

## D&T - Progression of Knowledge and Skills

	EYFS	Key Stage 1	Lower Key Stage 2	Upper Key Stage 2
<b>Thread</b>	<p><b>KUW Technology</b></p> <ul style="list-style-type: none"> <li>To recognise a range of technology is used in places such as homes and schools.</li> <li>Select and use technology for a particular purpose</li> </ul> <p><b>Expressive arts and Design Exploring and using media and materials</b></p> <ul style="list-style-type: none"> <li>Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function</li> </ul> <p><b>Being imaginative</b></p> <ul style="list-style-type: none"> <li>Use what they have learnt about media and materials in original ways, thinking about uses and purposes.</li> <li>Represent their own ideas, thoughts and feelings through design and technology.</li> </ul> <p><b>Physical Development Health and self-care</b></p> <ul style="list-style-type: none"> <li>Understand the importance of a healthy diet</li> <li>Talk about ways to keep healthy and safe</li> </ul>	<p><b>Design:</b></p> <ul style="list-style-type: none"> <li>design purposeful, functional, appealing products for themselves and other users based on design criteria</li> <li>generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and, where appropriate, information and communication technology</li> </ul> <p><b>Make</b></p> <ul style="list-style-type: none"> <li>select from and use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing]</li> <li>select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics</li> </ul> <p><b>Evaluate</b></p> <ul style="list-style-type: none"> <li>explore and evaluate a range of existing products</li> <li>evaluate their ideas and products against design criteria</li> </ul> <p><b>Technical knowledge</b></p> <ul style="list-style-type: none"> <li>build structures, exploring how they can be made stronger, stiffer and more stable</li> <li>explore and use mechanisms [for example, levers, sliders, wheels and axles], in their products.</li> </ul> <p><b>Cooking and nutrition</b></p> <ul style="list-style-type: none"> <li>use the basic principles of a healthy and varied diet to prepare dishes</li> <li>understand where food comes from.</li> </ul>	<p><b>Design</b></p> <ul style="list-style-type: none"> <li>use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose, aimed at particular individuals or groups</li> <li>generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design</li> </ul> <p><b>Make</b></p> <ul style="list-style-type: none"> <li>select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately</li> <li>select from and use a wider range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities</li> </ul> <p><b>Evaluate</b></p> <ul style="list-style-type: none"> <li>investigate and analyse a range of existing products</li> <li>evaluate their ideas and products against their own design criteria and consider the views of others to improve their work</li> <li>understand how key events and individuals in design and technology have helped shape the world</li> </ul> <p><b>Technical knowledge</b></p> <ul style="list-style-type: none"> <li>apply their understanding of how to strengthen, stiffen and reinforce more complex structures</li> <li>understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages]</li> <li>understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors]</li> <li>apply their understanding of computing to program, monitor and control their products.</li> </ul> <p><b>Cooking and nutrition</b></p> <ul style="list-style-type: none"> <li>understand and apply the principles of a healthy and varied diet</li> <li>prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques</li> <li>understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed.</li> </ul>	

**Rationale :** To ensure that children receive the breadth of learning required by the National Curriculum and that they increase their knowledge, understanding and skills over time, this Progression of Skills and Knowledge document is based on the creation of projects that :

- Ensure that the requirements of the programmes of study are met effectively by completing one project per term or six projects in KS1 and twelve in KS2.
- Projects are covered within the two-year block (e.g. Early Key Stage 2), they can be taught in any order by each year group but a suggested route for each year group has been mapped out. This means that projects can be matched with termly topics or themes and links can be made with related learning in other subjects, such as science, mathematics or art and design.
- Ensures that each term's project addresses a particular aspect of the subject. At KS1, these are mechanisms, structures, food and textiles, and at KS2 mechanical systems, electrical systems, structures, food and textiles.

### Three types of D&T activities

The programmes of study state what should be taught in KS1 and 2, but do not provide detail on how it should be taught. Building on current good practice, each 'Project Planner' includes three types of activity: **Investigative and Evaluative Activities (IEAs)** where children learn from a range of existing products and find out about D&T in the wider world; **Focused Tasks (FTs)** where they are taught specific technical knowledge, designing skills and making skills; **Design, Make and Evaluate Assignment (DMEA)** where children create functional products with users and purposes in mind.

Year 1	NC objectives and link to suggested linked tasks from Projects on a page	Key knowledge and skills	Suggested vocab and linked D&T activities/tasks	Broadening horizons
<p><b>Autumn</b></p> <p><b>Prior learning</b></p> <ul style="list-style-type: none"> <li>• Early experiences of working with paper and card to make simple flaps and hinges.</li> <li>• Experience of simple cutting, shaping and joining skills using scissors, glue, paper fasteners and masking tape.</li> </ul>	<p><b>Mechanisms</b> Sliders and levers</p> <p>See Project on a Page resource '<a href="#">Sliders and levers</a>' <a href="#">Could you see if this link works</a></p>	<p><b>Designing</b></p> <ul style="list-style-type: none"> <li>• Generate ideas based on simple design criteria and their own experiences, explaining what they could make.</li> <li>* Develop, model and communicate their ideas through drawings and mock-ups with card and paper.</li> </ul> <p><b>Making</b></p> <ul style="list-style-type: none"> <li>• Plan by suggesting what to do next.</li> <li>• Select and use tools, explaining their choices, to cut, shape and join paper and card.</li> <li>• Use simple finishing techniques suitable for the product they are creating.</li> </ul> <p><b>Evaluating</b></p> <ul style="list-style-type: none"> <li>• Explore a range of existing books and everyday products that use simple sliders and levers.</li> <li>• Evaluate their product by discussing how well it works in relation to the purpose and the user and whether it meets design criteria.</li> </ul> <p><b>Technical knowledge and understanding</b></p> <ul style="list-style-type: none"> <li>• Explore and use sliders and levers.</li> <li>• Understand that different mechanisms produce different types of movement.</li> <li>• Know and use technical vocabulary relevant to the project</li> </ul>	<p>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>Investigative and Evaluative Activities (IEAs)</b></p> <ul style="list-style-type: none"> <li>• Children explore and evaluate a collection of books and everyday products that have moving parts, including those with levers and sliders. e.g. <i>What is it? Who is it for? What is it for?</i></li> <li>• Use questions to develop children's understanding e.g. <i>What do you think will move? How will you make it move? What part of the product moved and how did it move? How do you think the mechanism works? What else could move in the product? How well does it work?</i></li> <li>• Introduce and develop vocabulary e.g. lever, pivot, slider, left, right, push, pull, up, down, forwards, backwards, in, out.</li> </ul> <p><b>Focused Tasks (FTs)</b></p> <ul style="list-style-type: none"> <li>• Demonstrate simple levers and sliders to the children using prepared teaching aids. It is helpful if these are also used in context e.g. the slider is used to show a snail appearing from behind a stone, the lever is used to show a butterfly flying to a flower.</li> <li>• Use questions to develop children's understanding e.g. <i>How does the slider move? How does the lever move? Which part of the mechanism is the pivot? What does the movement of the slider and lever remind you of?</i></li> <li>• Following teacher demonstration of the correct use of tools and materials, children should develop their knowledge and skills by replicating the slider and lever teaching aids. Encourage children to add pictures to</li> </ul>	<p>Additional information on skills on clickable <a href="#">progression planner</a></p> <p>Further ideas for lessons see <a href="#">D&amp;T further Ideas in this folder</a></p>

			<p>their mechanisms.</p> <p><b>Design, Make and Evaluate Assignment (DMEA)</b></p> <ul style="list-style-type: none"> <li>• Discuss with the children what they will be designing, making and evaluating e.g. <i>Who will your product be for? What will be its purpose? How do you want it to move? Will you use a lever or a slider?</i></li> <li>• Generate simple design criteria with the children e.g. the mechanism should work smoothly, it should make the right type of movement.</li> <li>• Encourage the children to develop their ideas through talking, drawing and making mock-ups of their ideas with paper and card.</li> <li>• Discuss the finishing techniques the children might use e.g. using digital text and graphics, paint, felt tipped pens or collage.</li> <li>• As a whole class, talk about the order in which the mechanisms will be made.</li> <li>• Ask children to evaluate their developing ideas and final products against the original design criteria.</li> </ul>	
<p><b>Spring</b> Prior learning</p> <ul style="list-style-type: none"> <li>• Experience of using construction kits to build walls, towers and frameworks.</li> <li>• Experience of using of basic tools e.g. scissors or hole punches with construction materials e.g. plastic,</li> </ul>	<p><b>Structures</b> Free Standing Structures</p> <p>See Project on a Page resource <a href="#">Free standing structures</a></p>	<p><b>Designing</b></p> <ul style="list-style-type: none"> <li>• Generate ideas based on simple design criteria and their own experiences, explaining what they could make.</li> <li>• Develop, model and communicate their ideas through talking, mock-ups and drawings.</li> </ul> <p><b>Making</b></p> <ul style="list-style-type: none"> <li>• Plan by suggesting what to do next.</li> <li>• Select and use tools, skills and techniques, explaining their choices.</li> <li>• Select new and reclaimed materials and construction kits to build their structures.</li> <li>• Use simple finishing techniques suitable for the structure they are creating.</li> </ul>	<p><b>Investigative and Evaluative Activities (IEAs)</b></p> <ul style="list-style-type: none"> <li>• Go on a walk and/or look at photographs of the local area to explore structures such as playground equipment, street furniture, walls, towers and bridges e.g. <i>What are the structures called and what is their purpose? Who might use them? What materials have been used? Why have these been chosen? How have the parts been joined together? How have the structures been made strong enough? How have they been made stable?</i></li> <li>• Where possible, ask the children to draw or photograph the structures they have been exploring and label with the correct technical vocabulary in relation to the structure, materials used and shapes e.g. wall, tower, framework, base, joint, metal, wood, plastic, brick, triangle, square, rectangle, cuboid, cube</li> </ul> <p><b>Focused Tasks (FTs)</b></p>	<p>Additional information on skills on clickable <a href="#">progression planner</a></p> <p>Further ideas for lessons see <a href="#">D&amp;T further Ideas in This folder</a></p>

<p>card.</p> <ul style="list-style-type: none"> <li>• Experience of different methods of joining card and paper.</li> </ul>		<p><b>Evaluating</b></p> <ul style="list-style-type: none"> <li>• Explore a range of existing freestanding structures in the school and local environment e.g. everyday products and buildings.</li> <li>• Evaluate their product by discussing how well it works in relation to the purpose, the user and whether it meets the original design criteria.</li> </ul> <p><b>Technical knowledge and understanding</b></p> <ul style="list-style-type: none"> <li>• Know how to make freestanding structures stronger, stiffer and more stable.</li> <li>• Know and use technical vocabulary relevant to the project.</li> </ul>	<ul style="list-style-type: none"> <li>• Demonstrate measuring, marking out, cutting, shaping, joining and finishing techniques with a range of tools and new and reclaimed materials that children are likely to use to make their structures. Discuss the suitability of materials for their products according to their characteristics.</li> <li>• Ask the children to build and explore a variety of freestanding structures using construction kits, such as wooden blocks, interconnecting plastic bricks and those that make frameworks e.g. <i>How can you stop your structures from falling over? How they can be made stronger and stiffer in order to carry a load?</i> Children could make models of the structures they have seen in school and the local area.</li> <li>• Ask children to fold paper or card in different ways to make freestanding structures, using masking tape where necessary to make joins. Encourage them to think about how folding materials can make them stronger, stiffer, stand up and be more stable e.g. <i>Can they support an object on top of their structures without it falling over or breaking?</i></li> </ul> <p><b>. Design, Make and Evaluate Assignment (DMEA)</b></p> <ul style="list-style-type: none"> <li>• Discuss with the children what structure they will be designing, making and evaluating e.g. <i>Who will your product be for? What will be its purpose? What materials will you use? How will you make it strong and stable?</i></li> <li>• Generate some simple design criteria with the children e.g. the structure should stand up on its own, it should be strong enough to carry Teddy.</li> <li>• Encourage the children to develop their ideas through talking, drawing and making mock-ups of their ideas with construction kits and other materials.</li> <li>• As a whole class, plan the order in which the structures will be made. Children could make their final products from construction kits, new and reclaimed materials or any combination of these, according to their characteristics.</li> <li>• Ask children to evaluate their developing ideas and</li> </ul>	
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			final products against original design criteria.	
<p><b>Summer Prior learning</b></p> <ul style="list-style-type: none"> <li>• Experience of common fruit and vegetables, undertaking sensory activities i.e. appearance taste and smell.</li> <li>• Experience of cutting soft fruit and vegetables using appropriate utensils.</li> </ul>	<p><b>Food</b> See Project on a Page resource <a href="#">Preparing fruit and vegetables</a> (including cooking and nutrition requirements for KS1)</p>	<p><b>Designing</b></p> <ul style="list-style-type: none"> <li>• Design appealing products for a particular user based on simple design criteria.</li> <li>• Generate initial ideas and design criteria through investigating a variety of fruit and vegetables.</li> <li>• Communicate these ideas through talk and drawings.</li> </ul> <p><b>Making</b></p> <ul style="list-style-type: none"> <li>• Use simple utensils and equipment to e.g. peel, cut, slice, squeeze, grate and chop safely.</li> <li>• Select from a range of fruit and vegetables according to their characteristics e.g. colour, texture and taste to create a chosen product.</li> </ul> <p><b>Evaluating</b></p> <ul style="list-style-type: none"> <li>• Taste and evaluate a range of fruit and vegetables to determine the intended user's preferences.</li> <li>• Evaluate ideas and finished products against design criteria, including intended user and purpose.</li> </ul> <p><b>Technical knowledge and understanding</b></p> <ul style="list-style-type: none"> <li>• Understand where a range of fruit and vegetables come from e.g. farmed or grown at home.</li> <li>• Understand and use basic principles of a healthy and varied diet to prepare dishes, including how fruit and vegetables are part of <i>The eatwell plate</i>.</li> <li>• Know and use technical and sensory vocabulary relevant to the project</li> </ul>	<p><b>Key vocabulary</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>Investigative and Evaluative Activities (IEAs)</b></p> <ul style="list-style-type: none"> <li>• Children examine a range of fruit/vegetables. Use questions to develop children's understanding e.g. <i>What is this called? Who has eaten this fruit/vegetable before? Where is it grown? When can it be harvested? What are its taste, smell, texture and appearance? What will it look like if we peel it or cut it in half? What are the different parts called?</i></li> <li>• Provide opportunities for children to handle, smell and taste fruit and vegetables in order to describe them through talking and drawing. e.g. <i>What words can we use to describe the shape, colour, feel, taste?</i></li> <li>• Evaluate existing products to determine what the children like best; provide opportunities for the children to investigate preferences of their intended users/suitability for intended purposes e.g. <i>What do you prefer and why? What might we want to include in our product to meet our user's preferences? Which fruit/vegetables might be the best for our product to match the occasion/purpose?</i></li> </ul> <p><b>. Focused Tasks (FTs)</b></p> <ul style="list-style-type: none"> <li>• Discuss basic food hygiene practices when handling food including the importance of following instructions to control risk e.g. <i>What should we do before we work with food? Why is following instructions important?</i></li> <li>• Demonstrate how to use simple utensils and provide opportunities for the children to practise food-</li> </ul>	<p>Additional information on skills on clickable <a href="#">progression planner</a></p> <p>Further ideas for lessons see <a href="#">D&amp;T further Ideas in This folder</a></p>

			<p>processing skills such as washing, grating, peeling, slicing, squeezing e.g. <i>Do we eat the whole fruit? Why or why not? Which parts do we eat? What might we have to do before eating this? Why do we cut, grate, peel and slice in this way?</i> Discuss different effects achieved by different processes.</p> <ul style="list-style-type: none"> <li>• Discuss healthy eating advice, including eating more fruit and vegetables; using <i>The eatwell plate</i> model talk about the importance of fruit and vegetables in our balanced diet e.g. <i>Why is it good to eat fruit and vegetables? How many pieces of fruit/vegetables do you eat per day? Why is it important to wash fruit/vegetables before we eat them?</i></li> </ul> <p><b>.Design, Make and Evaluate Assignment (DMEA)</b></p> <ul style="list-style-type: none"> <li>• Set a context for designing and making which is authentic and meaningful.</li> <li>• Discuss with the children the possible products that they might want to design, make and evaluate and who the products will be for. Agree on design criteria that can be used to guide the development and evaluation of children's products e.g. <i>Who/what is the product for? What will make our product unique/different? How will we know that we designed and made a successful product?</i></li> <li>• Use talk and drawings when planning for a product; ask the children to develop, model and communicate their ideas e.g. <i>What will you need? What fruit/vegetable will you need? How much will you need? How will you present the product?</i></li> <li>• Talk to the children about the main stages in making, considering appropriate utensils and food processes they learnt about through IEAs and FTs.</li> <li>• Evaluate as the children work through the project and the final products against the intended purpose and with the intended user, drawing on the design criteria previously agreed.</li> </ul>	
<b>Year 2</b>	<b>NC objectives</b>	<b>Key knowledge and skills</b>	<b>Suggested vocab and linked D&amp;T activities/tasks</b>	<b>Broadening horizons</b>

<p><b>Autumn Prior learning</b></p> <ul style="list-style-type: none"> <li>Assembled vehicles with moving wheels using construction kits.</li> <li>Explored moving vehicles through play.</li> <li>Gained some experience of designing, making and evaluating products for a specified user and purpose.</li> <li>Developed some cutting, joining and finishing skills with card.</li> </ul>	<p><b>Mechanisms</b> Wheels and Axles</p> <p>See Project on a Page resource <a href="#">Wheels and Axles</a></p>	<p><b>Designing</b></p> <ul style="list-style-type: none"> <li>Generate initial ideas and simple design criteria through talking and using own experiences.</li> <li>Develop and communicate ideas through drawings and mock-ups.</li> </ul> <p><b>Making</b></p> <ul style="list-style-type: none"> <li>Select from and use a range of tools and equipment to perform practical tasks such as cutting and joining to allow movement and finishing.</li> <li>Select from and use a range of materials and components such as paper, card, plastic and wood according to their characteristics.</li> </ul> <p><b>Evaluating</b></p> <ul style="list-style-type: none"> <li>Explore and evaluate a range of products with wheels and axles.</li> <li>Evaluate their ideas throughout and their products against original criteria.</li> </ul> <p><b>Technical knowledge and understanding</b></p> <ul style="list-style-type: none"> <li>Explore and use wheels, axles and axle holders.</li> <li>Distinguish between fixed and freely moving axles.</li> <li>Know and use technical vocabulary relevant to the project</li> </ul>	<p><b>Key vocabulary</b> 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>Investigative and Evaluative Activities (IEAs)</b></p> <ul style="list-style-type: none"> <li>Explore and evaluate a range of wheeled products such as toys and everyday objects. Through questioning, direct children's observations e.g. the number, size, position and methods of fixing wheels and axles. <i>How do you think the wheels move? How do you think the wheels are fixed on? Why do you think the product has this number of wheels? Why do you think the wheels are round?</i></li> <li>Draw an example of a wheeled product, stating the user and purpose, and labelling the main parts e.g. body, chassis, wheels, axles and axle holders.</li> <li>Walk around the school building and grounds, recording how wheels and axles are used in daily life.</li> <li>Read a story or non-fiction book that includes a wheeled product. Use this to introduce relevant vocabulary and to emphasise user and purpose.</li> </ul> <p><b>Focused Tasks (FTs)</b></p> <ul style="list-style-type: none"> <li>Using construction kits with wheels and axles, ask children to make a product that moves.</li> <li>Demonstrate to children how wheels and axles may be assembled as either fixed axles or free axles.</li> <li>Show different ways of making axle holders and stress the importance of making sure the axles run freely within the holders.</li> <li>Ensure that children are taught how to mark out, hold, cut and join materials and components correctly.</li> <li>Using samples of materials and components they will use when designing and making, ask the children to assemble some examples of wheel, axle, axle holder combinations. Display the work completed as a</li> </ul>	<p>Additional information on skills on <a href="#">clickable progression planner</a></p> <p>Further ideas for lessons see <a href="#">D&amp;T further Ideas in This folder</a></p>
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			<p>reference for their DMEA.</p> <p><b>Design, Make and Evaluate Assignment (DMEA)</b></p> <ul style="list-style-type: none"> <li>• Discuss with the children what they will be designing, making and evaluating within an authentic context.</li> <li>• With the children identify a user and purpose for the product and generate simple criteria.</li> <li>• Ask children to generate, develop and communicate their ideas as appropriate e.g. through talk and drawing. Talk about, evaluate and share ideas with other children/adults.</li> <li>• Make their wheel and axle product using their design ideas and criteria as an ongoing guide.</li> <li>• Discuss how the children might add finishing techniques to their product with reference to their design ideas and criteria. Direct the children to information and communication technology opportunities such as clip art, word processing, paint or simple drawing programs.</li> <li>• Ask children to evaluate their finished product, communicating how it works and how it matches their design criteria, including any changes they made.</li> </ul>	
<p><b>Spring</b></p>	<p><b>Food</b> Preparing Fruit and Vegetables</p> <p>See Project on a Page resource <a href="#">Preparing fruit and vegetables</a> (including cooking and nutrition requirements for KS1)</p>	<p><b>Designing</b></p> <ul style="list-style-type: none"> <li>• Design appealing products for a particular user based on simple design criteria.</li> <li>• Generate initial ideas and design criteria through investigating a variety of fruit and vegetables.</li> <li>• Communicate these ideas through talk and drawings.</li> </ul> <p><b>Making</b></p> <ul style="list-style-type: none"> <li>• Use simple utensils and equipment to e.g. peel, cut, slice, squeeze, grate and chop safely.</li> <li>• Select from a range of fruit and vegetables according to their characteristics e.g. colour, texture</li> </ul>	<p><b>Key vocabulary</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>Investigative and Evaluative Activities (IEAs)</b></p> <ul style="list-style-type: none"> <li>• Children examine a range of fruit/vegetables. Use questions to develop children's understanding e.g. <i>What is this called? Who has eaten this fruit/vegetable before? Where is it grown? When can it be harvested?</i></li> </ul>	<p>Additional information on skills on clickable <a href="#">progression planner</a></p> <p>Further ideas for lessons see <a href="#">D&amp;T further Ideas in This folder</a></p>



		<p>and taste to create a chosen product.</p> <p><b>Evaluating</b></p> <ul style="list-style-type: none"> <li>• Taste and evaluate a range of fruit and vegetables to determine the intended user's preferences.</li> <li>• Evaluate ideas and finished products against design criteria, including intended user and purpose.</li> </ul> <p><b>Technical knowledge and understanding</b></p> <ul style="list-style-type: none"> <li>• Understand where a range of fruit and vegetables come from e.g. farmed or grown at home.</li> <li>• Understand and use basic principles of a healthy and varied diet to prepare dishes, including how fruit and vegetables are part of <i>The eatwell plate</i>.</li> <li>• Know and use technical and sensory vocabulary relevant to the project</li> </ul>	<p><i>What are its taste, smell, texture and appearance? What will it look like if we peel it or cut it in half? What are the different parts called?</i></p> <ul style="list-style-type: none"> <li>• Provide opportunities for children to handle, smell and taste fruit and vegetables in order to describe them through talking and drawing. e.g. <i>What words can we use to describe the shape, colour, feel, taste?</i></li> <li>• Evaluate existing products to determine what the children like best; provide opportunities for the children to investigate preferences of their intended users/suitability for intended purposes e.g. <i>What do you prefer and why? What might we want to include in our product to meet our user's preferences? Which fruit/vegetables might be the best for our product to match the occasion/purpose?</i></li> </ul> <p><b>. Focused Tasks (FTs)</b></p> <ul style="list-style-type: none"> <li>• Discuss basic food hygiene practices when handling food including the importance of following instructions to control risk e.g. <i>What should we do before we work with food? Why is following instructions important?</i></li> <li>• Demonstrate how to use simple utensils and provide opportunities for the children to practise food-processing skills such as washing, grating, peeling, slicing, squeezing e.g. <i>Do we eat the whole fruit? Why or why not? Which parts do we eat? What might we have to do before eating this? Why do we cut, grate, peel and slice in this way? Discuss different effects achieved by different processes.</i></li> <li>• Discuss healthy eating advice, including eating more fruit and vegetables; using <i>The eatwell plate</i> model talk about the importance of fruit and vegetables in our balanced diet e.g. <i>Why is it good to eat fruit and vegetables? How many pieces of fruit/vegetables do you eat per day? Why is it important to wash fruit/vegetables before we eat them?</i></li> </ul> <p><b>.Design, Make and Evaluate Assignment (DMEA)</b></p> <ul style="list-style-type: none"> <li>• Set a context for designing and making which is authentic and meaningful.</li> </ul>	
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			<ul style="list-style-type: none"> <li>• Discuss with the children the possible products that they might want to design, make and evaluate and who the products will be for. Agree on design criteria that can be used to guide the development and evaluation of children's products e.g. <i>Who/what is the product for? What will make our product unique/different? How will we know that we designed and made a successful product?</i></li> <li>• Use talk and drawings when planning for a product; ask the children to develop, model and communicate their ideas e.g. <i>What will you need? What fruit/vegetable will you need? How much will you need? How will you present the product?</i></li> <li>• Talk to the children about the main stages in making, considering appropriate utensils and food processes they learnt about through IEAs and FTs.</li> <li>• Evaluate as the children work through the project and the final products against the intended purpose and with the intended user, drawing on the design criteria previously agreed.</li> </ul>	
<p><b>Summer Prior learning</b></p> <ul style="list-style-type: none"> <li>• Explored and used different fabrics.</li> <li>• Cut and joined fabrics with simple techniques.</li> <li>• Thought about the user and purpose of products.</li> </ul>	<p><b>Textiles</b>          Templates and Joining Techniques</p> <p>See Project on a Page resource <a href="#">Templates and Joining</a></p>	<p><b>Designing</b></p> <ul style="list-style-type: none"> <li>• Design a functional and appealing product for a chosen user and purpose based on simple design criteria.</li> <li>• Generate, develop, model and communicate their ideas as appropriate through talking, drawing, templates, mock-ups and information and communication technology.</li> </ul> <p><b>Making</b></p> <ul style="list-style-type: none"> <li>• Select from and use a range of tools and equipment to perform practical tasks such as marking out, cutting, joining and finishing.</li> <li>• Select from and use textiles according to their characteristics.</li> </ul> <p><b>Evaluating</b></p> <ul style="list-style-type: none"> <li>• Explore and evaluate a range of existing textile</li> </ul>	<p><b>Key vocabulary</b></p> <p>names of existing products, joining and finishing techniques, tools, fabrics and components</p> <p>template, pattern pieces, mark out, join, decorate, finish</p> <p>features, suitable, quality mock-up, design brief, design criteria, make, evaluate, user, purpose, function</p> <p><b>Investigative and Evaluative Activities (IEAs)</b></p> <ul style="list-style-type: none"> <li>• Children investigate and evaluate existing products linked to the chosen project. Explore and compare e.g. fabrics, joining techniques, finishing techniques and fastenings used.</li> <li>• Use questions to develop children's understanding e.g. <i>How many parts is it made from? What is it joined with? How is it finished? Why do you think these joining techniques have been chosen? How is it fastened? Who might use it and why?</i></li> <li>• Make drawings of existing products, stating the user and purpose. Identify and label, if appropriate, the</li> </ul>	<p>Additional information on skills on clickable <a href="#">progression planner</a></p> <p>Further ideas for lessons see <a href="#">D&amp;T further Ideas in This folder</a></p>

		<p>products relevant to the project being undertaken.</p> <ul style="list-style-type: none"> <li>• Evaluate their ideas throughout and their final products against original design criteria.</li> </ul> <p><b>Technical knowledge and understanding</b></p> <ul style="list-style-type: none"> <li>• Understand how simple 3-D textile products are made, using a template to create two identical shapes.</li> <li>• Understand how to join fabrics using different techniques e.g. running stitch, glue, over stitch, stapling.</li> <li>• Explore different finishing techniques e.g. using painting, fabric crayons, stitching, sequins, buttons and ribbons.</li> <li>• Know and use technical vocabulary relevant to the project.</li> </ul>	<p>fabrics, fastenings and techniques used.</p> <p><b>Focused Tasks (FTs)</b></p> <ul style="list-style-type: none"> <li>• Investigate fabrics to determine which is best for the purpose of the product they are creating.</li> <li>• Using prepared teaching aids, demonstrate the use of a template or simple paper pattern. Children could make their own templates or paper patterns. If necessary, they can use ones provided by the teacher.</li> <li>• Using prepared teaching aids, demonstrate the correct use of appropriate tools to mark out, tape or pin the fabric to the templates or paper patterns and cut out the relevant fabric pieces for the product.</li> <li>• Using prepared teaching aids, demonstrate appropriate examples of joining techniques for children to practise in guided groups e.g. running stitch including threading own needle, stapling, lacing and gluing. Talk about the advantages and disadvantages of each technique.</li> <li>• Using prepared teaching aids, demonstrate examples of finishing techniques for children to practise in guided groups e.g. sewing buttons, 3-D fabric paint, gluing sequins, printing.</li> </ul> <p><b>. Design, Make and Evaluate Assignment (DMEA)</b></p> <ul style="list-style-type: none"> <li>• Provide the children with a context that is authentic. Discuss with children the purpose and user of the products they will be designing, making and evaluating. Design criteria developed with the teacher should be used to guide the development and evaluation of the children's products.</li> <li>• Ask the children to generate a range of ideas e.g. <i>What parts will the product need to have and what will it be made from? What size will it be? How will it be joined and finished?</i></li> <li>• Through talk, drawings and mock-ups, ask the children to develop and communicate their ideas. Information and communication technology could be used for symmetry and pattern ideas. Choose one idea to</li> </ul>	
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			<p>follow through.</p> <ul style="list-style-type: none"> <li>• Talk with the children about the stages in making before assembling quality products, applying the knowledge, understanding and skills learnt through the IEAs and FTs.</li> <li>• Evaluate ongoing work and the final products against the intended purpose and with the intended user, drawing on the design criteria previously agreed.</li> </ul>	
<b>Year 3</b>	<b>NC objectives</b>	<b>Key knowledge and skills</b>	<b>Suggested vocab and linked D&amp;T activities/tasks</b>	<b>Broadening horizons</b>
<p><b>Autumn Prior learning</b></p> <ul style="list-style-type: none"> <li>• Experience of using different joining, cutting and finishing techniques with paper and card.</li> <li>• A basic understanding of 2-D and 3-D shapes in mathematics and the physical properties and everyday uses of materials in science.</li> <li>• Familiarity with general purpose</li> </ul>	<p><b>Structures</b> Shell structures (including computer aided design)</p> <p>See Project on a Page resource <a href="#">Shell structures</a></p>	<p><b>Designing</b></p> <ul style="list-style-type: none"> <li>• Generate realistic ideas and design criteria collaboratively through discussion, focusing on the needs of the user and the functional and aesthetic purposes of the product.</li> <li>• Develop ideas through the analysis of existing shell structures and use computer-aided design to model and communicate ideas.</li> </ul> <p><b>Making</b></p> <ul style="list-style-type: none"> <li>• Plan the order of the main stages of making.</li> <li>• Select and use appropriate tools and software to measure, mark out, cut, score, shape and assemble with some accuracy.</li> <li>• Explain their choice of materials according to functional properties and aesthetic qualities.</li> <li>• Use computer-generated finishing techniques suitable for the product they are creating.</li> </ul> <p><b>Evaluating</b></p> <ul style="list-style-type: none"> <li>• Investigate and evaluate a range of shell structures including the materials, components and techniques that have been used.</li> </ul>	<p><b>Key vocabulary</b></p> <p>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>Investigative and Evaluative Activities (IEAs)</b></p> <ul style="list-style-type: none"> <li>• Children investigate a collection of different shell structures including packaging. Use questions to develop children's understanding e.g. <i>What is the purpose of the shell structure – protecting, containing, presenting? What material is it made from? How has it been constructed? Are the materials recyclable or reusable? How has it been stiffened i.e. folded, corrugated, ribbed, laminated? What size/shape/colour is it? What information does it show and why? How attractive is the design?</i></li> <li>• Children take a small package apart identifying and discussing parts of a net including the tabs e.g. <i>How are different faces of the package arranged? How are</i></li> </ul>	<p>Additional information on skills on clickable <a href="#">progression planner</a></p> <p>Further ideas for lessons see <a href="#">D&amp;T further Ideas in This folder</a></p>

<p>software that can be used to draw accurate shapes, such as Microsoft Word, or simple computer-aided design (CAD), such as 2D Primary by Techsoft.</p>		<ul style="list-style-type: none"> <li>• Test and evaluate their own products against design criteria and the intended user and purpose.</li> </ul> <p><b>Technical knowledge and understanding</b></p> <ul style="list-style-type: none"> <li>• Develop and use knowledge of nets of cubes and cuboids and, where appropriate, more complex 3D shapes.</li> <li>• Develop and use knowledge of how to construct strong, stiff shell structures.</li> <li>• Know and use technical vocabulary relevant to the project.</li> </ul>	<p><i>the tabs used to join the 'free' edges of the net?</i></p> <ul style="list-style-type: none"> <li>• Evaluate existing products to determine which designs children think are the most effective. Provide opportunities for the children to judge the suitability of the shell structures for their intended users and purposes. Discuss graphics including colours/impact of style/logo/size of font e.g. <i>What do you prefer and why? What style of graphics and lettering might we want to include in our product to meet users' preferences and its intended purpose? Which packaging might be the best for...?</i></li> </ul> <p><b>. Focused Tasks (FTs)</b></p> <ul style="list-style-type: none"> <li>• Demonstrate simple drawing software such as Techsoft 2D Primary or Microsoft Word. Ask children to explore the interface and drawing tools to practise drawing and manipulating shapes such as rectangles, squares, ellipses, trapezoids and triangles.</li> <li>• Ask children to use the software to open existing drawings including nets and to draw nets of their own, using gridlines and pre-shaped tools.</li> <li>• Let the children explore and be guided to try out different fill and font tools to become familiar with the graphic design aspects of the available software to achieve the desired appearance of their products.</li> <li>• Practise making nets out of card, joining flat faces with masking tape to create 3-D shapes. Experiment with assembling pre-drawn nets in numerous ways using scoring, cutting and assembling techniques. Allow children to construct a simple box and show how a window can be cut out and acetate sheet added.</li> </ul> <p><b>Design, Make and Evaluate Assignment (DMEA)</b></p> <ul style="list-style-type: none"> <li>• Develop a design brief with the children within a context which is authentic and meaningful.</li> <li>• Discuss the uses and purposes of their shell structure e.g. <i>What does the product need to do? Who is it aimed at? How will the purpose and user affect your design decisions?</i> Agree on design criteria that can be</li> </ul>	
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			<p>used to guide the development and evaluation of children's products e.g. <i>How will we know that we have designed and made successful products?</i></p> <ul style="list-style-type: none"> <li>• Ask the children to develop a design using computer-aided design (CAD) software to create nets, addressing the needs of the user and the purpose.</li> <li>• Using computer-aided design (CAD) software ask the children to print out their nets to develop prototypes in order to evaluate and refine their ideas e.g. <i>What will you need to include in your design? How can you improve it? What materials will you use? How will you make sure your product works well and has the right appearance?</i></li> <li>• Ask children to identify the main stages of making and the appropriate tools and skills they learnt through focused tasks. Encourage the children to work with accuracy, using their computer-aided design (CAD) skills as appropriate.</li> <li>• Evaluate throughout and the final products against the intended purpose and with the intended user, where safe and practical, drawing on the design criteria previously agreed.</li> </ul>	
<p><b>Spring</b></p> <p><b>Prior learning</b></p> <ul style="list-style-type: none"> <li>• Know some ways to prepare ingredients safely and hygienically.</li> <li>• Have some basic knowledge and understanding about healthy eating and <i>The eatwell plate</i>.</li> <li>• Have used</li> </ul>	<p><b>Food</b></p> <p>Healthy and varied diet (including cooking and nutrition requirements for KS2)</p> <p>See Project on a Page resource <a href="#">Healthy and varied diet</a></p>	<p><b>Designing</b></p> <ul style="list-style-type: none"> <li>• 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.</li> <li>• Use annotated sketches and appropriate information and communication technology, such as web-based recipes, to develop and communicate ideas.</li> </ul> <p><b>Making</b></p> <ul style="list-style-type: none"> <li>• Plan the main stages of a recipe, listing ingredients, utensils and equipment.</li> <li>• Select and use appropriate utensils and equipment to prepare and combine ingredients.</li> <li>• Select from a range of ingredients to make appropriate food products, thinking about sensory characteristics.</li> </ul> <p><b>Evaluating</b></p> <ul style="list-style-type: none"> <li>• Carry out sensory evaluations of a variety of ingredients and products. Record the evaluations</li> </ul>	<p><b>Key vocabulary</b></p> <p>names 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>Investigative and Evaluative Activities (IEAs)</b></p> <ul style="list-style-type: none"> <li>• Children investigate a range of food products e.g. the content of their lunchboxes over a week, a selection of foods provided for them, food from a visit to a local shop. Link to the principles of a varied and healthy diet using <i>The eatwell plate</i> e.g. <i>What ingredients have been used? Which food groups do they belong to? What substances are used in the products e.g.</i></li> </ul>	<p>Additional information on skills on clickable <a href="#">progression planner</a></p> <p>Further ideas for lessons see <a href="#">D&amp;T further Ideas in This folder</a></p>

<p>some equipment and utensils and prepared and combined ingredients to make a product.</p>		<p>using e.g. tables and simple graphs.</p> <ul style="list-style-type: none"> <li>• Evaluate the ongoing work and the final product with reference to the design criteria and the views of others.</li> </ul> <p><b>Technical knowledge and understanding</b></p> <ul style="list-style-type: none"> <li>• Know how to use appropriate equipment and utensils to prepare and combine food.</li> <li>• Know about a range of fresh and processed ingredients appropriate for their product, and whether they are grown, reared or caught.</li> <li>• Know and use relevant technical and sensory vocabulary appropriately.</li> </ul>	<p><i>nutrients, water and fibre?</i></p> <ul style="list-style-type: none"> <li>• Carry out sensory evaluations on the contents of the food from e.g. a variety of bought food products such as a range of wraps or sandwiches. Record results, for example using a table. Use appropriate words to describe the taste/smell/texture/appearance e.g. <i>How do the sensory characteristics affect your liking for the food?</i></li> <li>• Gather information about existing products available relating to your product. Visit a local supermarket and/or use the internet.</li> <li>• Find out how a variety of ingredients used in products are grown and harvested, reared, caught and processed e.g. <i>Where and when are the ingredients grown? Where do different meats/fish/cheese/eggs come from? How and why are they processed?</i></li> </ul> <p><b>Focused Tasks (FTs)</b></p> <ul style="list-style-type: none"> <li>• Learn to select and use a range of utensils and use a range of techniques as appropriate to prepare ingredients hygienically including the bridge and claw technique, grating, peeling, chopping, slicing, mixing, spreading, kneading and baking.</li> <li>• Food preparation and cooking techniques could be practised by making a food product using an existing recipe.</li> <li>• Discuss basic food hygiene practices when handling food including the importance of following instructions to control risk e.g. <i>What should we do before we work with food? Why is following instructions important?</i></li> </ul> <p><b>Design, Make and Evaluate Assignment (DMEA)</b></p> <ul style="list-style-type: none"> <li>• Discuss the purpose of the products that the children will be designing, making and evaluating and who the products will be for.</li> <li>• Develop and agree on design criteria with the children within a context that is authentic and meaningful. This can include criteria relating to healthy eating and a varied diet e.g. <i>What do you need to consider to make</i></li> </ul>	
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			<p><i>it part of a balanced diet? How do we select the ingredients? How could we make it appealing to eat?</i></p> <ul style="list-style-type: none"> <li>• Ask children to generate a range of ideas encouraging realistic responses.</li> <li>• Using discussion, annotated sketches and information and communication technology if appropriate, ask the children to develop and communicate their ideas.</li> <li>• Ask children to consider the main stages in making the food product, before preparing/cooking the product including the ingredients and utensils they will need.</li> <li>• Evaluate as the assignment proceeds and the final product against the intended purpose and user, reflecting on the design criteria previously agreed. Consider what others think of the product when considering how the work might be improved.</li> </ul>	
<p><b>Summer Prior learning</b></p> <ul style="list-style-type: none"> <li>• Have joined fabric in simple ways by gluing and stitching.</li> <li>• Have used simple patterns and templates for marking out.</li> <li>• Have evaluated a range of textile products.</li> </ul>	<p><b>Textiles</b> 2-D shape to 3-D Product</p> <p>See Project on a page resource <a href="#">2-D shape to 3-D Product</a></p>	<p><b>Designing</b></p> <ul style="list-style-type: none"> <li>• Generate realistic ideas through discussion and design criteria for an appealing, functional product fit for purpose and specific user/s.</li> <li>• Produce annotated sketches, prototypes, final product sketches and pattern pieces.</li> </ul> <p><b>Making</b></p> <ul style="list-style-type: none"> <li>• Plan the main stages of making.</li> <li>• Select and use a range of appropriate tools with some accuracy e.g. cutting, joining and finishing.</li> <li>• Select fabrics and fastenings according to their functional characteristics e.g. strength, and aesthetic qualities e.g. pattern.</li> </ul> <p><b>Evaluating</b></p> <ul style="list-style-type: none"> <li>• Investigate a range of 3-D textile products relevant to the project.</li> <li>• Test their product against the original design criteria and with the intended user.</li> </ul>	<p><b>Key vocabulary</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>Investigative and Evaluative Activities (IEAs)</b></p> <ul style="list-style-type: none"> <li>• Children investigate a range of textile products that have a selection of stitches, joins, fabrics, finishing techniques, fastenings and purposes, linked to the product they will design, make and evaluate. Think about products from the past and what changes have been made in textile production and products e.g. the invention of zips and Velcro.</li> <li>• Give children the opportunity to disassemble appropriate textiles products to gain an understanding of 3-D shape, patterns and seam allowances.</li> <li>• Use questioning to develop understanding e.g. <i>What is its purpose? Which one is most suited to its purpose? What properties/characteristics does the fabric have? Why has this fabric been chosen? How has the fabric</i></li> </ul>	<p>Additional information on skills on clickable <a href="#">progression planner</a></p> <p>Further ideas for lessons see <a href="#">D&amp;T further Ideas in This folder</a></p>



		<ul style="list-style-type: none"> <li>• Take into account others' views.</li> <li>• Understand how a key event/individual has influenced the development of the chosen product and/or fabric.</li> </ul> <p><b>Technical knowledge and understanding</b></p> <ul style="list-style-type: none"> <li>• Know how to strengthen, stiffen and reinforce existing fabrics.</li> <li>• Understand how to securely join two pieces of fabric together.</li> <li>• Understand the need for patterns and seam allowances.</li> <li>• Know and use technical vocabulary relevant to the projec</li> </ul>	<p><i>been joined together? How effective are its fastenings? How has it been decorated? Does its decoration have a purpose? What would the 2-D pattern piece look like? What are its measurements? How might you change the product?</i></p> <p><b>Focused Tasks (FTs)</b></p> <ul style="list-style-type: none"> <li>• Demonstrate a range of stitching techniques and allow children to practise sewing two small pieces of fabric together, demonstrating the use of, and need for, seam allowances.</li> <li>• Allow children to use a textile product they have taken apart to create a paper pattern using 2-D shapes.</li> <li>• Provide a range of fabrics – children to consider whether fabrics are suitable for the chosen purpose and user. The fabrics also can be used for demonstrating and testing out a range of decorative finishing techniques e.g. appliqué, embroidery, fabric pens/paints, printing.</li> <li>• Use questioning to develop understanding e.g. <i>Which joining technique makes the strongest seam? Why? Which stitch is appropriate for the purpose? Which joining techniques are suitable for the fabric and purpose? How can you stiffen your fabric? What is the purpose of the fastenings? Which one is most suited to the purpose and user? What decorative techniques have been used? What effect do they have?</i></li> </ul> <p><b>Design, Make and Evaluate Assignment (DMEA)</b></p> <ul style="list-style-type: none"> <li>• Children to create a design brief, supported by the teacher, set within a context which is authentic and meaningful. Discuss the intended user, purpose and appeal of their product. Create a set of design criteria.</li> <li>• Ask children to sketch and annotate a range of possible ideas, constantly encouraging creative thinking. Produce mock-ups and prototypes of their chosen product.</li> <li>• Plan the main stages of making e.g. using a flowchart or storyboard.</li> </ul>	
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			<ul style="list-style-type: none"> <li>Children to assemble their product using their existing knowledge, skills and understanding from IEAs and FTs. Encourage children to think about the aesthetics and quality finish of their product.</li> <li>Evaluate as the process is undertaken and the final product in relation to the design brief and criteria. The product should be tested by the intended user and for its purpose and others' views sought to help with identifying possible improvements.</li> </ul>	
<b>Year 4</b>	<b>NC objectives</b>	<b>Key knowledge and skills</b>	<b>Suggested vocab and linked D&amp;T activities/tasks</b>	<b>Broadening horizons</b>
<p><b>Autumn Prior learning</b></p> <ul style="list-style-type: none"> <li>Explored and used mechanisms such as flaps, sliders and levers.</li> <li>Gained experience of basic cutting, joining and finishing techniques with paper and card.</li> </ul>	<p><b>Mechanical Systems</b> Levers and Linkages</p> <p>See Project on a page resource <a href="#">Levers and Linkages</a></p>	<p><b>Designing</b></p> <ul style="list-style-type: none"> <li>Generate realistic ideas and their own design criteria through discussion, focusing on the needs of the user.</li> <li>Use annotated sketches and prototypes to develop, model and communicate ideas.</li> </ul> <p><b>Making</b></p> <ul style="list-style-type: none"> <li>Order the main stages of making.</li> <li>Select from and use appropriate tools with some accuracy to cut, shape and join paper and card.</li> <li>Select from and use finishing techniques suitable for the product they are creating.</li> </ul> <p><b>Evaluating</b></p> <ul style="list-style-type: none"> <li>Investigate and analyse books and, where available, other products with lever and linkage mechanisms.</li> <li>Evaluate their own products and ideas against criteria and user needs, as they design and make.</li> </ul> <p><b>Technical knowledge and understanding</b></p>	<p><b>Key vocabulary</b></p> <p>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>Investigative and Evaluative Activities (IEAs)</b></p> <ul style="list-style-type: none"> <li>Children investigate, analyse and evaluate books and, where available, other products which have a range of lever and linkage mechanisms.</li> <li>Use questions to develop children's understanding e.g. <i>Who might it be for? What is its purpose? What do you think will move? How will you make it move? What part moved and how did it move? How do you think the mechanism works? What materials have been used? How effective do you think it is and why? What else could move?</i></li> </ul> <p><b>Focused Tasks (FTs)</b></p> <ul style="list-style-type: none"> <li>Demonstrate a range of lever and linkage mechanisms to the children using prepared teaching aids.</li> <li>Use questions to develop children's understanding e.g. <i>Which card strip is the lever? Which card strip is acting as the linkage? Which part of the system is the input and which part the output? What does the type of movement remind you of? Which are the fixed pivots</i></li> </ul>	<p>Additional information on skills on clickable <a href="#">progression planner</a></p> <p>Further ideas for lessons see <a href="#">D&amp;T further Ideas in This folder</a></p>

		<ul style="list-style-type: none"> <li>• Understand and use lever and linkage mechanisms.</li> <li>• Distinguish between fixed and loose pivots.</li> <li>• Know and use technical vocabulary relevant to the project</li> </ul>	<p><i>and which are the loose pivots?</i></p> <ul style="list-style-type: none"> <li>• Demonstrate the correct and accurate use of measuring, marking out, cutting, joining and finishing skills and techniques.</li> <li>• Children should develop their knowledge and skills by replicating one or more of the teaching aids.</li> </ul> <p><b>Design, Make and Evaluate Assignment (DMEA)</b></p> <ul style="list-style-type: none"> <li>• Develop a design brief with the children within a context which is authentic and meaningful.</li> <li>• Discuss with children the purpose of the products they will be designing and making and who the products will be for. Ask the children to generate a range of ideas, encouraging creative responses. Agree on design criteria that can be used to guide the development and evaluation of the children's products.</li> <li>• Using annotated sketches and prototypes, ask the children to develop, model and communicate their ideas.</li> <li>• Ask the children to consider the main stages in making before assembling high quality products, drawing on the knowledge, understanding and skills learnt through IEAs and FTs.</li> <li>• Evaluate the final products against the intended purpose and with the intended user, drawing on the design criteria previously agreed.</li> </ul>	
<p><b>Spring</b></p> <p><b>Prior learning</b></p> <ul style="list-style-type: none"> <li>• Constructed a simple series electrical circuit in science, using bulbs, switches and</li> </ul>	<p><b>Electrical Systems</b></p> <p>Simple circuits and switches (including Programming and Control.</p> <p>See Project on a page resource <a href="#">Simple circuits and switches</a></p>	<p><b>Designing</b></p> <ul style="list-style-type: none"> <li>• 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.</li> <li>• Generate, develop, model and communicate realistic ideas through discussion and, as appropriate, annotated sketches, cross-sectional and exploded diagrams.</li> </ul>	<p><b>Key vocabulary</b></p> <p>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>Investigative and Evaluative Activities (IEAs)</b></p> <ul style="list-style-type: none"> <li>• Discuss, investigate and, where practical, disassemble different examples of relevant battery-powered</li> </ul>	<p>Additional information on skills on clickable <a href="#">progression planner</a></p> <p>Further ideas for lessons see <a href="#">D&amp;T further Ideas in This folder</a></p>

<p>buzzers.</p> <ul style="list-style-type: none"> <li>• Cut and joined a variety of construction materials, such as wood, card, plastic, reclaimed materials and glue.</li> </ul>		<p><b>Making</b></p> <ul style="list-style-type: none"> <li>• Order the main stages of making.</li> <li>• Select from and use tools and equipment to cut, shape, join and finish with some accuracy.</li> <li>• Select from and use materials and components, including construction materials and electrical components according to their functional properties and aesthetic qualities.</li> </ul> <p><b>Evaluating</b></p> <ul style="list-style-type: none"> <li>• Investigate and analyse a range of existing battery-powered products.</li> <li>• Evaluate their ideas and products against their own design criteria and identify the strengths and areas for improvement in their work.</li> </ul> <p><b>Technical knowledge and understanding</b></p> <ul style="list-style-type: none"> <li>• Understand and use electrical systems in their products, such as series circuits incorporating switches, bulbs and buzzers.</li> <li>• Apply their understanding of computing to program and control their products.</li> <li>• Know and use technical vocabulary relevant to the project.</li> </ul>	<p>products, including those which are commercially available e.g. <i>Where and why they are used? How does the product work? What are its key features and components? How does the switch work? Is the product manually controlled or controlled by a computer? What materials have been used and why? How is it suited to its intended user and purpose?</i></p> <ul style="list-style-type: none"> <li>• Ask children to investigate examples of switches, including those which are commercially available, which work in different ways e.g. push-to-make, push-to-break, toggle switch. Let the children use them in simple circuits e.g. <i>How might different types of switches be useful in different types of products?</i></li> <li>• Remind children about the dangers of mains electricity.</li> </ul> <p><b>Focused Tasks (FTs)</b></p> <ul style="list-style-type: none"> <li>• Recap with the children how to make manually controlled, simple series circuits with batteries and different types of switches, bulbs and buzzers. Discuss which of the components in the circuit are input devices e.g. switches, and which are output devices e.g. bulbs and buzzers.</li> <li>• Demonstrate how to find a fault in a simple circuit and correct it, giving pupils opportunities to practise.</li> <li>• Use a simple computer control program with an interface box or standalone control box to physically control output devices e.g. bulbs and buzzers.</li> <li>• Ask the children to make a variety of switches by using simple classroom materials e.g. card, corrugated plastic, aluminium foil, paper fasteners and paper clips. Encourage children to make switches that operate in different ways e.g. when you press them, when you turn them, when you push them from side to side. Ask the children to test their switches in a simple series circuit.</li> <li>• Teach children how to avoid making short circuits.</li> </ul> <p><b>Design, Make and Evaluate Assignment (DMEA)</b></p> <ul style="list-style-type: none"> <li>• Develop a design brief with the children within a</li> </ul>	
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			<p>context which is authentic and meaningful.</p> <ul style="list-style-type: none"> <li>• Discuss with children the purpose of the battery-powered products that they will be designing and making and who they will be for. Ask the children to generate a range of ideas, encouraging realistic responses. Agree on design criteria that can be used to guide the development and evaluation of the children's products, including safety features.</li> <li>• Using annotated sketches, cross-sectional and exploded diagrams, as appropriate, ask the children to develop, model and communicate their ideas.</li> <li>• Ask the children to consider the main stages in making and testing before assembling high quality products, drawing on the knowledge, understanding and skills learnt through IEAs and FTs.</li> <li>• Evaluate throughout and the final products against the intended purpose and with the intended user, drawing on the design criteria previously agreed.</li> </ul>	
<p><b>Summer Prior learning</b></p> <ul style="list-style-type: none"> <li>• Know some ways to prepare ingredients safely and hygienically.</li> <li>• Have some basic knowledge and understanding about healthy eating and <i>The eatwell plate</i>.</li> <li>• Have used some</li> </ul>	<p><b>Food</b> Healthy and varied Diet (including cooking and nutrition requirements for KS2)</p> <p>See Project on a page resource <a href="#">Healthy and varied Diet</a></p>	<p><b>Designing</b></p> <ul style="list-style-type: none"> <li>• 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.</li> <li>• Use annotated sketches and appropriate information and communication technology, such as web-based recipes, to develop and communicate ideas.</li> </ul> <p><b>Making</b></p> <ul style="list-style-type: none"> <li>• Plan the main stages of a recipe, listing ingredients, utensils and equipment.</li> <li>• Select and use appropriate utensils and equipment to prepare and combine ingredients.</li> <li>• Select from a range of ingredients to make appropriate food products, thinking about sensory</li> </ul>	<p><b>Key vocabulary</b></p> <p>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</p> <p>planning, design criteria, purpose, user, annotated sketch, sensory evaluations.</p> <p><b>Investigative and Evaluative Activities (IEAs)</b></p> <ul style="list-style-type: none"> <li>• Children investigate a range of food products e.g. the content of their lunchboxes over a week, a selection of foods provided for them, food from a visit to a local shop. Link to the principles of a varied and healthy diet using <i>The eatwell plate</i> e.g. <i>What ingredients have been used? Which food groups do they belong to? What substances are used in the products e.g. nutrients, water and fibre?</i></li> </ul>	<p>Additional information on skills on <a href="#">clickable progression planner</a></p> <p>Further ideas for lessons see <a href="#">D&amp;T further Ideas in This folder</a></p>

<p>equipment and utensils and prepared and combined ingredients to make a product.</p>		<p>characteristics.</p> <p><b>Evaluating</b></p> <ul style="list-style-type: none"> <li>• Carry out sensory evaluations of a variety of ingredients and products. Record the evaluations using e.g. tables and simple graphs.</li> <li>• Evaluate the ongoing work and the final product with reference to the design criteria and the views of others.</li> </ul> <p><b>Technical knowledge and understanding</b></p> <ul style="list-style-type: none"> <li>• Know how to use appropriate equipment and utensils to prepare and combine food.</li> <li>• Know about a range of fresh and processed ingredients appropriate for their product, and whether they are grown, reared or caught.</li> <li>• Know and use relevant technical and sensory vocabulary appropriately.</li> </ul>	<ul style="list-style-type: none"> <li>• Carry out sensory evaluations on the contents of the food from e.g. a variety of bought food products such as a range of wraps or sandwiches. Record results, for example using a table. Use appropriate words to describe the taste/smell/texture/appearance e.g. <i>How do the sensory characteristics affect your liking for the food?</i></li> <li>• Gather information about existing products available relating to your product. Visit a local supermarket and/or use the internet.</li> <li>• Find out how a variety of ingredients used in products are grown and harvested, reared, caught and processed e.g. <i>Where and when are the ingredients grown? Where do different.</i></li> </ul> <p><b>Focused Tasks (FTs)</b></p> <ul style="list-style-type: none"> <li>• Learn to select and use a range of utensils and use a range of techniques as appropriate to prepare ingredients hygienically including the bridge and claw technique, grating, peeling, chopping, slicing, mixing, spreading, kneading and baking.</li> <li>• Food preparation and cooking techniques could be practised by making a food product using an existing recipe.</li> <li>• Discuss basic food hygiene practices when handling food including the importance of following instructions to control risk e.g. <i>What should we do before we work with food? Why is following instructions important?</i></li> </ul> <p><b>. Design, Make and Evaluate Assignment (DMEA)</b></p> <ul style="list-style-type: none"> <li>• Discuss the purpose of the products that the children will be designing, making and evaluating and who the products will be for.</li> <li>• Develop and agree on design criteria with the children within a context that is authentic and meaningful. This can include criteria relating to healthy eating and a varied diet e.g. <i>What do you need to consider to make it part of a balanced diet? How do we select the ingredients? How could we make it appealing to eat?</i></li> </ul>	
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<b>Year 5</b>	<b>NC objectives</b>	<b>Key knowledge and skills</b>	<b>Suggested vocab and linked D&amp;T activities/tasks</b>	<b>Broadening horizons</b>
<p><b>Autumn Prior learning</b></p> <ul style="list-style-type: none"> <li>• Experience of using measuring, marking out, cutting, joining, shaping and finishing techniques with construction materials.</li> <li>• Basic understanding of what structures are and how they can be made stronger, stiffer and more stable.</li> </ul>	<p><b>Structures</b> Frame Structures See Project on a page resource <a href="#">Frame Structures</a></p>	<p><b>Prior learning</b></p> <ul style="list-style-type: none"> <li>• Experience of using measuring, marking out, cutting, joining, shaping and finishing techniques with construction materials.</li> <li>• Basic understanding of what structures are and how they can be made stronger, stiffer and more stable.</li> </ul> <p><b>Designing</b></p> <ul style="list-style-type: none"> <li>• Carry out research into user needs and existing products, using surveys, interviews, questionnaires and web-based resources.</li> <li>• Develop a simple design specification to guide the development of their ideas and products, taking account of constraints including time, resources and cost.</li> <li>• Generate, develop and model innovative ideas, through discussion, prototypes and annotated sketches.</li> </ul>	<p><b>Key vocabulary</b></p> <p>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>Investigative and Evaluative Activities (IEAs)</b></p> <ul style="list-style-type: none"> <li>• Children investigate and make annotated drawings of a range of portable and permanent frame structures, e.g. tents, bus shelters, umbrellas. Use photographs and web-based research to extend the range e.g. <i>How well does the frame structure meet users' needs and purposes? Why were materials chosen? What methods of construction have been used? How has the framework been strengthened, reinforced and stiffened? How does the shape of the framework affect its strength? How innovative is the design? When was it made? Who made it? Where was it made?</i></li> <li>• Children could research key events and individuals related to their study of frame structures e.g. Stephen Sauvestre – a designer of the Eiffel Tower; Thomas Farnolls Pritchard – designer of the Iron Bridge. They could also learn about locally important design and</li> </ul>	<p>Additional information on skills on clickable <a href="#">progression planner</a></p> <p>Further ideas for lessons see <a href="#">D&amp;T further Ideas in This folder</a></p>

		<p><b>Making</b></p> <ul style="list-style-type: none"> <li>• Formulate a clear plan, including a step-by-step list of what needs to be done and lists of resources to be used.</li> <li>• Competently select from and use appropriate tools to accurately measure, mark out, cut, shape and join construction materials to make frameworks.</li> <li>• Use finishing and decorative techniques suitable for the product they are designing and making.</li> </ul> <p><b>Evaluating</b></p> <ul style="list-style-type: none"> <li>• Investigate and evaluate a range of existing frame structures.</li> <li>• Critically evaluate their products against their design specification, intended user and purpose, identifying strengths and areas for development, and carrying out appropriate tests.</li> <li>• Research key events and individuals relevant to frame structures.</li> </ul> <p><b>Technical knowledge and understanding</b></p> <ul style="list-style-type: none"> <li>• Understand how to strengthen, stiffen and reinforce 3-D frameworks.</li> <li>• Know and use technical vocabulary relevant to the project.</li> </ul>	<p>technology activity related to their project.</p> <p><b>Focused Tasks (FTs)</b></p> <ul style="list-style-type: none"> <li>• Use a construction kit consisting of plastic strips and paper fasteners to build 2-D frameworks. Compare the strength of square frameworks with triangular frameworks. Ask the children to reinforce square frameworks using diagonals to help develop an understanding of using triangulation to add strength to a structure.</li> <li>• Demonstrate how paper tubes can be made from rolling sheets of newspaper diagonally around pieces of e.g. dowel. Ask children to use these tubes and masking tape or paper straws with pipe cleaners to build 3-D frameworks such as cubes, cuboids and pyramids. <i>How could each of the frameworks be reinforced and strengthened?</i></li> <li>• Demonstrate the accurate use of tools and equipment. Develop skills and techniques using junior hacksaws, G-clamps, bench hooks, square section wood, card triangles and hand drills to construct wooden frames, as appropriate.</li> <li>• Demonstrate skills and techniques for accurately joining framework materials together e.g. paper straws, square sectioned wood. Ask children to practise these, mounting their joints onto card for future reference.</li> </ul> <p><b>Design, Make and Evaluate Assignment (DMEA)</b></p> <ul style="list-style-type: none"> <li>• Discuss the brief of designing and making a small-scale frame structure e.g. <i>Who is the intended user and what is the purpose of the frame structure? Will it be permanent, or can it be easily dismantled? What materials will you use? How will it be joined? How will it be reinforced? How will it be finished?</i> Children should be encouraged to generate innovative ideas, drawing on their research. Ask children to develop a simple design specification to guide their thinking.</li> <li>• Children should produce a detailed, step-by-step plan, listing tools and materials.</li> <li>• Children's sketches should be annotated with notes to help develop and communicate their ideas.</li> </ul>	
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			<ul style="list-style-type: none"> <li>• Encourage children to model their ideas first using materials such as paper, card and paper straws e.g. <i>How will you make it stable? How will it stand up? How could you make it stronger? Where are the weak points? How could you reinforce them? What tools and materials will you need? How can you improve the design?</i></li> <li>• Encourage children to make their products with accuracy. They should regularly evaluate their work and their completed product, drawing on their design specification, and thinking about the intended purpose and user.</li> </ul>	
<p><b>Spring</b></p> <p><b>Prior learning</b></p> <ul style="list-style-type: none"> <li>• Have knowledge and understanding about food hygiene, nutrition, healthy eating and a varied diet.</li> <li>• Be able to use appropriate equipment and utensils, and apply a range of techniques for measuring out, preparing and combining</li> </ul>	<p><b>Food</b></p> <p>Celebrating culture and seasonality (including cooking and nutrition requirements for KS2)</p> <p>See Project on a page resource <a href="#">Celebrating culture and seasonality</a></p>	<p><b>Designing</b></p> <ul style="list-style-type: none"> <li>• Generate innovative ideas through research and discussion with peers and adults to develop a design brief and criteria for a design specification.</li> <li>• Explore a range of initial ideas, and make design decisions to develop a final product linked to user and purpose.</li> <li>• Use words, annotated sketches and information and communication technology as appropriate to develop and communicate ideas.</li> </ul> <p><b>Making</b></p> <ul style="list-style-type: none"> <li>• Write a step-by-step recipe, including a list of ingredients, equipment and utensils</li> <li>• Select and use appropriate utensils and equipment accurately to measure and combine appropriate ingredients.</li> <li>• Make, decorate and present the food product appropriately for the intended user and purpose.</li> </ul>	<p><b>Key vocabulary</b></p> <p>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>Investigative and Evaluative Activities (IEAs)</b></p> <ul style="list-style-type: none"> <li>• Children use first hand and secondary sources to carry out relevant research into existing products to include personal/cultural preferences, ensuring a healthy diet, meeting dietary needs and the availability of locally sourced/seasonal/organic ingredients. This could include a visit to a local bakery, farm, farm shop or supermarket e.g. <i>What ingredients are sourced locally/in the UK/from overseas? What are the key ingredients needed to make a particular product? How have ingredients been processed? What is the nutritional value of a product?</i></li> <li>• Children carry out sensory evaluations of a variety of existing food products and ingredients relating to the project. The ingredients could include those that could be added to a basic recipe such as herbs, spices, vegetables or cheese. These could be locally sourced, seasonal, Fair Trade or organic. Present results in e.g.</li> </ul>	<p>Additional information on skills on clickable <a href="#">progression planner</a></p> <p>Further ideas for lessons see <a href="#">D&amp;T further Ideas in This folder</a></p>

<p>ingredients.</p>		<p><b>Evaluating</b></p> <ul style="list-style-type: none"> <li>• 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.</li> <li>• Evaluate the final product with reference back to the design brief and design specification, taking into account the views of others when identifying improvements.</li> <li>• Understand how key chefs have influenced eating habits to promote varied and healthy diets.</li> </ul> <p><b>Technical knowledge and understanding</b></p> <ul style="list-style-type: none"> <li>• Know how to use utensils and equipment including heat sources to prepare and cook food.</li> <li>• Understand about seasonality in relation to food products and the source of different food products.</li> <li>• Know and use relevant technical and sensory vocabulary.</li> </ul>	<p>tables/graphs/charts and by using evaluative writing.</p> <ul style="list-style-type: none"> <li>• Use a range of questions to support children’s ability to evaluate food ingredients and products e.g. <i>What ingredients help to make the product spicy/crisp/crunchy etc? What is the impact of added ingredients/finishes/shapes on the finished product?</i></li> <li>• Research key chefs and how they have promoted seasonality, local produce and healthy eating.</li> </ul> <p><b>Focused Tasks (FTs)</b></p> <ul style="list-style-type: none"> <li>• Demonstrate how to measure out, cut, shape and combine e.g. knead, beat, rub and mix ingredients.</li> <li>• Demonstrate how to use appropriate utensils and equipment that the children may use safely and hygienically.</li> <li>• Techniques could be practised following a basic recipe to prepare and cook a savoury food product.</li> <li>• Ask questions about which ingredients could be changed or added in a basic recipe such as types of flour, seeds, garlic, vegetables. Consider texture, taste, appearance and smell.</li> <li>• When using a basic dough recipe, explore making different shapes to change the appearance of the food product e.g. <i>Which shape is most appealing and why?</i></li> </ul> <p><b>Design, Make and Evaluate Assignment (DMEA)</b></p> <ul style="list-style-type: none"> <li>• Develop a design brief and simple design specification with the children within a context that is authentic and meaningful. This can include design criteria relating to nutrition and healthy eating.</li> <li>• Discuss the purpose of the products that the children will be designing, making and evaluating and who the products will be for.</li> <li>• Ask children to generate a range of ideas encouraging innovative responses. Agree on design criteria that can be used to guide the development and evaluation of the children’s product.</li> </ul>	
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			<ul style="list-style-type: none"> <li>• Using annotated sketches, discussion and information and communication technology if appropriate, ask children to develop and communicate their ideas.</li> <li>• Ask children to record the steps, equipment, utensils and ingredients for making the food product drawing on the knowledge, understanding and skills learnt through IEAs and FTs.</li> <li>• Evaluate the work as it progresses and the final product against the intended purpose and user reflecting on the design specification previously agreed.</li> </ul>	
<p><b>Summer Prior learning</b></p> <ul style="list-style-type: none"> <li>• Understanding of the essential characteristics of a series circuit and experience of creating a battery-powered, functional, electrical product.</li> <li>• Initial experience of using computer control software and an interface box or a standalone box, e.g. writing and modifying a</li> </ul>	<p><b>Electrical systems</b> More complex switches and circuits (including programming, monitoring and control)</p> <p>See Project on a page resource <a href="#">More complex switches and circuits</a></p>	<p><b>Designing</b></p> <ul style="list-style-type: none"> <li>• Use research to develop a design specification for a functional product that responds automatically to changes in the environment. Take account of constraints including time, resources and cost.</li> <li>• Generate and develop innovative ideas and share and clarify these through discussion.</li> <li>• Communicate ideas through annotated sketches, pictorial representations of electrical circuits or circuit diagrams.</li> </ul> <p><b>Making</b></p> <ul style="list-style-type: none"> <li>• Formulate a step-by-step plan to guide making, listing tools, equipment, materials and components.</li> <li>• Competently select and accurately assemble materials, and securely connect electrical components to produce a reliable, functional product.</li> <li>• Create and modify a computer control program to enable an electrical product to work automatically in response to changes in the environment.</li> </ul>	<p><b>. Key vocabulary</b></p> <p>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>. Investigative and Evaluative Activities (IEAs)</b></p> <ul style="list-style-type: none"> <li>• Using research, discuss a range of relevant products that respond to changes in the environment using a computer control program such as automatic nightlights, alarm systems, security lighting e.g. <i>Who have the products been designed for and for what purpose? How and why is a computer control program used to operate the products? What input devices, e.g. switches, and output devices, e.g. bulbs, have been used?</i></li> <li>• Investigate electrical sensors such as light dependent resistors (LDRs) and a range of switches such as push-to-make switches, push-to-break switches, toggle switches, micro switches and reed switches. To gain an understanding of how they are operated by the user and how they work, ask the children to use each component to control a bulb in a simple circuit. Remind children about the dangers of mains electricity.</li> <li>• Children could research famous inventors related to the project e.g. Thomas Edison – light bulb.</li> </ul>	<p>Additional information on skills on clickable <a href="#">progression planner</a></p> <p>Further ideas for lessons see <a href="#">D&amp;T further Ideas in This folder</a></p>

<p>program to make a light flash on and off.</p>		<p><b>Evaluating</b></p> <ul style="list-style-type: none"> <li>• Continually evaluate and modify the working features of the product to match the initial design specification.</li> <li>• Test the system to demonstrate its effectiveness for the intended user and purpose.</li> <li>• Investigate famous inventors who developed ground-breaking electrical systems and components.</li> </ul> <p><b>Technical knowledge and understanding</b></p> <ul style="list-style-type: none"> <li>• Understand and use electrical systems in their products.</li> <li>• Apply their understanding of computing to program, monitor and control their products.</li> <li>• Know and use technical vocabulary relevant to the project.</li> </ul>	<p><b>. Focused Tasks (FTs)</b></p> <ul style="list-style-type: none"> <li>• Through teacher demonstration and explanation, recap measuring, marking out, cutting and joining skills with construction materials that children will need to create their electrical products.</li> <li>• Demonstrate and enable children to practise methods for making secure electrical connections e.g. using automatic wire strippers, twist and tape electrical connections, screw connections and connecting blocks.</li> <li>• Drawing on science understanding, ask the children to explore a range of electrical systems that could be used to control their products, including a simple series circuit where a single output device is controlled, a series circuit where two output devices are controlled by one switch and, where appropriate, parallel circuits where two output devices are controlled independently by two separate switches.</li> <li>• Drawing on related computing activities, ensure that children can write computer control programs that include inputs, outputs and decision making. Test out the programs using electrical components connected to interface boxes or standalone boxes.</li> <li>• Teach children how to avoid making short circuits</li> </ul> <p><b>Design, Make and Evaluate Assignment (DMEA)</b></p> <ul style="list-style-type: none"> <li>• Develop an authentic and meaningful design brief with the children.</li> <li>• Ask the children generate innovative ideas by drawing on research and develop a design specification for their product, carefully considering the purpose and needs of the intended user.</li> <li>• Communicate ideas through annotated sketches, pictorial representations of electrical circuits or circuit diagrams. Drawings should indicate the design decisions made, including the location of the electrical components and how they work as a system with an input, process and output.</li> </ul>	
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			<ul style="list-style-type: none"> <li>• Produce detailed step-by-step plans and lists of tools, equipment and materials needed. If appropriate, allocate tasks within a team.</li> <li>• Make high quality products, applying knowledge, understanding and skills from IEAs and FTs. Create and modify a computer control program to enable the product to work automatically in response to changes in the environment.</li> <li>• Critically evaluate throughout and the final product, comparing it to the original design specification. Test the system to demonstrate its effectiveness for the intended user and purpose.</li> </ul>	
<b>Year 6</b>	<b>NC objectives</b>	<b>Key knowledge and skills</b>	<b>Suggested vocab and linked D&amp;T activities/tasks</b>	<b>Broadening horizons</b>
<b>Autumn Prior learning</b> <ul style="list-style-type: none"> <li>• Experience of basic stitching, joining textiles and finishing techniques.</li> <li>• Experience of making and using simple pattern pieces.</li> </ul>	<b>Textiles</b> Combining different fabric shapes (including computer –aided design)  See Project on a page resource <a href="#">Combining different fabric shapes</a>	<b>Designing</b> <ul style="list-style-type: none"> <li>• Generate innovative ideas by carrying out research including surveys, interviews and questionnaires.</li> <li>• Develop, model and communicate ideas through talking, drawing, templates, mock-ups and prototypes and, where appropriate, computer-aided design.</li> <li>• Design purposeful, functional, appealing products for the intended user that are fit for purpose based on a simple design specification.</li> </ul> <b>Making</b> <ul style="list-style-type: none"> <li>• Produce detailed lists of equipment and fabrics relevant to their tasks.</li> <li>• Formulate step-by-step plans and, if appropriate, allocate tasks within a team.</li> <li>• 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.</li> </ul>	<b>Key vocabulary</b> 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  <b>Investigative and Evaluative Activities (IEAs)</b> <ul style="list-style-type: none"> <li>• Children investigate, analyse and evaluate a range of existing products which have been produced by combining fabric shapes. Investigate work by designers and their impact on fabrics and products. Use questions to develop children’s understanding e.g. <i>Is the product functional or decorative? Who would use this product? What is its purpose? What design decisions have been made? Do the textiles used match the intended purpose? What components have been used to enhance the appearance? To what extent is the design innovative?</i></li> <li>• Children investigate and analyse how existing products have been constructed. Children disassemble a product and evaluate what the fabric shapes look like, how the parts have been joined, how the product</li> </ul>	Additional information on skills on clickable <a href="#">progression planner</a>  Further ideas for lessons see <a href="#">D&amp;T further Ideas in This folder</a>

		<p><b>Evaluating</b></p> <ul style="list-style-type: none"> <li>• Investigate and analyse textile products linked to their final product.</li> <li>• Compare the final product to the original design specification.</li> <li>• Test products with intended user and critically evaluate the quality of the design, manufacture, functionality and fitness for purpose.</li> <li>• Consider the views of others to improve their work.</li> </ul> <p><b>Technical knowledge and understanding</b></p> <ul style="list-style-type: none"> <li>• A 3-D textile product can be made from a combination of accurately made pattern pieces, fabric shapes and different fabrics.</li> <li>• Fabrics can be strengthened, stiffened and reinforced where appropriate</li> </ul>	<p>has been strengthened and stiffened, what fastenings have been used and why.</p> <ul style="list-style-type: none"> <li>• Children investigate properties of textiles through investigation e.g. exploring insulating properties, water resistance, wear and strength of textiles.</li> </ul> <p><b>Focused Tasks (FTs)</b></p> <ul style="list-style-type: none"> <li>• Develop skills of threading needles and joining textiles using a range of stitches. This activity must build upon children's earlier experiences of stitches e.g. improving appearance and consistency of stitches and introducing new stitches. If available, demonstrate and allow children to use sewing machines to join fabric with close adult supervision.</li> <li>• Develop skills of sewing textiles by joining right side together and making seams. Children should investigate how to sew and shape curved edges by snipping seams, how to tack or attach wadding or stiffening and learn how to start and finish off a row of stitches.</li> <li>• Develop skills of 2-D paper pattern making using grid or tracing paper to create a 3-D dipryl mock-up of a chosen product. Remind/teach how to pin a pattern on to fabric ensuring limited wastage, how to leave a seam allowance and different cutting techniques.</li> <li>• Develop skills of computer-aided design (CAD) by using on-line pattern making software to generate pattern pieces. Investigate using art packages on the computer to design prints that can be applied to textiles using iron transfer paper.</li> </ul> <p><b>. Design, Make and Evaluate Assignment (DMEA)</b></p> <ul style="list-style-type: none"> <li>• Set an authentic and meaningful design brief. Children generate ideas by carrying out research using e.g. surveys, interviews, questionnaires and the web. Children develop a simple design specification for their product.</li> <li>• Communicate ideas through detailed, annotated drawings from different perspectives and/or computer- aided design. Drawings should indicate design decisions made, the methods of</li> </ul>	
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			<p>strengthening, the type of fabrics to be used and the types of stitching that will be incorporated.</p> <ul style="list-style-type: none"> <li>• Produce step-by-step plans, lists of tools equipment, fabrics and components needed. Allocate tasks within a team if appropriate.</li> <li>• Make high quality products applying knowledge, understanding and skills from IEAs and FTs. Incorporate simple computer-aided manufacture (CAM) if appropriate e.g. printing on fabric. Children use a range of decorating techniques to ensure a well-finished final product that matches the intended user and purpose.</li> <li>• Evaluate both as the children proceed with their work and the final product in use, comparing the final product to the original design specification. Critically evaluate the quality of the design, the manufacture, functionality, innovation shown and fitness for intended user and purpose, considering others' opinions. Communicate the evaluation in various forms e.g. writing for a particular purpose, giving a well-structured oral evaluation, speaking clearly and fluently.</li> </ul>	
<p><b>Spring</b></p> <p><b>Prior learning</b></p> <ul style="list-style-type: none"> <li>• Experience of axles, axle holders and wheels that are fixed or free moving.</li> <li>• Basic understanding of electrical circuits, simple switches and component</li> </ul>	<p><b>Mechanical Systems</b> (Pulleys or gears)</p> <p>See Project on a page resource <a href="#">Pulleys or Gears</a></p>	<p><b>Designing</b></p> <ul style="list-style-type: none"> <li>• Generate innovative ideas by carrying out research using surveys, interviews, questionnaires and web-based resources.</li> <li>• Develop a simple design specification to guide their thinking.</li> <li>• Develop and communicate ideas through discussion, annotated drawings, exploded drawings and drawings from different views.</li> </ul> <p><b>Making</b></p> <ul style="list-style-type: none"> <li>• Produce detailed lists of tools, equipment and materials. Formulate step-by-step plans and, if appropriate, allocate tasks within a team.</li> </ul>	<p>Key vocabulary 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.</p> <p><b>Investigative and Evaluative Activities (IEAs)</b></p> <ul style="list-style-type: none"> <li>• Investigate, analyse and evaluate existing everyday products and existing or pre-made toys that incorporate gear or pulley systems. Use videos and photographs of products that cannot be explored through first-hand experience.</li> <li>• Use observational drawings and questions to develop understanding of each product in the collection e.g. <i>How innovative is the product? What design decisions have been made? What type of movement can be seen? What types of mechanical components are used and where are they positioned? What are the input, process and output of the system? How</i></li> </ul>	<p>Additional information on skills on clickable <a href="#">progression planner</a></p> <p>Further ideas for lessons see <a href="#">D&amp;T further Ideas in This folder</a></p>

<p>s.</p> <ul style="list-style-type: none"> <li>• Experience of cutting and joining techniques with a range of materials including card, plastic and wood.</li> <li>• An understanding of how to strengthen and stiffen structures.</li> </ul>		<ul style="list-style-type: none"> <li>• 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.</li> </ul> <p><b>Evaluating</b></p> <ul style="list-style-type: none"> <li>• Compare the final product to the original design specification.</li> <li>• Test products with intended user and critically evaluate the quality of the design, manufacture, functionality and fitness for purpose.</li> <li>• Consider the views of others to improve their work.</li> <li>• Investigate famous manufacturing and engineering companies relevant to the project.</li> </ul> <p><b>Technical knowledge and understanding</b></p> <ul style="list-style-type: none"> <li>• Understand that mechanical and electrical systems have an input, process and an output.</li> <li>• Understand how gears and pulleys can be used to speed up, slow down or change the direction of movement.</li> <li>• Know and use technical vocabulary relevant to the project.</li> </ul>	<p><i>well does the product work? Why have the materials and components been chosen? How well has it been designed? How well has it been made?</i></p> <ul style="list-style-type: none"> <li>• Children could research and, if possible, visit engineering and manufacturing companies that are relevant to the product they are designing and making e.g. Jaguar Land Rover, JCB, local companies</li> </ul> <p><b>Focused Tasks (FTs)</b></p> <ul style="list-style-type: none"> <li>• Using a construction kit, investigate combinations of two different sized pulleys to learn about direction and speed of rotation e.g. <i>How many times does the smaller pulley turn each time the larger pulley turns once? Do the pulleys move in the same direction? How can you reverse the direction of rotation?</i></li> </ul> <p>AND/OR</p> <ul style="list-style-type: none"> <li>• Using a construction kit, explore combinations of two different size gears meshed together. Investigate the direction and speed of rotation focusing on how the size of the driver gear affects the speed of the follower gear. Ask the children to use the number of teeth on each gear to decide upon the gear ratios e.g. 10 tooth driver gear meshed with a 20 tooth follower gear produces a ratio of 2:1</li> <li>• Build a working circuit that incorporates a battery, a motor and a handmade switch, such as a reversing switch. Demonstrate the accurate use of tools and equipment including cutting and stripping wire, and making secure electrical connections. Remind children about the dangers of mains electricity. Draw a pictorial representation of the circuit or draw a circuit diagram using correct symbols.</li> <li>• Develop measuring, marking, cutting, shaping and joining skills using junior hacksaws, G-clamps, bench hooks, square section wood, card triangles and hand drills to construct wooden frames, as appropriate. Demonstrate the accurate use of tools and equipment.</li> </ul> <p><b>Design, Make and Evaluate Assignment (DMEA)</b></p> <ul style="list-style-type: none"> <li>• Develop an authentic and meaningful design brief with the children.</li> <li>• Children generate innovative ideas by carrying out research including surveys, interviews and</li> </ul>	
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			<p>questionnaires and develop a design specification for their product, carefully considering the purpose and intended user for their product.</p> <ul style="list-style-type: none"> <li>• Communicate ideas through detailed, annotated drawings from different views and/or exploded diagrams. The drawings should indicate the design decisions made, including the location of the mechanical and electrical components, how they work as a system with an input, process and output, and the appearance and finishing techniques for the product.</li> <li>• Produce detailed step-by-step plans and lists of tools, equipment and materials needed. If appropriate allocate tasks within a team.</li> <li>• Make high quality products, applying knowledge, understanding and skills from IEAs and FTs. Children should use a range of decorative finishing techniques to ensure a well finished final product that matches the intended user and purpose.</li> <li>• Evaluate throughout and the final product in use, comparing it to the original design specification. Critically evaluate the quality of the design, the manufacture, functionality, innovation shown and fitness for the intended user and purpose.</li> </ul>	
<p><b>Summer</b></p> <p><b>Prior learning</b></p> <ul style="list-style-type: none"> <li>• Have knowledge and understanding about food hygiene, nutrition, healthy eating and a varied diet.</li> <li>• Be able to use appropriate equipment and utensils, and apply a range of</li> </ul>	<p><b>Food</b></p> <p>Celebrating culture and seasonality (including cooking and nutrition requirements for KS2)</p> <p>See Project on a page resource <a href="#">Celebrating culture and seasonality</a></p>	<p><b>Designing</b></p> <ul style="list-style-type: none"> <li>• Generate innovative ideas through research and discussion with peers and adults to develop a design brief and criteria for a design specification.</li> <li>• Explore a range of initial ideas, and make design decisions to develop a final product linked to user and purpose.</li> <li>• Use words, annotated sketches and information and communication technology as appropriate to develop and communicate ideas.</li> </ul> <p><b>Making</b></p> <ul style="list-style-type: none"> <li>• Write a step-by-step recipe, including a list of ingredients, equipment and utensils</li> <li>• Select and use appropriate utensils and equipment accurately to measure and combine appropriate</li> </ul>	<p><b>Key vocabulary</b></p> <p>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>Investigative and Evaluative Activities (IEAs)</b></p> <ul style="list-style-type: none"> <li>• Children use first hand and secondary sources to carry out relevant research into existing products to include personal/cultural preferences, ensuring a healthy diet, meeting dietary needs and the availability of locally sourced/seasonal/organic ingredients. This could include a visit to a local bakery, farm, farm shop or supermarket e.g. <i>What ingredients are sourced locally/in the UK/from overseas? What are the key</i></li> </ul>	

<p>techniques for measuring out, preparing and combining ingredients.</p>		<p>ingredients.</p> <ul style="list-style-type: none"> <li>• Make, decorate and present the food product appropriately for the intended user and purpose.</li> </ul> <p><b>Evaluating</b></p> <ul style="list-style-type: none"> <li>• 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.</li> <li>• Evaluate the final product with reference back to the design brief and design specification, taking into account the views of others when identifying improvements.</li> <li>• Understand how key chefs have influenced eating habits to promote varied and healthy diets.</li> </ul> <p><b>Technical knowledge and understanding</b></p> <ul style="list-style-type: none"> <li>• Know how to use utensils and equipment including heat sources to prepare and cook food.</li> <li>• Understand about seasonality in relation to food products and the source of different food products.</li> <li>• Know and use relevant technical and sensory vocabulary.</li> </ul>	<p><i>ingredients needed to make a particular product? How have ingredients been processed? What is the nutritional value of a product?</i></p> <ul style="list-style-type: none"> <li>• Children carry out sensory evaluations of a variety of existing food products and ingredients relating to the project. The ingredients could include those that could be added to a basic recipe such as herbs, spices, vegetables or cheese. These could be locally sourced, seasonal, Fair Trade or organic. Present results in e.g. tables/graphs/charts and by using evaluative writing.</li> <li>• Use a range of questions to support children’s ability to evaluate food ingredients and products e.g. <i>What ingredients help to make the product spicy/crisp/crunchy etc? What is the impact of added ingredients/finishes/shapes on the finished product?</i></li> <li>• Research key chefs and how they have promoted seasonality, local produce and healthy eating.</li> </ul> <p><b>Focused Tasks (FTs)</b></p> <ul style="list-style-type: none"> <li>• Demonstrate how to measure out, cut, shape and combine e.g. knead, beat, rub and mix ingredients.</li> <li>• Demonstrate how to use appropriate utensils and equipment that the children may use safely and hygienically.</li> <li>• Techniques could be practised following a basic recipe to prepare and cook a savoury food product.</li> <li>• Ask questions about which ingredients could be changed or added in a basic recipe such as types of flour, seeds, garlic, vegetables. Consider texture, taste, appearance and smell.</li> <li>• When using a basic dough recipe, explore making different shapes to change the appearance of the food product e.g. <i>Which shape is most appealing and why?</i></li> </ul> <p><b>Design, Make and Evaluate Assignment (DMEA)</b></p> <ul style="list-style-type: none"> <li>• Develop a design brief and simple design specification with the children within a context that is authentic and meaningful. This can include design criteria relating to</li> </ul>	
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			<p>nutrition and healthy eating.</p> <ul style="list-style-type: none"><li>• Discuss the purpose of the products that the children will be designing, making and evaluating and who the products will be for.</li><li>• Ask children to generate a range of ideas encouraging innovative responses. Agree on design criteria that can be used to guide the development and evaluation of the children's product.</li><li>• Using annotated sketches, discussion and information and communication technology if appropriate, ask children to develop and communicate their ideas.</li><li>• Ask children to record the steps, equipment, utensils and ingredients for making the food product drawing on the knowledge, understanding and skills learnt through IEAs and FTs.</li><li>• Evaluate the work as it progresses and the final product against the intended purpose and user reflecting on the design specification previously agreed.</li></ul> <p><b>. Focused Tasks (FTs)</b></p> <ul style="list-style-type: none"><li>• Develop skills of threading needles and joining textiles using a range of stitches. This activity must build upon children's earlier experiences of stitches e.g. improving appearance and consistency of stitches and introducing new stitches. If available, demonstrate and allow children to use sewing machines to join fabric with close adult supervision.</li><li>• Develop skills of sewing textiles by joining right side together and making seams. Children should investigate how to sew and shape curved edges by snipping seams, how to tack or attach wadding or stiffening and learn how to start and finish off a row of stitches.</li><li>• Develop skills of 2-D paper pattern making using grid or tracing paper to create a 3-D dipryl mock-up of a chosen product. Remind/teach how to pin a pattern on to fabric ensuring limited wastage, how to leave a</li></ul>	
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			<p>seam allowance and different cutting techniques.</p> <ul style="list-style-type: none"><li>• Develop skills of computer-aided design (CAD) by using on-line pattern making software to generate pattern pieces. Investigate using art packages on the computer to design prints that can be applied to textiles using iron transfer paper.</li></ul>	
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