

		<b>Substantive Knowledge and Disciplinary Knowledge</b>				
<b>Reception</b>  <b>Marvellous Me</b>  <b>Real Superheroes</b>	<b>Playing &amp; Exploring - Engagement</b>  Finding out & exploring Playing with what they know Being willing to 'have a go'	<b>Active Learning - Motivation</b>  Being involved & concentrating Keep on trying Enjoying achieving what they set out to do		<b>Creating &amp; Thinking Critically -</b>  Having their own ideas (creative thinking) Making links (building theories) Working with ideas (critical thinking)		
	<b>ELG</b>  <i>Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function</i>  <i>Share their creations, explaining the process they have used</i>  <i>Make use of props and materials when role-playing characters in narratives and stories</i>					
<b>Wonderful World</b>  <b>Celebrations</b>  <b>Into the Woods</b>  <b>Journeys</b>	<b>Designing</b>	<b>Making</b>	<b>Evaluating</b>	<b>Technical skills</b>	<b>Food technology</b>	
	Develop own ideas through experimentation with diverse materials to express & communicate their discoveries & understanding  Create collaboratively sharing ideas, resources & skills	Use increasing knowledge & understanding of tools & materials to explore their interests & enquiries & develop their thinking  Create representations both imaginary & real-life ideas, events, people & objects	Express & communicate working theories, feelings & understanding  Respond imaginatively to art works & objects Return to & build on previous learning, refining ideas & developing ability to represent them  Discuss problems & how they might be solved	Use different techniques for joining materials  Use tools independently, with care & precision	Look closely at similarities, differences, patterns & change  Know & talk about the different factors that support their overall health & well-being	

<b>Year 1</b>	<b>By the end of Year 1, children should know:</b>
	<p><b>Technical knowledge and understanding</b>          Explore and use sliders and levers.</p>
<b>Mechanisms</b>	<p>Understand that different mechanisms produce different types of movement.          Know how to make freestanding structures stronger, stiffer and more stable.</p>
<b>Structures</b>	<p>Understand where a range of fruit and vegetables come from e.g. farmed or grown at home.</p>
<b>Food</b>	<p>Understand and use basic principles of a healthy and varied diet to prepare dishes, including how fruit and vegetables are part of the eatwell plate.</p>
	<p><b>Know and use technical vocabulary relevant to the project:</b></p> <p><b>Mechanisms - sliders and levers</b>          slider, lever, pivot, slot, bridge/guide, card, masking tape, paper fastener, join, pull, push, up, down, straight, curve, forwards, backwards, design, make, evaluate, user, purpose, ideas, design criteria, product, function.</p> <p><b>Structures - freestanding structures</b>          cut, fold, join, fix, structure, wall, tower, framework, weak, strong, base, top, underneath, side, edge, surface, thinner, thicker, corner, point, straight, curved, metal, wood, plastic, circle, triangle, square, rectangle, cuboid, cube, cylinder, design, make, evaluate, user, purpose, ideas, design criteria, product, function</p> <p><b>Food - preparing fruit and vegetables</b>          fruit and vegetable names, names of equipment and utensils, sensory vocabulary e.g. soft, juicy, crunchy, sweet, sticky, smooth, sharp, crisp, sour, hard, flesh, skin, seed, pip, core, slicing, peeling, cutting, squeezing, healthy diet, choosing, ingredients, planning, investigating tasting, arranging, popular, design, evaluate, criteria; know they should eat at least five portions of fruit and vegetables each day to stay healthy.</p> <p><b>By the end of Year 1, children should be able to:</b></p> <p><b>Designing</b>          Generate ideas based on simple design criteria and their own experiences, explaining what they could make.          Develop, model and communicate their ideas through talk, drawings and mock-ups with card and paper.          Design appealing products for a particular user based on simple design criteria.</p> <p><b>Making</b>          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.</p>

	<p>Select new and reclaimed materials and construction kits to build their structures.</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><b>Evaluating</b></p> <p>Explore a range of existing books and everyday products that use simple sliders and levers.</p> <p>Evaluate their product by discussing how well it works in relation to the purpose and the user and whether it meets design criteria.</p> <p>Explore a range of existing freestanding structures in the school and local environment e.g. everyday products and buildings.</p> <p>Taste and evaluate a range of fruit and vegetables to determine the intended user's preferences.</p> <p><b>Health and safety</b></p> <p>Work safely, using tools, equipment, materials, components and techniques appropriate to the task</p>
<p><b>Year 2</b></p> <p><b>Mechanisms</b></p> <p><b>Food</b></p> <p><b>Textiles</b></p>	<p><b>By the end of Year 2, children should know:</b></p> <p><b>Technical knowledge and understanding</b></p> <p>Explore and use wheels, axles and axle holders.</p> <p>Distinguish between fixed and freely moving axles.</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 eatwell plate.</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><b>Know and use technical vocabulary relevant to the project:</b></p> <p><b>Mechanisms - wheels and axles</b></p> <p>vehicle, wheel, axle, axle holder, chassis, body, cab assembling, cutting, joining, shaping, finishing, fixed, free, moving, mechanism, names of tools, equipment and materials used, design, make, evaluate, purpose, user, criteria, functional</p> <p><b>Food - healthy and varied diet</b></p> <p>fruit and vegetable names, names of equipment and utensils, sensory vocabulary e.g. soft, juicy, crunchy, sweet, sticky, smooth, sharp, crisp, sour, hard, flesh, skin, seed, pip, core, slicing, peeling, cutting, squeezing, healthy diet, choosing, ingredients, planning, investigating tasting, arranging, popular, design, evaluate, criteria</p>

	<p><b>Textiles – templates and joining techniques</b>  names of existing products, joining and finishing techniques, tools, fabrics and component, template, pattern pieces, mark out, join, decorate, finish, features, suitable, quality mockup, design brief, design criteria, make, evaluate, user, purpose, function  <b>By the end of Year 2, children should be able to:</b></p> <p><b>Designing</b>  Generate initial ideas and simple design criteria through talking and using own experiences.  Generate, develop, model and communicate their ideas as appropriate through talking, drawing, templates, mock-ups and information and communication technology.  Use annotated sketches and appropriate information and communication technology, such as web-based recipes, to develop and communicate ideas.</p> <p><b>Making</b>  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.  Select from and use a range of materials and components such as paper, card, plastic and wood according to their characteristics.  Select from a range of fruit and vegetables according to their characteristics e.g. colour, texture and taste to create a chosen product.  Plan the main stages of a recipe, listing ingredients, utensils and equipment.  Select from and use textiles according to their characteristics</p> <p><b>Evaluating</b>  Explore and evaluate a range of products with wheels and axles.  Evaluate their ideas throughout and their products against original criteria.  Taste and evaluate a range of fruit and vegetables to determine the intended user's preferences.  Explore and evaluate a range of existing textile products relevant to the project being undertaken.</p> <p><b>Health and safety</b>  Work safely and hygienically, using tools, equipment, techniques and ingredients appropriate to the task.</p>
<p><b>Year 3</b></p> <p><b>Structures</b></p>	<p><b>By the end of Year 3, children should know:</b></p> <p><b>Technical knowledge and understanding</b>  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 how to use appropriate equipment and utensils to prepare and combine food.</p>

<p><b>Food</b></p> <p><b>Textiles</b></p>	<p>Know about a range of fresh and processed ingredients appropriate for their product, and whether they are grown, reared or caught.</p> <p>Know how to use appropriate equipment and utensils to prepare and combine food.</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><b>Know and use technical vocabulary relevant to the project:</b></p> <p><b>Structures - shell structures</b>  shell structure, three-dimensional (3-D) shape, net, cube, cuboid, prism, vertex, edge, face, length, width, breadth, capacity marking out, scoring, shaping, tabs, adhesives, joining, assemble, accuracy, material, stiff, strong, reduce, reuse, recycle, corrugating, ribbing, laminating font, lettering, text, graphics, decision, evaluating, design brief design criteria, innovative, prototype</p> <p><b>Food - healthy and varied diet</b>  name of products, names of equipment, utensils, techniques and ingredients, texture, taste, sweet, sour, hot, spicy, appearance, smell, preference, greasy, moist, cook, fresh, savoury hygienic, edible, grown, reared, caught, frozen, tinned, processed, seasonal, harvested healthy/varied diet planning, design criteria, purpose, user, annotated sketch, sensory evaluations;  Know about a range of fresh and processed ingredients appropriate for their product, and whether they are grown, reared or caught.</p> <p><b>Textiles - 2D shape to 3D product</b>  fabric, names of fabrics, fastening, compartment, zip, button, structure, finishing technique, strength, weakness, stiffening, templates, stitch, seam, seam allowance, user, purpose, design, model, evaluate, prototype, annotated sketch, functional, innovative, investigate, label, drawing, aesthetics, function, pattern pieces</p> <p><b>By the end of Year 3, children should be able to:</b></p> <p><b>Designing</b>  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.  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>
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	<p>Use annotated sketches and appropriate information and communication technology, such as web-based recipes, to develop and communicate ideas.</p> <p>Produce annotated sketches, prototypes, final product sketches and pattern pieces</p> <p><b>Making</b></p> <p>Order the main stages of making.</p> <p>Select and use appropriate tools to measure, mark out, cut, score, shape and assemble with some accuracy.</p> <p>Explain their choice of materials according to functional properties and aesthetic qualities.</p> <p>Use finishing techniques suitable for the product they are creating.</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 and use a range of appropriate tools with some accuracy e.g. cutting, joining and finishing.</p> <p>Select fabrics and fastenings according to their functional characteristics e.g. strength, and aesthetic qualities e.g. pattern.</p> <p><b>Evaluating</b></p> <p>Investigate and evaluate a range of existing shell structures including the materials, components and techniques that have been used.</p> <p>Test and evaluate their own products against design criteria and the intended user and purpose.</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>Evaluate the ongoing work and the final product with reference to the design criteria and the views of others.</p> <p>Investigate a range of 3-D textile products relevant to the project.</p> <p>Consider others' views.</p> <p>Understand how a key event/individual has influenced the development of the chosen product and/or fabric.</p> <p><b>Health and safety</b></p> <p>Work safely and hygienically, using tools, equipment, techniques and ingredients appropriate to the task.</p>
<p><b>Year 4</b></p> <p><b>Mechanical Systems</b></p>	<p><b>By the end of Year 4, children should know:</b></p> <p><b>Technical knowledge and understanding</b></p> <p>Understand and use lever and linkage mechanisms.</p> <p>Distinguish between fixed and loose pivots.</p>

<p><b>Electrical Systems</b></p>	<p>Know and use technical vocabulary relevant to the project.</p> <p>Understand and use electrical systems in their products, such as series circuits incorporating switches, bulbs and buzzers.</p> <p>Apply their understanding of computing to program and control their products.</p>
<p><b>Food</b></p>	<p><b>Know and use technical vocabulary relevant to the project:</b></p> <p><b>Mechanical systems - levers and linkages</b>  mechanism, lever, linkage, pivot, slot, bridge, guide, system, input, process, output, linear, rotary, oscillating, reciprocating, user, purpose, function, prototype, design criteria, innovative, appealing, design brief</p> <p><b>Electrical Systems - simple circuits and switches</b>  series circuit, fault, connection, toggle switch, push-to-make switch, push-to-break switch, battery, battery holder, bulb, bulb holder, wire, insulator, conductor, crocodile clip, control, program, system, input device, output device, user, purpose, function, prototype, design criteria, innovative, appealing, design brief</p> <p><b>Food - healthy and varied diet</b>  name of products, names of equipment, utensils, techniques and ingredients, texture, taste, sweet, sour, hot, spicy, appearance, smell, preference, greasy, moist, cook, fresh, savoury, hygienic, edible, grown, reared, caught, frozen, tinned, processed, seasonal, harvested healthy/varied diet, planning, design criteria, purpose, user, annotated sketch, sensory evaluations</p> <p><b>By the end of Year 4, children should be able to:</b></p> <p><b>Designing</b>  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.  Generate, develop, model and communicate realistic ideas through discussion and, as appropriate, annotated sketches, cross sectional and exploded diagrams.</p> <p><b>Making</b>  Order the main stages of making.  Select from and use finishing techniques suitable for the product they are creating.  Select from and use tools and equipment to cut, shape, join and finish with some accuracy.  Select from and use materials and components, including construction materials and electrical components according to their functional properties and aesthetic qualities.</p> <p><b>Evaluating</b>  Investigate and analyse books and, where available, other products with lever and linkage mechanisms.  Evaluate their own products and ideas against criteria and user needs, as they design and make.  Investigate and analyse a range of existing battery-powered products.</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><b>Health and safety</b></p> <p>Pupils should be taught to work safely, using tools, equipment, materials, components and techniques appropriate to the task.</p>
<p><b>Year 5</b></p> <p><b>Structures</b></p> <p><b>Food</b></p> <p><b>Electrical Systems</b></p>	<p><b>By the end of Year 5, children should know:</b></p> <p><b>Technical knowledge and understanding</b></p> <p>Understand how to strengthen, stiffen and reinforce 3-D frameworks.          Know and use technical vocabulary relevant to the project.</p> <p>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.</p> <p>Understand and use electrical systems in their products.          Apply their understanding of computing to program, monitor and control their products</p> <p><b>Know and use technical vocabulary relevant to the project:</b></p> <p><b>Structures</b>          frame structure, stiffen, strengthen, reinforce, triangulation, stability, shape, join, temporary, permanent, design brief, design specification, prototype, annotated sketch, purpose, user, innovation, research, functional</p> <p><b>Food</b>          ingredients, yeast, dough, bran, flour, wholemeal, unleavened, baking soda, spice, herbs, fat, sugar, carbohydrate, protein, vitamins, nutrients, nutrition, healthy, varied, gluten, dairy, allergy, intolerance, savoury, source, seasonality, utensils, combine, fold, knead, stir, pour, mix, rubbing in, whisk, beat, roll out, shape, sprinkle, crumble design specification, innovative, research, evaluate, design brief</p> <p><b>Electrical Systems</b>          series circuit, parallel circuit, names of switches and components, input device, output device, system, monitor, control, program, flowchart, function, innovative, design specification, design brief, user, purpose</p> <p><b>By the end of Year 5, children should be able to:</b></p> <p><b>Designing</b></p> <p>Carry out research into user needs and existing products, using surveys, interviews, questionnaires and web-based resources.          Develop a simple design specification to guide the development of their ideas and products, taking account of constraints including time, resources and cost.          Generate, develop and model innovative ideas, through discussion with peers and adults, prototypes, annotated sketches and pictorial representations of electrical circuits or circuit diagrams.</p>



	<p><b>Making</b></p> <p>Formulate a clear plan, recipe or step by step guide, including a step-by-step list of what needs to be done and lists of resources, tools, materials and components to be used.</p> <p>Competently select from and use appropriate tools to accurately measure, mark out, cut, shape and join construction materials to make frameworks.</p> <p>Use finishing and decorative techniques suitable for the product they are designing and making.</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>Competently select and accurately assemble materials, and securely connect electrical components to produce a reliable, functional product.</p> <p>Create and modify a computer control program to enable an electrical product to work automatically in response to changes in the environment</p> <p><b>Evaluating</b></p> <p>Investigate and evaluate a range of existing frame structures.</p> <p>Critically evaluate their products against their design specification, intended user and purpose, identifying strengths and areas for development, including the views of others, and carrying out appropriate tests.</p> <p>Research key events and individuals relevant to frame structures.</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>Understand how key chefs have influenced eating habits to promote varied and healthy diets.</p> <p>Investigate famous inventors who developed ground-breaking electrical systems and components</p> <p><b>Health and safety</b></p> <p>Work safely and hygienically, using tools, equipment, techniques and ingredients appropriate to the task.</p>
<p><b>Year 6</b></p> <p><b>Textiles</b></p> <p><b>Food</b></p>	<p><b>By the end of Year 6, children should know:</b></p> <p><b>Technical knowledge and understanding</b></p> <p>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.</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>

**Mechanical systems**

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:**

**Textiles**

seam, seam allowance, wadding, reinforce, right side, wrong side, hem, template, pattern pieces, name of textiles and fastenings used, pins, needles, thread, pinking shears, fastenings, iron transfer paper, design criteria, annotate, design decisions, functionality, innovation, authentic, user, purpose, evaluate, mock-up, prototype

**Food**

ingredients, yeast, dough, bran, flour, wholemeal, unleavened, baking soda, spice, herbs, fat, sugar, carbohydrate, protein, vitamins, nutrients, nutrition, healthy, varied, gluten, dairy, allergy, intolerance, savoury, source, seasonality, utensils, combine, fold, knead, stir, pour, mix, rubbing in, whisk, beat, roll out, shape, sprinkle, crumble, design specification, innovative, research, evaluate, design brief

**Mechanical systems**

pulley, drive belt, gear, rotation, spindle, driver, follower, ratio, transmit, axle, motor, circuit, switch, circuit diagram, annotated drawings, exploded diagrams, mechanical system, electrical system, input, process, output, design decisions, functionality, innovation, authentic, user, purpose, design specification, design brief

**By the end of Year 6, children should be able to:**

**Designing**

Generate innovative ideas by carrying out research including surveys, interviews, questionnaires and web-based resources.  
Develop, model and communicate ideas through talking, drawing, exploded drawings and drawings from different views, templates, mock-ups and prototypes and, where appropriate, computer-aided design.  
Design purposeful, functional, appealing products for the intended user that are fit for purpose based on a simple design specification.

**Making**

Produce detailed lists of tools, equipment, materials and fabrics relevant to their tasks.  
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 are accurately assembled and well finished.  
Work within the constraints of time, resources and cost.  
Write a step-by-step recipe, including a list of ingredients, equipment and utensils  
Select and use appropriate utensils and equipment accurately to measure and combine appropriate ingredients.  
Make, decorate and present the food product appropriately for the intended user and purpose

**Evaluating**

Investigate and analyse textile products linked to their final product.

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.

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.

Evaluate the final product with reference back to the design brief and design specification, considering the views of others when identifying improvements.

Understand how key chefs have influenced eating habits to promote varied and healthy diets

**Health and safety**

Work safely and hygienically, using tools, equipment, techniques and ingredients appropriate to the task.