By the end of each year our learners will be able to:

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| EYFS | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 |
| **From across the**  **Strands –**  • Explore different materials freely, to develop their ideas about how to use them and what to make.  • Develop their own ideas and then decide which materials to use to express them.  • Join different materials and explore different textures  • Use all their senses in hands-on exploration of natural materials. • Explore collections of materials with similar and/or different properties.  • Talk about what they see, using a wide vocabulary.  • Explore how things work  • Develop their small motor skills so that they can use a range of tools competently, safely and confidently. Suggested tools: pencils for drawing and writing, paintbrushes, scissors, knives, forks and spoons | **Designing**  • Generate ideas based on simple design criteria and their own experiences, explaining what they could make.  • Develop, model and communicate their ideas through drawings and mock-ups with card and paper.  **Making**  • Plan by suggesting what to do next.  • Select and use tools, explaining their choices, to cut, shape and join paper and card.  • Use simple finishing techniques suitable for the product they are creating.  **Evaluating**  • Explore a range of existing books and everyday products that use simple sliders and levers.  • Evaluate their product by discussing how well it works in relation to the purpose and the user and whether it meets design criteria.  **Technical knowledge and understanding**  • Explore and use sliders and levers.  • Understand that different mechanisms produce different types of movement.  • Know and use technical vocabulary relevant to the project.  • Know how to make freestanding structures stronger, stiffer and more stable.  • Understand where a range of fruit and vegetables come from e.g. farmed or grown at home.  • Understand anduse basic principles of a healthy and varied diet to prepare dishes. | **Designing**  • Generate initial ideas and simple design criteria through talking and using own experiences.  • Develop and communicate ideas through drawings and mock-ups.  **Making**  • Select from and use a range of tools and equipment to perform practical tasks such as cutting and joining to allow movement and finishing.  • Select from and use a range of materials and components such as paper, card, plastic and wood according to their characteristics.  **Evaluating**  • Explore and evaluate a range of products with wheels and axles.  • Evaluate their ideas throughout and their products against original criteria.  **Technical knowledge and understanding**  • Explore and use wheels, axles and axle holders.  • Distinguish between fixed and freely moving axles.  • Know and use technical vocabulary relevant to the project.  • Understand how simple 3-D textile products are made, using a template to create two identical shapes.  • Understand how to join fabrics using different techniques e.g. running stitch, glue, over stitch, stapling.  • Explore different finishing techniques e.g. using painting, fabric crayons, stitching, sequins, buttons and ribbons.  • Understand where a range of fruit and vegetables come from e.g. farmed or grown at home.  • Understand anduse basic principles of a healthy and varied diet to prepare dishes, including how fruit and vegetables are part of *The eatwell plate*.  • Know and use technical and sensory vocabulary relevant to the project. | **Designing**  • Generate realistic ideas and design criteria collaboratively through discussion, focusing on the needs of the user and purpose of the product.  • Develop ideas through the analysis of existing products and use annotated sketches and prototypes to model and communicate ideas.  **Making**  • Order the main stages of making.  • Select and use appropriate tools to measure, mark out, cut, score, shape and assemble with some accuracy.  • Explain their choice of materials according to functional properties and aesthetic qualities.  • Use finishing techniques suitable for the product they are creating.  **Evaluating**  • Investigate and evaluate a range of existing shell structures including the materials, components and techniques that have been used.  • Test and evaluate their own products against design criteria and the intended user and purpose.  **Technical knowledge and understanding**  • Develop and use knowledge of how to construct strong, stiff shell structures.  • Develop and use knowledge of nets of cubes and cuboids and, where appropriate, more complex 3D shapes.  • Know and use technical vocabulary relevant to the project. • Understand and use lever and linkage mechanisms.  • Distinguish between fixed and loose pivots.  • Know how to use appropriate equipment and utensils to prepare and combine food.  • Know about a range of fresh and processed ingredients appropriate for their product, and whether they are grown, reared or caught. | **Designing**  • Generate realistic and appropriate ideas and their own design criteria through discussion, focusing on the needs of the user.  • Use annotated sketches and prototypes to develop, model and communicate ideas.  **Making**  • Order the main stages of making.  • Select from and use appropriate tools with some accuracy to cut and join materials and components such as tubing, syringes and balloons.  • Select from and use finishing techniques suitable for the product they are creating.  **Evaluating**  • Investigate and analyse books, videos and products with pneumatic mechanisms.  • Evaluate their own products and ideas against criteria and user needs, as they design and make.  **Technical knowledge and understanding**  • Understand and use pneumatic mechanisms.  • Know and use technical vocabulary relevant to the project.  Understand and use electrical systems in their products, such as series circuits incorporating switches, bulbs and buzzers.  • Apply their understanding of computing to program and control their products.  • Know how to strengthen, stiffen and reinforce existing fabrics.  • Understand how to securely join two pieces of fabric together.  • Understand the need for patterns and seam allowances. | **Designing**  • Generate innovative ideas by carrying out research using surveys, interviews, questionnaires and web-based resources.  • Develop a simple design specification to guide their thinking.  • Develop and communicate ideas through discussion, annotated drawings, exploded drawings and drawings from different views.  **Making**  • Produce detailed lists of tools, equipment and materials. Formulate step-by-step plans and, if appropriate, allocate tasks within a team.  • Select from and use a range of tools and equipment to make products that that are accurately assembled and well finished. Work within the constraints of time, resources and cost.  **Evaluating**  • Compare the final product to the original design specification.  • Test products with the intended user, where safe and practical, and critically evaluate the quality of the design, manufacture, functionality and fitness for purpose.  • Consider the views of others to improve their work.  • Investigate famous manufacturing and engineering companies relevant to the project.  **Technical knowledge and understanding**  • Understand that mechanical systems have an input, process and an output.  • Understand how cams can be used to produce different types of movement and change the direction of movement.  Know and use technical vocabulary relevant to the project.  • Know how to use utensils and equipment including heat sources to prepare and cook food.  • Understand about seasonality in relation to food products and the source of different food products. | **Designing**  • Generate innovative ideas by carrying out research using surveys, interviews, questionnaires and web-based resources.  • Develop a simple design specification to guide their thinking.  • Develop and communicate ideas through discussion, annotated drawings, exploded drawings and drawings from different views.  **Making**  • Produce detailed lists of tools, equipment and materials. Formulate step-by-step plans and, if appropriate, allocate tasks within a team.  • Select from and use a range of tools and equipment to make products that that are accurately assembled and well finished. Work within the constraints of time, resources and cost.  **Evaluating**  • Compare the final product to the original design specification.  • Test products with intended user and critically evaluate the quality of the design, manufacture, functionality and fitness for purpose.  • Consider the views of others to improve their work.  • Investigate famous manufacturing and engineering companies relevant to the project.  **Technical knowledge and understanding**  • Understand that mechanical and electrical systems have an input, process and an output.  • Understand how gears and pulleys can be used to speed up, slow down or change the direction of movement.   * Know and use technical vocabulary relevant to the project.   • A 3-D textile product can be made from a combination of accurately made pattern pieces, fabric shapes and different fabrics.  • Fabrics can be strengthened, stiffened and reinforced where appropriate.  • Understand and use electrical systems in their products.  • Understand the use of computer control systems in products.  • Apply their understanding of computing to program, monitor and control their products.  • Know and use technical vocabulary relevant to the project. |