

## Key learning and progression through strands in Design and Technology

### Coverage and projects at Weeke

	Autumn	Spring	Summer
<b>EYFS</b>	<p>Mechanisms (simple flaps) <i>Make a simple flap picture linked to the story Dear Zoo</i></p> <p>Food (following simple instructions) <i>Make gingerbread following simple widgeit instructions</i></p>	<p>Structures (towers, building – using blocks and construction materials inside and outside) <i>In continuous provision</i></p>	<p>Textiles (joining a variety of different materials) <i>In continuous provision</i></p>
<b>Year 1</b>	<p>Mechanisms (sliders and levers) <i>Design, make and evaluate a moving Christmas card</i></p>	<p>Food and Nutrition (preparing fruit and vegetables, including cooking and nutrition) <i>Design, make and evaluate a salad for the school salad bar</i></p>	<p>Structures (free standing structures) <i>Design, make and evaluate a shelter for Captain Scott</i></p>
<b>Year 2</b>	<p>Mechanisms (wheels and axles) <i>Design, make and evaluate a moving vehicle for Bob (from Man on the Moon)</i></p>	<p>Textiles (templates and joining techniques) <i>Design, make and evaluate a puppet to accompany the story Where the Wild Things Are</i></p>	<p>Food and Nutrition (preparing fruit and vegetables, including cooking and nutrition) <i>Design, make and evaluate a wrap for your packed lunch</i></p>
<b>Year 3</b>	<p>Structures (shell structures) <i>Design, make and evaluate packaging to promote animals at the zoo</i></p>	<p>Food (healthy and varied diet, including cooking and nutrition) <i>Design, make and evaluate a range of balanced and varied snacks for the snack bar</i></p>	<p>Mechanisms (levers and linkages) <i>Design, make and evaluate a moving picture linked to story George and the Dragon</i></p>
<b>Year 4</b>	<p>Food (healthy and varied diet, including cooking and nutrition) <i>Design, make and evaluate a healthy soup for the school kitchen.</i></p>	<p>Electrical Systems (simple circuit and switches, including programming and control) <i>Design, make and evaluate a portable source of light to see artefacts in a tomb</i></p>	<p>Textiles (2D shape to 3D shape product) <i>Design, make and evaluate a soft toy to be sold at Marwell Zoo</i></p>
<b>Year 5</b>	<p>Mechanical Systems (pulleys or gears) <i>Design, make and evaluate a new fairground ride for Paultons Park</i></p>	<p>Electrical Systems (using more complex switches and circuits, including programming, control and monitoring) <i>(WORK IN PROGRESS – TO LINK UP WITH FAIRGROUND RIDES USING MICROBIT)</i></p>	<p>Food (celebrating culture and seasonality, including cooking and nutrition) <i>Design, make and evaluate a dip for a Greek banquet</i></p>
<b>Year 6</b>	<p>Structures (frame structures) <i>Design, make and evaluate a bridge that is either permanent or portable for tanks during wartime to cross a river, trench and any extensive gap</i></p>	<p>Textiles (combining different fabric shapes, including CAD) <i>Design, make and evaluate a carrier bag</i></p>	<p>Food (celebrating culture and seasonality, including cooking and nutrition) <i>Design, make and evaluate a pizza for the end of year party</i></p>

### Curriculum design at Weeke – coverage of strands throughout primary career

Mechanisms	Structures	Textiles	Electrical Systems	Food
Flaps (Simple Levers) - EYFS	Towers and buildings (block and construction areas) - EYFS	Joining a variety of materials - EYFS		Preparing fruit and vegetables and manipulating dough, following simple instructions - EYFS
Sliders and Levers – Y1	Free Standing Structure – Y1	Templates and joining – Y2	Simple circuits and switches – Y4	Preparing Fruit and Vegetables – Y1 and 2
Wheels and Axles – Y2	Shell Structures – Y3	2D shape to 3D product – Y4	More complex switches – Y5	Healthy and varied diet – Y3 and 4
Levers and Linkages – Y3	Frame Structures – Y6	Combining different fabric shapes – Y6		Celebrating culture and seasonality – Y5 and 6
Pulleys and Gears – Y5				

Vocabulary key: **project specific** **subject specific**

**Mechanisms**

Focus	Project	Designing	Making	Evaluating	Sticky Knowledge	Key Vocabulary
<p><b>Flaps (simple levers) - Early Years</b></p>	<p><b>Directed Teaching:</b> Early experiences of working with paper and card to make simple flaps and hinges.</p> <p>Design, make and evaluate a flap book. (Linked to Literacy – Dear Zoo)</p> <p><b>Continuous Provision:</b></p> <p><b>Simple sliders and levers -</b> Experience of cutting, shaping and joining skills using scissors, glue, paper fasteners and masking tape – creative and workshop area</p> <p><b>Wheels and Axles</b> Assembled vehicles with moving wheels using construction kits.</p>	<p>Articulate ideas and thoughts in well-formed sentences.</p> <p>Children should have freedom to select media and materials from an appropriate range</p>	<p>Provide opportunities for children to work collaboratively on design and make tasks.</p> <p>Developed some cutting, joining and finishing skills with card.</p>	<p>Help them to develop problem-solving skills by talking through how they, you and others resolved a problem or difficulty. Show that mistakes are an important part of learning and going back is trial and error not failure.</p> <p>Encourage them to say what they like or dislike about the design of the products.</p>	<p><b>Know how to:</b></p> <ul style="list-style-type: none"> <li>- Cut around a picture</li> <li>- Position another piece of card to create a flap so you can't see the picture underneath</li> <li>- Know that where my fold or lever is affects the movement</li> <li>- Know and use technical vocabulary relevant to the project</li> </ul>	<p>flap, lever, fold, construct, cut, behind, next to, paper, card, glue, masking tape</p> <p>vehicle, car, lorry, bike, tricycle, wheel, tyre, faster, slower, movement</p> <p>design, make, user, purpose</p>

	<p>Explore moving vehicles through play.</p> <p>Gain some experience of designing, making and evaluating products for a specified user and purpose.</p>					
<p><b>Sliders and Levers – Y1</b></p>	<p>Design, make and evaluate a moving Christmas card.</p> <p>(Linked to RE topic – Christmas)</p> <p><b>Prior experience:</b> <i>Experience making simple flap pictures in Year R through direct teaching and independent exploration in continuous provision.</i></p>	<p>Generate ideas based on simple design criteria and their own experiences, explaining what they could make.</p> <p>Develop, model and communicate their ideas through drawings and mock-ups with card and paper.</p>	<p>Plan by suggesting what to do next.</p> <p>Select and use tools suitable for the task, explaining their choices, to cut, shape and join paper and card.</p> <p>Use simple finishing techniques suitable for the product they are creating.</p>	<p>Explore a range of existing books and everyday products that use simple sliders and levers.</p> <p>Evaluate their product by discussing how well it works in relation to the purpose and the user and whether it meets design criteria.</p>	<p>Know that different mechanisms produce different types of movement</p> <p>Know and use technical vocabulary relevant to the project.</p>	<p>slider, lever, pivot, slot, bridge/guide, card, masking tape, paper fastener, join</p> <p>pull, push, up, down, straight, curve, forwards, backwards</p> <p>design, make, evaluate, user, purpose, ideas, design criteria, product, function</p>
<p><b>Wheels and Axles – Y2</b></p>	<p>Design, make and evaluate a moving vehicle for Bob (from Man on the Moon).</p> <p>(Linked to Literacy unit – Man on the Moon)</p> <p><b>Prior experience:</b></p>	<p>Generate initial ideas and simple design criteria through talking and using own experiences.</p> <p>Develop and communicate ideas</p>	<p>Select from and use a range of tools and equipment to perform practical tasks such as cutting and joining to allow movement and finishing.</p>	<p>Explore and evaluate a range of products with wheels and axles.</p> <p>Evaluate their ideas throughout and their products against original criteria.</p>	<p>Know the difference between fixed and freely moving axles</p> <p>Know and use technical vocabulary relevant to the project.</p>	<p>vehicle, wheel, axle, axle holder, chassis, body, cab, assembling, cutting, joining, shaping,</p>

	<i>Experience creating movement through independent exploration in YR in the construction area in continuous provision. (Mobilo)</i>	through drawings and mock-ups.	Select from and use a range of materials and components such as paper, card, plastic and wood according to their characteristics.			finishing, fixed, free, moving, mechanism names of tools, equipment and materials used design, make, evaluate, purpose, user, criteria, functional
<b>Levers and Linkages – Y3</b>	Design, make and evaluate a moving picture.  (Linked to story George and the Dragon by Chris Wormell)  <b>Prior experience:</b> <i>Experience from YR and Y1.</i>	Generate realistic ideas and their own design criteria through discussion, focusing on the needs of the user. Use annotated sketches and prototypes to develop, model and communicate ideas.	Order the main stages of making.  Select from and use appropriate tools with some accuracy to cut, shape and join paper and card.  Select from and use finishing techniques suitable for the product they are creating.	Investigate and analyse books and, where available, other products with lever and linkage mechanisms.  Evaluate their own products and ideas against criteria and user needs, as they design and make.	Know that lever and linkage mechanisms produce different outputs  Know the difference between fixed and loose pivots and their purpose  Know and use technical vocabulary relevant to the project.	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
<b>Pulleys and Gears – Y5</b>	Design, make and evaluate a new	Generate innovative ideas by carrying out research using	Produce detailed lists of tools, equipment and materials.	Compare the final product to the	Understand that mechanical and electrical systems	pulley, drive belt, gear, rotation, spindle, driver,

	<p>fairground ride for Paultons Park.</p> <p>(Linked to Science – Forces)</p> <p><b>Prior experience:</b> <i>Combining knowledge from science learning about forces from Autumn Term. Trip to Paultons Park as research.</i></p>	<p>surveys, interviews, questionnaires and web-based resources.</p> <p>Develop a simple design specification to guide their thinking.</p> <p>Develop and communicate ideas through discussion, annotated drawings, exploded drawings and drawings from different views.</p>	<p>Formulate step-by-step plans and, if appropriate, allocate tasks within a team. Select from and use a range of tools and equipment to make products that are accurately assembled and well finished. Work within the constraints of time, resources and cost.</p>	<p>original design specification.</p> <p>Test products with intended user and critically evaluate the quality of the design, manufacture, functionality and fitness for purpose.</p> <p>Consider the views of others to improve their work.</p> <p>Investigate famous manufacturing and engineering companies relevant to the project.</p>	<p>have an input, process and an output.</p> <p>Understand how gears and pulleys can be used to speed up, slow down or change the direction of movement.</p> <p>Know and use technical vocabulary relevant to the project.</p>	<p>follower, ratio, transmit, axle, motor</p> <p>circuit, switch, circuit diagram</p> <p>annotated drawings, exploded diagrams</p> <p>mechanical system, electrical system, input, process, output</p> <p>design decisions, functionality, innovation, authentic, user, purpose, design specification, design brief</p>
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## Structures

Focus	Project	Designing	Making	Evaluating	Sticky Knowledge	Key Vocabulary
<p><b>Block Area and Construction Area Inside and Outside – Early Years</b></p>	<p><b>Continuous Provision:</b></p> <p>Experience using construction kits and blocks to build walls, buildings, towers and frameworks.</p> <p>Experience using basic tools e.g. scissors or hole punches with construction materials e.g. plastic, card.</p>	<p>Articulate ideas and thoughts in well-formed sentences.</p> <p>Designing includes physically arranging and re-arranging materials and components and orally communicating what they are doing and have done.</p>	<p>Provide opportunities for children to work collaboratively on design and make tasks.</p> <p>Create collaboratively, sharing ideas, resources and skills.</p>	<p>Encourage children to think how they can stop their structures from falling over and how to make them stronger.</p>	<p><b>Know how to:</b></p> <ul style="list-style-type: none"> <li>- Line up and carry blocks</li> <li>- Stack and make rows</li> <li>- Create bridges</li> <li>- Enclose sections</li> <li>- Design patterns</li> <li>- Construct and name what they have created</li> <li>- Plan constructions before building</li> </ul>	<p>build, construct, stack, line up, rows, tall, short, wide, narrow, tower, bridge, building</p>

	Experience different methods of joining card and paper.	Designing is typically intuitive i.e. children design as they make.			- Know and use technical vocabulary relevant to the project  <b>Taken from the developmental stages of block play.</b>	
<b>Structures – Freestanding – Y1</b> <i>Free standing structure – a structure that stands on its own foundation or base without attachment to anything else. NC: Build structures, exploring how they can be made stronger, stiffer and more stand.</i>	Design, make and evaluate a shelter for Captain Scott.  (Linked to History topic – Scott of the Antarctic)  <b>Prior experience:</b> <i>Experience of exploring structures through continuous provision in YR, specifically block area and inside and outside construction.</i>	<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>	<ul style="list-style-type: none"> <li>• Plan by suggesting what to do next.</li> <li>• Select and use tools, skills and techniques suitable for the task, 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>	<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>	<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>	<i>cut, fold, join, fix structure, wall, tower, framework, weak, strong, base, top, underneath, side, edge, surface, thinner, thicker, corner, point, straight, curved metal, wood, plastic circle, triangle, square, rectangle, cuboid, cube, cylinder design, make, evaluate, user, purpose, ideas, design criteria, product, function</i>
<b>Structures – Shell – Y3</b> <i>Shell structure – a hollow structure with</i>	Design, make and evaluate packaging to promote animals at the zoo.  <b>Prior experience:</b>	<ul style="list-style-type: none"> <li>• Generate realistic ideas and design criteria collaboratively through discussion, focusing on the</li> </ul>	<ul style="list-style-type: none"> <li>• Order the main stages of making.</li> <li>• Use appropriate tools to measure, mark out, cut, score, shape and</li> </ul>	<ul style="list-style-type: none"> <li>• Investigate and evaluate a range of existing shell structures including the materials, components and</li> </ul>	<ul style="list-style-type: none"> <li>• Know how to construct strong, stiff shell structures.</li> <li>• Use knowledge of nets of cubes and cuboids and, where</li> </ul>	<i>shell structure, three-dimensional (3-D) shape, net, cube, cuboid, prism, vertex,</i>

<p>a thin outer covering.</p> <p>(including computer aided design)</p>	<p><i>Linked to a local zoo that most children have visited. Children had school trip to zoo in Y1. Also, links to maths – 3D shape.</i></p> <p>Packaging created using Pacdora software - <a href="https://www.pacdora.com/">https://www.pacdora.com/</a></p>	<p>needs of the user and purpose of the product.</p> <ul style="list-style-type: none"> <li>• Develop ideas through the analysis of existing products and use annotated sketches and prototypes to model and communicate ideas.</li> </ul>	<p>assemble with some accuracy.</p> <ul style="list-style-type: none"> <li>• Explain their choice of materials according to functional properties and aesthetic qualities.</li> <li>• Use finishing techniques suitable for the product they are creating.</li> </ul>	<p>techniques that have been used.</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>appropriate, more complex 3D shapes.</p> <ul style="list-style-type: none"> <li>• Know and use technical vocabulary relevant to the project.</li> </ul>	<p>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</p> <p>decision, evaluating, design brief design criteria, innovative, prototype</p>
<p><b>Structures – Frame – Y6</b></p> <p><i>Frame structure – a structure made from thin components e.g. tent frame</i></p>	<p>Design, make and evaluate a bridge, that's either permanent or portable for tanks during war time to cross a river, trench or any extensive gap.</p> <p>(Linked to History unit in Autumn Term – WW1)</p> <p><b>Prior experience:</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</li> </ul>	<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</li> </ul>	<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> </ul>	<ul style="list-style-type: none"> <li>• Know how to strengthen, stiffen and reinforce 3-D frameworks.</li> <li>• Know and use technical vocabulary relevant to the project.</li> </ul>	<p>frame structure, stiffen, strengthen, reinforce, triangulation, stability, shape, join, temporary, permanent</p> <p>design brief, design specification,</p>



	<p><i>Children can use their knowledge of this time and apply to the brief.</i></p> <p>Architecture Workshop – bridges</p>	<p>account of constraints including time, resources and cost.</p> <ul style="list-style-type: none"> <li>• Generate, develop and model innovative ideas, through discussion, prototypes and annotated sketches.</li> </ul>	<p>materials to make frameworks.</p> <ul style="list-style-type: none"> <li>• Use finishing and decorative techniques suitable for the product they are designing and making.</li> </ul>	<ul style="list-style-type: none"> <li>• Research key events and individuals relevant to frame structures.</li> </ul>		<p>prototype, annotated sketch, purpose, user, innovation, research, functional</p>
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## Textiles

Focus	Project	Designing	Making	Evaluating	Sticky Knowledge	Key Vocabulary
<p><b>Creative and Workshop Area – Early Years</b></p>	<p><b>Continuous Provision:</b> Opportunities to develop fine motor skills, including threading.</p> <p>Explore and use different fabrics.</p> <p>Cut and join fabrics with simple techniques.</p> <p>Thought about the user and purpose of products designed and made.</p>	<p>Articulate ideas and thoughts in well-formed sentences.</p> <p>When designing and/or making things for other people, ask the children what they think the user would like/need.</p> <p>Ask them to say who their product is for e.g. coat for Teddy.</p>	<p>Provide opportunities for children to thread.</p> <p>Provide opportunities for children to work collaboratively on design and make tasks.</p> <p>Children should have freedom to select media and materials from an appropriate range.</p>	<p>Help them to develop problem-solving skills by talking through how they, you and others resolved a problem or difficulty. Show that mistakes are an important part of learning and going back is trial and error not failure.</p> <p>Ask children to talk about how the products look, feel and smell and explain how they work.</p>	<p><b>Know how to:</b> - Join materials using;</p> <p>masking tape hole punch and string stapler glue</p> <p>- Know and use technical vocabulary relevant to the project</p>	<p>thread, masking tape, hole punch, string, stapler, attach, join, make, thick, thin, flexible, soft</p>
<p><b>Templates and joining – Y2</b></p>	<p>Design, make and evaluate a puppet to accompany the story Where the Wild Things Are.</p>	<ul style="list-style-type: none"> <li>• Design a functional and appealing product for a chosen user and purpose based on</li> </ul>	<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,</li> </ul>	<ul style="list-style-type: none"> <li>• Explore and evaluate a range of existing textile products relevant to the project being undertaken.</li> </ul>	<ul style="list-style-type: none"> <li>• Know how simple 3-D textile products are made, using a template to create two identical shapes.</li> </ul>	<p>names of existing products, joining and finishing techniques, tools, fabrics and</p>

	<p>(Linked to Literacy unit – Where the Wild Things Are)</p> <p><b>Prior experience:</b> <i>Experience of joining materials during continuous provision in YR.</i></p>	<p>simple design criteria.</p> <ul style="list-style-type: none"> <li>• Generate, develop, model and communicate their ideas as appropriate through talking, drawing, templates, mock-ups and information and communication technology.</li> </ul>	<p>cutting, joining and finishing.</p> <ul style="list-style-type: none"> <li>• Select from and use textiles according to their characteristics.</li> </ul>	<ul style="list-style-type: none"> <li>• Evaluate their ideas throughout and their final products against original design criteria.</li> </ul>	<ul style="list-style-type: none"> <li>• Know how to join fabrics using different techniques e.g. running stitch, glue, over stitch, stapling.</li> <li>• Use 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>components template, pattern pieces, mark out, join, decorate, finish features, suitable, quality mock-up design brief, design criteria, make, evaluate, user, purpose, function</p>
<p><b>2D shape to 3D product – Y4</b></p>	<p>Design, make and evaluate a soft toy to be sold at Marwell Zoo.</p> <p>(Linked to Geography topic – Rainforests)</p> <p><b>Prior experience:</b> <i>Research experience of products sold at Marwell linked to packaging for Marwell Zoo in Year 3.</i></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>	<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>	<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> <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>	<ul style="list-style-type: none"> <li>• Know how to strengthen, stiffen and reinforce existing fabrics.</li> <li>• Know 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 project.</li> </ul>	<p>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,</p>

						function, pattern pieces
<b>Combining different fabric shapes (including computer aided design) – Y6</b>	Design, make and evaluate a carrier bag  <i>Prior experience: Experience of joining materials and adding decoration in Year 2 – puppets and Year 4 – soft toy)</i>	<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>	<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>	<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>	<ul style="list-style-type: none"> <li>• Know that a 3-D textile product can be made from a combination of accurately made pattern pieces, fabric shapes and different fabrics.</li> <li>• Know that fabrics can be strengthened, stiffened and reinforced where appropriate.</li> </ul>	<p>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</p> <p>design criteria, annotate, design decisions, functionality, innovation, authentic, user, purpose, evaluate, mock-up, prototype</p>

## Electrical Systems

Focus	Project	Designing	Making	Evaluating	Sticky Knowledge	Key Vocabulary
<b>Electrical systems -</b>	Design, make and evaluate a torch to	<ul style="list-style-type: none"> <li>• Gather information about needs and wants, and develop</li> </ul>	<ul style="list-style-type: none"> <li>• Order the main stages of making.</li> </ul>	<ul style="list-style-type: none"> <li>• Investigate and analyse a range of</li> </ul>	<ul style="list-style-type: none"> <li>• Understand and use electrical systems in their products, such</li> </ul>	<p>series circuit, fault, connection, toggle switch, push-to-make</p>

<p><b>Simple circuits and switches – Y4</b></p>	<p>see artefacts in a tomb.</p> <p>(Linked to History unit – Ancient Egyptians and Science unit - Electricity)</p>	<p>design criteria to inform the design of products that are fit for purpose, aimed at particular individuals or groups.</p> <ul style="list-style-type: none"> <li>• Generate, develop, model and communicate realistic ideas through discussion and, as appropriate, annotated sketches, cross-sectional and exploded diagrams.</li> </ul>	<ul style="list-style-type: none"> <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>existing battery-powered products.</p> <ul style="list-style-type: none"> <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>as series circuits incorporating switches, bulbs and buzzers.</p> <ul style="list-style-type: none"> <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>switch, push-to-break switch, battery, battery holder, bulb, bulb holder, wire, insulator, conductor, crocodile clip control, program, system, input device, output device</p> <p>user, purpose, function, prototype, design criteria, innovative, appealing, design brief</p>
<p><b>Electrical systems – more complex switches – Y5</b></p>	<p>Design, make and evaluate a new fairground ride for Paultons Park.</p> <p>(Linked to Science – Forces)</p> <p><b>Prior experience:</b> <i>Use knowledge from science - electricity unit in Year 4. Revision before next electricity unit in Year 6.</i></p> <p><b>Trial use of Microsoft Microbit – Spring 2023</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</li> </ul>	<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</li> </ul>	<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>	<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>series circuit, parallel circuit, names of switches and components, input device, output device, system, monitor, control, program, flowchart</p> <p>function, innovative, design specification, design brief, user, purpose</p>

		electrical circuits or circuit diagrams.	changes in the environment.			
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## Food and Nutrition

Focus	Project	Designing	Making	Evaluating	Sticky Knowledge	Key Vocabulary
<p><b>Preparing fruit and vegetables – Early Years</b></p>	<p><b>Directed Teaching:</b> To follow simple pictorial instructions to make gingerbread (Linked to The Gingerbread Man)</p> <p>To make and evaluate a simple fruit salad (Linked to Handa's Surprise)</p> <p><b>Continuous Provision:</b> Experience of common fruit and vegetables, undertaking sensory activities i.e. appearance taste and smell. – Edible herb garden outside</p> <p>Experience manipulating dough – Malleable Area</p>	<p>Articulate ideas and thoughts in well-formed sentences.</p> <p>Designing is typically intuitive i.e. children design as they make.</p>	<p>Experience of common fruit and vegetables, undertaking sensory activities i.e. appearance taste and smell.</p> <p>Experience of cutting soft fruit and vegetables using appropriate utensils.</p> <p>Use simple utensils and equipment to crush, peel, shape, mix/stir, measure, cut out, tear, spoon and cut (soft foods) (See D&amp;T Primary – Food Skills Progression Chart)</p> <p>Practises safety measures without direct supervision.</p>	<p>Ask children to talk about how the products look, feel and smell and explain how they work</p> <p>Encourage them to say what they like or dislike about the design of the products</p>	<p><b>Know how to:</b></p> <ul style="list-style-type: none"> <li>- by hand peel e.g. satsuma, banana</li> <li>- shape foods by hand or with a rolling pin</li> <li>- crush soft fruit with a masher or fork</li> <li>- combine ingredients by mixing</li> <li>- spoon ingredients between containers</li> <li>- measure ingredients using a spoon, e.g. 3 spoons of flour</li> <li>- cut out using a cutter</li> <li>- tear fresh herbs</li> <li>- cut soft food with a butter knife</li> </ul> <p>- Know and use technical vocabulary relevant to the project</p> <p><b>Taken from Practical foods skills progression chart</b></p>	<p>crush, peel, shape, mix/stir, measure, cut out, tear, spoon, cut, slice, sieve, bridge grip, claw grip, names of fruit, knife</p>
	<b>Year 1</b>					

<b>Food – preparing fruit and vegetables</b>	Design and make a salad for the school salad bar	<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>	<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>	<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>	<ul style="list-style-type: none"> <li>• Know where a range of fruit and vegetables come from e.g. farmed or grown at home.</li> <li>• Know 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>	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
	<b>Year 2</b> Design, make and evaluate a healthy lunchbox for a school trip.  (Linked to Geography unit – Seaside)					
<b>Food – Healthy and varied diet</b>	<b>Year 3</b> Design, make and evaluate a healthy and varied snack bar.  (Linked to History unit – Romans, comparing whether Romans had a healthier diet than us)	<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> </ul>	<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</li> </ul>	<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</li> </ul>	<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</li> </ul>	name of products, names of equipment, utensils, techniques and ingredients texture, taste, sweet, sour, hot, spicy, appearance, smell, preference, greasy,
	<b>Year 4</b>					

	Design and make a healthy soup for the school kitchen.	<ul style="list-style-type: none"> <li>Use annotated sketches and appropriate information and communication technology, such as web-based recipes, to develop and communicate ideas.</li> </ul>	make appropriate food products, thinking about sensory characteristics.	and the views of others.	<p>grown, reared or caught.</p> <ul style="list-style-type: none"> <li>Know and use relevant technical and sensory vocabulary appropriately.</li> </ul>	<p>moist, cook, fresh, savoury hygienic, edible, grown, reared, caught, frozen, tinned, processed, seasonal, harvested</p> <p>healthy/varied diet planning, design criteria, purpose, user, annotated sketch, sensory evaluations</p>
<b>Food – celebrating culture and seasonality</b>	<p><b>Year 5</b></p> <p>Design, make and evaluate a dip for a Greek banquet.</p> <p>(Linked to History - Ancient Greeks)</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> </ul>	<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>	<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</li> </ul>	<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>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</p> <p>utensils, combine, fold, knead, stir, pour, mix, rubbing in, whisk,</p>
	<p><b>Year 6</b></p> <p>Design, make and evaluate a pizza for the end of year party</p>	<ul style="list-style-type: none"> <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</li> </ul>				

		develop and communicate ideas.		habits to promote varied and healthy diets.		beat, roll out, shape, sprinkle, crumble design specification, innovative, research, evaluate, design brief
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### EARLY KS3

<p><b>Early KS3</b></p>	<p><b>Designing</b> Understanding contexts, users and purposes: <b>Across KS3 pupils should:</b></p> <ul style="list-style-type: none"> <li>work confidently within a range of relevant domestic, local and industrial contexts, such as the home, health, leisure, culture, engineering, manufacturing, construction, food, energy, agriculture and fashion</li> <li><i>consider the influence of a range of lifestyle factors and consumer choices when designing products</i></li> <li>take creative risks when making design decisions</li> <li><i>consider additional factors such as ergonomics, anthropometrics or dietary needs</i></li> <li>analyse where human values may conflict and compromise has to be</li> </ul> <p>Achieved</p>	<p><b>Making</b> Planning: <b>Across KS3 pupils should:</b></p> <ul style="list-style-type: none"> <li>select appropriately from specialist tools, techniques, processes, equipment and machinery, including computer-aided manufacture</li> <li>select appropriately from a wider, more complex range of materials, components and ingredients, taking into account their properties such as water resistance and stiffness</li> </ul> <p><b>In early KS3 pupils should also:</b></p> <ul style="list-style-type: none"> <li><i>produce ordered sequences and schedules for manufacturing products they design, detailing resources required</i></li> <li><i>produce costings using spreadsheets for products they design and make</i></li> </ul> <p>Practical skills and techniques: <b>Across KS3 pupils should:</b></p>	<p><b>Evaluating</b> Own ideas and products: <b>Across KS3 pupils should:</b></p> <ul style="list-style-type: none"> <li>test, evaluate and refine their ideas and products against a specification, taking into account the views of intended users and other interested groups</li> </ul> <p><b>In early KS3 pupils should also:</b></p> <ul style="list-style-type: none"> <li>evaluate their products against their original specification and identify ways of improving them</li> <li>actively involve others in the testing of their products</li> </ul> <p>Existing Products: <b>Across KS3 pupils should investigate and analyse:</b></p> <ul style="list-style-type: none"> <li>new and emerging technologies</li> </ul> <p><b>In early KS3 pupils should investigate and analyse:</b></p> <ul style="list-style-type: none"> <li>products through disassembly to determine how they are constructed and function</li> </ul>	<p><b>Technical Knowledge</b> Making products work: <b>Across KS3 pupils should:</b></p> <ul style="list-style-type: none"> <li>use learning from science to help design and make products that work</li> <li>use learning from mathematics to help design and make products that work</li> <li>understand the properties of materials, including smart materials, and how they can be used to advantage</li> <li>understand the performance of structural elements to achieve functioning solutions</li> <li>understand how more advanced mechanical systems used in their products enable changes in movement and force</li> <li>how to competently use a range of cooking techniques for example, selecting and preparing ingredients; using utensils and electrical equipment</li> </ul>
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***In early KS3 pupils should also:***

- develop detailed design specifications to guide their thinking
- use research including the study of different cultures, to identify and understand user needs
- identify and solve their own design problems

Generating, developing, modelling, and communicating ideas:

***Across KS3 pupils should:***

- use specifications to inform the design of innovative, functional, appealing products that respond to needs in a variety of situations
- *combine ideas from a variety of sources*
- use a variety of approaches, for example biomimicry and user-centred design, to generate creative ideas and avoid stereotypical responses
- decide which design criteria clash and determine which should take priority
- develop and communicate design ideas using annotated sketches
- produce 3D models to develop and communicate ideas
- use mathematical modelling to indicate likely performance before using physical materials and components, instance when developing circuits or gearing systems

- follow procedures for safety and hygiene and understand the process of risk assessment
- use a wider, more complex range of materials, components and ingredients, taking into account their properties
- use a broad range of manufacturing techniques including handcraft skills and machinery to manufacture products precisely
- exploit the use of CAD/CAM equipment to manufacture products, increasing standards of quality, scale of production and precision
- apply a range of finishing techniques, including those from art and design, to a broad range of materials including textiles, metals, polymers and woods

***In early KS3 pupils should also:***

- make use of specialist equipment to mark out materials
- use a broad range of material joining techniques including stitching, mechanical fastenings, heat processes and adhesives
- use CAD/CAM to produce and apply surface finishing techniques, for example using dye sublimation
- investigate and develop skills in modifying the appearance of materials including textiles and other manufactured materials e.g. dying and applique

- the positive and negative impact that products can have in the wider world

Key events and individuals:

***Across KS3 pupils should know:***

- about an increasing range of designers, engineers, chefs, technologists and manufacturers and be able to relate their products to their own designing and making

***In early KS3 pupils should also know:***

- *how to classify materials by structure e.g. hard words, soft woods, ferrous and non-ferrous, thermoplastic and thermosetting plastics*
- about the physical properties of materials e.g. grain, brittleness, flexibility, elasticity, malleability and thermal
- how more advanced electrical and electronic systems can be powered and used in their products
- how to use simple electronic circuits incorporating inputs and outputs
- *about textile fibre sources e.g. natural and synthetic and fabrics e.g. plain and woven*
- *how to select and modify patterns and use in textile construction*

	<ul style="list-style-type: none"><li>• give oral and digital presentations and use computer-based tools</li></ul> <p><b><i>In early KS3 pupils should also:</i></b></p> <ul style="list-style-type: none"><li>• use 2D and begin to use 3D CAD packages to model their ideas</li><li>• produce models of their ideas using CAM to test out their ideas</li></ul>			
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*School Curriculum KS3 – statements which are additional to the programmes of study for D&T are shown in blue font*

**Information taken from:**

**DATA association – Opportunities for Developing Design and Technology in the Early Years Foundation Framework 2021**

**Hampshire County Council – HIAS Moodle and Resource – Sarah Pook**