.</li> <li>• Explaining their choices, referring to their research.</li> <li>• Considering which equipment will work well together.</li> <li>• Choosing from the known range of equipment available to them with little guidance.</li> <li>• Assessing risks associated with different tools and equipment.</li> <li>• Understanding and explaining each safety rule's importance.</li> <li>• Consistently apply safety instructions.</li> <li>• Cutting jelutong or other harder wood with a coping saw or a tenon saw in small groups.</li> <li>• Cutting in a back-and-forth sawing motion where appropriate.</li> <li>• In supervised groups, using hot glue guns safely.</li> <li>• Recognising that hot glue is useful for joining materials that need a strong bond that sets quickly.</li> </ul> |
|           | Evaluate   | <ul style="list-style-type: none"> <li>• Assessing their designs against a more complex set of design criteria that includes functionality, aesthetics, user experience, sustainability and cost.</li> <li>• Providing feedback that is helpful, specific and encouraging.</li> <li>• Incorporating feedback from peers or users to improve their product further, explaining the changes they made and the impact they had.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Knowledge | Technical  | <ul style="list-style-type: none"> <li>• To know that the mechanism in an automata uses a system of cams, axles and followers.</li> <li>• To know that different shaped cams produce different outputs.</li> <li>• To know which mechanisms are working together to make a mechanical system.</li> <li>• To know that there are different directions of movement.</li> <li>• To know that mechanisms can change one type of movement to another.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|           | Additional | <ul style="list-style-type: none"> <li>• To know that an automata is a hand powered mechanical toy.</li> <li>• To know that a cross-sectional diagram shows the inner workings of a product.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |

|           |            | Year 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Year 4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|-----------|------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|           |            | <u>Electric poster</u>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | <u>Torches</u>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Skills    | Design     | <ul style="list-style-type: none"> <li>Carry out research based on a given topic (e.g. The Romans) to develop a range of initial ideas.</li> <li>Generate a final design for the electric poster with consideration to the client's needs and design criteria.</li> <li>Design an electric poster that fits the requirements of a given brief.</li> <li>Plan the positioning of the bulb (circuit component) and its purpose.</li> </ul>                                                                                                                                                                            | <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>                                                                                                                                                                                                                                                                                                                   |
|           | Make       | <ul style="list-style-type: none"> <li>Create a final design for the electric poster.</li> <li>Mount the poster onto corrugated card to improve its strength and allow it to withstand the weight of the circuit on the rear.</li> <li>Measure and mark materials out using a template or ruler.</li> <li>Fit an electrical component (bulb).</li> <li>Learn ways to give the final product a higher quality finish (e.g. framing to conceal a roughly cut edge).</li> </ul>                                                                                                                                        | <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>                                                                                                                                                                                                                                                                        |
|           | Evaluate   | <ul style="list-style-type: none"> <li>Learning to give and accept constructive criticism on own work and the work of others.</li> <li>Testing the success of initial ideas against the design criteria and justifying opinions.</li> <li>Revisiting the requirements of the client to review developing design ideas and check that they fulfil their needs.</li> </ul>                                                                                                                                                                                                                                            | <ul style="list-style-type: none"> <li>Evaluating electrical products.</li> <li>Testing and evaluating the success of a final product.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                 |
| Knowledge | Technical  | <ul style="list-style-type: none"> <li>To understand that an electrical system is a group of parts (components) that work together to transport electricity around a circuit.</li> <li>To understand common features of an electric product (switch, battery or plug, dials, buttons, etc.).</li> <li>To list examples of common electric products (kettle, remote control etc.).</li> <li>To understand that an electric product uses an electrical system to work (function).</li> <li>To know the name and appearance of a bulb, battery, battery holder and crocodile wire to build simple circuits.</li> </ul> | <ul style="list-style-type: none"> <li>To understand that electrical conductors are materials which electricity can pass through.</li> <li>To understand that electrical insulators are materials which electricity cannot pass through.</li> <li>To know that a battery contains stored electricity that can be used to power products.</li> <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> |
|           | Additional | <ul style="list-style-type: none"> <li>To understand the importance and purpose of information design.</li> <li>To understand how material choices (such as mounting paper to corrugated card) can improve a product to serve its purpose (remain rigid without bending when the electrical circuit is attached).</li> </ul>                                                                                                                                                                                                                                                                                        | <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>                                                                                                                                                                                                                                                          |

Year 5

Option 1: Wobble bots

|           |            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|-----------|------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Skills    | Design     | <ul style="list-style-type: none"> <li>• Creating more complex design criteria that require considering detailed user needs, environmental impact, materials and cost.</li> <li>• Developing more independence in generating ideas.</li> <li>• Coming up with a broader range of ideas and deeper innovation, requiring pupils to think critically about their ideas' practicality and originality.</li> <li>• Using a series of prototypes to refine and improve their designs.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|           | Make       | <ul style="list-style-type: none"> <li>• Producing lists of equipment, materials and tools that they need for a task.</li> <li>• Creating a step-by-step plan for making.</li> <li>• Selecting materials, components or ingredients based on research or user needs.</li> <li>• Explaining their choices, referring to their research.</li> <li>• Understanding and explaining each safety rule's importance.</li> <li>• Consistently apply safety instructions.</li> <li>• Balancing aesthetics and functionality when creating parts of a design.</li> <li>• Considering when best to apply finishing effects.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|           | Evaluate   | <ul style="list-style-type: none"> <li>• Reflecting on the usability, aesthetics, innovation and sustainability of products and discussing how design choices impact these aspects.</li> <li>• Assessing their designs against a more complex set of design criteria that includes functionality, aesthetics, user experience, sustainability and cost.</li> <li>• Considering alternative materials, tools or techniques that could enhance the product.</li> <li>• Providing feedback that is helpful, specific, and encouraging.</li> <li>• Incorporating feedback from peers or users to improve their product further, explaining the changes they made and the impact they had.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Knowledge | Technical  | <ul style="list-style-type: none"> <li>• Beginning to understand that electricity flows around a circuit.</li> <li>• Using different components to produce different results from electrical systems.</li> <li>• Creating working electrical circuits with a wider variety of electrical components.</li> <li>• Deconstructing electrical systems to understand how they work.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|           | Additional | <ul style="list-style-type: none"> <li>• To know environmental impact is how the product and making the product might affect the environment.</li> <li>• To know original and innovative ideas are different from what has been made before.</li> <li>• To know annotations are detailed labels and comments on diagrams.</li> <li>• To know improving on prototypes can help to improve the final design.</li> <li>• To know materials and equipment lists help to plan better.</li> <li>• To know research can help decide which materials are best for both aesthetics and functional properties.</li> <li>• To know some equipment can work well with other equipment.</li> <li>• To know risks are things that might go wrong.</li> <li>• To know the shape of an object can affect both its aesthetics and function.</li> <li>• To know sustainability means thinking about the materials that were used to make a product and how the product was made.</li> <li>• To know looking at other designers work can help inform designs.</li> <li>• To know their final product can still be improved by using different materials or techniques.</li> <li>• To know evaluating their designs in detail will help them understand its successful and less successful parts.</li> <li>• To know feedback should be positive, helpful and specific.</li> <li>• To know that explaining how they used feedback to improve their design can help them create better products in the future.</li> <li>• To know an electric motor converts electricity into rotational movement.</li> <li>• To know a motorised product is one which uses a motor to function.</li> <li>• To know the names of components that can form an electrical system.</li> </ul> |

|           |            | Year 5                                                                                                                                                                                                                                                                                                                                                                                                                                     | Year 6                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|-----------|------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|           |            | Option 2: <u>Doodlers</u>                                                                                                                                                                                                                                                                                                                                                                                                                  | <u>Steady hand game</u>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Skills    | Design     | <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 findings from investigating existing products.</li> <li>Developing design criteria that clarifies the target user.</li> </ul>                                                                                | <ul style="list-style-type: none"> <li>Designing a steady hand game - identifying and naming the components required.</li> <li>Drawing a design from three different perspectives.</li> <li>Generating ideas through sketching and discussion.</li> <li>Modelling ideas through prototypes.</li> <li>Understanding the purpose of products (toys), including what is meant by 'fit for purpose' and 'form over function'.</li> </ul>                                                                                                                                                                                               |
|           | Make       | <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>                                                              | <ul style="list-style-type: none"> <li>Constructing a stable base for a game.</li> <li>Accurately cutting, folding and assembling a net.</li> <li>Decorating the base of the game to a high quality finish.</li> <li>Making and testing a circuit.</li> <li>Incorporating a circuit into a base.</li> </ul>                                                                                                                                                                                                                                                                                                                        |
|           | Evaluate   | <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> | <ul style="list-style-type: none"> <li>Testing own and others finished games, identifying what went well and making suggestions for improvement.</li> <li>Gathering images and information about existing children's toys.</li> <li>Analysing a selection of existing children's toys.</li> </ul>                                                                                                                                                                                                                                                                                                                                  |
| Knowledge | Technical  | <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> <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>        | <ul style="list-style-type: none"> <li>To know that batteries contain acid, which can be dangerous if they leak.</li> <li>To know the names of the components in a basic series circuit, including a buzzer.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                            |
|           | Additional | <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>                                                                                                                                                                                                              | <ul style="list-style-type: none"> <li>To know that 'form' means the shape and appearance of an object.</li> <li>To know the difference between 'form' and 'function'.</li> <li>To understand that 'fit for purpose' means that a product works how it should and is easy to use.</li> <li>To know that form over purpose means that a product looks good but does not work very well.</li> <li>To know the importance of 'form follows function' when designing: the product must be designed primarily with the function in mind.</li> <li>To understand the diagram perspectives 'top view', 'side view' and 'back'.</li> </ul> |

|           |          | EYFS (Reception)                                                                                                                                                                                                                                                                                                                                                                                                                                      | Year 1                                                                                                                                                                                                                                                                                                                                                                                                                 | Year 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|-----------|----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|           |          | <u>Soup</u>                                                                                                                                                                                                                                                                                                                                                                                                                                           | <u>Smoothies</u>                                                                                                                                                                                                                                                                                                                                                                                                       | <u>Balanced diet</u>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Skills    | Design   | <ul style="list-style-type: none"> <li>• Designing a soup recipe as a class.</li> <li>• Designing soup packaging.</li> </ul>                                                                                                                                                                                                                                                                                                                          | <ul style="list-style-type: none"> <li>• Designing smoothie carton packaging by-hand.</li> <li>• Learning where and how fruits and vegetables grow.</li> </ul>                                                                                                                                                                                                                                                         | <ul style="list-style-type: none"> <li>• Designing three wrap ideas.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|           | Make     | <ul style="list-style-type: none"> <li>• Chopping plasticine safely.</li> <li>• Chopping vegetables with support.</li> </ul>                                                                                                                                                                                                                                                                                                                          | <ul style="list-style-type: none"> <li>• Chopping fruit and vegetables safely to make a smoothie.</li> <li>• Juicing fruits safely to make a smoothie.</li> <li>• Identifying if a food is a fruit.</li> </ul>                                                                                                                                                                                                         | <ul style="list-style-type: none"> <li>• Chopping foods safely to make a wrap.</li> <li>• Constructing a wrap that meets a design brief.</li> <li>• Grating foods to make a wrap.</li> <li>• Snipping smaller foods instead of cutting.</li> <li>• Spreading soft foods to make a wrap.</li> <li>• Identifying the five food groups.</li> <li>• Learning about a balanced diet.</li> </ul>                                                                                                                                                                                                                                                                                             |
|           | Evaluate | <ul style="list-style-type: none"> <li>• Tasting the soup and giving opinions.</li> <li>• Describing some of the following when tasting food: look, feel, smell and taste.</li> <li>• Choosing their favourite packaging design and explaining why.</li> </ul>                                                                                                                                                                                        | <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> <li>• Comparing their own smoothie with someone else's.</li> </ul>                                                                                                                                 | <ul style="list-style-type: none"> <li>• Describing appearance, smell and taste.</li> <li>• Tasting and evaluating different food combinations.</li> <li>• Describing the information that should be included on a label.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Knowledge |          | <ul style="list-style-type: none"> <li>• To know that soup is ingredients (usually vegetables and liquid) blended together.</li> <li>• To know that vegetables are grown.</li> <li>• To recognise and name some common vegetables.</li> <li>• To know that different vegetables taste different.</li> <li>• To know that eating vegetables is good for us.</li> <li>• To discuss why different packages might be used for different foods.</li> </ul> | <ul style="list-style-type: none"> <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 a vegetable is any edible part of a plant.</li> </ul> | <ul style="list-style-type: none"> <li>• To know that 'diet' means the food and drink that a person or animal usually eats.</li> <li>• To know what makes a balanced diet.</li> <li>• To know that the five main food groups are: Carbohydrates, fruits and vegetables, protein, dairy and foods high in fat and sugar.</li> <li>• To know that I should eat a range of different foods from each food group, and roughly how much of each food group.</li> <li>• To know that 'ingredients' means the items in a mixture or recipe.</li> <li>• To know how to cut, grate, snip and spread to prepare foods.</li> <li>• To know how to review and give a score to evaluate.</li> </ul> |

|           |          | Year 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Year 4                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|-----------|----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|           |          | <u>Eating seasonally</u>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | <u>Adapting a recipe</u>                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Skills    | Design   | <ul style="list-style-type: none"> <li>Describing how climate affects where foods grow.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | <ul style="list-style-type: none"> <li>Designing a biscuit within a given budget.</li> <li>Conducting market research.</li> </ul>                                                                                                                                                                                                                                                                                                                                    |
|           | Make     | <ul style="list-style-type: none"> <li>Identifying seasonal ingredients from the UK.</li> <li>Following the instructions within a recipe.</li> <li>Tasting seasonal ingredients.</li> <li>Peeling foods by hand or with a peeler.</li> <li>Cutting ingredients safely.</li> <li>Choosing ingredients based on a design brief.</li> </ul>                                                                                                                                                                                                                                                                           | <ul style="list-style-type: none"> <li>Following a baking recipe.</li> <li>Understanding safety and hygiene rules.</li> <li>Adapting a recipe.</li> </ul>                                                                                                                                                                                                                                                                                                            |
|           | Evaluate | <ul style="list-style-type: none"> <li>Describing the texture and flavour of ingredients.</li> <li>Describing the benefits of seasonal fruits and vegetables and the impact on the environment.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                         | <ul style="list-style-type: none"> <li>Evaluating an adapted recipe.</li> <li>Evaluating and comparing a range of products.</li> <li>Suggesting modifications.</li> </ul>                                                                                                                                                                                                                                                                                            |
| Knowledge |          | <ul style="list-style-type: none"> <li>To know that seasonal means foods that grow in a given season in a given country.</li> <li>To know some seasonal foods that grow in the UK and what season they grow in.</li> <li>To know that eating seasonal foods can have a positive impact on the environment.</li> <li>To know how to describe the flavour and texture of foods.</li> <li>To know how to cut and peel safely.</li> <li>To know that the appearance of food is as important as taste.</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 know that the amount of an ingredient in a recipe is known as the 'quantity.'</li> <li>To know that safety and hygiene are important when cooking.</li> <li>To know the following cooking techniques: sieving, measuring, stirring, cutting out and shaping.</li> <li>To know the importance of budgeting while planning ingredients for a recipe.</li> <li>To know that products often have a target audience.</li> </ul> |

|           |          | Year 5                                                                                                                                                                                                                                                                                                                                                                                                                               | Year 6                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|-----------|----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|           |          | <u>Developing a recipe</u>                                                                                                                                                                                                                                                                                                                                                                                                           | <u>Come dine with me</u>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Skills    | Design   | <ul style="list-style-type: none"> <li>• Researching existing recipes.</li> <li>• Suggesting alternative ingredients.</li> <li>• Designing a jar label.</li> </ul>                                                                                                                                                                                                                                                                   | <ul style="list-style-type: none"> <li>• Writing a recipe, explaining the key steps, method and ingredients.</li> <li>• Including facts and drawings from research undertaken.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                             |
|           | Make     | <ul style="list-style-type: none"> <li>• Writing an alternative recipe.</li> <li>• Understanding cross-contamination.</li> <li>• Using preparation skills.</li> <li>• Making a developed recipe.</li> </ul>                                                                                                                                                                                                                          | <ul style="list-style-type: none"> <li>• Following a recipe, including using the correct quantities of each ingredient.</li> <li>• Adapting a recipe based on research.</li> <li>• Working to a given timescale.</li> <li>• Working safely and hygienically with independence.</li> </ul>                                                                                                                                                                                                                                                                                             |
|           | Evaluate | <ul style="list-style-type: none"> <li>• Explaining the farm to fork process.</li> <li>• Analysing nutritional content.</li> </ul>                                                                                                                                                                                                                                                                                                   | <ul style="list-style-type: none"> <li>• Evaluating a recipe, considering: taste, smell, texture and origin of the food group.</li> <li>• Taste testing and scoring final products.</li> <li>• Suggesting and writing up points of improvements in productions.</li> <li>• Evaluating health and safety in production to minimise cross contamination.</li> </ul>                                                                                                                                                                                                                     |
| Knowledge |          | <ul style="list-style-type: none"> <li>• To know that beef comes from cows reared on farms.</li> <li>• To know that recipes can be adapted to suit nutritional needs and dietary requirements.</li> <li>• To know that nutritional information is found on food packaging.</li> <li>• To know that coloured chopping boards can prevent cross-contamination.</li> <li>• To know that food packaging serves many purposes.</li> </ul> | <ul style="list-style-type: none"> <li>• To know that 'flavour' is how a food or drink tastes.</li> <li>• To know that many countries have 'national dishes' which are recipes associated with that country.</li> <li>• To know that 'processed food' means food that has been put through multiple changes in a factory.</li> <li>• To understand that it is important to wash fruit and vegetables before eating to remove any dirt and insecticides.</li> <li>• To understand what happens to a certain food before it appears on the supermarket shelf (Farm to Fork).</li> </ul> |

|           |           | EYFS: Reception                                                                                                                                                                                                                                                                       | Year 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|-----------|-----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|           |           | <u>Bookmarks</u>                                                                                                                                                                                                                                                                      | Option 1: <u>Simple stitches</u>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Option 2: <u>Puppets</u>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Skills    | Design    | <ul style="list-style-type: none"> <li>• Discussing what a good design needs.</li> <li>• Designing a simple pattern with paper.</li> <li>• Designing a bookmark.</li> <li>• Choosing from available materials.</li> </ul>                                                             | <ul style="list-style-type: none"> <li>• Stating what they intend to make and why - identifying the purpose.</li> <li>• Talking about ideas, with purpose and user in mind.</li> <li>• Using basic drawing skills to communicate ideas.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | <ul style="list-style-type: none"> <li>• Using a template to create a design for a puppet.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|           | Make      | <ul style="list-style-type: none"> <li>• Developing fine motor/cutting skills with scissors.</li> <li>• Exploring fine motor/threading and weaving (under, over technique) with a variety of materials.</li> <li>• Using a prepared needle and wool to practise threading.</li> </ul> | <ul style="list-style-type: none"> <li>• Choosing between a small number of materials, ingredients or components.</li> <li>• Explaining their choices based on personal experiences.</li> <li>• Explaining in simple terms why certain tools must be handled carefully.</li> <li>• Following and recalling simple safety instructions.</li> <li>• Using a straightedge to draw a straight line.</li> <li>• Beginning to use objects with a fixed width or length to create even spacing of markings or cuts. (e.g. a lolly stick).</li> <li>• Using a large plastic needle and large-weave embroidery fabric to begin to create a running stitch.</li> <li>• Applying masking tape to fix something in place or join to edges.</li> <li>• Adding texture to create visual interest.</li> </ul>                                                        | <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>                                                                                                                                                                                                                                                                                                                                                                          |
|           | Evaluate  | <ul style="list-style-type: none"> <li>• Reflecting on a finished product and comparing to their design.</li> </ul>                                                                                                                                                                   | <ul style="list-style-type: none"> <li>• Saying what they like about their peers' designs and products.</li> <li>• Accepting feedback and understanding it is meant to improve their work.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | <ul style="list-style-type: none"> <li>• Reflecting on a finished product, explaining likes and dislikes.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|           | Technical |                                                                                                                                                                                                                                                                                       | <ul style="list-style-type: none"> <li>• Discussing fabric properties.</li> <li>• Threading large needles.</li> <li>• Rehearsing sewing techniques with large needles and thick thread, like wool.</li> <li>• Sewing a running stitch in large-weave embroidery fabric or hessian.</li> <li>• Creating patterns and following them with stitching.</li> <li>• Spacing stitches evenly.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Knowledge |           | <ul style="list-style-type: none"> <li>• To know that a design is a way of planning our idea before we start.</li> <li>• To know that threading is putting one material through an object.</li> </ul>                                                                                 | <ul style="list-style-type: none"> <li>• To know drawings are a way to explain ideas.</li> <li>• To know that choosing different materials or components will affect what the product does or looks like.</li> <li>• To know the names of common pieces of equipment.</li> <li>• To know that following instructions helps with safety.</li> <li>• To know that spacing cuts or marks evenly can be useful.</li> <li>• To know that texture is how something feels.</li> <li>• To know their ideas or products can be made better.</li> <li>• To know their final product might be different to their original idea.</li> <li>• To know their ideas can make someone else's work better.</li> <li>• To know other people's ideas can help make their work better.</li> <li>• To know evenly spaced stitches help when following a pattern.</li> </ul> | <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> |

|           |          | Year 2                                                                                                                                                                                                                                                                                                                                              | Year 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Year 4                                                                                                                                                                                                                                                                                                                                                                                                 |
|-----------|----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|           |          | <u>Pouches</u>                                                                                                                                                                                                                                                                                                                                      | Cross-stitch and appliqué<br><u>Cushions</u> or <u>Egyptian collars</u>                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | <u>Fastenings</u>                                                                                                                                                                                                                                                                                                                                                                                      |
| Skills    | Design   | <ul style="list-style-type: none"> <li>Designing a pouch.</li> </ul>                                                                                                                                                                                                                                                                                | <ul style="list-style-type: none"> <li>Designing and making a template from an existing cushion and applying individual design criteria.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                            | <ul style="list-style-type: none"> <li>Writing design criteria for a product, articulating decisions made.</li> <li>Designing a personalised book sleeve.</li> </ul>                                                                                                                                                                                                                                   |
|           | Make     | <ul style="list-style-type: none"> <li>Selecting and cutting fabrics for sewing.</li> <li>Decorating a pouch using fabric glue or running stitch.</li> <li>Threading a needle.</li> <li>Sewing running stitch, with evenly spaced, neat, even stitches to join fabric.</li> <li>Neatly pinning and cutting fabric using a template.</li> </ul>      | <ul style="list-style-type: none"> <li>Following design criteria to create a cushion or Egyptian collar.</li> <li>Selecting and cutting fabrics with ease using fabric scissors.</li> <li>Threading needles with greater independence.</li> <li>Tying knots with greater independence.</li> <li>Sewing cross stitch to join fabric.</li> <li>Decorating fabric using appliqué.</li> <li>Completing design ideas with stuffing and sewing the edges (Cushions) or embellishing the collars based on design ideas (Egyptian collars).</li> </ul> | <ul style="list-style-type: none"> <li>Making and testing a paper template with accuracy and in keeping with the design criteria.</li> <li>Measuring, marking and cutting fabric using a paper template.</li> <li>Selecting a stitch style to join fabric.</li> <li>Working neatly by sewing small, straight stitches.</li> <li>Incorporating a fastening to a design.</li> </ul>                      |
|           | Evaluate | <ul style="list-style-type: none"> <li>Troubleshooting scenarios posed by teacher.</li> <li>Evaluating the quality of the stitching on others' work.</li> <li>Discussing as a class, the success of their stitching against the success criteria.</li> <li>Identifying aspects of their peers' work that they particularly like and why.</li> </ul> | <ul style="list-style-type: none"> <li>Evaluating an end product and thinking of other ways in which to create similar items.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                       | <ul style="list-style-type: none"> <li>Testing and evaluating an end product against the original design criteria.</li> <li>Deciding how many of the criteria should be met for the product to be considered successful.</li> <li>Suggesting modifications for improvement.</li> <li>Articulating the advantages and disadvantages of different fastening types.</li> </ul>                            |
| Knowledge |          | <ul style="list-style-type: none"> <li>To know that sewing is a method of joining fabric.</li> <li>To know that different stitches can be used when sewing.</li> <li>To understand the importance of tying a knot after sewing the final stitch.</li> <li>To know that a thimble can be used to protect my fingers when sewing.</li> </ul>          | <ul style="list-style-type: none"> <li>To know that applique is a way of mending or decorating a textile by applying smaller pieces of fabric to larger pieces.</li> <li>To know that when two edges of fabric have been joined together it is called a seam.</li> <li>To know that it is important to leave space on the fabric for the seam.</li> <li>To understand that some products are turned inside out after sewing so the stitching is hidden.</li> </ul>                                                                             | <ul style="list-style-type: none"> <li>To know that a fastening is something which holds two pieces of material together for example a zipper, toggle, button, press stud and velcro.</li> <li>To know that different fastening types are useful for different purposes.</li> <li>To know that creating a mock up (prototype) of their design is useful for checking ideas and proportions.</li> </ul> |

|           |          | Year 5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|-----------|----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|           |          | <u>Stuffed toys</u>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Skills    | Design   | <ul style="list-style-type: none"> <li>• Designing a stuffed toy, considering the main component shapes required and creating an appropriate template.</li> <li>• Considering the proportions of individual components.</li> </ul>                                                                                                                                                                                                                                                                                                                |
|           | Make     | <ul style="list-style-type: none"> <li>• Creating a 3D stuffed toy from a 2D design.</li> <li>• Measuring, marking and cutting fabric accurately and independently .</li> <li>• Creating strong and secure blanket stitches when joining fabric.</li> <li>• Threading needles independently.</li> <li>• Using appliqué to attach pieces of fabric decoration.</li> <li>• Sewing blanket stitch to join fabric.</li> <li>• Applying blanket stitch so the spaces between the stitches are even and regular.</li> </ul>                             |
|           | Evaluate | <ul style="list-style-type: none"> <li>• Testing and evaluating an end product and giving point for further improvements.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                              |
| Knowledge |          | <ul style="list-style-type: none"> <li>• To know that blanket stitch is useful to reinforce the edges of a fabric material or join two pieces of fabric.</li> <li>• To understand that it is easier to finish simpler designs to a high standard.</li> <li>• To know that soft toys are often made by creating appendages separately and then attaching them to the main body.</li> <li>• 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.</li> </ul> |

|           |           | Year 6                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|-----------|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|           |           | Option 1: <u>Bags</u>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Option 2: <u>Waistcoats</u>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Skills    | Design    | <ul style="list-style-type: none"> <li>Beginning to use more complex annotated sketches, such as cross-sectional and exploded diagrams and pattern pieces in design.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                               | <ul style="list-style-type: none"> <li>Designing a waistcoat in accordance with a specification linked to set of design criteria.</li> <li>Annotating designs, to explain their decisions.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|           | Make      | <ul style="list-style-type: none"> <li>Using a ruler to accurately measure and draw lines and marks.</li> <li>Using nets to create 3D objects.</li> <li>Using a combination of joining techniques to ensure strong joins (for example, using safety pins to hold fabric in place while a running stitch is sewn).</li> </ul>                                                                                                                                                                                                                                                  | <ul style="list-style-type: none"> <li>Using a template when cutting fabric to ensure they achieve the correct shape.</li> <li>Using pins effectively to secure a template to fabric without creases or bulges.</li> <li>Marking and cutting fabric accurately, in accordance with their 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 features (such as appliqué) using thread.</li> <li>Finishing the waistcoat with a secure fastening (such as buttons).</li> <li>Learning different decorative stitches.</li> <li>Sewing accurately with evenly spaced, neat stitches.</li> </ul> |
|           | Evaluate  | <ul style="list-style-type: none"> <li>Reflecting on the usability, aesthetics, innovation and sustainability of products and discussing how design choices impact these aspects.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                  | <ul style="list-style-type: none"> <li>Reflecting on their work continually throughout the design, make and evaluate process.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|           | Technical | <ul style="list-style-type: none"> <li>Using pins effectively to secure a template to fabric without creases or bulges.</li> <li>Tying knots at the end of thread to secure it.</li> <li>Attaching objects like buttons using thread.</li> </ul>                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Knowledge |           | <ul style="list-style-type: none"> <li>To know how designers use pattern pieces when creating textile products.</li> <li>To know how nets can be folded to create 3D shapes.</li> <li>To know safety pins can hold fabric in place before sewing.</li> <li>To know consistently sized stitches improve the aesthetic of a product.</li> <li>To know the shape of a product can affect both its aesthetics and function.</li> <li>To know aesthetics is how something looks.</li> <li>To know complete products are sometimes made in parts that are sewn together.</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>                                                                                                                                                                                                                                                                                                                                                                                 |

|           |            | Year 3                                                                                                                                                                                                                                                                                                                                                                                                                                | Year 4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|-----------|------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|           |            | <u>Wearable technology</u>                                                                                                                                                                                                                                                                                                                                                                                                            | <u>Mindful moments timer</u>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Skills    | Design     | <ul style="list-style-type: none"> <li>• Problem solving by suggesting which features on a Micro:bit might be useful and justifying my ideas.</li> <li>• Drawing and manipulating 2D shapes, using computer-aided design, to produce a point of sale badge.</li> <li>• Developing design ideas through annotated sketches to create a product concept.</li> <li>• Developing design criteria to respond to a design brief.</li> </ul> | <ul style="list-style-type: none"> <li>• Writing design criteria for a programmed timer (Micro:bit).</li> <li>• Exploring different mindfulness strategies.</li> <li>• Applying the results of my research to further inform my design criteria.</li> <li>• Developing a prototype case for my mindful moment timer.</li> <li>• Using and manipulating shapes and clipart by using computer-aided design (CAD), to produce a logo.</li> <li>• Following a list of design requirements.</li> </ul>                                                                                                                                                                                                                                 |
|           | Make       | <ul style="list-style-type: none"> <li>• Following a list of design requirements.</li> <li>• Writing a program to control (button press) and/or monitor (sense light) that will initiate a flashing LED algorithm.</li> </ul>                                                                                                                                                                                                         | <ul style="list-style-type: none"> <li>• Developing a prototype case for my mindful moment timer.</li> <li>• Creating 3D structures using modelling materials.</li> <li>• Programming a micro:bit in the Microsoft micro:bit editor, to time a set number of seconds/minutes upon button press.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                        |
|           | Evaluate   | <ul style="list-style-type: none"> <li>• Analysing and evaluating wearable technology.</li> <li>• Using feedback from peers to improve design.</li> </ul>                                                                                                                                                                                                                                                                             | <ul style="list-style-type: none"> <li>• Investigating and analysing a range of timers by identifying and comparing their advantages and disadvantages.</li> <li>• Evaluating my Micro:bit program against points on my design criteria and amending them to include any changes I made.</li> <li>• Documenting and evaluating my project.</li> <li>• Understanding what a logo is and why they are important in the world of design and business.</li> <li>• Testing my program for bugs (errors in the code).</li> <li>• Finding and fixing the bugs (debug) in my code.</li> <li>• Using an exhibition to gather feedback.</li> <li>• Gathering feedback from the user to make suggested improvements to a product.</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> <li>• To know that a Micro:bit is a pocket-sized, codeable computer.</li> <li>• To know that a simulator is able to replicate the functions of an existing piece of technology.</li> </ul>                                                                                   | <ul style="list-style-type: none"> <li>• To understand what variables are in programming.</li> <li>• To know some of the features of a Micro:bit.</li> <li>• To know that an algorithm is a set of instructions to be followed by the computer.</li> <li>• To know that it is important to check my code for errors (bugs).</li> <li>• To know that a simulator can be used as a way of checking your code works before installing it onto an electronic device.</li> </ul>                                                                                                                                                                                                                                                       |
|           | Additional | <ul style="list-style-type: none"> <li>• To know what the 'digital revolution' is and the features of some of the products that evolved as a result.</li> <li>• To understand what is meant by 'point of sale display'.</li> <li>• To know that CAD stands for 'Computer-aided design'.</li> <li>• To know what a focus group is by taking part in one.</li> </ul>                                                                    | <ul style="list-style-type: none"> <li>• To understand the terms 'ergonomic' and 'aesthetic'.</li> <li>• 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.</li> <li>• To know that an exhibition is a way for companies to showcase products, meet potential new customers and gather feedback from users.</li> </ul>                                                                                                                                                                                                                                                                                            |

|           |            | Year 5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Year 6                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|-----------|------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|           |            | <u>Monitoring devices</u>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | <u>Navigating the world</u>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Skills    | Design     | <ul style="list-style-type: none"> <li>• Researching (books, internet) for a particular (user's) animal's needs.</li> <li>• Developing design criteria based on research.</li> <li>• Generating multiple housing ideas using building bricks.</li> <li>• Understanding what a virtual model is and the pros and cons of traditional and CAD modelling.</li> <li>• Placing and manoeuvring 3D objects, using CAD.</li> <li>• Changing the properties of, or combining one or more 3D objects, using CAD.</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 combining one or more 3D objects, using CAD.</li> </ul>                                                                                                                                                                                                                                                                                                                                                          |
|           | Make       | <ul style="list-style-type: none"> <li>• Understanding the functional and aesthetic properties of plastics.</li> <li>• Programming to monitor the ambient temperature and coding an (audible or visual) alert when the temperature rises above or falls below a specified range.</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>• Stating an event or fact from the last 100 years of plastic history.</li> <li>• Explaining how plastic is affecting planet Earth and suggesting ways to make more sustainable choices.</li> <li>• Explaining key functions in my program (audible alert, visuals).</li> <li>• Explaining how my product would be useful for an animal carer including programmed features.</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 explaining 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 pitch.</li> </ul> |
| Knowledge | Technical  | <ul style="list-style-type: none"> <li>• To know that a 'device' means equipment created for a certain purpose or job and that monitoring devices observe and record.</li> <li>• To know that a sensor is a tool or device that is designed to monitor, detect and respond to changes for a purpose.</li> <li>• To understand that conditional statements (and, or, if booleans) in programming are a set of rules which are followed if certain conditions are met.</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>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|           | Additional | <ul style="list-style-type: none"> <li>• To understand key developments in thermometer history.</li> <li>• To know some key events and facts from the history of plastic and how these affects the future outlook.</li> <li>• To know the 6Rs of sustainability.</li> <li>• To understand what a virtual model is and the pros and cons of traditional vs CAD modelling.</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>                                                                                                                                                                                                                                                                                                                                                                                                                                        |

This slide shows recent updates to the document.

| Date     | Update                                                                                             |
|----------|----------------------------------------------------------------------------------------------------|
| 27.10.23 | Updated to reflect refreshed Cooking and nutrition units.                                          |
| 30.04.24 | Updated to reflect refreshed 'Constructing a windmill unit.' (p.5).                                |
| 21.08.24 | Updated to reflect refreshed content published on the website.                                     |
| 02.09.24 | Updated links to reflect the new published unit.                                                   |
| 14.10.24 | Updated to reflect refreshed content published on the website.                                     |
| 18.12.24 | Updated to reflect refreshed content published on the website.                                     |
| 06.03.25 | Updated Cooking and nutrition statements to reflect those on the website.                          |
| 22.05.25 | Updated to reflect new content published on the website.                                           |
| 27.06.25 | Updated to reflect new content published on the website.                                           |
| 17.07.25 | Updated to reflect new content published on the website.                                           |
| 28.08.25 | Updated to reflect new content published on the website.                                           |
| 22.10.25 | Updated to reflect new content published on the website.                                           |
| 15.12.25 | Updated to reflect new content published on the website; some option 2 units moved to the archive. |