Design and Technology – Progression of Skills

<table>
<tr><td rowspan="2">National Curriculum and EYFS</td><td>EYFS</td><td colspan="2">Year 1</td><td>Year 2</td><td colspan="2">Year 3</td><td>Year 4</td><td colspan="2">Year 5</td><td>Year 6</td></tr>
<tr><td><u>Physical Development</u>
<u>Exploring media and materials</u>
• How to use one handed tools and equipment with control to achieve their intended purpose.
• How to thread a needle and sew a simple running stitch.
• How to cut using scissors
• To learn to handle and use equipment and tools effectively, e.g. hammers, clay tools, scissors etc.
• To use scissors to cut out regular shapes.
• To learn how to use the appropriate amount of glue and tape in joining materials together.
• Learn to use cutlery effectively to cut food, including challenging food that needs more stabilising whilst being cut
• Learn to prepare a healthy snack and explain choices.</td><td colspan="3">Key Stage 1

KS1 Pupils should be taught about:
When designing and making, pupils should be taught to:
Design
• 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.
Make
• select from and use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing]
• select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics
Evaluate
• explore and evaluate a range of existing products
• evaluate their ideas and products against design criteria
Technical knowledge
• 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.</td><td colspan="3">Lower Key Stage 2

KS2 Pupils should be taught about:
When designing and making, pupils should be taught to:
Design
• 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
• generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design.
Make
• select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately
• 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
Evaluate
• investigate and analyse a range of existing products
• evaluate their ideas and products against their own design criteria and consider the views of others to improve their work
• understand how key events and individuals in design and technology have helped shape the world Technical knowledge
• apply their understanding of how to strengthen, stiffen and reinforce more complex structures
• understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages]
• understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors]
• apply their understanding of computing to program, monitor and control their products</td><td colspan="2">Upper Key Stage 2</td></tr>
<tr><td>Design</td><td colspan="6">• 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.</td><td colspan="5">• 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
• Generate, develop, model and communicate their ideas through discussions, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design</td></tr>
<tr><td></td><td>EYFS</td><td colspan="2">Year 1</td><td>Year 2</td><td colspan="2">Year 3</td><td>Year 4</td><td colspan="2">Year 5</td><td>Year 6</td></tr>
<tr><td></td><td>Key Objectives
Select appropriate resources
*Use gestures, talking and arrangements of materials and components to show design
* Use contexts set by the teacher and myself
*Use language of designing and making (join, build, shape, longer, shorter, heavier etc.)</td><td colspan="2">Key Objectives
* have own ideas
* explain what I want to do
*explain what my product is for, and how it will work
* use pictures and words to plan, begin to use models
* design a product for myself
following design criteria
*research similar Existing products</td><td>Key Objectives
* have own ideas and plan what to do next
* explain what I want to do and describe how I may do it
* explain purpose of product, how it will work and how it will be suitable for the user
* describe design using pictures, words, models, diagrams, begin to use ICT
* design products for myself and others following design criteria
* choose best tools And materials, and explain choices</td><td colspan="2">Key Objectives
*begin to research others' needs
* show design meets a range of requirements
* describe purpose of product
* follow a given design criteria
* have at least one idea about how to create product
* create a plan which shows order, equipment and tools
*describe design using an accurately labelled sketch and words</td><td>Key Objectives
* use research for design ideas
* show design meets a range of requirements and is fit for purpose
*begin to create own design criteria
*have at least one idea about how to create product and suggest improvements for design.
* produce a plan and explain it to others
*say how realistic plan is.
*include an annotated sketch
*make and explain design</td><td colspan="2">Key Objectives
*use internet and questionnaires for research and design ideas
*take a user's view into account when designing
* begin to consider needs/wants of individuals/groups when designing and ensure product is fit for purpose
*create own design criteria
* have a range of ideas
*produce a logical, realistic plan and explain it to others.
*use cross-sectional planning and annotated sketches</td><td>Key Objectives
* draw on market research to inform design
* use research of user's individual needs, wants, requirements for design
* identify features of design that will appeal to the intended user
* create own design criteria and specification
* come up with innovative design ideas
*follow and refine a logical plan.
*use annotated sketches, cross-sectional planning and exploded diagrams</td></tr>
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Design and Technology – Progression of Skills

			* use knowledge of existing products to produce ideas	* make design decisions *explain how product will work * make a prototype * begin to use computers to show design	decisions considering availability of resources *explain how product will work * make a prototype *begin to use computers to show design	* make design decisions considering time and resources. *clearly explain how parts of product will work. *model and refine design ideas by making prototypes and using pattern pieces. *use computer-aided designs	* make design decisions, considering, resources and cost * clearly explain how parts of design will work, and how they are fit for purpose * independently model and refine design ideas by making prototypes and using pattern pieces * use computer-aided designs
	Outcomes • -Begin to use the language of designing and making, e.g. join, build and shape. • Learning about planning and adapting initial ideas to make them better.	**Outcomes** • To design purposeful, functional, appealing products based on design criteria. • To generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and, where appropriate, ICT.		**Outcomes** • To 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 • To generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer aided design			

Design and Technology – Progression of Skills

<table>
<tr><td rowspan="3">Make</td><td>EYFS</td><td colspan="2">Year 1</td><td colspan="2">Year 2</td><td colspan="2">Year 3</td><td colspan="2">Year 4</td><td colspan="2">Year 5</td><td colspan="2">Year 6</td></tr>
<tr><td></td><td colspan="4">Kay Stage 1</td><td colspan="6">Kay Stage 2</td></tr>
<tr><td></td><td colspan="4">• select from and use a range of tools and equipment to perform practical tasks [for example, cutting,
shaping, joining and finishing]
• select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics.</td><td colspan="6">• select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately
• 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.</td></tr>
<tr><td></td><td>Key Objectives
• Construct with a purpose, using a variety of Resources
• Use simple tools and techniques
• Build / construct with a wide range of objects
• Select tools & techniques to shape, assemble and join
• Replicate structures with materials /components
• Discuss how to make an activity safe and hygienic
• Record experiences by drawing, writing, voice recording
• Understand different media can be combined for a purpose</td><td colspan="2">Key Objectives
*explain what I’m making and why
*consider what I need to do next
*select tools/equipment to cut, shape, join, finish and explain choices
*measure, mark out, cut and shape, with support
*choose suitable materials and explain choices
*try to use finishing techniques to make product look good
*work in a safe and hygienic manner</td><td colspan="2">Key Objectives
explain what I am making and why it fits the purpose
*make suggestions as to what I need to do next.
*join materials/components together in different ways
*measure, mark out, cut and shape materials and components, with support.
*describe which tools I’m using and why
*choose suitable materials and explain choices depending on characteristics.
*use finishing techniques to make product look good
*work safely and hygienically</td><td colspan="2">Key Objectives
*select suitable tools/equipment, explain choices; begin to use them accurately
* select appropriate materials, fit for purpose.
* work through plan in order
*consider how good product will be
* begin to measure, mark out, cut and shape materials/components with some accuracy
* begin to assemble, join and combine materials and components with some accuracy
* begin to apply a range of finishing techniques with some accuracy</td><td>Key Objectives
* select suitable tools and equipment, explain choices in relation to required techniques and use accurately
*select appropriate materials, fit for purpose; explain choices
* work through plan in order.
* realise if product is going to be good quality
* measure, mark out, cut and shape materials/components with some accuracy
*assemble, join and combine materials and components with some accuracy
*apply a range of finishing techniques with some accuracy</td><td>Key Objectives
use selected tools/equipment with good level of precision
* produce suitable lists of tools, equipment/materials needed
*select appropriate materials, fit for purpose; explain choices, considering functionality
* create and follow detailed stepby-step plan
* explain how product will appeal to an audience
* mainly accurately measure, mark out, cut and shape materials/components
*mainly accurately assemble, join and combine materials/components
* mainly accurately apply a range of finishing techniques
* use techniques that involve a small number of steps
* begin to be resourceful</td><td>Key Objectives
* use selected tools and equipment precisely
*produce suitable lists of tools, equipment, materials needed, considering constraints
* select appropriate materials, fit for purpose; explain choices, considering functionality and aesthetics
* create, follow, and adapt detailed step-by-step plans
*explain how product will appeal to audience; make changes to improve quality
* accurately measure, mark out, cut and shape materials/components
* accurately assemble, join and combine materials/components
* accurately apply a range of finishing techniques
* use techniques that involve a number of steps
* be resourceful with Practical problems</td></tr>
<tr><td></td><td>Outcomes
• To learn to construct with a purpose in mind.</td><td colspan="4">Outcomes
• To select from and use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing]
• To select from and use a wide range of materials and components, including construction materials,</td><td colspan="6">Outcomes
• To select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately.
• To 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.</td></tr>
</table>

	• Selects tools and techniques needed to shape, assemble and join materials.	textiles and ingredients, according to their characteristics	

Evaluate	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
		Kay Stage 1		Kay Stage 2			
	• explore and evaluate a range of existing products • evaluate their ideas and products against design criteria			• investigate and analyse a range of existing products • evaluate their ideas and products against their own design criteria and consider the views of others to improve their work • understand how key events and individuals in design and technology have helped shape the world.			
	Key Objectives *Adapt work if necessary *Dismantle, examine, talk about existing objects/structures *Consider and manage some risks *Practise some appropriate safety measures independently *Talk about how things work *Look at similarities and differences between existing objects / materials / tools *Show an interest in technological toys *Describe textures	Key **Objectives** *talk about my work, linking it to what I was asked to do * talk about existing products considering: use, materials, how they work, audience, where they might be used *talk about existing products, and say what is and isn't good * talk about things that other people have made *begin to talk about what could make product better	**Key Objectives** * describe what went well, thinking about design criteria * talk about existing products considering: use, materials, how they work, audience, where they might be used; express personal opinion *evaluate how good existing products are *talk about what I would do differently if I were to do it again and why	**Key Objectives** * look at design criteria while designing and making *use design criteria to evaluate finished product * say what I would change to make design better *begin to evaluate existing products, considering: how well they have been made, materials, whether they work, how they have been made, fit for purpose * begin to understand by whom, when and where products were designed * learn about some inventors/designers/ engineers/chefs/ manufacturers of ground-breaking products	**Key Objectives** *refer to design criteria while designing and making *use criteria to evaluate product * begin to explain how I could improve original design *evaluate existing products, considering: how well they've been made, materials, whether they work, how they have been made, fit for purpose * discuss by whom, when and where products were designed * research whether products can be recycled or reused * know about some inventors/designers/ engineers/chefs/manufacturers of ground-breaking products	K**ey Objectives** *evaluate quality of design while designing and making *evaluate ideas and finished product against specification, considering purpose and appearance. *test and evaluate final product * evaluate and discuss existing products, considering: how well they've been made, materials, whether they work, how they have been made, fit for purpose * begin to evaluate how much products cost to make and how innovative they are *research how sustainable materials are *talk about some key inventors/designers/ engineers/ chefs/manufacturers of ground-breaking products	**Key Objectives** *evaluate quality of design while designing and making; is it fit for purpose? * keep checking design is best it can be. *evaluate ideas and finished product against specification, stating if it's fit for purpose *test and evaluate final product; explain what would improve it and the effect different resources may have had *do thorough evaluations of existing products considering: how well they've been made, materials, whether they work, how they've been made, fit for purpose *evaluate how much products cost to make and how innovative they are *research and discuss how sustainable materials are *consider the impact of products beyond their

							intended purpose *discuss some key inventors/designers/ engineers/ chefs/manufacturers of ground-breaking products
	Outcomes • Begin to talk about changes made during the making process, e.g. making a decision to use a different joining method.	**Outcomes** • To explore and evaluate a range of existing products. • To evaluate their ideas and products against design criteria.		**Outcomes** • To investigate and analyse a range of existing products. • To evaluate their ideas and products against their own design criteria and consider the views of others to improve their work. • To understand how key events and individuals in design and technology have helped shape the world.			
	Key Vocabulary Planning Investigating Design Evaluate Make	**Key Vocabulary** Planning Investigating Design Evaluate Make User Purpose Idea Product	**Key Vocabulary** Investigating, Planning Design Make Evaluate User Purpose Ideas Design Criteria Product Function	**Key Vocabulary** User Purpose Design Model Evaluate Prototype Annotated sketch Functional Innovative Investigate Label Drawing function Planning, Design criteria Annotated Sketch Appealing	**Key Vocabulary** Evaluating Design brief Design criteria Innovative Prototype User Purpose Function Prototype Design Criteria Innovative Appealing Design brief Planning Annotated sketch Sensory evaluations	**Key Vocabulary** Design decisions Functionality Authentic User Purpose Design specification Design brief Innovative Research Evaluate Design criteria Annotate Evaluate Mock-up Prototype	**Key Vocabulary** Function Innovative Design Specification Design brief User Purpose Design brief Design Specification Prototype Annotated sketch Purpose User Innovation Research Functional Mock-up Prototype

Design and Technology – Progression of Skills

<table>
<tr><th>Mechanisms</th><th>EYFS</th><th>Year 1</th><th>Year 2</th><th>Year 3</th><th>Year 4</th><th>Year 5</th><th>Year 6</th></tr>
<tr><td rowspan="3"></td><td>Physical Development
Exploring media and materials

• How to use one handed tools and equipment with control to achieve their intended purpose.
• Use simple construction materials</td><td colspan="2">National Curriculum

KS1 Pupils should be taught about:
When designing and making, pupils should be taught to:
Design
• 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, mockups and, where appropriate, information and communication technology.
Make
• select from and use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing]
• select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics
Evaluate
• explore and evaluate a range of existing products
• evaluate their ideas and products against design criteria Technical knowledge
• 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 product</td><td colspan="4">National Curriculum

KS2 Pupils should be taught about:
When designing and making, pupils should be taught to:
Design
• 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
• generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer aided design.
Make
• select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately
• 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
Evaluate
• investigate and analyse a range of existing products
• evaluate their ideas and products against their own design criteria and consider the views of others to improve their work
• understand how key events and individuals in design and technology have helped shape the world Technical knowledge
• apply their understanding of how to strengthen, stiffen and reinforce more complex structures
• understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages]
• understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors]
• apply their understanding of computing to program, monitor and control their products.</td></tr>
<tr><td>Key Learning Outcomes</td><td>Key Learning Outcomes</td><td>Key Learning Outcomes</td><td>Key Learning Outcomes</td><td>Key Learning Outcomes</td><td>Key Learning Outcomes</td><td>Key Learning Outcomes</td></tr>
<tr><td>• begin to use levers or slides

• Use simple construction materials e.g duplo to stack and join pieces, tell an adult what they are making</td><td><u>Sliders and Levers</u>
• To use own ideas to design something and describe how their own idea works
• To design a product which moves
• To explain to someone else how they want to make their product and make a simple plan before making</td><td><u>Wheels and Axles</u>
Generate initial ideas and simple design criteria through talking and using own experiences.
• Develop and communicate ideas through drawings and mock-ups.

Making
• Select from and use a range of tools and equipment to</td><td><u>Pneumatics</u>
Generate realistic and appropriate 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.

Making</td><td><u>Levers and Linkages</u>
Designing
• 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.

Making</td><td><u>CAMS</u>
Designing
• Generate innovative ideas by carrying out research using surveys, interviews, questionnaires and web-based resources.
• Develop a simple design specification to guide their thinking.
• Develop and communicate ideas through discussion, annotated drawings, exploded</td><td><u>Pulleys or Gears</u>
Designing
• Generate innovative ideas by carrying out research using surveys, interviews, questionnaires and web-based resources.
• Develop a simple design specification to guide their thinking.
• Develop and communicate ideas through discussion, annotated drawings, exploded</td></tr>
</table>

		• To use own ideas to make something • To make a product which moves • To choose appropriate resources and tools • To describe how something works • To explain what works well and not so well in the model they have made • To generate ideas based on simple design criteria and their own experiences, explaining what they could make. • To develop, model and communicate their ideas through drawings and mock-ups with card and paper. • To plan by suggesting what to do next. • To select and use tools, explaining their choices, to cut, shape and join paper and card. • To use simple finishing techniques suitable for the product they are creating. • To explore and use sliders and levers. To understand that different mechanisms produce different types of movement. • To know and use technical vocabulary relevant to the project.	perform practical tasks such as cutting and joining to allow movement and finishing. • Select from and use a range of materials and components such as paper, card, plastic and wood according to their characteristics. **Evaluating** • Explore and evaluate a range of products with wheels and axles. • Evaluate their ideas throughout and their products against original criteria. **Technical knowledge and understanding** • Explore and use wheels, axles and axle holders. • Distinguish between fixed and freely moving axles. • Know and use technical vocabulary relevant to the project.	• Order the main stages of making. • Select from and use appropriate tools with some accuracy to cut and join materials and components such as tubing, syringes and balloons. • Select from and use finishing techniques suitable for the product they are creating. **Evaluating** • Investigate and analyse books, videos and products with pneumatic mechanisms. • Evaluate their own products and ideas against criteria and user needs, as they design and make. **Technical knowledge and understanding** • Understand and use pneumatic mechanisms. • Know and use technical vocabulary relevant to the project.	• 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. **Evaluating** • 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. **Technical knowledge and understanding** • Understand and use lever and linkage mechanisms. • Distinguish between fixed and loose pivots. • Know and use technical vocabulary relevant to the project.	drawings and drawings from different views. **Making** • Produce detailed lists of tools, equipment and materials. 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 that are accurately assembled and well finished. Work within the constraints of time, resources and cost. **Evaluating** • Compare the final product to the original design specification. • Test products with the intended user, where safe and practical, and critically evaluate the quality of the design, manufacture, functionality and fitness for purpose. • Consider the views of others to improve their work. • Investigate famous manufacturing and engineering companies relevant to the project. **Technical knowledge and understanding** • Understand that mechanical systems have an input, process and an output. • Understand how cams can be used to produce different types of movement and change the direction of movement. •Know and use technical vocabulary relevant to the project.	drawings and drawings from different views. **Making** • Produce detailed lists of tools, equipment and materials. 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 that are accurately assembled and well finished. Work within the constraints of time, resources and cost. **Evaluating** • Compare the final product to the original design specification. • Test products with intended user and critically evaluate the quality of the design, manufacture, functionality and fitness for purpose. • Consider the views of others to improve their work. • Investigate famous manufacturing and engineering companies relevant to the project. **Technical knowledge and understanding** • Understand that mechanical and electrical systems have an input, process and an output. • Understand how gears and pulleys can be used to speed up, slow down or change the direction of movement. •Know and use technical vocabulary relevant to the project.
	Final Outcome	**Final Outcome**	**Final Outcome**	**Final Outcome**	**Final Outcome**	**Final Outcome**	**Final Outcome**
	Outcomes • To begin to experiment with leavers and slides in different scenarios	**Outcomes** • To explore and use mechanisms [for example, levers, sliders, wheels and axles], in their products.		**Outcomes** • To understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages].			

	• Shows an interest in technological toys with knobs or pulleys, real objects such as cameras, and touchscreen devices such as mobile phones and tablets • Shows skill in making toys work by pressing parts or lifting flaps to achieve effects such as sound, movements or new images • Plays with a range of materials to learn cause and effect, for example, makes a string puppet using dowels and string to suspend the puppet	**<u>Sliders and Levers</u>** • class/group storybook poster • display • greetings card • class/group • information book • storyboard	**<u>Wheels and Axles</u>** • push/pull toys e.g. emergency service vehicle • carnival float • farm vehicle • clown's car • vehicle for imaginary/story character • shopping trolley	**<u>Pneumatics</u>** • tipper truck • jack-in-the-box • class display • moving creature • shop window display • moving toy	**<u>Levers and Linkages</u>** • story book • poster • class display • greetings card • information book storyboard	**<u>CAMS</u>** • a shop display with moving parts e.g. lifting or rotating images of items for sale • a vehicle incorporating cam-driven components • a toy with oscillating rotating or reciprocating movement	**<u>Pulleys or Gears</u>** • fairground ride with gears or pulleys e.g. carousel, Ferris wheel controllable toy vehicle with gears or pulleys e.g. dragster, off-road vehicle • sports car, lorry • window display with moving parts e.g. lifting or turning items for sale
	Key vocabulary	**Key vocabulary**	**Key Vocabulary**	**Key Vocabulary**	**Key Vocabulary**	**Key Vocabulary**	**Key Vocabulary**
	Slot Card Masking Tape Paper fastener Join Pull Push Up Down Straight Curve Forwards Backwards Bricks Pieces Wheels Axle	**<u>Sliders and Levers</u>** Slider Lever Pivot Slot bridge/guide card masking tape paper fastener join pull push up down straight curve forwards backwards design	**<u>Wheels and Axles</u>** assembling joining shaping finishing fixed free moving equipment materials used design make evaluate purpose user criteria functional Vehicle Wheel Axle	**<u>Pneumatics</u>** Components Fixing Attaching Tubing Syringe Plunger split pin paper fastener pneumatic system input movement process output movement control compression pressure inflate deflate	**<u>Levers and Linkages</u>** Mechanism Lever Linkage Pivot Slot Bridge guide system input process output linear rotary oscillating reciprocating user purpose	**<u>CAMS</u>** Cam snail cam off-centre cam peg cam pear shaped cam follower axle shaft crank handle housing framework rotation rotary motion oscillating motion reciprocating motion annotated sketches	**<u>Pulleys or Gears</u>** Pulley drive belt gear rotation spindle driver follower ratio transmit axle motor circuit switch circuit diagram annotated drawings

	steering wheel seat figure shape names e.g. cube, cuboid Build Construct push together pull apart big small	make evaluate user purpose ideas design criteria product function Key Vocabulary Slider Lever Pivot Slot, Bridge/guide Card Masking Tape Paper fastener Join Pull Push Up Down Straight Curve Forwards Backwards	Axle holder Chassis Body Cab Assembling Cutting Joining, Shaping Finishing Fixed Free Moving Mechanism Names of tools equipment and materials used	pump seal air-tight linear rotary user purpose function prototype design criteria innovative appealing design brief research evaluate ideas constraints investigate Mechanism Lever Linkage Pivot Slot Bridge Guide System Input Process Output Linear Rotary Oscillating Reciprocating	function prototype design criteria innovative appealing design brief	exploded diagrams mechanical system input movement process output movement design decisions functionality innovation authentic user purpose design specification design brief	exploded diagrams mechanical system electrical system input process output design decisions functionality innovation authentic user purpose design specification design brief
						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 and Technology – Progression of Skills

Structures Freestanding structures	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
	Physical Development **Exploring media and materials** How to use one handed tools and equipment with control to achieve their intended purpose. To learn to handle and use equipment and tools effectively, e.g. hammers, clay tools, scissors etc. To use scissors to cut out regular shapes. To learn how to use the appropriate amount of glue and tape in joining materials together.	**National Curriculum** **Pupils should be taught:** • The knowledge, understanding and skills needed to engage in an iterative process of designing and making. • To work in a range of relevant contexts [for example, the home and school, gardens and playgrounds, the local community, industry and the wider environment]. • To design purposeful, functional, appealing products for themselves and other users based on design criteria • To generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and, where appropriate, information and communication technology • To select from and use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing] • To select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics • To explore and evaluate a range of existing products • To evaluate their ideas and products against design criteria • To *build structures, exploring how they can be made stronger, stiffer and more stable* • *To explore and use mechanisms [for example, levers, sliders, wheels and axles], in their products.*		**National Curriculum** **Pupils should be taught:** • The knowledge, understanding and skills needed to engage in an iterative process of designing and making. • To work in a range of relevant contexts [for example, the home, school, leisure, culture, enterprise, industry and the wider environment]. • To 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 • To generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately • To select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities investigate and analyse a range of existing products • To evaluate their ideas and products against their own design criteria and consider the views of others to improve their work • To understand how key events and individuals in design and technology have helped shape the world • To apply their understanding of how to strengthen, stiffen and reinforce more complex structures • To understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages] • understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors] • To apply their understanding of computing to program, monitor and control their products.		
	Key Learning Outcomes	**Key Learning Outcomes**	**Key Learning Outcomes**	**Key Learning Outcomes**	**Key Learning Outcomes**	**Key Learning Outcomes**	**Key Learning Outcomes**
	Build structures, exploring how they can be made stronger, stiffer and more stable Stacking blocks vertically and horizontally Joining construction pieces to build and balance Making enclosures and creating spaces Uses various construction materials Use a range of small tools, including scissors, paint brushes and cutlery Safely use and explore a variety of materials, tools and techniques,	**Freestanding structures** •make their own model stronger **Designing** • Generate ideas based on simple design criteria and their own experiences, explaining what they could make. • Develop, model and communicate their ideas through talking, mock-ups and drawings. **Making** • Plan by suggesting what to do next. • Select and use tools, skills and techniques, explaining their choices.	• make a model stronger and more stable • use wheels and axles, when appropriate to do so	**Shell Structures – Using CAD (Computer Aided Design)** **Designing** • 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. • Develop ideas through the analysis of existing shell structures and use computer-aided design to model and communicate ideas. **Making** • Plan the order of the main stages of making. • Select and use appropriate tools and software to measure, mark out, cut,	**Shell Structures** **Designing** • 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. • Develop ideas through the analysis of existing shell structures and use computer-aided design to model and communicate ideas. **Making** • Plan the order of the main stages of making. • Select and use appropriate tools and software to measure, mark out, cut, score, shape and assemble with some accuracy.	**Frame Structures** **Designing** • Carry out research into user needs and existing products, using surveys, interviews, questionnaires and web-based resources. • Develop a simple design specification to guide the development of their ideas and products, taking account of constraints including time, resources and cost. • Generate, develop and model innovative ideas, through discussion, prototypes and annotated sketches. **Making** • Formulate a clear plan, including a step-by-step list of what needs to be done and lists of resources to be used. • Competently select from and use appropriate tools to accurately measure, mark out, cut, shape and join construction materials to make frameworks. • Use finishing and decorative techniques suitable for the product they are designing and making. **Evaluating** • Investigate and evaluate a range of existing frame structures.	

	experimenting with colour, design, texture, form, and function Share their creations, explaining the process they have used	• Select new and reclaimed materials and construction kits to build their structures. • Use simple finishing techniques suitable for the structure they are creating. **Evaluating** • Explore a range of existing freestanding structures in the school and local environment e.g. everyday products and buildings. • Evaluate their product by discussing how well it works in relation to the purpose, the user and whether it meets the original design criteria. **Technical knowledge and understanding** • Know how to make freestanding structures stronger, stiffer and more stable. • Know and use technical vocabulary relevant to the project.		score, shape and assemble with some accuracy. • Explain their choice of materials according to functional properties and aesthetic qualities. • Use computer-generated finishing techniques suitable for the product they are creating. **Evaluating** • • Investigate and evaluate a range of shell structures including the materials, components and techniques that have been used. • Test and evaluate their own products against design criteria and the intended user and purpose. **Technical knowledge and understanding** • • Develop and use knowledge of nets of cubes and cuboids and, where appropriate, more complex 3D shapes. • Develop and use knowledge of how to construct strong, stiff shell structures. • Know and use technical vocabulary relevant to the project.	• Explain their choice of materials according to functional properties and aesthetic qualities. • Use computer-generated finishing techniques suitable for the product they are creating. **Evaluating** • Investigate and evaluate a range of shell structures including the materials, components and techniques that have been used. • Test and evaluate their own products against design criteria and the intended user and purpose. **Technical knowledge and understanding** • Develop and use knowledge of nets of cubes and cuboids and, where appropriate, more complex 3D shapes. • Develop and use knowledge of how to construct strong, stiff shell structures. • Know and use technical vocabulary relevant to the project.	• Critically evaluate their products against their design specification, intended user and purpose, identifying strengths and areas for development, and carrying out appropriate tests. • Research key events and individuals relevant to frame structures. **Technical knowledge and understanding** • Understand how to strengthen, stiffen and reinforce 3-D frameworks. • Know and use technical vocabulary relevant to the project. •
	Final Outcome	**Final Outcome**		**Final Outcome**		
	• To learn how to use a range of tools, e.g. scissors, hole punch, stapler, woodworking tools, rolling pins, pastry cutters. • Learn how everyday objects work by dismantling things.	• To build structures, exploring how they can be made stronger, stiffer and more stable.		• To apply their understanding of how to strengthen, stiffen and reinforce more complex structures.		
		Freestanding structures enclosures for farm or zoo animals playground/park/garden furniture bridge for Billy Goats Gruff playground equipment		**Shell Structures – Using CAD (Computer Aided Design)** • gift boxes • desk tidy • lunchboxes • packaging cool boxes	**Shell Structures** • gift boxes • desk tidy • lunchboxes • packaging cool boxes • party boxes	**Frame Structures** • playground shelter • market stall • bus shelter • tent • play house

		furniture for the Three Bears other – specific	• party boxes • mystery boxes • toy car body shell moneyboxes	• mystery boxes • toy car body shell moneyboxes	• gazebo • bird hide • parasol • park furniture • adventure playground equipment • kite
	Key vocabulary	**Key vocabulary**	**Key Vocabulary**	**Key Vocabulary**	**Key Vocabulary**

Design and Technology – Progression of Skills

	Key Vocabulary	**Freestanding structures**	**Shell Structures – Using CAD (Computer Aided Design)**	**Frame Structures**
	Cut Fold Join Fix Structure Wall Tower Weak Strong Base Top Underneath Side Edge Thinner Thicker Corner Straight Curved Metal Wood Plastic Circle Triangle Square Rectangle Cuboid Cube Cylinder	Design Make Evaluate User Purpose Ideas design criteria product function 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	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	frame structure stiffen strengthen reinforce triangulation stability shape join temporary permanent design brief design specification prototype annotated sketch purpose user innovation research functional Frame structure Stiffen Strengthen Reinforce Triangulation Stability Shape Join Temporary Permanent

		Cuboid Cube Cylinder		

Design and Technology – Progression of Skills

<table>
<tr><td rowspan="8">Food</td><td>EYFS</td><td colspan="2">Year 1</td><td colspan="2">Year 2</td><td>Year 3</td><td>Year 4</td><td>Year 5</td><td>Year 6</td></tr>
<tr><td>• To begin to understand some of the tools, techniques and processes involved in food preparation.
• Children have basic hygiene awareness.</td><td colspan="3">• As part of their work with food, pupils should be taught how to cook and apply the principles of nutrition and healthy eating. Instilling a love of cooking in pupils will also open a door to one of the great expressions of human creativity.
• Learning how to cook is a crucial life skill that enables pupils to feed themselves and others affordably and well, now and in later life.

Pupils should be taught to:

• use the basic principles of a healthy and varied diet to prepare dishes
• understand where food comes from.
• use the basic principles of a healthy and varied diet to prepare dishes
• understand where food comes from</td><td colspan="4">• As part of their work with food, pupils should be taught how to cook and apply the principles of nutrition and healthy eating.
• Instilling a love of cooking in pupils will also open a door to one of the great expressions of human creativity.
• Learning how to cook is a crucial life skill that enables pupils to feed themselves and others affordably and well, now and in later life.

Pupils should be taught to:

• understand and apply the principles of a healthy and varied diet
• prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques
• understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed.</td></tr>
<tr><td colspan="4">Key Learning Outcomes</td><td colspan="4">Key Learning Outcomes</td></tr>
<tr><td colspan="4">• Use the basic principles of a healthy and varied diet to prepare dishes
• Understand where food comes from.</td><td colspan="4">• Understand and apply the principles of a healthy and varied diet
• Prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques
• Understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed.</td></tr>
<tr><td colspan="2">• Learn to use cutlery effectively to cut food, including challenging food that needs more stabilising whilst being cut
• Learn to prepare a healthy snack and explain choices.
• Name the fruit
• Select a piece, say please and thank you
• To know to wash hands before selecting snack and eating
• Willing to try a range of different textures and tastes and expresses a preference.</td><td colspan="3">cut food safely

Preparing fruits and vegetables

Designing
• Design appealing products for a particular user based on simple design criteria.
• Generate initial ideas and design criteria through investigating a variety of fruit and vegetables.
• Communicate these ideas through talk and drawings.

Making
• Use simple utensils and equipment to e.g. peel, cut, slice, squeeze, grate and chop safely.
• Select from a range of fruit and vegetables according to their characteristics e.g. colour, texture and taste to create a chosen product. • weigh ingredients to use in a recipe
describe the ingredients used when making a dish or cake

Evaluating
• Taste and evaluate a range of fruit and vegetables to determine the intended user's preferences.
• Evaluate ideas and finished products against design criteria, including intended user and purpose.

Technical knowledge and understanding
• Understand where a range of fruit and vegetables come from e.g. farmed or grown at home.</td><td colspan="2">Healthy and varied diet

Designing
• 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.
• Use annotated sketches and appropriate information and communication technology, such as web-based recipes, to develop and communicate ideas.

Making
• Plan the main stages of a recipe, listing ingredients, utensils and equipment.
• Select and use appropriate utensils and equipment to prepare and combine ingredients.
• Select from a range of ingredients to make appropriate food products, thinking about sensory characteristics.

Evaluating
• Carry out sensory evaluations of a variety of ingredients and products. Record the evaluations using e.g. tables and simple graphs.
• Evaluate the ongoing work and the final product with reference to the design criteria and the views of others.

Technical knowledge and understanding</td><td colspan="2">Celebrating Culture and Seasonality

Designing
• Generate innovative ideas through research and discussion with peers and adults to develop a design brief and criteria for a design specification.
• Explore a range of initial ideas, and make design decisions to develop a final product linked to user and purpose.
• Use words, annotated sketches and information and communication technology as appropriate to develop and communicate ideas.

Making
• Write a step-by-step recipe, including a list of ingredients, equipment and utensils
• Select and use appropriate utensils and equipment accurately to measure and combine appropriate ingredients.
• Make, decorate and present the food product appropriately for the intended user and purpose.

Evaluating
• Carry out sensory evaluations of a range of relevant products and ingredients. Record the evaluations using e.g. tables/graphs/charts such as star diagrams.
• Evaluate the final product with reference back to the design brief and design specification, taking into account the views of others when identifying improvements.
• Understand how key chefs have influenced eating habits to promote varied and healthy diets.</td></tr>
</table>

		• Understand and use basic principles of a healthy and varied diet to prepare dishes, including how fruit and vegetables are part of *The eat well plate*. • Know and use technical and sensory vocabulary relevant to the project.	• Know how to use appropriate equipment and utensils to prepare and combine food. • Know about a range of fresh and processed ingredients appropriate for their product, and whether they are grown, reared or caught. • Know and use relevant technical and sensory vocabulary appropriately	**Technical knowledge and understanding** • Know how to use utensils and equipment including heat sources to prepare and cook food. • Understand about seasonality in relation to food products and the source of different food products. • Know and use relevant technical and sensory vocabulary.
	Final Outcome	**Final Outcome**	**Final Outcome**	**Final Outcome**
	• Wash and prepare/chop fruit/snack with adult supervision • Offer snack using polite language – would you like a … • Use language sweet, sour, juicy • To know to wash hands before preparing, selecting or eating snack/lunch • To make healthy choices of food and drink (water or milk)	**Preparing fruits and vegetables** • fruit salads • fruit yogurt • fruit drinks • fruit jelly • fruit smoothies • vegetable salads • fruit and vegetable kebabs	**Healthy and varied diet** • sandwiches • wraps • rolls • pitta pockets • blinis • rice cakes • toasties • snack bar • salad • snacks	**Celebrating Culture and Seasonality** • bread • pizza • savoury biscuits • savoury scones • savoury muffin • cereal snack
	Key vocabulary	**Key vocabulary**	**Key Vocabulary**	**Key Vocabulary**
	Fruit and vegetable names Names of equipment and utensils Seed Slicing Peeling Cutting Squeezing Healthy diet Ingredients Sweet Sour Juicy	**Preparing fruits and vegetables** 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 Fruit vegetable	**Healthy varied diet** planning design criteria purpose user annotated sketch sensory evaluations Name of products Names of equipment Utensils Techniques Ingredients Texture Taste Sweet Sour Hot Spicy Appearance Smell Preference Greasy Moist, Cook Fresh Savoury Hygienic Edible	**Celebrating Culture Seasonality** rubbing in sprinkle crumble design specification innovative research evaluate design brief Ingredients Yeast Dough Bran Flour Wholemeal Unleavened Baking soda Spice Herbs Fat Sugar Carbohydrate, Protein Vitamins Nutrients, Nutrition Healthy Varied Gluten

			Grown Reared Caught Frozen Tinned, Processed Seasonal Harvested Healthy/varied diet	Dairy Allergy Intolerance Savoury Source, Seasonality Utensils Combine Fold, Knead Stir Pour Mix Whisk Beat Roll out Shape

Design and Technology – Progression of Skills

<table>
<tr><th>Textiles</th><th>EYFS</th><th>Year 1</th><th>Year 2</th><th>Year 3</th><th>Year 4</th><th>Year 5</th><th>Year 6</th></tr>
<tr><td></td><td>Physical Development
Exploring media and materials
How to use one handed tools and equipment with control to achieve their intended purpose.

How to thread a needle and sew a simple running stitch.

How to cut using scissors
To learn to handle and use equipment and tools effectively, e.g. hammers, clay tools, scissors etc.

To use scissors to cut out regular shapes.

To learn how to use the appropriate amount of glue and tape in joining materials together.</td><td colspan="2">National Curriculum

Pupils should be taught:
The knowledge, understanding and skills needed to engage in an iterative process of designing and making.
To work in a range of relevant contexts [for example, the home and school, gardens and playgrounds, the local community, industry and the wider environment].
To design purposeful, functional, appealing products for themselves and other users based on design criteria
To generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and, where appropriate, information and communication technology
To select from and use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing]
To select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics
To explore and evaluate a range of existing products
To evaluate their ideas and products against design criteria
To build structures, exploring how they can be made stronger, stiffer and more stable
To explore and use mechanisms [for example, levers, sliders, wheels and axles], in their products.</td><td colspan="4">National Curriculum

Pupils should be taught:
The knowledge, understanding and skills needed to engage in an iterative process of designing and making.
To work in a range of relevant contexts [for example, the home, school, leisure, culture, enterprise, industry and the wider environment].
To 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
To generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately
To select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities investigate and analyse a range of existing products
To evaluate their ideas and products against their own design criteria and consider the views of others to improve their work
To understand how key events and individuals in design and technology have helped shape the world
To apply their understanding of how to strengthen, stiffen and reinforce more complex structures
To understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages]
understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors]
To apply their understanding of computing to program, monitor and control their products.</td></tr>
<tr><td></td><td>Key Learning Outcomes</td><td colspan="2">Key Learning Outcomes</td><td>Key Learning Outcomes</td><td>Key Learning Outcomes</td><td>Key Learning Outcomes</td></tr>
<tr><td></td><td>measure, cut and join textiles
to make a product, with some support</td><td colspan="2">Templates and joining techniques

Designing
• Design a functional and appealing product for a chosen user and purpose based on simple design criteria.
• Generate, develop, model and communicate their ideas as appropriate through talking, drawing, templates, mock-ups and information and communication technology.

Making
• Select from and use a range of tools and equipment to perform practical tasks such as marking out, cutting, joining and finishing.
• Select from and use textiles according to their characteristics.

Evaluating
• Explore and evaluate a range of existing textile products relevant to the project being undertaken.
• Evaluate their ideas throughout and their final products against original design criteria.</td><td>2-D shape to 3-D product

Designing
• Generate realistic ideas through discussion and design criteria for an appealing, functional product fit for purpose and specific user/s.
• Produce annotated sketches, prototypes, final product sketches and pattern pieces.

Making
• Plan the main stages of making.
• Select and use a range of appropriate tools with some accuracy e.g. cutting, joining and finishing.
• Select fabrics and fastenings according to their functional characteristics e.g. strength, and aesthetic qualities e.g. pattern.

Evaluating
• Investigate a range of 3-D textile products relevant to the project.</td><td>Combining different fabric shapes

Designing
• Generate innovative ideas by carrying out research including surveys, interviews and questionnaires.
• Develop, model and communicate ideas through talking, drawing, templates, mock-ups and prototypes and, where appropriate, computer-aided design.
• Design purposeful, functional, appealing products for the intended user that are fit for purpose based on a simple design specification.</td><td>Using computer aided design (CAD) in textiles

Designing
• Generate innovative ideas through research including surveys, interviews and questionnaires.
• Develop, model and communicate ideas through talking, drawing, templates, mock-ups and prototypes including using computer-aided design.
• Design purposeful, functional, appealing products for the intended user that are fit for purpose based on a simple design specification.

Making</td></tr>
</table>

		Technical knowledge and understanding • Understand how simple 3-D textile products are made, using a template to create two identical shapes. • Understand how to join fabrics using different techniques e.g. running stitch, glue, over stitch, stapling. • Explore different finishing techniques e.g. using painting, fabric crayons, stitching, sequins, buttons and ribbons. • Know and use technical vocabulary relevant to the project.	• Test their product against the original design criteria and with the intended user. • Take into account others' views. • Understand how a key event/individual has influenced the development of the chosen product and/or fabric. **Technical knowledge and understanding** • Know how to strengthen, stiffen and reinforce existing fabrics. • Understand how to securely join two pieces of fabric together. • Understand the need for patterns and seam allowances. • Know and use technical vocabulary relevant to the project.	**Making** • Produce detailed lists of equipment and fabrics relevant to their tasks. • Formulate step-by-step plans and, if appropriate, allocate tasks within a team. • Select from and use a range of tools and equipment to make products that are accurately assembled and well finished. Work within the constraints of time, resources and cost. **Evaluating** • Investigate and analyse textile products linked to their final product. • Compare the final product to the original design specification. • Test products with intended user and critically evaluate the quality of the design, manufacture, functionality and fitness for purpose. • Consider the views of others to improve their work. **Technical knowledge and understanding** • A 3-D textile product can be made from a combination of accurately made pattern pieces, fabric shapes and different fabrics. • Fabrics can be strengthened, stiffened and reinforced where appropriate.	• Produce detailed lists of equipment and fabrics relevant to their tasks. • Formulate step-by-step plans and, if appropriate, allocate tasks within a team. • Select from and use a range of tools and equipment, including CAD, to make products that are accurately assembled and well finished. Work within the constraints of time, resources and cost. **Evaluating** • Investigate and analyse textile products linked to their final product. • Compare the final product to the original design specification. • Test products with intended user, where safe and practical, and critically evaluate the quality of the design, manufacture, functionality and fitness for purpose. • Consider the views of others to improve their work. **Technical knowledge and understanding** • A 3-D textile product can be made from a combination of accurately made pattern pieces, fabric shapes and different fabrics. • Fabrics can be strengthened
	Final Outcome	**Final Outcome**	**Final Outcome**	**. Final Outcome**	**Final Outcome**
	• To learn to construct with a purpose in mind. • Selects tools and techniques needed to shape, assemble and join materials • Bookmarks • Calendar	**Templates and joining techniques** • glove puppet • finger puppet • simple bag • clothes for teddy/soft toy/class doll • fabric placemat	**2-D shape to 3-D product** • purse/wallet • soft toy/mascot • apron • fashion accessory • beach bag • shoe bag • pencil case • story sack	**Combining different fabric shapes** • tablet case • mobile phone carrier shopping bag • insulating bag • hat/cap • garden tool belt • slippers sandals • fabric advent calendar • fabric doorstop	**Using computer aided design (CAD) in textiles** • tablet case • mobile phone carrier shopping bag • insulating bag • hat/cap • garden tool belt • slippers • sandals • fabric advent calendar

					• fabric doorstop
	Key vocabulary	**Key vocabulary**	**Key Vocabulary**	**Key Vocabulary**	**Key Vocabulary**
	Key Vocabulary Joining and finishing techniques Tools Fabrics Join Decorate	Templates and joining techniques names of existing products joining and finishing techniques tools fabrics components template pattern pieces mark out features suitable quality mock-up design brief design criteria make evaluate user purpose function purpose function	2-D shape to 3-D product 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 Fabric Names of fabrics Fastening Compartment Zip Button Structure finishing techniques Strength Weakness Stiffening Templates Stitch Seam Seam allowance	Combining different fabric shapes design criteria annotate, design decisions functionality innovation authentic user purpose evaluate mock-up prototype Seam Seam allowance Wadding Reinforce Right side Wrong side Hem Template Pattern pieces Name of textiles and fastenings used Pins Needles Thread Fastenings	Using computer aided design (CAD) in textiles computer aided design (CAD) computer aided manufacture (CAM) font lettering text graphics menu scale modify repeat copy flip design brief design criteria design decisions innovative prototype seam seam allowance wadding reinforce right side wrong side hem template pattern pieces fastenings pins needles thread pinking shears fastenings iron transfer paper annotate functionality innovation authentic user purpose evaluate mock-up ptototype

Design and Technology – Progression of Skills

Electrical systems	EYFS	Year 1	Year 2	Year	Year 4	Year 5	Year 6
				National Curriculum **Pupils should be taught:** • The knowledge, understanding and skills needed to engage in an iterative process of designing and making. • To work in a range of relevant contexts [for example, the home, school, leisure, culture, enterprise, industry and the wider environment]. • To 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 • To generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately • To select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities investigate and analyse a range of existing products • To evaluate their ideas and products against their own design criteria and consider the views of others to improve their work • To understand how key events and individuals in design and technology have helped shape the world • To apply their understanding of how to strengthen, stiffen and reinforce more complex structures • To understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages] • understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors] • To apply their understanding of computing to program, monitor and control their products.		
	Key Learning Outcomes	**Key Learning Outcomes**	**Key Learning Outcomes**	**Key Learning Outcomes**	**Key Learning Outcomes**	**Key Learning Outcomes**	**Key Learning Outcomes**
				Simple programming and control **Designing** • Gather information about users' needs and wants, and develop design criteria to inform the design of products that are fit for purpose. • Generate, develop, model and communicate realistic ideas through discussion and, as appropriate, annotated sketches, cross-sectional and exploded diagrams. **Making** • Order the main stages of making. • Select from and use tools and equipment to cut, shape, join and finish with some accuracy. • Connect simple electrical components and a battery in a series circuit to achieve a functional outcome.	**Simple Circuit and Switches** Designing • Gather information about needs and wants, and develop design criteria to inform the design of products that are fit for purpose, aimed at particular individuals or groups. • Generate, develop, model and communicate realistic ideas through discussion and, as appropriate, annotated sketches, cross-sectional and exploded diagrams. Making • Order the main stages of making. • Select from and use tools and equipment to cut, shape, join and finish with some accuracy. • Select from and use materials and components, including construction materials and electrical	**Monitoring and Control** **Designing** • Develop a design specification for a functional product that responds automatically to changes in the environment. • Generate, develop and communicate ideas through discussion, annotated sketches and pictorial representations of electrical circuits or circuit diagrams. **Making** • Formulate a step-by-step plan to guide making, listing tools, equipment, materials and components. • Competently select and accurately assemble materials, and securely connect electrical components to produce a reliable, functional product.	**More Complex Switches and circuits** **Designing** • 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. • Generate and develop innovative ideas and share and clarify these through discussion. • Communicate ideas through annotated sketches, pictorial representations of electrical circuits or circuit diagrams. **Making** • Formulate a step-by-step plan to guide making, listing tools, equipment, materials and components. • Competently select and accurately assemble

				• Program a standalone control box, microcontroller or interface box to enhance the way the product works. **Evaluating** • Investigate and analyse a range of existing battery-powered products, including pre-programmed and programmable products. • Evaluate their ideas and products against their own design criteria and identify the strengths and areas for improvement in their work. **Technical knowledge and understanding** • Understand and use computing to program and control products containing electrical systems, such as series circuits incorporating switches, bulbs and buzzers. • Know and use technical vocabulary relevant to the project.	components according to their functional properties and aesthetic qualities. Evaluating • Investigate and analyse a range of existing battery-powered products. • Evaluate their ideas and products against their own design criteria and identify the strengths and areas for improvement in their work. Technical knowledge and understanding • Understand and use electrical systems in their products, such as series circuits incorporating switches, bulbs and buzzers. • Apply their understanding of computing to program and control their products. • Know and use technical vocabulary relevant to the project.	• Create and modify a computer control program to enable their electrical product to respond to changes in the environment. **Evaluating** • Continually evaluate and modify the working features of the product to match the initial design specification. • Test the system to demonstrate its effectiveness for the intended user and purpose. **Technical knowledge and understanding** • Understand and use electrical systems in their products. • Understand the use of computer control systems in products. • Apply their understanding of computing to program, monitor and control their products. • Know and use technical vocabulary relevant to the project.	materials, and securely connect electrical components to produce a reliable, functional product. • Create and modify a computer control program to enable an electrical product to work automatically in response to changes in the environment. **Evaluating** • Continually evaluate and modify the working features of the product to match the initial design specification. • Test the system to demonstrate its effectiveness for the intended user and purpose. • Investigate famous inventors who developed ground-breaking electrical systems and components. **Technical knowledge and understanding** • Understand and use electrical systems in their products. • Apply their understanding of computing to program, monitor and control their products. • Know and use technical vocabulary relevant to the project.
	Final Outcome	**Final Outcome**	**Final Outcome**	**Final Outcome**	**Final Outcome**	**Final Outcome**	**Final Outcome**
				Simple programming and control • illuminated sign • noise-making toy vehicle • nightlight • display lighting	**Simple Circuit and Switches** • siren for a toy vehicle • reading light • noise-making toy nightlight • illuminated sign • torches • table lamp lighting for display • hands-free head lamp buzzer for school office	**Monitoring and Control** • cycle or vehicle alarm security lighting system alarm for valuable artefact garden light • automatic • nightlight • electronic moneybox alarm for school shed	**More Complex Switches and Circuits** • vehicle alarm • security lighting system alarm for valuable artefact automatic nightlight electrical board game • alarm for school shed

Design and Technology – Progression of Skills

	Key vocabulary	Key vocabulary	Key Vocabulary	Key Vocabulary	Key Vocabulary	Key Vocabulary	Key Vocabulary
				Simple programming and control series circuit fault connection toggle switch push-to-make switch push-to-break switch battery battery holder light emitting diode (LED) bulb bulb holder USB cable Wire Insulator Conductor crocodile clip control program system input device output device process user purpose function prototype design criteria innovative appealing design brief	Simple Circuit and Switches 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	Monitoring and Control reed switch toggle switch push-to-make switch push-to-break switch light dependent resistor (LDR) tilt switch light emitting diode (LED) bulb bulb holder battery battery holder USB cable Wire Insulator Conductor crocodile clip control program system input device output device series circuit parallel circuit function innovative design specification design brief user purpose	**More Complex Switches and Circuits** 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