



DESIGN & TECHNOLOGY Curriculum Map

DESIGN & TECHNOLOGY

Year	Knowledge	Skills	Vocabulary
KS1	<p>Technical knowledge</p> <ul style="list-style-type: none"> • build structures, exploring how they can be made stronger, stiffer and more stable • explore and use mechanisms [for example, levers, sliders, wheels and axles], in their products. • about the simple working characteristics of materials and components • about the movement of simple mechanisms such as levers, sliders, wheels and axles • how freestanding structures can be made stronger, stiffer and more stable • <i>that a 3-D textiles product can be assembled from two identical fabric shapes</i> • <i>that food ingredients should be combined according to their sensory characteristics</i> • about the working characteristics of materials (e.g. folding paper to make it stiffer, plaiting yarns to make it stronger) • how mechanisms can be used in different ways (e.g. wheels and axles, joints that allow movement) 	<p>Designing</p> <ul style="list-style-type: none"> • design purposeful, functional, appealing products for themselves and other users based on design criteria • generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and, where appropriate, information and communication technology <p>Make</p> <ul style="list-style-type: none"> • select from and use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing] • <i>plan by suggesting what to do next</i> • select from a range of tools and equipment, <i>explaining their choices</i> • select from a range of materials and components according to their characteristics • follow procedures for safety and hygiene • use a range of materials and components, including construction materials and kits, textiles, food ingredients and mechanical components • measure, mark out, cut and shape materials and components • assemble, join and combine materials and components • use finishing techniques, including those from art and design • select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics <p>Evaluate</p> <ul style="list-style-type: none"> • explore and evaluate a range of existing products • evaluate their ideas and products against design criteria <p>Year 1</p> <ul style="list-style-type: none"> • Explore and use mechanisms [for example, levers, sliders, wheels and axles], in their products. • With help measure, mark out, cut and shape a range of materials. Explore using tools e.g. scissors and a hole punch safely. 	<p>design, make, evaluate, user, purpose, ideas, design criteria, product, function</p> <p>Mechanisms vocab</p> <p>slider, lever, pivot, slot, bridge/guide card, masking tape, paper fastener, join pull, push, up, down, straight, curve, forwards, backwards, vehicle, wheel, axle, axle holder, chassis, body, cab</p> <p>Structures vocab</p> <p>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</p> <p>Textiles vocab</p> <p>names of existing products, joining and finishing techniques, tools, fabrics and components, template, pattern pieces, mark out, join, decorate, finish, thread, pins, needles.</p>



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- Begin to assemble, join and combine materials and components together using a variety of temporary methods e.g. glues or masking tape.
- Begin to use simple finishing techniques to improve the appearance of their product.

Year 2

- With help measure, cut and score with some accuracy.
- Learn to use hand tools safely and appropriately.
- Start to assemble, join and combine materials in order to make a product.
- Demonstrate how to cut, shape and join fabric to make a simple product.
- Use basic sewing techniques.
- Start to choose and use appropriate finishing techniques based on own ideas.



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<p>Lower KS2 Yr 3/4</p>	<p>Technical Knowledge</p> <ul style="list-style-type: none"> • how to use learning from science to help design and make products that work • how to use learning from mathematics to help design and make products that work • that materials have both functional properties and aesthetic qualities • <i>that materials can be combined and mixed to create more useful characteristics</i> • that mechanical and electrical systems have an input, process and output • <i>the correct technical vocabulary for the projects they are undertaking</i> • how mechanical systems such as levers and linkages or pneumatic systems create movement • how simple electrical circuits and components can be used to create functional products • how to program a computer to control their products • how to make strong, stiff shell structures • <i>that a single fabric shape can be used to make a 3D textiles product</i> • <i>that food ingredients can be fresh, pre-cooked and processed</i> • investigating and evaluating a range of familiar products, thinking about how they work, how they are used and the views of the people who use them • focused practical tasks that develop a range of techniques, skills, processes and knowledge <p>Technical Knowledge</p> <ul style="list-style-type: none"> • how mechanical systems such as cams or pulleys or gears create movement • how more complex electrical circuits and components can be used to create 	<p>Designing</p> <ul style="list-style-type: none"> • work confidently within a range of contexts, such as the home, school, leisure, culture, enterprise, industry and the wider environment • describe the purpose of their products • indicate the design features of their products that will appeal to intended users • explain how particular parts of their products work • share and clarify ideas through discussion • model their ideas using prototypes and pattern pieces • use annotated sketches, cross-sectional drawings and exploded diagrams to develop and communicate their ideas • use computer-aided design to develop and communicate their ideas <p>LKS2</p> <ul style="list-style-type: none"> • generate realistic ideas, focusing on the needs of the user • <i>make design decisions that take account of the availability of resources</i> • gather information about the needs and wants of particular individuals and groups • develop their own design criteria and use these to inform their ideas <p>Making</p> <ul style="list-style-type: none"> • follow procedures for safety and hygiene • use a wider range of materials and components than KS1, including construction materials and kits, textiles, food ingredients, mechanical components and electrical components • select tools and equipment suitable for the task • <i>explain their choice of tools and equipment in relation to the skills and techniques they will be using</i> • select materials and components suitable for the task • explain their choice of materials and components according to functional properties and aesthetic qualities <p>LKS2</p> <ul style="list-style-type: none"> • measure, mark out, cut and shape materials and components with some accuracy • assemble, join and combine materials and components with some 	<p>General vocab</p> <p>user, purpose, function, prototype, design criteria, innovative, appealing, design brief</p> <p>Mechanisms vocab</p> <p>mechanism, lever, linkage, pivot, slot, bridge, guide, system, input, process, output, linear, rotary, oscillating, reciprocating</p> <p>Structures vocab</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</p> <p>Textiles vocab</p> <p>fabric, names of fabrics, fastening, compartment, zip, button, structure, finishing technique, strength, weakness, stiffening, templates, stitch, seam, seam allowance user, purpose, design, model,</p>
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	<p>functional products</p> <ul style="list-style-type: none"> • how to program a computer to monitor changes in the environment and control their products • how to reinforce and strengthen a 3D framework • <i>that a 3D textiles product can be made from a combination of fabric shapes</i> • <i>that a recipe can be adapted by adding or substituting one or more ingredients</i> • investigating and evaluating a range of familiar products, thinking about how they work, how they are used and the views of the people who use them • design and make assignments using a range of materials, including electrical and mechanical components, food, mouldable materials, stiff and flexible sheet materials, and textiles. 	<p>accuracy</p> <ul style="list-style-type: none"> • apply a range of finishing techniques, including those from art and design, with some accuracy • <i>order the main stages of making</i> <p>Evaluating (other products and their own)</p> <ul style="list-style-type: none"> • identify the strengths and areas for development in their ideas and products • consider the views of others, including intended users, to improve their work • refer to their design criteria as they design and make • use their design criteria to evaluate their completed products • how well products have been designed • how well products have been made • why materials have been chosen • what methods of construction have been used • how well products work • how well products achieve their purposes • how well products meet user needs and wants <p>LKS2</p> <ul style="list-style-type: none"> • who designed and made the products • where products were designed and made • when products were designed and made • whether products can be recycled or reused <p>Year 3</p> <ul style="list-style-type: none"> • Explain their choice of tools and equipment in relation to the skills and techniques they will be using. • Start to understand that mechanical and electrical systems have an input, process and output. • Start to understand that mechanical systems such as levers and linkages or pneumatic systems create movement. • Know how simple electrical circuits and components can be used to create functional products. • Measure, mark out, cut, score and assemble components with more accuracy. • Start to work safely and accurately with a range of simple tools. • Start to think about their ideas as they make progress and be willing to change things if this helps them to improve their work. 	<p>evaluate, prototype, annotated sketch, functional, innovative, investigate, label, drawing, aesthetics, function, pattern pieces</p> <p>Electrical Systems vocab</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</p>
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		<ul style="list-style-type: none"> Start to measure, tape or pin, cut and join fabric with some accuracy. <p>Year 4</p> <ul style="list-style-type: none"> Start to join and combine materials and components accurately in temporary and permanent ways. Know how mechanical systems such as cams or pulleys or gears create movement. Understand how more complex electrical circuits and components can be used to create functional products. Continue to learn how to program a computer to monitor changes in the environment and control their products. Understand how to reinforce and strengthen a 3D framework. Now sew using a range of different stitches, to weave and knit. Demonstrate how to measure, tape or pin, cut and join fabric with some accuracy. Begin to use finishing techniques to strengthen and improve the appearance of their product using a range of equipment including ICT. 	
<p>Upper KS2 Yr 5/6</p>	<p>Technical Knowledge</p> <ul style="list-style-type: none"> how to use learning from science to help design and make products that work how to use learning from mathematics to help design and make products that work that materials have both functional properties and aesthetic qualities <i>that materials can be combined and mixed to create more useful characteristics</i> that mechanical and electrical systems have an input, process and output <i>the correct technical vocabulary for the projects they are undertaking</i> how mechanical systems such as levers and linkages or pneumatic systems create movement how simple electrical circuits and components can be used to create functional products how to program a computer to control their products 	<p>Designing</p> <ul style="list-style-type: none"> work confidently within a range of contexts, such as the home, school, leisure, culture, enterprise, industry and the wider environment describe the purpose of their products indicate the design features of their products that will appeal to intended users explain how particular parts of their products work share and clarify ideas through discussion model their ideas using prototypes and pattern pieces use annotated sketches, cross-sectional drawings and exploded diagrams to develop and communicate their ideas use computer-aided design to develop and communicate their ideas <p>UKS2</p> <ul style="list-style-type: none"> carry out research, using surveys, interviews, questionnaires and web-based resources identify the needs, wants, preferences and values of particular individuals and groups <i>develop a simple design specification to guide their thinking</i> 	<p>General vocab design criteria, annotate, design decisions, functionality, innovation, authentic, user, purpose, evaluate, mock-up, prototype</p> <p>Mechanisms (mechanical systems) vocab 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</p> <p>Structures vocab</p>



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<ul style="list-style-type: none">• how to make strong, stiff shell structures• <i>that a single fabric shape can be used to make a 3D textiles product</i>• <i>that food ingredients can be fresh, pre-cooked and processed</i>• investigating and evaluating a range of familiar products, thinking about how they work, how they are used and the views of the people who use them• focused practical tasks that develop a range of techniques, skills, processes and knowledge <p>Technical Knowledge</p> <ul style="list-style-type: none">• how mechanical systems such as cams or pulleys or gears create movement• how more complex electrical circuits and components can be used to create functional products• how to program a computer to monitor changes in the environment and control their products• how to reinforce and strengthen a 3D framework• <i>that a 3D textiles product can be made from a combination of fabric shapes</i>• <i>that a recipe can be adapted by adding or substituting one or more ingredients</i>• investigating and evaluating a range of familiar products, thinking about how they work, how they are used and the views of the people who use them• design and make assignments using a range of materials, including electrical and mechanical components, food, mouldable materials, stiff and flexible sheet materials, and textiles.	<ul style="list-style-type: none">• generate innovative ideas, drawing on research• <i>make design decisions, taking account of constraints such as time, resources and cost</i> <p>Making</p> <ul style="list-style-type: none">• follow procedures for safety and hygiene• use a wider range of materials and components than KS1, including construction materials and kits, textiles, food ingredients, mechanical components and electrical components• select tools and equipment suitable for the task• <i>explain their choice of tools and equipment in relation to the skills and techniques they will be using</i>• select materials and components suitable for the task• explain their choice of materials and components according to functional properties and aesthetic qualities <p>UKS2</p> <ul style="list-style-type: none">• accurately measure, mark out, cut and shape materials and components• accurately assemble, join and combine materials and components• accurately apply a range of finishing techniques, including those from art and design• <i>use techniques that involve a number of steps</i>• demonstrate resourcefulness when tackling practical problems• <i>produce appropriate lists of tools, equipment and materials that they need</i>• <i>formulate step-by-step plans as a guide to making</i> <p>Evaluating (other products and their own)</p> <ul style="list-style-type: none">• identify the strengths and areas for development in their ideas and products• consider the views of others, including intended users, to improve their work• refer to their design criteria as they design and make• use their design criteria to evaluate their completed products• how well products have been designed• how well products have been made• why materials have been chosen• what methods of construction have been used• how well products work	<p>frame structure, stiffen, strengthen, reinforce, triangulation, stability, shape, join, temporary, permanent</p> <p>Textiles vocab</p> <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>Electrical Systems vocab</p> <p>series circuit, parallel circuit, names of switches and components, input device, output device, system, monitor, control, program, flowchart</p>
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- how well products achieve their purposes
- how well products meet user needs and wants

UKS2

- how much products cost to make
- how innovative products are
- how sustainable the materials in products are
- what impact products have beyond their intended purpose
- critically evaluate the quality of the design, manufacture and fitness for purpose of their products as they design and make
- *evaluate their ideas and products against their original design specification*

Year 5

- Understand how mechanical systems such as cams or pulleys or gears create movement.
- Know how more complex electrical circuits and components can be used to create functional products and how to program a computer to monitor changes in the environment and control their products.
- Understand that mechanical and electrical systems have an input, process and output. Begin to measure and mark out more accurately.
- Demonstrate how to use skills in using different tools and equipment safely and accurately with growing confidence cut and join with accuracy to ensure a good-quality finish to the product.
- Use finishing techniques to strengthen and improve the appearance of their product using a range of equipment including ICT.
- Weigh and measure accurately (time, dry ingredients, liquids).

Year 6

- Assemble components to make working models.
- Aim to make and to achieve a quality product.
- With confidence pin, sew and stitch materials together to create a product.
- Demonstrate when make modifications as they go along.
- Construct products using permanent joining techniques.
- Understand how mechanical systems such as cams or pulleys or gears create movement. Know how more complex electrical



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		<p>circuits and components can be used to create functional products and how to program a computer to monitor changes in the environment and control their products.</p> <ul style="list-style-type: none">• Know how to reinforce and strengthen a 3D framework.• Understand that mechanical and electrical systems have an input, process and output.• Use finishing techniques to strengthen and improve the appearance of their product using a range of equipment including ICT.	
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