

St Michael's C of E Primary School – Design and Technology Progression

Progression is colour coded to reflect approaches specific to the five areas covered in the curriculum:

Mechanical systems, **Structures**, **Textiles**, **Electrical systems**, **Food** as well as approaches relevant to all areas.

Reception Class

Children gain experience of working with paper, card and fabric using simple cutting, shaping, joining and finishing skills using scissors, glue, paper fasteners, hole punches, yarn and masking tape. They create familiar structures, frameworks and vehicles using small-scale construction kits and larger-scale materials. Children talk about what they have made and begin to evaluate their creations. The children also have experience of common fruit and vegetables: tasting, talking about them and using appropriate utensils to prepare them for eating and cooking.

Designing

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
<p>Generate ideas based on simple design criteria and personal experiences, explaining what they could make.</p> <p>Develop, model and communicate ideas through talk, drawings and mock-ups with card and paper.</p> <p style="color: orange;">Generate initial ideas and design criteria through investigating a variety of fruit and vegetables.</p>	<p>Generate, develop, model and communicate their ideas as appropriate through talking, drawing, templates, mock-ups and information and communication technology.</p> <p>Design a functional and appealing product for a chosen user and purpose based on simple design criteria.</p> <p style="color: orange;">Generate initial ideas and design criteria through investigating a variety of fruit and vegetables.</p>	<p>Generate realistic ideas and their own design criteria through discussion, focusing on the needs of the user and purpose of the product.</p> <p>Develop ideas through the analysis of existing products.</p> <p>Produce annotated sketches, prototypes, final product sketches and pattern pieces.</p> <p style="color: orange;">Generate and clarify ideas through discussion with peers and adults to develop design criteria including appearance, taste, texture and aroma for an appealing product for a particular user and purpose.</p>	<p>Generate, develop, model and communicate realistic ideas through discussion and, as appropriate, annotated sketches, cross-sectional and exploded diagrams.</p> <p>Gather information about needs and wants, and develop design criteria to inform the design of products that are fit for purpose, aimed at particular individuals or groups.</p> <p>Use annotated sketches and prototypes to develop, model and communicate ideas.</p> <p style="color: orange;">Generate and clarify ideas through discussion with peers and adults to develop design criteria including appearance, taste, texture and aroma for an appealing product for a particular user and purpose.</p>	<p>Generate innovative ideas by carrying out research using surveys, interviews, questionnaires and web-based resources.</p> <p>Develop a simple design specification to guide thinking.</p> <p>Develop and communicate ideas through discussion, annotated drawings, exploded drawings and drawings from different views.</p> <p>Design purposeful, functional, appealing products for the intended user that are fit for purpose based on a simple design specification.</p>	<p>Carry out research into user needs and existing products, using surveys, interviews, questionnaires and web-based resources.</p> <p>Develop a simple design specification to guide the development of ideas and products, taking account of constraints including time, resources and cost.</p> <p>Generate, develop and model innovative ideas, through discussion, prototypes, mock-ups, annotated sketches and, where appropriate, computer-aided design.</p>



Love **Determination** **Responsibility** **Respect** **Kindness** **Friendship** **Honesty**

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Making					
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<p>Plan by suggesting what to do next.</p> <p>Select and use tools, explaining choices, to cut, shape and join paper and card.</p> <p>Select new and reclaimed materials and construction kits to build structures.</p> <p>Use simple finishing techniques suitable for the product/structure created.</p> <p>Use simple utensils and equipment to e.g. peel, cut, slice, squeeze, grate and chop safely.</p> <p>Select from a range of fruit and vegetables according to their characteristics e.g. colour, texture and taste to create a chosen product.</p>	<p>Select from and use a range of tools and equipment to perform practical tasks such as marking out, cutting and joining to allow movement and finishing.</p> <p>Select from and use a range of materials and components such as paper, card, plastic and wood according to their characteristics.</p> <p>Select from and use textiles according to their characteristics.</p> <p>Use simple utensils and equipment to e.g. peel, cut, slice, squeeze, grate and chop safely.</p> <p>Select from a range of fruit and vegetables according to their characteristics e.g. colour, texture and taste to create a chosen product.</p>	<p>Order the main stages of making.</p> <p>Select from and use appropriate tools with some accuracy to measure, mark out, cut, score, shape and join and assemble with some accuracy.</p> <p>Select from and use finishing techniques suitable for the product created.</p> <p>Explain choice of materials according to functional properties and aesthetic qualities.</p> <p>Select fabrics and fastenings according to their functional characteristics e.g. strength, and aesthetic qualities e.g. pattern.</p> <p>Plan the main stages of a recipe, listing ingredients, utensils and equipment.</p> <p>Select and use appropriate utensils and equipment to prepare and combine ingredients.</p> <p>Select from a range of ingredients to make appropriate food products, thinking about sensory characteristics.</p>	<p>Plan the main stages of making.</p> <p>Select from and use appropriate tools with some accuracy to cut and join materials and components such as tubing, syringes and balloons.</p> <p>Select from and use finishing techniques suitable for the product created.</p> <p>Select from and use materials and components, including construction materials and electrical components according to their functional properties and aesthetic qualities.</p> <p>Plan the main stages of a recipe, listing ingredients, utensils and equipment.</p> <p>Select and use appropriate utensils and equipment to prepare and combine ingredients.</p> <p>Select from a range of ingredients to make appropriate food products, thinking about sensory characteristics.</p>	<p>Formulate step-by-step plans and, if appropriate, allocate tasks within a team.</p> <p>Produce detailed lists of tools, equipment, materials and fabric relevant to the task.</p> <p>Use finishing and decorative techniques suitable for the product.</p> <p>Select from and use a range of tools and equipment to make products that are accurately assembled and well finished. Work within the constraints of time, resources and cost.</p> <p>Write a step-by-step recipe, including a list of ingredients, equipment and utensils</p> <p>Select and use appropriate utensils and equipment accurately to measure and combine appropriate ingredients.</p> <p>Make, decorate and present the food product appropriately for the intended user and purpose.</p>	<p>Formulate a clear plan, including a step-by-step list of what needs to be done and lists of resources to be used.</p> <p>Competently select from and use appropriate tools to accurately measure, mark out, cut, shape and join appropriately chosen construction materials.</p> <p>Use finishing and decorative techniques suitable for the product.</p> <p>Competently select and accurately assemble materials, and securely connect electrical components to produce a reliable, functional product.</p> <p>Write a step-by-step recipe, including a list of ingredients, equipment and utensils</p> <p>Select and use appropriate utensils and equipment accurately to measure and combine appropriate ingredients.</p> <p>Make, decorate and present the food product appropriately for the intended user and purpose.</p>



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Evaluating					
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
<p>Explore a range of existing books and everyday products that use simple sliders and levers/free standing structures and buildings in the local environment.</p> <p>Evaluate product by discussing how well it works in relation to the purpose and the user and whether it meets design criteria.</p> <p>Taste and evaluate a range of fruit and vegetables to determine the intended user's preferences.</p>	<p>Explore and evaluate a range of products with wheels and axles.</p> <p>Explore and evaluate a range of existing textile products relevant to the project being undertaken.</p> <p>Evaluate ideas throughout and final products against original design criteria.</p> <p>Taste and evaluate a range of fruit and vegetables to determine the intended user's preference.</p>	<p>Investigate and analyse books and, where available, other products with lever and linkage mechanisms.</p> <p>Investigate and evaluate a range of existing shell structures including the materials, components and techniques that have been used.</p> <p>Investigate a range of 3-D textile products relevant to the project.</p> <p>Evaluate own products and ideas against criteria and user needs, during the design and make.</p> <p>Test and evaluate final product against design criteria and the intended user and purpose.</p> <p>Take into account others' views. Understand how a key event/individual has influenced the development of the chosen product and/or fabric.</p> <p>Carry out sensory evaluations of a variety of ingredients and products. Record the evaluations using e.g. tables and simple graphs.</p>	<p>Investigate and analyse books, videos and products with pneumatic mechanisms.</p> <p>Investigate and analyse a range of existing battery-powered products.</p> <p>Evaluate own products and ideas against criteria and user needs, during the design and make.</p> <p>Evaluate their ideas and products against their own design criteria and identify the strengths and areas for improvement in their work.</p> <p>Carry out sensory evaluations of a variety of ingredients and products. Record the evaluations using e.g. tables and simple graphs.</p>	<p>Compare the final product to the original design specification.</p> <p>Test products with intended user and critically evaluate the quality of the design, manufacture, functionality and fitness for purpose.</p> <p>Consider the views of others to improve their work.</p> <p>Investigate famous manufacturing and engineering companies relevant to the project.</p> <p>Investigate and analyse textile products linked to their final product.</p> <p>Carry out sensory evaluations of a range of relevant products and ingredients. Record the evaluations using e.g. tables/graphs/charts such as star diagrams.</p>	<p>Investigate and evaluate a range of existing frame structures.</p> <p>Research key events and individuals relevant to frame structures.</p> <p>Investigate famous inventors who developed ground-breaking electrical systems and components.</p> <p>Continually evaluate and modify the working features of the product to match the initial design specification.</p> <p>Test the system to demonstrate its effectiveness for the intended user and purpose.</p> <p>Critically evaluate products against design specification, intended user and purpose, identifying strengths and areas for development.</p> <p>Carry out sensory evaluations of a range of relevant products and ingredients. Record the evaluations using e.g. tables/graphs/charts such as star diagrams.</p>



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Technical knowledge and understanding					
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
<p>Explore and use sliders and levers. Understand that different mechanisms produce different types of movement.</p> <p>Know how to make freestanding structures stronger, stiffer and more stable.</p> <p>Understand where a range of fruit and vegetables come from e.g. farmed or grown at home.</p> <p>Understand and use basic principles of a healthy and varied diet to prepare dishes, including how fruit and vegetables are part of the eat well plate.</p> <p>Know and use relevant technical and sensory vocabulary relevant to the project.</p>	<p>Explore and use wheels, axles and axle holders.</p> <p>Distinguish between fixed and freely moving axles.</p> <p>Understand how simple 3-D textile products are made, using a template to create two identical shapes.</p> <p>Understand how to join fabrics using different techniques e.g. running stitch, glue, over stitch, stapling.</p> <p>Explore different finishing techniques e.g. using painting, fabric crayons, stitching, sequins, buttons and ribbons.</p> <p>Understand where a range of fruit and vegetables come from e.g. farmed or grown at home.</p> <p>Understand and use basic principles of a healthy and varied diet to prepare dishes, including how fruit and vegetables are part of the eat well plate.</p> <p>Know and use technical and sensory vocabulary relevant to the project.</p>	<p>Understand and use lever and linkage mechanisms.</p> <p>Distinguish between fixed and loose pivots.</p> <p>Develop and use knowledge of how to construct strong, stiff shell structures.</p> <p>Develop and use knowledge of nets of cubes and cuboids and, where appropriate, more complex 3D shapes.</p> <p>Know how to strengthen, stiffen and reinforce existing fabrics.</p> <p>Understand how to securely join two pieces of fabric together.</p> <p>Understand the need for patterns and seam allowances.</p> <p>Know how to use appropriate equipment and utensils to prepare and combine food.</p> <p>Know about a range of fresh and processed ingredients appropriate for product and whether they are grown, reared or caught.</p> <p>Know and use technical and sensory vocabulary relevant to the project.</p>	<p>Understand and use pneumatic mechanisms.</p> <p>Understand and use electrical systems in their products, such as series circuits incorporating switches, bulbs and buzzers.</p> <p>Apply understanding of computing to program and control products.</p> <p>Know how to use appropriate equipment and utensils to prepare and combine food.</p> <p>Know about a range of fresh and processed ingredients appropriate for product and whether they are grown, reared or caught.</p> <p>Know and use technical and sensory vocabulary relevant to the project.</p>	<p>Understand that mechanical and electrical systems have an input, process and an output.</p> <p>Understand how gears and pulleys can be used to speed up, slow down or change the direction of movement</p> <p>Understand how cams can be used to produce different types of movement and change the direction of movement.</p> <p>Understand that 3-D textile products can be made from a combination of accurately made pattern pieces, fabric shapes and different fabrics.</p> <p>Know how fabrics can be strengthened, stiffened and reinforced where appropriate.</p> <p>Understand how key chefs have influenced eating habits to promote varied and healthy diets.</p> <p>Know how to use utensils and equipment including heat sources to prepare and cook food.</p> <p>Understand about seasonality in relation to food products and the source of different food products.</p> <p>Know and use technical and sensory vocabulary relevant to the project.</p>	<p>Understand how to strengthen, stiffen and reinforce 3-D frameworks.</p> <p>Understand and use electrical systems in appropriate products.</p> <p>Apply understanding of computing to program, monitor and control their products.</p> <p>Understand how key chefs have influenced eating habits to promote varied and healthy diets.</p> <p>Know how to use utensils and equipment including heat sources to prepare and cook food.</p> <p>Understand about seasonality in relation to food products and the source of different food products.</p> <p>Know and use technical and sensory vocabulary relevant to the project.</p>

