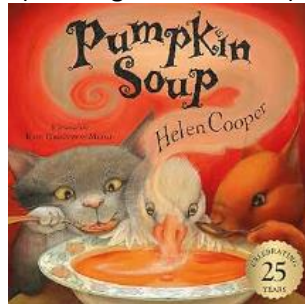




## Design and Technology Long Term Overview

| Year Group  | Autumn 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Spring 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Summer 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
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| <b>EYFS</b> | <b>Junk modelling<br/>(Structures)</b>  <ul style="list-style-type: none"> <li>To explore and investigate the tools and materials in the junk modelling area.</li> <li>To develop scissor skills.</li> <li>To investigate cutting different materials.</li> <li>To learn how to plan and select the correct resources needed to make a model.</li> <li>To verbally plan and create a junk model</li> <li>To share a finished model and talk about the processes in its creation.</li> <li>To explore different ways to temporarily join materials together.</li> </ul> | <b>Soup<br/>(Cooking and nutrition)</b>  <ul style="list-style-type: none"> <li>To explore fruits and vegetables and the differences between them.</li> <li>To use adjectives to describe how fruits and vegetables look, feel, smell and taste.</li> <li>To listen to and recall elements from the story 'The Best Pumpkin Soup.'</li> <li>To explore a pumpkin and describe it using the five senses.</li> <li>To design a fruit and vegetable soup recipe.</li> <li>To practise cutting with a knife.</li> <li>To learn how to use a knife safely.</li> <li>To observe and help (where appropriate) with the use of tools to prepare ingredients.</li> <li>To describe the finished product and evaluate the process.</li> <li>To design food packaging.</li> </ul> | <b>Boats<br/>(Structures)</b>  <ul style="list-style-type: none"> <li>To understand what waterproof means and to test whether materials are waterproof.</li> <li>To test and make predictions for which materials float or sink.</li> <li>To compare the uses of boats.</li> <li>To investigate how the shape and structure of boats affects the way they move.</li> <li>To design a boat.</li> <li>To create a boat based upon their own design.</li> </ul> |

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| <p><b>Year 1</b></p> | <p><b>Smoothies</b><br/>(Cooking and nutrition)</p>  <ul style="list-style-type: none"> <li>Describe fruits and vegetables and explain how to identify fruits.</li> <li>Name a range of places that fruits and vegetables grow.</li> <li>Describe basic characteristics of fruit and vegetables.</li> <li>Prepare fruits and vegetables to make a smoothie.</li> </ul>           | <p><b>Puppets</b><br/>(Textiles)</p>  <ul style="list-style-type: none"> <li>Join fabrics together using pins, staples or glue.</li> <li>Design a puppet and use a template.</li> <li>Join their two puppets' faces together as one.</li> <li>Decorate a puppet to match their design.</li> </ul>                                                                 | <p><b>Wheels and Axles</b><br/>(Mechanisms)</p>  <ul style="list-style-type: none"> <li>Explain that wheels move because they are attached to an axle.</li> <li>Recognise that wheels and axles are used in everyday life, not just in cars.</li> <li>Identify and explain vehicle design flaws using the correct vocabulary.</li> <li>Design a vehicle that includes functioning wheels, axles and axle holders.</li> <li>Make a moving vehicle with working wheels and axles.</li> <li>Explain what must be changed if there are any operational issues.</li> </ul> |
| <p><b>Year 2</b></p> | <p><b>Balanced diet</b><br/>(Cooking and nutrition)</p>  <ul style="list-style-type: none"> <li>Name the main food groups and identify foods that belong to each group.</li> <li>Describe the taste, feel and smell of a given food.</li> <li>Think of three different wrap ideas, considering flavour combinations.</li> <li>Construct a wrap that meets the design</li> </ul> | <p><b>Moving monsters</b><br/>(Mechanisms)</p>  <ul style="list-style-type: none"> <li>Identify the correct terms for levers, linkages and pivots.</li> <li>Analyse popular toys with the correct terminology.</li> <li>Create functional linkages that produce the desired input and output motions.</li> <li>Design monsters suitable for children,</li> </ul> | <p><b>Baby bear's chair</b><br/>(Structures)</p>  <ul style="list-style-type: none"> <li>Identify man-made and natural structures.</li> <li>Identify stable and unstable structural shapes.</li> <li>Contribute to discussions. Identify features that make a chair stable.</li> <li>Work independently to make a stable structure, following a demonstration.</li> </ul>                                                                                                                                                                                            |

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|        | <p>brief and their plan.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | <p>which satisfy most of the design criteria.</p> <ul style="list-style-type: none"> <li>• Evaluate their two designs against the design criteria, using this information and the feedback of their peers to choose their best design.</li> <li>• Select and assemble materials to create their planned monster features.</li> <li>• Assemble the monster to their linkages without affecting their functionality.</li> </ul>                                                                                                                 | <ul style="list-style-type: none"> <li>• Explain how their ideas would be suitable for Baby Bear.</li> <li>• Produce a model that supports a teddy, using the appropriate materials and construction techniques.</li> <li>• Explain how they made their model strong, stiff and stable.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Year 3 | <p><b>Pneumatic toys</b><br/>(Mechanisms)</p>  <ul style="list-style-type: none"> <li>• Draw accurate diagrams with correct labels, arrows and explanations.</li> <li>• Correctly identify definitions for key terms. Identify five appropriate design criteria.</li> <li>• Communicate two ideas using thumbnail sketches.</li> <li>• Communicate and develop one idea using an exploded diagram.</li> <li>• Select appropriate equipment and materials to build a working pneumatic system.</li> <li>• Assemble their pneumatic system within the housing to create the desired motion.</li> <li>• Create a finished pneumatic toy that fulfills the design brief.</li> </ul> | <p><b>Eating seasonally</b><br/>(Cooking and nutrition)</p>  <ul style="list-style-type: none"> <li>• Explain that fruits and vegetables grow in different countries based on their climates.</li> <li>• Understand that seasonal fruits and vegetables grow in a given season.</li> <li>• Understand that eating seasonal fruit and vegetables positively affects the environment.</li> <li>• Design a tart recipe using seasonal ingredients.</li> </ul> | <p><b>Cushions</b><br/>(Textiles)</p>  <ul style="list-style-type: none"> <li>• Demonstrate their ability to use cross-stitch as a decorative feature or to join two pieces of fabric together.</li> <li>• Develop appliqué designs based on design criteria.</li> <li>• Design, cut and shape their template for cushion with increasing accuracy.</li> <li>• Decorate their cushion using a variety of techniques, such as appliqué, cross-stitch, beads, buttons and pinking.</li> <li>• Measure and attach a ribbon with a running stitch.</li> <li>• Recognise different types and qualities of fabrics.</li> <li>• Explain the aesthetic and functional properties of some of their material choices.</li> </ul> |

## Year 4

### Torches (Electrical systems)



- Identify electrical products and explain why they are useful.
- Help to make a working switch. Identify the features of a torch and how it works.
- Describe what makes a torch successful.
- Create suitable designs that fit the success criteria and their own design criteria.
- Create a functioning torch with a switch according to their design criteria.

### Mindful moments timer (Digital world)



- State and/or describe the advantages and disadvantages of existing products (timers).
- Understand how virtual micro:bit features could be used as part of a design idea.
- Use research to inform design criteria.
- Write a program that displays a timer on the virtual micro:bit based on their chosen seconds/minutes.
- Suggest where the errors are, if testing is unsuccessful, by comparing the correct code to their own.
- State key functions in the program editor (e.g. loops).
- Evaluate the immediate appeal of the virtual micro:bit timer and how it might function.
- Express which stages of the project they enjoyed or found more challenging.
- Explain the need for a company to stand out against competition and/or state the importance of logos in business.
- Recall and describe the name and use of key tools used in Sketchpad (CAD) software.
- Fulfil the design requirements of the logo.
- Evaluate the product using feedback from the user.

### Pavilions (Structures)



- Produce a range of free-standing frame structures of different shapes and sizes.
- Design a pavilion that is strong, stable and aesthetically pleasing.
- Select appropriate materials and construction techniques to create a stable, free-standing frame structure.
- Select appropriate materials and techniques to add cladding to their pavilion.

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| <p><b>Year 5</b></p> | <p><b>Pop up books</b><br/>(Mechanisms)</p>  <ul style="list-style-type: none"> <li>• Produce a suitable plan for each page of their book.</li> <li>• Produce the structure of the book.</li> <li>• Assemble the components necessary for all their structures/mechanisms.</li> <li>• Hide the mechanical elements with more layers using spacers where needed.</li> <li>• Use a range of mechanisms and structures to illustrate their story and make it interactive for the users.</li> <li>• Use appropriate materials and captions to illustrate the story.</li> </ul> | <p><b>Stuffed toys</b><br/>(Textiles)</p>  <ul style="list-style-type: none"> <li>• Design a stuffed toy, considering the main component shapes of their toy.</li> <li>• Create an appropriate template for their stuffed toy.</li> <li>• Join two pieces of fabric using a blanket stitch.</li> <li>• Neatly cut out their fabric. Use appliqué or decorative stitching to decorate the front of their stuffed toy.</li> <li>• Use blanket stitch to assemble their stuffed toy, repairing when needed.</li> <li>• Identify what worked well and areas for improvement.</li> </ul> | <p><b>Developing a recipe</b><br/>(Cooking and nutrition)</p>  <ul style="list-style-type: none"> <li>• Describe the process of beef production.</li> <li>• Research a traditional recipe and make changes to it.</li> <li>• Add nutritional value to a recipe by selecting ingredients.</li> <li>• Prepare and cook a version of bolognese sauce.</li> </ul> |
| <p><b>Year 6</b></p> | <p><b>Navigating the world</b><br/>(Digital world)</p>  <ul style="list-style-type: none"> <li>• Incorporate key information from a client's design request such as 'multifunctional' and</li> </ul>                                                                                                                                                                                                                                                                                                                                                                     | <p><b>Steady hand game</b><br/>(Electrical systems)</p>  <ul style="list-style-type: none"> <li>• Explain simply what is meant by 'form' (the</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                          | <p><b>Automata</b><br/>(Mechanisms)</p>  <ul style="list-style-type: none"> <li>• Mark, saw and cut out the components and</li> </ul>                                                                                                                                                                                                                       |



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|  | <p>'compact' in their design brief.</p> <ul style="list-style-type: none"> <li>• Write a program that displays an arrow to indicate cardinal compass directions with an 'On start' loading screen.</li> <li>• Identify errors (bugs) in the code and suggest ways to fix (debug) them.</li> <li>• Self and peer evaluate a product concept against a list of design criteria with basic statements.</li> <li>• Identify key industries that use 3D CAD modelling and why.</li> <li>• Recall and describe the name and use of key tools used in Tinkercad (CAD) software.</li> <li>• Combine more than one object to develop a finished 3D CAD model in Tinkercad.</li> <li>• Complete a product pitch plan that includes key information.</li> </ul> | <p>shape of a product) and 'function' (how a product works).</p> <ul style="list-style-type: none"> <li>• State what they like or dislike about an existing children's toy and why.</li> <li>• Learn about skills developed through play and apply this knowledge in a survey of one or more children's toys.</li> <li>• Identify the components of a steady hand game.</li> <li>• Design a steady hand game of their own according to their design criteria, using four different perspective drawings.</li> <li>• Create a secure base for their game, with neat edges, that relates to their design.</li> <li>• Make and test a functioning circuit and assemble it within a case.</li> </ul> | <p>supports of their toy with a varying degree of accuracy to the intended measurements.</p> <ul style="list-style-type: none"> <li>• Follow health and safety rules, taking care with the equipment.</li> <li>• Attempt a partial assembly of their toys using an exploded-diagram, following a teacher's demonstration.</li> <li>• Develop a design idea with some descriptive notes.</li> <li>• Explore different cam profiles and choose three for their follower toppers with an explanation of their choices.</li> <li>• Create neat, decorated follower toppers with some accuracy.</li> <li>• Measure and cut panels that fit with some inaccuracies to conceal the inner workings of the automata.</li> <li>• Decorate and finish the automata to meet the design criteria and brief.</li> <li>• Evaluate their finished product, making descriptive and reflective points on function and form.</li> </ul> |
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