Design and Technology
Curriculum Progression of the Knowledge Essentials

Design Technology Curriculum

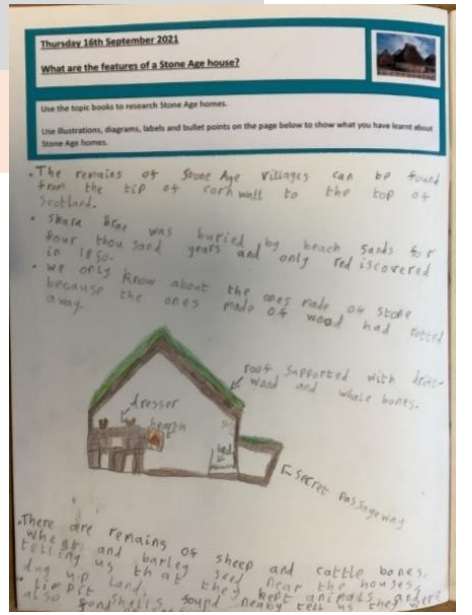
Knowledge Rich Curriculum

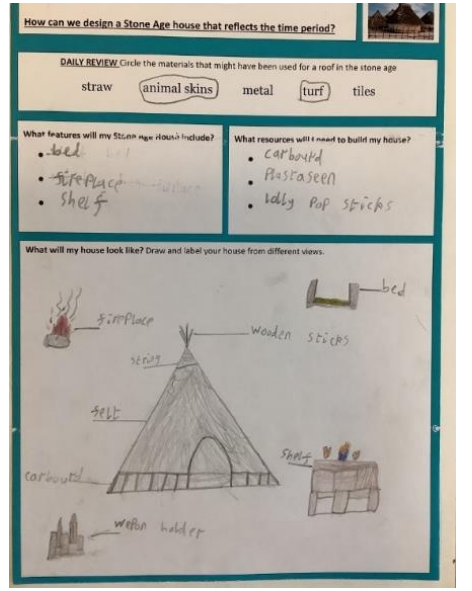
Knowledge has driven the philosophy in developing the Design Technology curriculum. The knowledge essentials specify what children should know in as much detail as possible and content sequenced such that there is a coherent flow. This ensures ideas build on secure foundations, staged towards challenging goals. Careful sequencing ensures that elements are regularly returned to, supporting pupils to accumulate knowledge over time, feeding previous topics into current topics supported by Practice and Retrieval strategies.

In designing the curriculum, we have considered a broad range of knowledge forms with a focus on being able to articulate substantive and disciplinary knowledge:

- **Substantive knowledge** is the content that teachers teach as established fact. It's basically the specific, factual content for the subjects, which must be connected into a careful sequence. To the right is an example in DT.
- **Disciplinary knowledge** is best described as the action taken within a particular subject to gain knowledge. It is also about what pupils learn about how that knowledge was established, its degree of certainty and how it continues to be revised.

The DT curriculum reflects careful thinking as to what is to be taught, the rationale for it, the sequencing of learning and the relationships between the forms of knowledge. As a result, pupils know more, remember more and can do more.



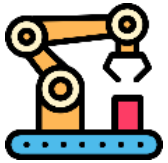


Design Technology Curriculum

How is the Design Technology Curriculum Organised?

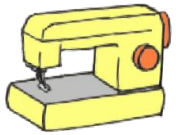
The subject has been planned with two key lenses – Pillars of Learning and Strands.

Pillars of Learning



Mechanisms – Mimic natural movements using mechanisms such as cams, followers, levers and sliders.

Construction – Material functional and aesthetic properties, strength and stability. Stiffen and reinforce structures.

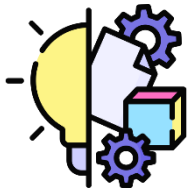


Textiles – Fastening, sewing, decorative and functional fabric techniques including cross stitch, blanket stitch and applique.

Cooking and Nutrition – Where food comes from, balanced diet, preparation and cooking skills. Kitchen hygiene and safety. Following recipes.

Electrical Systems – Operational series circuits, circuit components, circuit diagrams and symbols, combined to create various electrical products.

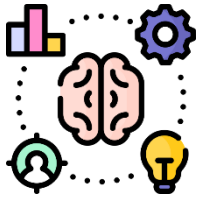
Strands



Design

Make

Evaluate



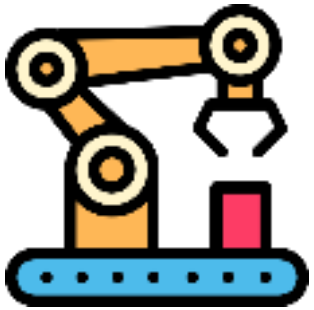
Technical Knowledge

Vocabulary

Design Technology Curriculum

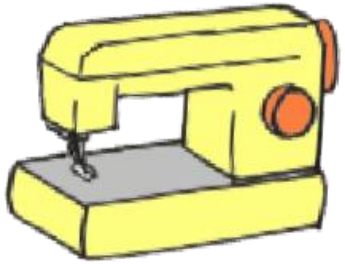
What are the Design and Technology Pillars of Learning?

Topics build knowledge sequentially with opportunities to revisit and build on children's prior learning – deepening knowledge and understanding. Links are made in learning through recurring themes throughout our curriculum.

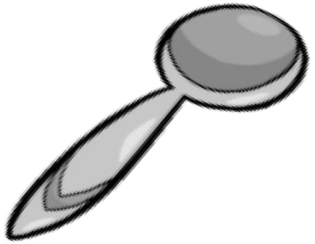


Mechanisms

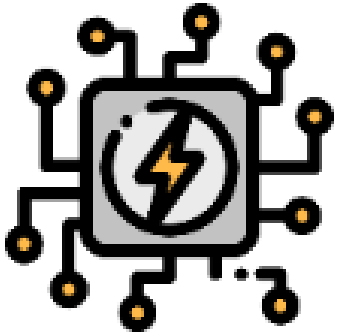
Construction Projects



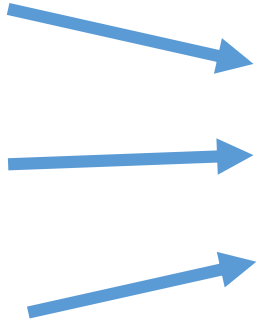
Textiles Projects

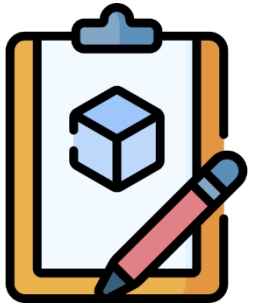


Food Projects



Electrical Systems – Key Stage 2





Design
Make
Evaluate
Technical Knowledge

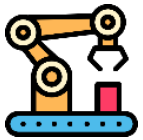
Curriculum

How is the Design Technology Curriculum Organised?

EYFS	A range of recipes linked to topics such as making pumpkin soup – Harvest 	Technological toys with knobs or pulleys, or real objects. Making toys work by pressing parts or lifting flaps to achieve effects, such as sound, movements or new images. 	A range of structures such as making houses for the Three Little Pigs Making objects from stories such as brushes for Farmer Duck 	A range of explorative activities such as threading and simple stitch work such as creating a remembrance poppy. 	***Activities through continuous provision***
Year 1	Cooking and Nutrition - Fruit/vegetable Smoothie 	Mechanisms - Moving story books with levers and sliders 	Structures - Windmills 	Textiles - Puppets 	
Year 2	Cooking and Nutrition – Healthy wrap 	Mechanisms - Moving monsters 	Structures -A chair for a character (link to the reading spine) 	Textiles - A pouch for Samuel Pepys 	
Year 3	Cooking and Nutrition - Eating Seasonally (crumble/tart using seasonal ingredients) 	Mechanisms / Pneumatic Systems - Pneumatic toys 	Structures - Stone Age timber frame houses 	Textiles - Cushions 	Electrical Systems / Electronic Posters 
Year 4	Cooking and Nutrition - Adapting a Recipe (Product that falls within a set budget and design brief) 	Mechanisms - Slingshot Cars 	Structures - Pavilions 	Textiles / Fastenings - Book sleeves 	Electrical Systems - Torches 
Year 5	Cooking and Nutrition - What Could Be Healthier? (Create recipes) 	Mechanisms - Pop Up Books 	Structures - Bridges (Design a bridge for Charles Waterton's first nature reserve in the world - Walton Hall) 	Textiles - Stuffed Toys 	Electrical Systems - Electric Greeting Cards 
Year 6	Cooking and Nutrition - Come Dine With Me (Three course meal) 	Mechanisms / Automata Toys 	Structures - Anderson Shelters 	Textiles - Waistcoats 	Electrical Systems - Steady Hand Games 

Pillars of Learning Progression

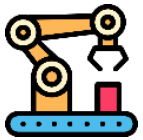
Mechanisms



Strand	Early Years	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Design 	Nursery • Works with a friend, copying ideas and developing skills together. • Children work independently to develop basic skills. • Is beginning to understand how to answer questions. • Understands 'who, what, where, when,' questions. Reception • Works with a friend, copying ideas and developing skills together. • Asks questions to find out more and to check they understand. what has been said to them. • Can answer a wide variety of questions independently. • Understands 'how' and 'why' questions. • Uses talk to help work out problems and organise thinking. ELG • Share their creations, explaining the process they have used. • Make comments about what they have heard and ask questions to clarify their understanding. • Hold conversation when engaged in back-and-forth exchanges with their teacher and peers. • Participate in small group, class and one-to-one discussions, offering their own ideas, using recently introduced vocabulary. • Express their ideas and feelings about their experiences.	• Design pages of a moving story book. • State what product they are designing and making. • Say whether their product is for themselves or other users. • Use scaffolded design criteria to help develop ideas. • Generate ideas by drawing on their own experience of story books. • Develop and communicate ideas by talking and drawing. • Explain how to adapt mechanisms, using bridges or guides to control the movement. • Use ICT, where appropriate, to develop and communicate ideas. For example describing visual representations of movement and sliders.	• Design a moving monster for a specific audience in accordance with a design criteria. • Consider how a design for a moving monster includes the linkage that will be used to make the monster move. • Say how they will make their products suitable for their intended users. • Use simple design criteria to help develop ideas. Create a class design criteria for a moving monster. • Say how their product will work. • Use knowledge of existing products to help come up with ideas. • Use ICT, where appropriate, to develop and communicate ideas.	• Design a toy which uses a pneumatic system and describe the purpose of the product. Indicate the design features and explain how particular parts of the product work. • Develop their own design criteria from a design brief. • Share ideas through discussion. • Generate ideas, focusing on the wants of the user. • Generate ideas using thumbnail sketches and exploded diagrams.	• Design a shape that reduces air resistance and describe the purpose of the product. Indicate the design features and explain how particular parts of the product work. • Develop their own design criteria and use these to inform their ideas. • Share and clarify ideas through discussion. • Generate realistic ideas, focusing on the needs of the user. • Make decisions that take into account the availability of resources. • Draw a net to create a structure from. • Choose shapes that increase or decrease speed as a result of air resistance. • Personalise a design.	• Design a pop-up book which uses a mixture of structures and mechanisms and describe the purpose of the product. Indicate the design features and explain how particular parts of the product work. • Identify the needs, wants and preferences of particular individuals and groups. • Develop a simple design specification to guide their thinking. • Share and clarify ideas through discussion and modelling ideas. • Generate ideas, drawing on research. • Name each mechanism, input and output accurately. • Storyboard ideas for a book.	• Experiment with a range of cams, creating a design for an automata toy based on a choice of cam to create a desired movement and be able describe the purpose of the product. Indicate the design features and explain how particular parts of the product work. • Understand how linkages change the direction of a force. • Identify the needs, wants, preferences and values of particular individuals and groups. • Develop a design specification to guide their thinking. • Share and clarify ideas through discussion, modelling ideas through protypes and pattern pieces. • Generate innovative ideas, drawing on research. • Understand and draw cross-sectional diagrams to show the inner-working

Pillars of Learning Progression

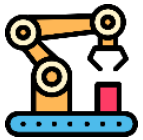
Mechanisms



Strand	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Make 	Nursery • Selects and uses activities and resources, with help, when needed. Reception • Uses one-handed tools and equipment. • Makes something with clear intentions. • Makes something that they give meaning to. • Selects and uses activities and resources without help. ELG • Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function.	• Follow a design to create moving models that use levers and sliders. • Select from a range of tools and equipment to perform practical tasks (for example cutting, shaping, joining and finishing). • Explore a range of mechanical components. • Mark out and cut materials and components. • Assemble, join and combine materials and components.	• Plan by suggesting what to do next. • Select from a range of tools and equipment, explaining their choices. • Select from a range of materials and components according to their characteristics. • Use a range of mechanical components. • Measure, mark out, cut and shape materials and components neatly. • Assemble, join and combine materials and components and use finishing techniques including those from art and design. • Make linkages using card for levers and split pins for pivots. • Experiment with linkages adjusting the widths, lengths and thicknesses of card used.	• Select tools suitable for the task. • Select materials and components suitable for the task. • Measure, mark out, cut and shape materials and components with some accuracy. • Assemble, join and combine materials and components with some accuracy. • Create a pneumatic system to create a desired motion. • Build secure housing for a pneumatic system. • Create different types of pneumatic systems to make a functional and appealing pneumatic toy. • Manipulate materials to create different effects by cutting, creasing, folding, weaving.	• Select tools and equipment suitable for the task. • Select materials and components suitable for the task explaining their choice of materials and components. • Order the main stages in making. • Apply a range of finishing techniques, including those from art and design, with some accuracy. • Make a model based on a chosen design.	• Select tools and equipment suitable for the task explaining their choice of tools and equipment. • Select materials and components suitable for the task explaining their choice of materials and components according to functional properties. • Produce appropriate lists of tools, equipment and materials that they need. • Measure, mark out, cut and shape materials and components with increasing accuracy. • Assemble, join and combine materials and components with increasing accuracy. • Apply a range of finishing techniques, including those from art and design, with increasing accuracy. • Make mechanisms and/or structures using sliders, pivots and folds to produce movement. • Use layers and spacers to hide the workings of mechanical parts for an aesthetically pleasing result.	• Select tools and equipment suitable for the task explaining their choice of tools and equipment in relation to the skills and techniques they will be using. • Select materials and components suitable for the task explaining their choice of materials and components according to functional properties and aesthetic qualities. • Select appropriate materials based on the materials being joined and the speed at which the glue needs to dry/set. • Measure, mark and check the accuracy of the jelutong and dowel pieces required. • Assemble components accurately to make a stable frame. • Formulate step-by-step plans as a guide to making that includes a list of tools, equipment and materials needed. • Accurately apply a range of finishing techniques, including those from art and design.

Pillars of Learning Progression

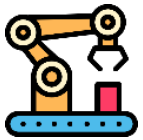
Mechanisms



Strand	Early Years	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Evaluate 	Nursery • Works with a friend, copying ideas and developing skills together. • Children can articulate what they do and don't like. Reception • Returns to work on another occasion to edit and improve. • Creates collaboratively, sharing ideas with peers and developing skills further. • Works with a friend, copying ideas and developing skills together. • Expresses a point of view and debates when they disagree. ELG • Share their creations, explaining the process they have used. • Offer explanations for why things might happen.	• Make simple judgements about their moving story book pages and ideas. • Explore existing products discussing what they are, how they work and what they like/dislike about them.	• Make simple judgements about their products and ideas against design criteria. • Suggest how their products could be improved. • Explore existing products discussing what they are, who they are for, what they are for, how they work, how they are used, where they might be used, what materials they are made from and what they like/dislike about them.	• Refer to their design criteria as they design and make. • Use the views of others to improve designs. • Understand the purpose of exploded-diagrams through the eyes of a designer and their client.	• Use their design criteria to evaluate their completed products. • Investigate who designed and made the products, where products were designed and made and whether products can be recycled or reused. • Use the views of others to improve designs. Test and modify the outcome, suggesting improvements. • Evaluate the speed of a final product based on: the effect of shape on speed and the accuracy of workmanship on performance.	• Critically evaluate the quality of the design, manufacture and fitness for purpose of their products as they design and make. • Investigate and analyse who designed and made the products, where products were designed and made and whether products can be recycled or reused. • Evaluate the work of others and receive feedback on own work. Suggest points for improvement.	• Critically evaluate the quality of the design, manufacture and fitness for purpose of their products as they design and make, evaluating their ideas and products against their original design specification. • Investigate and analyse how much products cost to make, how innovative products are, how sustainable the materials in products are and what impact products have beyond their intended purpose. • Evaluate the work of others and receive feedback on own work applying points of improvements. Describe changes they would make/do if they were to do the project again.
				• Investigate how well products have been designed, how well products have been made, why materials have been chosen, what methods have been used, how well products work, how well products achieve their purposes and how well products meet user needs and wants. • Know about inventors, designers, engineers and manufacturers who have developed ground-breaking products.			

Pillars of Learning Progression

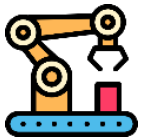
Mechanisms



Strand	Early Years	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Technical Knowledge 	Nursery • Knows that they need some resources e.g. an apron. • Explore collections of materials, identifying similar and different properties. • Explores and talks about forces (push and pull). • Explores how things work. Reception • Explores the natural world around them. • Talks about differences between materials and changes they notice. • Develop small motor skills to use a range of tools competently, safely and confidently. • Explores non-contact forces (gravity and magnetism). • Explores and talks about forces (push and pull). • Knows which resources they need to carry out their intended activity. • Improved vocab – flexible, rigid, smooth, rough, bendy, hard. ELG • Share their creations, explaining the process they have used.	• Know that a mechanism is the parts of an object that move together. • Know that a slider mechanism moves an object from side to side. • Know that a slider mechanism has a slider, slots, guides and an object. • Know that bridges and guides are bits of card that purposefully restrict the movement of the slider. • Know that in Design and technology we call a plan a 'design'.	• Know that mechanisms are a collection of moving parts that work together as a machine to produce movement. • Know that there is always an input and output in a mechanism. • Know that an input is the energy that is used to start something working. • Know that an output is the movement that happens as a result of the input. • Know that a lever is something that turns on a pivot. • Know that a linkage mechanism is made up of a series of levers. • Know some real-life objects that contain mechanisms.	• Apply prior knowledge and increasing knowledge of nets. • Understand how pneumatic systems work. • Understand that pneumatic systems can be used as part of a mechanism. • Know that pneumatic systems operate by drawing in, releasing and compressing air. • Understand how sketches, drawings and diagrams can be used to communicate design ideas. • Know that exploded-diagrams are used to show how different parts of a product fit together. • Know that thumbnail sketches are small drawings to get ideas down on paper quickly. • Learn that different types of drawings are used in design to explain ideas clearly.	• Understand that all moving things have kinetic energy. • Understand that kinetic energy is the energy that something (object/person) has by being in motion. • Know that air resistance is the level of drag on an object as it is forced through the air. • Understand that the shape of a moving object will affect how it moves due to air resistance. • Understand that products change and evolve over time. • Know that aesthetics means how an object or product looks in design and technology. • Know that a template is a stencil you can use to help you draw the same shape accurately. • Know that a birds-eye view means a view from a high angle (as if a bird in flight). • Know that graphics are images which are designed to explain or advertise something.	• Know that mechanisms control movement. • Understand that mechanisms can be used to change one kind of motion into another. • Understand how to use sliders, pivots and folds to create paper-based mechanisms. • Know that a design brief is a description of what I am going to design and make. • Know that designers often want to hide mechanisms to make a product more aesthetically pleasing.	• Understand that the mechanism in an automata uses a system of cams, axles and followers. • Understand that different shaped cams produce different outputs. • Know that an automata is a hand powered mechanical toy. • Know that a cross-sectional diagram shows the inner workings of a product. • Understand how to use a bench hook and saw safely. • Know that a set square can be used to help mark 90° angles.
				• Know how to use learning from science to help design and make products that work. • Know how to use learning from mathematics to help design and make products that work.			

Pillars of Learning Progression

Mechanisms



Strand	Early Years	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Vocabulary 	Nursery: Move, push, pull Reception: Forwards/ Backwards/ Wheels/ Side to side	Assemble Design Evaluation Mechanism Model Sliders Stencil Target Audience Template Test	Input Lever Linear Motion Linkage Mechanical Motion Oscillating Motion Output Pivot Reciprocating Motion Rotary Motion Survey	Exploded-diagram Function Input Lever Linkage Mechanism Motion Net Output Pivot Pneumatic system Thumbnail sketch	Aesthetic Air resistance Chassis Design Design Criteria Function Graphics Kinetic Energy Mechanism Net Structure	Computer-aided design (CAD) Caption Exploded-diagram Function Input Linkage Mechanism Motion Output Pivot Prototype Slider Structure Template	Assembly-diagram Automata Axle Bench hook Cam Dowel Drill bits Follower Frame Hand drill Jelutong Linkage Research

Pillars of Learning Progression

Construction

Strand	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Design 	Nursery • Works with a friend, copying ideas and developing skills together. • Children work independently to develop basic skills. • Is beginning to understand how to answer questions. • Understands 'who, what, where, when,' questions. Reception • Works with a friend, copying ideas and developing skills together. • Asks questions to find out more and to check they understand. what has been said to them. • Can answer a wide variety of questions independently. • Understands 'how' and 'why' questions. • Uses talk to help work out problems and organise thinking. ELG • Share their creations, explaining the process they have used. • Make comments about what they have heard and ask questions to clarify their understanding. • Hold conversation when engaged in back-and-forth exchanges with their teacher and peers. • Participate in small group, class and one-to-one discussions, offering their own ideas, using recently introduced vocabulary. • Express their ideas and feelings about their experiences.	• Design a windmill with a stable structure. • State what structure they are designing and making. • Use scaffolded design criteria to help develop ideas. • Describe what their structure is for. • Develop and communicate ideas by talking and drawing.	• Design a chair for an imaginary character in accordance with a design criteria. • Say how they will make their structure suitable for their intended users. • Use simple design criteria to help develop ideas. Create a class design criteria. • Use knowledge of existing products to help come up with ideas. • Model ideas by exploring materials and components and by making templates and mock-ups.	• Design a stone age house with key features to appeal to a specific person/purpose of the time period. Indicate the design features and explain how particular parts of the structure work. • Gather information about the wants of particular individuals and groups. • Develop their own design criteria from a design brief. • Share ideas through discussion. • Generate ideas, focusing on the wants of the user. • Design and/or decorate a stone age house on CAD software.	• Design a stable pavilion structure that is aesthetically pleasing and select materials to create a desired effect. Indicate the design features and explain how particular parts of the structure work. • Gather information about the needs and wants of particular individuals and groups. • Develop their own design criteria and use these to inform their ideas. • Share and clarify ideas through discussion. • Generate realistic ideas, focusing on the needs of the user. • Make decisions that take into account the availability of resources. • Personalise a design.	• Design a stable structure that is able to support weight and describe the purpose of the structure. Indicate the design features and explain how particular parts of the structure work. • Carry out research, using surveys and questionnaires. • Identify the needs, wants and preferences of particular individuals and groups. • Develop a simple design specification to guide their thinking. • Share and clarify ideas through discussion and modelling ideas. • Generate ideas, drawing on research. • Make decisions, taking account of availability of constraints such as time, resources and cost. • Design arch and truss bridges. • Create a frame structure with a focus on triangulation.	• Design an Anderson Shelter featuring a variety of different structures, giving careful consideration to how the structures will be used, considering effective and ineffective designs. • Carry out research, using surveys, questionnaires, interviews and web-based resources. • Identify the needs, wants, preferences and values of particular individuals and groups. • Develop a design specification to guide their thinking. • Share and clarify ideas through discussion, modelling ideas through protypes and pattern pieces. • Generate innovative ideas, drawing on research. • Establish and use a design criteria to help focus and evaluate work.

Pillars of Learning Progression

Construction

Strand	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Make 	Nursery • Builds simple models using walls, roofs and towers. • Builds walls to create enclosed spaces. • Builds towers by stackings objects. • Manipulates clay (rolls, cuts, squashes, pinches, twists…). • Makes marks in clay. • Selects and uses activities and resources, with help, when needed. • Use glue sticks and glue spatulas independently. • Use glue spatulas with support. • Use glue sticks with support. • Adds other materials to develop models (tissue paper, glitter…). Reception • Uses one-handed tools and equipment. • Is beginning to use scissors. Uses large tweezers, large nuts and bolts and is able to thread. Is able to use other large one-handed tools such as hammers. • Builds models which replicate those in real life. Can use a variety of resources – loose part play. • Builds simple models using walls, roofs and towers. • Makes something with clear intentions. • Makes something that they give meaning to. • Manipulates clay (rolls, cuts, squashes, pinches, twists…). • Selects and uses activities and resources without help. • Join items in a variety of ways – Sellotape, masking tape, string, ribbon. • Join items with glue or tape. • Use glue sticks and glue spatulas independently. • Adds other materials to develop models (tissue paper, glitter…). ELG • Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function.	• Make functioning turbines and axles which are assembled into a main supporting structure. • Select from a range of tools and equipment to perform practical tasks (for example cutting, shaping, joining and finishing). • With support, follow procedures for safety. • Explore a range of construction materials. • Mark out and cut materials and components. • Assemble, join and combine materials and components.	• Plan by suggesting what to do next. • Select from a range of tools and equipment, explaining their choices. • Select from a range of materials and components according to their characteristics. • Follow procedures for safety. • Use a range of construction materials. • Measure, mark out, cut and shape materials and components neatly. • Assemble, join and combine materials and components and use finishing techniques including those from art and design. • Create joints and structures. • Build a strong and stiff structure by folding paper.	• Select tools suitable for the task. • Select materials and components suitable for the task. • Measure, mark out, cut and shape materials and components with some accuracy. • Assemble, join and combine materials and components with some accuracy. • Construct a range of 3D geometric shapes using nets. • Create special features for individual designs. • Make facades from a range of recycled materials.	• Select tools and equipment suitable for the task. • Select materials and components suitable for the task explaining their choice of materials and components. • Order the main stages in making. • Apply a range of finishing techniques, including those from art and design, with some accuracy. • Make a variety of free standing frame structures of different shapes and sizes. • Reinforce corners to strengthen a structure.	• Select tools and equipment suitable for the task explaining their choice of tools and equipment. • Select materials and components suitable for the task explaining their choice of materials and components according to functional properties. • Produce appropriate lists of tools, equipment and materials that they need. • Measure, mark out, cut and shape materials and components with increasing accuracy. Independently measure and mark wood accurately. • Assemble, join and combine materials and components with increasing accuracy. • Use the correct techniques to saw safely. • Apply a range of finishing techniques, including those from art and design, with increasing accuracy. • Make a range of different shaped beam bridges. • Use triangulation for bracing to create truss bridges that span a given distance and support a load.	• Select tools and equipment suitable for the task explaining their choice of tools and equipment in relation to the skills and techniques they will be using. • Select materials and components suitable for the task explaining their choice of materials and components according to functional properties and aesthetic qualities. • Formulate step-by-step plans as a guide to making that includes a list of tools, equipment and materials needed. • Accurately apply a range of finishing techniques, including those from art and design. • Use techniques that involve a number of steps. • Demonstrate resourcefulness when tackling practical problems.

Pillars of Learning Progression

Construction

Strand	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Evaluate 	Nursery • Works with a friend, copying ideas and developing skills together. • Children can articulate what they do and don't like. Reception • Returns to work on another occasion to edit and improve. • Creates collaboratively, sharing ideas with peers and developing skills further. • Works with a friend, copying ideas and developing skills together. • Expresses a point of view and debates when they disagree. ELG • Share their creations, explaining the process they have used. • Offer explanations for why things might happen.	• Make simple judgements about their windmills and ideas. • Test the finished product.	• Make simple judgements about their products and ideas against design criteria. • Suggest how their products could be improved. • Explore existing products discussing what they are, who they are for, what they are for, how they work, how they are used, where they might be used, what materials they are made from and what they like/dislike about them.	• Refer to their design criteria as they design and make. • Use the views of others to improve designs.	• Use their design criteria to evaluate their completed products. • Investigate who designed and made the products, where products were designed and made and whether products can be recycled or reused. • Use the views of others to improve designs. Test and modify the outcome, suggesting improvements. • Consider effective and ineffective designs.	• Critically evaluate the quality of the design, manufacture and fitness for purpose of their products as they design and make. • Investigate and analyse who designed and made the products, where products were designed and made and whether products can be recycled or reused. • Evaluate the work of others and receive feedback on own work. Suggest points for improvement. • Compare 3D objects to a 2D design. • Test to destruction to evaluate the successful properties of a design and its materials. • Adapt and improve own bridge structure by identifying points of weakness and reinforcing them as necessary.	• Critically evaluate the quality of the design, manufacture and fitness for purpose of their products as they design and make, evaluating their ideas and products against their original design specification. • Investigate and analyse how much products cost to make, how innovative products are, how sustainable the materials in products are and what impact products have beyond their intended purpose. • Evaluate the work of others and receive feedback on own work applying points of improvements. Describe changes they would make/do if they were to do the project again.
				• Investigate 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 and how well products meet user needs and wants. • Know about inventors, designers, engineers and manufacturers who have developed ground-breaking products.			

Pillars of Learning Progression

Construction

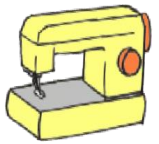
Strand	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Technical Knowledge 	Nursery • Knows that they need some resources e.g. an apron. • Explores clay. • Explore collections of materials, identifying similar and different properties. • Explores how things work. Reception • Explores the natural world around them. • Talks about differences between materials and changes they notice. • Knows how to secure boxes, toilet rolls, decorate bottles. • Develop small motor skills to use a range of tools competently, safely and confidently. • Explores and talks about forces (push and pull). • Knows which resources they need to carry out their intended activity. • Knows how to improve models (scrunch, twist, fold, bend, roll). • Improved vocab – flexible, rigid, smooth, rough, bendy, hard. ELG • Share their creations, explaining the process they have used.	• Understand that the shape of materials can be changed to improve the strength and stiffness of structures. • Understand that cylinders are a strong type of structure (e.g. the main shape used for windmills and lighthouses). • Understand that axles are used in structures and mechanisms to make parts turn in a circle. • Begin to understand that different structures are used for different purposes. • Know that a structure is something that has been made and put together. • Know that design criteria is a list of points to ensure the product meets the clients needs and wants. • Know that a windmill harnesses the power of wind for a purpose like grinding grain, pumping water or generating electricity. • Know that windmill turbines use wind to turn and make the machines inside work. • Know that a windmill is a structure with sails that are moved by the wind. • Know the three main parts of a windmill are the turbine, axle and structure.	• Know how freestanding structures can be made stronger, stiffer and more stable. • Know that shapes and structures with wide, flat bases or legs are the most stable. • Understand that the shape of a structure affects its strength. • Know that materials can be manipulated to improve strength and stiffness. • Know that a structure is something which has been formed or made from parts. • Know that a ‘stable’ structure is one which is firmly fixed and unlikely to change or move. • Know that a ‘strong’ structure is one which does not break easily. • Know that a ‘stiff’ structure or material is one which does not bend easily. • Know that natural structures are those found in nature. • Know that man-made structures are those made by people.	• Know how to make strong, stiff shell structures. • Understand that wide and flat based objects are more stable. • Know how to use learning from History (Stone Age) to help design and make the house. • Understand the features of a stone age house. • Know that a façade is the front of a structure • Know that a paper net is a flat 2D shape that can become a 3D shape once assembled. • Know that a design specification is a list of success criteria for a product.	• Build on prior knowledge of net structures and broadening knowledge of frame structures. • Understand what a frame structure is. • Know that a ‘free-standing’ structure is one which can stand on its own. • Know that a pavilions is a decorative building or structure for leisure activities. • Know that cladding can be applied to structures for different effects. • Know that aesthetics are how a product looks. • Know that a product’s function means its purpose. • Understand that the target audience means the person or group of people a product is designed for. • Know that architects consider light, shadow and patterns when designing.	• Understand some different ways to reinforce structures such as the importance of compression and tension in bridge structures. • Understand how triangles can be used to reinforce bridges. • Know that properties are words that describe the form and function of materials. • Understand why material selection is important based on their properties. • Understand the material (functional and aesthetic) properties of wood. • Understand the difference between arch, beam, truss and suspension bridges. • Understand how to carry and use a saw safely. • Know how to use learning from History (Industrial Revolution).	• Understand that complex structures can be strengthened using bracing. • Know that structures can be strengthened by manipulating materials and shapes. • Understand what a 'footprint plan’ is. • Understand that in the real world, design, can impact users in positive and negative ways. • Know that a prototype is a cheap model to test a design idea. • Know how to use learning from History (WWII).
				• Know how to use learning from science to help design and make products that work. • Know how to use learning from mathematics to help design and make products that work.			

Pillars of Learning Progression

Construction

Strand	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Vocabulary 	Nursery: Build, bricks, cardboard, box, glue, Lego or Duplo Reception: Create, cello tape, junk modelling, branches, natural materials, fort, tarpaulin, tools	Client Design Evaluation Net Stable Strong Test Weak Windmill Turbine Axle	Function Man-made Mould Natural Stable Stiff Strong Structure Test Weak	2D Shapes 3D Shapes Design Criteria Evaluate Façade Feature Recyclable Scoring Stable Structure Weak Tab	Aesthetic Cladding Design Criteria Evaluation Frame structure Function Inspiration Pavilion Reinforce Stable Structure Target Audience Target Customer Texture Theme	Abutment Arched bridge Beam bridge Coping saw File Mark out Material properties Reinforce Sandpaper Set square Suspension bridge Tenon saw Truss bridge Tension	Reinforce Stability Temporary Permanent Innovation Functional Bracing Natural materials Corrugated iron Bench hook Cladding Coping saw Dowel Jelutong Landscape Modify Tenon saw Vice

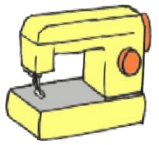
Pillars of Learning Progression



Textiles

Strand	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Design 	Nursery • Works with a friend, copying ideas and developing skills together. • Children work independently to develop basic skills. • Is beginning to understand how to answer questions. • Understands 'who, what, where, when,' questions. Reception • Works with a friend, copying ideas and developing skills together. • Asks questions to find out more and to check they understand. what has been said to them. • Can answer a wide variety of questions independently. • Understands 'how' and 'why' questions. • Uses talk to help work out problems and organise thinking. ELG • Share their creations, explaining the process they have used. • Make comments about what they have heard and ask questions to clarify their understanding. • Hold conversation when engaged in back-and-forth exchanges with their teacher and peers. • Participate in small group, class and one-to-one discussions, offering their own ideas, using recently introduced vocabulary. • Express their ideas and feelings about their experiences.	• Use a template to create a design for a puppet. • State what product they are designing and making. • Say whether their product is for themselves or other users. • Use scaffolded design criteria to help develop ideas. • Generate ideas by drawing on their own experience. • Develop and communicate ideas by talking and drawing. • Use ICT, where appropriate, to develop and communicate ideas.	• Design a pouch for Samuel Pepys in accordance with a design criteria. • Say how they will make their products suitable for their intended users. • Use simple design criteria to help develop ideas. Create a class design criteria for a pouch. • Say how their product will work. • Use knowledge of existing products to help come up with ideas. • Model ideas by exploring materials and components and by making templates and mock-ups. • Use ICT, where appropriate, to develop and communicate ideas.	• Design a cushion to be made from a template of an existing cushion, describing the purpose of the product. Indicate the design features and explain how the product fits its purpose. • Gather information about the wants of particular individuals and groups. • Develop their own design criteria from a design brief. • Share ideas through discussion. • Generate ideas, focusing on the wants of the user.	• Design a personalised book sleeve and describe the purpose of the product. Indicate the design features and explain how particular parts of the product work. • Gather information about the needs and wants of particular individuals and groups. • Develop their own design criteria and use these to inform their ideas. • Share and clarify ideas through discussion. • Generate realistic ideas, focusing on the needs of the user. • Make decisions that take into account the availability of resources.	• Design a stuffed toy considering the main component shapes required and creating an appropriate template. • Describe the purpose of the product Indicating the design features and explaining explain how the product fits its purpose. • Carry out research, using surveys and questionnaires. • Identify the needs, wants and preferences of particular individuals and groups. • Develop a simple design specification to guide their thinking. • Consider the proportions of individual components. • Share and clarify ideas through discussion and modelling ideas. • Generate ideas, drawing on research. • Make decisions, taking account of availability of constraints such as time, resources and cost.	• Design a waistcoat and describe the purpose of the product. Indicate the design features and explain how particular parts of the product work. • Carry out research, using surveys, questionnaires, interviews and web-based resources. • Identify the needs, wants, preferences and values of particular individuals and groups. • Develop a design specification to guide their thinking. • Share and clarify ideas through discussion, modelling ideas through protypes and pattern pieces. • Generate innovative ideas, drawing on research. • Make design decisions, taking account of availability of constraints such as time, resources and cost.

Pillars of Learning Progression

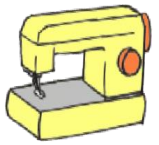


Textiles

Strand	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Make 	Nursery • Selects and uses activities and resources, with help, when needed. • Beginning to weave (gross motor). Reception • Uses one-handed tools and equipment. • Is beginning to use scissors. Uses large tweezers, large nuts and bolts and is able to thread. Is able to use other large one-handed tools such as hammers. • Makes something with clear intentions. • Makes something that they give meaning to. • Selects and uses activities and resources without help. • Join items in a variety of ways – Sellotape, masking tape, string, ribbon. • Weave (fine motor). ELG • Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function.	• Follow instructions to cut and assemble a puppet. • Select from a range of tools and equipment to perform practical tasks (for example joining, sewing, finishing). • With support, follow procedures for safety. • Explore a range of textiles. • Mark out and cut materials and components. • Assemble, join and combine materials and components.	• Plan by suggesting what to do next. • Select from a range of tools and equipment, explaining their choices. • Select from a range of materials and components according to their characteristics. • Follow procedures for safety. • Use a range of textiles. • Measure, mark out, cut and shape materials and components neatly. • Assemble, join and combine materials and components and use finishing techniques including those from art and design. • Thread a needle, with support. • Sew running stitch, with evenly spaced, neat, even stitches to join fabric. • Neatly pin and cut fabric using a provided template.	• Select tools suitable for the task. • Select materials and components suitable for the task. • Measure, mark out, cut and shape materials and components with some accuracy. • Assemble, join and combine materials and components with some accuracy. • Follow design criteria to create a cushion. • Thread needles with greater independence. • Tie knots with greater independence. • Sew cross stitch to join fabric. • Decorate fabric using appliqué.	• Select tools and equipment suitable for the task. • Select materials and components suitable for the task explaining their choice of materials and components. • Order the main stages in making. • Apply a range of finishing techniques, including those from art and design, with some accuracy. • Make and test a paper template with accuracy and in keeping with the design criteria. • Measure, mark and cut fabric using a paper template. • Select a stitch style to join fabric, working neatly sewing small neat stitches. • Incorporate fastening to a design.	• Select tools and equipment suitable for the task explaining their choice of tools and equipment. • Select materials and components suitable for the task explaining their choice of materials and components according to functional properties. • Produce appropriate lists of tools, equipment and materials that they need. • Measure, mark out, cut and shape materials and components with increasing accuracy. • Assemble, join and combine materials and components with increasing accuracy. • Apply a range of finishing techniques, including those from art and design, with increasing accuracy. • Create a 3D stuffed toy from a 2D design. • Create strong and secure blanket stitches. • Thread needles independently. • Use applique to attach pieces of fabric decoration.	• Select tools and equipment suitable for the task explaining their choice of tools and equipment in relation to the skills and techniques they will be using. • Select materials and components suitable for the task explaining their choice of materials and components according to functional properties and aesthetic qualities. • Formulate step-by-step plans as a guide to making that includes a list of tools, equipment and materials needed. • Accurately apply a range of finishing techniques, including those from art and design. • Use techniques that involve a number of steps. • Demonstrate resourcefulness when tackling practical problems. • Sew a strong running stitch, making small, neat stitches and following the edge. • Tie strong knots. • Sew accurately with even regularity of stitches.

Pillars of Learning Progression

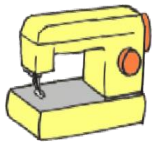
Textiles



Strand	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Evaluate 	Nursery • Works with a friend, copying ideas and developing skills together. • Children can articulate what they do and don't like. Reception • Returns to work on another occasion to edit and improve. • Creates collaboratively, sharing ideas with peers and developing skills further. • Works with a friend, copying ideas and developing skills together. • Expresses a point of view and debates when they disagree. ELG • Share their creations, explaining the process they have used. • Offer explanations for why things might happen.	• Make simple judgements about their puppets and ideas. • Explore existing products discussing what they are, how they work and what they like/dislike about them.	• Make simple judgements about their products and ideas against design criteria. • Suggest how their products could be improved. • Explore existing products discussing what they are, who they are for, what they are for, how they work, how they are used, where they might be used, what materials they are made from and what they like/dislike about them. • Identify aspects of their peers' work that they particularly like and why.	• Refer to their design criteria as they design and make. • Use the views of others to improve designs. • Evaluate an end product and think of other ways in which to create similar items.	• Use their design criteria to evaluate their completed products. • Investigate who designed and made the products, where products were designed and made and whether products can be recycled or reused. • Use the views of others to improve designs. Test and modify the outcome, suggesting improvements. • Articulate the advantages and disadvantages of different fastening types.	• Critically evaluate the quality of the design, manufacture and fitness for purpose of their products as they design and make. • Investigate and analyse who designed and made the products, where products were designed and made and whether products can be recycled or reused. • Evaluate the work of others and receive feedback on own work. Suggest points for improvement.	• Critically evaluate the quality of the design, manufacture and fitness for purpose of their products as they design and make, evaluating their ideas and products against their original design specification. • Evaluate the work of others and receive feedback on own work applying points of improvements. Describe changes they would make/do if they were to do the project again.
				• Investigate how well products have been designed, how well products have been made, why materials have been chosen, what methods have been used, how well products work, how well products achieve their purposes and how well products meet user needs and wants. • Know about inventors, designers, engineers and manufacturers who have developed ground-breaking products.			

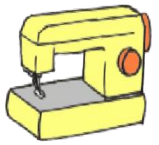
Pillars of Learning Progression

Textiles



Strand	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Technical Knowledge 	Nursery • Knows that they need some resources e.g. an apron. • Explore collections of materials, identifying similar and different properties. • Explores how things work. Reception • Explores the natural world around them. • Talks about differences between materials and changes they notice. • Develop small motor skills to use a range of tools competently, safely and confidently. • Knows which resources they need to carry out their intended activity. ELG • Share their creations, explaining the process they have used.	• Know that 'joining technique' means connecting two pieces of material together. • Know that there are various temporary methods of joining fabric by using staples. glue or pins. • Understand that different techniques for joining materials can be used for different purposes. • Understand that a template (or fabric pattern) is used to cut out the same shape multiple times. • Know that drawing a design idea is useful to see how an idea will look.	• Know that a 3-D textiles product can be assembled from two identical fabric shapes. • Identify parts of a needle (point and eye). • Understand the alternative ways of joining fabrics and embellishments. • Know that sewing is a method of joining fabric. • Know that different stitches can be used when sewing. • Understand the importance of tying a knot after sewing the final stitch. • Know that a thimble can be used to protect my fingers when sewing.	• Know that a single fabric shape can be used to make a 3D textiles product. • Understand that fabrics can be layered for effect. • Know different stitch types. • Know that applique is a way of mending or decorating a textile by applying smaller pieces of fabric. • Know that when two edges of fabric have been joined together it is called a seam. • Know that it is important to leave space on the fabric for the seam. • Understand that some products are turned inside out after sewing so the stitching is hidden.	• Understand the factors that contribute to product design. • Understand stitches and their benefits. • Know how to use templates. • Know that a fastening is something which holds two pieces of material together for example a zipper, toggle, button, press stud and Velcro. • Know that different fastening types are useful for different purposes. • Know that creating a mock up (prototype) of their design is useful for checking ideas and proportions.	• Know what a hidden seam is. • Know that blanket stitch is useful to reinforce the edges of a fabric material or join two pieces of fabric. • Understand that it is easier to finish simpler designs to a high standard. • Know that soft toys are often made by creating appendages separately and then attaching them to the main body. • Know that small, neat stitches which are pulled taut are important to ensure that the soft toy is strong and holds the stuffing securely. • Know how to use learning from Geography (Rainforest).	• Know how to create hidden seams. • Understand that it is important to design clothing with the client/ target customer in mind. • Know that using a template (or clothing pattern) helps to accurately mark out a design on fabric. • Understand the importance of consistently sized stitches.
				• Know how to use learning from science to help design and make products that work. • Know how to use learning from mathematics to help design and make products that work.			

Pillars of Learning Progression



Textiles

Strand	Early Years	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Vocabulary 	Nursery: Fabric, clothes, puppets, cushions, bags (items made from fabric) Reception: Material, sock puppet, soft, clean, dirty	Decorate Design Fabric Glue Model Hand Puppet Safety Pin Staple Stencil Template	Accurate Fabric Knot Pouch Running-stitch Sew Shape Stencil Template Thimble	Applique Cross-stitch Cushion Decorate Detail Fabric Patch Running-stitch Seam Stuffing	Aesthetic Assemble Book sleeve Design Criteria Evaluation Fabric Fastening Prototype Net Running-stitch Target audience Target customer Template	Annotate Appendage Blanket-stitch Design criteria Detail Evaluation Fabric Sew Shape Stuffed toy Stuffing Template	Adapt Annotate Fastening Knot Properties Running-stitch Seam Thread Unique Waistcoat Waterproof

Pillars of Learning Progression

Cooking and Nutrition

Strand	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Design 	Nursery • Works with a friend, copying ideas and developing skills together. • Children work independently to develop basic skills. • Is beginning to understand how to answer questions. • Understands 'who, what, where, when,' questions. Reception • Works with a friend, copying ideas and developing skills together. • Asks questions to find out more and to check they understand. what has been said to them. • Can answer a wide variety of questions independently. • Understands 'how' and 'why' questions. • Uses talk to help work out problems and organise thinking. ELG • Share their creations, explaining the process they have used. • Make comments about what they have heard and ask questions to clarify their understanding. • Hold conversation when engaged in back-and-forth exchanges with their teacher and peers. • Participate in small group, class and one-to-one discussions, offering their own ideas, using recently introduced vocabulary. • Express their ideas and feelings about their experiences.	• Design a fruit/vegetable smoothie. • State what product they are designing and making. • Use scaffolded design criteria to help develop ideas. • Generate ideas by drawing on their own experience. • Develop and communicate ideas by talking and drawing. • Use ICT, where appropriate, to develop and communicate ideas.	• Design a healthy wrap based on a food combination that work well together for a specific audience in accordance with a design criteria. • Say how they will make their products suitable for their intended users. • Use simple design criteria to help develop ideas. Create a class design criteria for a healthy wrap. • Use knowledge of existing products to help come up with ideas. • Use ICT, where appropriate, to develop and communicate ideas.	• Create a healthy and nutritious recipe for a savoury tart using seasonal ingredients, considering the taste, texture, smell and appearance of the dish. • Describe the purpose of the product indicating the design features and explaining particular parts of the product. • Gather information about the wants of particular individuals and groups. • Develop their own design criteria from a design brief. • Share ideas through discussion. • Generate ideas, focusing on the wants of the user.	• Design a biscuit within a given budget, drawing upon previous taste testing and describing the purpose of the product. Indicate the design features and explain particular parts of the product. • Gather information about the needs and wants of particular individuals and groups. • Develop their own design criteria and use these to inform their ideas. • Share and clarify ideas through discussion. • Generate realistic ideas, focusing on the needs of the user. • Make decisions that take into account the availability of resources.	• Adapt a traditional recipe, understanding that the nutritional value of a recipe alters if you remove, substitute or add additional ingredients. • Write an amended method for a recipe to incorporate the relevant changes to ingredients. • Design appealing packaging to reflect a recipe. • Carry out research, using surveys and questionnaires. • Identify the needs, wants and preferences of particular individuals and groups. • Develop a simple design specification to guide their thinking. • Share and clarify ideas through discussion and modelling ideas. • Generate ideas, drawing on research. • Make decisions, taking account of availability of constraints such as time, resources and cost.	• Experiment with a range of ingredients, creating a design for a three course meal and be able to describe the purpose of the product. Indicate the design features and explain how particular elements of the product work. • Develop a design specification to guide their thinking. • Share and clarify ideas through discussion, modelling ideas through protypes and pattern pieces. • Make design decisions, taking account of availability of constraints such as time, resources and cost. • Write a recipe, explaining the key steps, method and ingredients. Generate innovative ideas, drawing on research.

Pillars of Learning Progression

Cooking and Nutrition

Strand	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Make 	Nursery • Selects and uses activities and resources, with help, when needed. Reception • Uses one-handed tools and equipment. • Makes something with clear intentions. • Makes something that they give meaning to. • Selects and uses activities and resources without help. ELG • Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function.	• Select from a range of tools and equipment to perform practical tasks (for example mixing). • With support, follow procedures for safety and hygiene. • Explore a range of food ingredients. • Chop fruit and vegetables safely to make a smoothie. • Assemble, mix and combine ingredients. • Identify if a food is a fruit or a vegetable.	• Plan by suggesting what to do next. • Select from a range of tools and equipment, explaining their choices. • Select from a range of ingredients according to their characteristics. • Follow procedures for safety and hygiene. • Use a range of ingredients. • Slice food safely using the bridge or claw grip. • Assemble, mix and combine ingredients and use finishing techniques including those from art and design. • Construct a wrap that meets a design brief.	• Select tools suitable for the task. • Select ingredients suitable for the task. • Assemble, mix and combine ingredients with some accuracy. • Know how to prepare themselves and a work space to cook safely in, learning the basic rules to avoid food contamination. • Follow the instructions within a recipe.	• Select tools and equipment suitable for the task. • Select ingredients suitable for the task explaining their choice. • Order the main stages in making. • Apply a range of finishing techniques. • Follow a baking recipe. • Adapt a recipe.	• Select tools and equipment suitable for the task explaining their choice of tools and equipment. • Select ingredients suitable for the task explaining their choice according to functional properties. • Produce appropriate lists of tools, equipment and ingredients that they need. • Measure, cut and shape ingredients with increasing accuracy. • Assemble, mix and combine ingredients with increasing accuracy. • Cut and prepare vegetables and meat safely. • Use equipment safely, including knives, hot pans and hobs. • Know how to avoid cross-contamination . • Follow a step by step method carefully to make a recipe.	• Select tools and equipment suitable for the task explaining their choice of tools and equipment in relation to the skills and techniques they will be using. • Select ingredients suitable for the task explaining their choice according to functional properties and aesthetic qualities. • Formulate step-by-step plans as a guide to making that includes a list of tools, equipment and ingredients needed. • Use techniques that involve a number of steps. • Demonstrate resourcefulness when tackling practical problems. • Follow a recipe, including using the correct quantities of each ingredient. • Adapt a recipe based on research. • Work to a given timescale. • Work safely and hygienically with independence.

Pillars of Learning Progression

Cooking and Nutrition

Strand	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Evaluate 	Nursery • Works with a friend, copying ideas and developing skills together. • Children can articulate what they do and don't like. Reception • Returns to work on another occasion to edit and improve. • Creates collaboratively, sharing ideas with peers and developing skills further. • Works with a friend, copying ideas and developing skills together. • Expresses a point of view and debates when they disagree. ELG • Share their creations, explaining the process they have used. • Offer explanations for why things might happen.	• Make simple judgements about their products and ideas. • Explore existing products discussing what they are, how they work and what they like/dislike about them. • Taste and evaluate different food combinations. • Describe appearance, smell and taste. • Suggest information to be included on packaging.	• Talk about their design ideas and what they are making. • Make simple judgements about their products and ideas against design criteria. • Suggest how their products could be improved. • Describe the taste, texture and smell of fruit and vegetables. • Taste test food combinations and final products. • Describe the information that should be included on a label. • Evaluate which grip was most effective.	• Refer to their design criteria as they design and make. • Use the views of others to improve designs. • Suggest points for improvement when making a seasonal tart. • Evaluate an end product and think of other ways in which to create similar items. • Describe the benefits of seasonal fruits and vegetables and the impact on the environment.	• Use their design criteria to evaluate their completed products. • Use the views of others to improve designs. Test and modify the outcome, suggesting improvements. • Decide how many of the criteria should be met for the product to be considered successful • Suggest modifications for improvement.. • Evaluate a recipe, considering: taste, smell, texture and appearance. • Describe the impact of the budget on the selection of ingredients. • Evaluate and compare a range of products.	• Critically evaluate the quality of the design, manufacture and fitness for purpose of their products as they design and make. • Evaluate the work of others and receive feedback on own work. Suggest points for improvement. • Taste and adapt a dish during the cooking process. • Identify the nutritional differences between different products and recipes. • Identify and describe healthy benefits of food groups.	• Critically evaluate the quality of the design, manufacture and fitness for purpose of their products as they design and make, evaluating their ideas and products against their original design specification. • Evaluate the work of others and receive feedback on own work applying points of improvements. Describe changes they would make/do if they were to do the project again. • Evaluate a recipe, considering: taste, smell, texture and origin of the food group . • Evaluate health and safety in production to minimise cross contamination.
				• Know about inventors, designers, engineers and manufacturers who have developed ground-breaking products.			

Pillars of Learning Progression

Cooking and Nutrition

Strand	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Technical Knowledge 	Nursery • Knows that they need some resources e.g. an apron. • Explores how things work. Reception • Explores the natural world around them. • Talks about differences between materials and changes they notice. • Develop small motor skills to use a range of tools competently, safely and confidently. • Knows which resources they need to carry out their intended activity. ELG • Share their creations, explaining the process they have used.	• Understand the difference between fruits and vegetables. • Understand that some foods typically known as vegetables are actually fruits (e.g. cucumber). • Learn where and how fruits and vegetables grow. • Know that a blender is a machine which mixes ingredients together into a smooth liquid. • Know that a fruit has seeds and a vegetable does not. • Know that fruits grow on trees or vines. • Know that vegetables can grow either above or below ground. • Know that vegetables can come from different parts of the plant (e.g. roots: potatoes, leaves: lettuce, fruit: cucumber). • Know that all food comes from plants or animals. • Know that everyone should eat at least five portions of fruit and vegetables every day. • Know how to use techniques such as cutting, peeling and grating.	• Understand how fruit and vegetables grow. • Know that 'diet' means the food and drink that a person or animal usually eats. • Understand what makes a balanced diet. • Know where to find the nutritional information on packaging. • Know that the five main food groups are: Carbohydrates, fruits and vegetables, protein, dairy and foods high in fat and sugar. • Understand that I should eat a range of different foods from each food group, and roughly how much of each food group. • Know that nutrients are substances in food that all living things need to make energy, grow and develop. • Know that 'ingredients' means the items in a mixture or recipe. • Know that I should only have a maximum of five teaspoons of sugar a day to stay healthy. • Know that many food and drinks we do not expect to contain sugar do; we call these 'hidden sugars'. • Know that food has to be farmed, grown elsewhere (e.g. home) or caught. • Know how to prepare simple dishes safely and hygienically, without using a heat source.	• Know that food is grown (such as tomatoes, wheat and potatoes), reared (such as pigs, chickens and cattle) and caught (such as fish) in the UK, Europe and the wider world. • Know that not all fruits and vegetables can be grown in the UK. • Know that climate affects food growth. • Know that vegetables and fruit grow in certain seasons. • Know that cooking instructions are known as a 'recipe'. • Know that imported food is food which has been brought into the country. • Know that exported food is food which has been sent to another country. • Understand that imported foods travel from far away and this can negatively impact the environment. • Know that each fruit and vegetable gives us nutritional benefits because they contain vitamins, minerals and fibre. • Understand that vitamins, minerals and fibre are important for energy, growth and maintaining health. • Know safety rules for using, storing and cleaning a knife safely. • Know that similar coloured fruits and vegetables often have similar nutritional benefits.	• Know that the amount of an ingredient in a recipe is known as the 'quantity'. • Know that it is important to use oven gloves when removing hot food from an oven. • Know the following cooking techniques: sieving, creaming, rubbing method, cooling. • Understand the importance of budgeting while planning ingredients for biscuits. • Know how to use a range of techniques such as peeling, chopping, slicing, grating, mixing, spreading, kneading and baking. • Know that a healthy diet is made up from a variety and balance of different food and drink, as depicted in The Eatwell Plate. • Know that to be active and healthy, food and drink are needed to provide energy for the body.	• Understand where meat comes from - learning that beef is from cattle and how beef is reared and processed, including key ethical/welfare issues. • Know that I can adapt a recipe to make it healthier by substituting ingredients. • Know that I can use a nutritional calculator to see how healthy a food option is. • Understand that 'cross-contamination' means that bacteria and germs have been passed onto ready-to-eat foods and it happens when these foods mix with raw meat or unclean objects. • Know that seasons may affect the food available. • Know that recipes can be adapted to change the appearance, taste, texture and aroma.	• Understand the risks of meat or fish when not cooked or stored properly. • Understand safe storage of meat/fish. • Know that 'flavour' is how a food or drink tastes. • Know that many countries have 'national dishes' which are recipes associated with that country. • Know that 'processed food' means food that has been put through multiple changes in a factory. • Understand that it is important to wash fruit and vegetables before eating to remove any dirt and insecticides. • Understand what happens to a certain food before it appears on the supermarket shelf (Farm to Fork). • Know how food is processed into ingredients that can be eaten or used in cooking. • Know that different food and drink contain different substances – nutrients, water and fibre – that are needed for health.
				• Know how to use learning from science to help design and make products that work. • Know how to use learning from mathematics to help design and make products that work.			

Pillars of Learning Progression

Cooking and Nutrition

Strand	Early Years	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Vocabulary 	Nursery: Naming different types of common food, taste, cut, knife, fork, spoon, plate Reception: Meal, healthy, snack, like, dislike, taste, cut, cook, bake	Blender Carton Fruit Healthy Ingredients Peel Peeler Recipe Slice Smoothie Vegetable	Alternative Diet Balanced Diet Expensive Healthy Ingredients Nutrients Packaging Refrigerator Sugar Substitute	Climate Dry climate Exported Imported Mediterranean climate Nationality Nutrients Polar climate Recipe Seasonal food Seasons Temperate climate Tropical climate	Adapt Budget Cooling rack Creaming Flavour Method Prototype Quantity Recipe Rubbing Sieving Unit of measure Utilities	Beef Cross-contamination Ethical issues Farm Healthy Nutrients Reared Substitute Vegan Vegetarian Welfare Sustainable	Accompaniment Collaboration Cookbook Cross-contamination Flavour Nationality Preparation Processed Reared Storyboard

Pillars of Learning Progression

Electrical Systems

Strand	Year 3	Year 4	Year 5	Year 6
Design 	• Design an electric poster with key features to appeal to a specific person/purpose of the time period. Indicate the design features and explain how particular parts of the product work. • Develop their own design criteria from a design brief. • Share ideas through discussion. • Carry out research based on a given topic (e.g. Geography – Pollution) to develop a range of initial ideas. • Plan the positioning of the bulb (circuit component) and its purpose.	• Design a torch that is aesthetically pleasing and select materials to create a desired effect. Indicate the design features and explain how particular parts of the product work. • Gather information about the needs and wants of particular individuals and groups. • Develop their own design criteria and use these to inform their ideas. • Share and clarify ideas through discussion. • Generate realistic ideas, focusing on the needs of the user. • Make decisions that take into account the availability of resources. • Personalise a design.	• Design an electronic greetings card with a copper track circuit and components and describe the purpose of the product. Indicate the design features and explain how particular parts of the product work. • Develop a simple design specification to guide their thinking. • Share and clarify ideas through discussion and modelling ideas. • Generate ideas, drawing on research. • Make decisions, taking account of availability of constraints such as time, resources and cost. • Plan using storyboards and designs, communicating through words and illustrations.	• Design a steady hand game featuring a variety of different components, giving careful consideration to how they will be used, considering effective and ineffective designs. • Develop a design specification to guide their thinking. • Share and clarify ideas through discussion, modelling ideas through protypes and pattern pieces. • Generate innovative ideas, drawing on research. • Make design decisions, taking account of availability of constraints such as time, resources and cost. • Understand and draw cross-sectional diagrams to show the inner-working • Draw a design from three different perspectives. • Understand the purpose of products (toys), including what is meant by ‘fit for purpose’ and ‘form over function’.

Pillars of Learning Progression

Electrical Systems

Strand	Year 3	Year 4	Year 5	Year 6
Make 	• Select tools suitable for the task. • Select materials and components suitable for the task. • Measure, mark out, cut and shape materials and components with some accuracy. • Assemble, join and combine materials and components with some accuracy. • Consider how to improve a products strength and withstand weight. • Fit an electrical component (bulb). • Learn ways to give the final product a higher quality finish (e.g. framing to conceal a roughly cut edge).	• Select tools and equipment suitable for the task. • Select materials and components suitable for the task explaining their choice of materials and components. • Order the main stages in making. • Apply a range of finishing techniques, including those from art and design, with some accuracy. • Make a torch with a working electrical circuit and switch.	• Select tools and equipment suitable for the task explaining their choice of tools and equipment. • Select materials and components suitable for the task explaining their choice of materials and components according to functional properties. • Produce appropriate lists of tools, equipment and materials that they need. • Measure, mark out, cut and shape materials and components with increasing accuracy. • Assemble, join and combine materials and components with increasing accuracy. • Apply a range of finishing techniques, including those from art and design, with increasing accuracy. • Make a functional series circuit.	• Select tools and equipment suitable for the task explaining their choice of tools and equipment in relation to the skills and techniques they will be using. • Select materials and components suitable for the task explaining their choice of materials and components according to functional properties and aesthetic qualities. • Formulate step-by-step plans as a guide to making that includes a list of tools, equipment and materials needed. • Accurately apply a range of finishing techniques, including those from art and design. • Use techniques that involve a number of steps. • Demonstrate resourcefulness when tackling practical problems. • Make and test a circuit Incorporating a circuit into a base.

Pillars of Learning Progression

Electrical Systems

Strand	Year 3	Year 4	Year 5	Year 6
Evaluate 	• Refer to their design criteria as they design and make. • Use the views of others to improve designs.	• Use their design criteria to evaluate their completed products. • Investigate who designed and made the products, where products were designed and made and whether products can be recycled or reused. • Use the views of others to improve designs. Test and modify the outcome, suggesting improvements. • Describe what characteristics of a design and construction made it the most effective. • Consider effective and ineffective designs. • Evaluate electrical products.	• Critically evaluate the quality of the design, manufacture and fitness for purpose of their products as they design and make. • Investigate and analyse who designed and made the products, where products were designed and made and whether products can be recycled or reused. • Evaluate the work of others and receive feedback on own work. Suggest points for improvement. • Compare 3D objects to a 2D design. • Experiment with circuits to consolidate knowledge of function.	• Critically evaluate the quality of the design, manufacture and fitness for purpose of their products as they design and make, evaluating their ideas and products against their original design specification. • Investigate and analyse how much products cost to make, how innovative products are, how sustainable the materials in products are and what impact products have beyond their intended purpose. • Evaluate the work of others and receive feedback on own work applying points of improvements. Describe changes they would make/do if they were to do the project again.
	• Investigate 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 and how well products meet user needs and wants. • Know about inventors, designers, engineers and manufacturers who have developed ground-breaking products.			

Pillars of Learning Progression

Electrical Systems

Strand	Year 3	Year 4	Year 5	Year 6
Technical Knowledge 	• Know what a 'target audience' is. • Understand that an electrical system is a group of parts (components) that work together to transport electricity around a circuit. • Understand common features of an electric product (switch, battery or plug, dials, buttons etc.). • List examples of common electric products (kettle, remote control etc.). • Understand that an electric product uses an electrical system to work (function). • Know the name and appearance of a bulb, battery, battery holder and crocodile wire to build simple circuits. • Understand the importance and purpose of information design. • Understand how material choices (such as mounting paper to corrugated card) can improve a product to serve its purpose (remain rigid without bending when the electrical circuit is attached).	• Know that electricity is energy. • Understand that electrical conductors are materials which electricity can pass through. • Understand that electrical insulators are materials which electricity cannot pass through. • Know that a battery contains stored electricity that can be used to power products. • Know that an electrical circuit must be complete for electricity to flow. • Know that a switch can be used to complete and break an electrical circuit. • Know the features of a torch: case, contacts, batteries, switch, reflector, lamp, lens. • Know facts from the history and invention of the electric light bulb(s) - by Sir Joseph Swan and Thomas Edison. • Know how simple electrical circuits and components can be used to create functional products. • Know how to program a computer to control their products.	• Know the key components used to create a functioning circuit. • Know that copper is a conductor and can be used as part of a circuit. • Understand that breaks in a circuit will stop it from working. • Understand that a series circuit only has one path for the electrical current to flow from positive to negative. • Know that we use symbols to represent components in a circuit diagram. • Know the names of the components in a basic series circuit: crocodile wires, LED (light-emitting diode), battery holder, battery, cell. • Know that product analysis is critiquing the strengths and weaknesses of a product. • Know that 'mass production' is when a product is made in large quantities by a machine, usually in a factory. • Know that one-off production is when only one of a product is made by hand. • Know that 'bespoke' means a product was made for a particular reason or person. • Understand the development of personal message exchange through to the invention of the Penny Black stamp, and exchanging of greeting cards. • Know that a mood board may include words, sketches, textures, colours, material samples etc. and can act as inspiration when designing.	• Know that batteries contain acid, which can be dangerous if they leak. • Know the names of the components in a basic series circuit including a buzzer • Know that 'form' means the shape and appearance of an object. • Know the difference between 'form' and 'function'. • Understand that 'fit for purpose' means that a product works how it should and is easy to use. • Know that form over purpose means that a product looks good but does not work very well. • Know the importance of 'form follows function' when designing: the product must be designed primarily with the function in mind. • Understand the diagram perspectives 'top view', 'side view' and 'back'. • Know that mechanical and electrical systems have an input, process and output.
	• Know how to use learning from science to help design and make products that work. • Know how to use learning from mathematics to help design and make products that work.			

Pillars of Learning Progression

Electrical Systems

Strand	Year 3	Year 4	Year 5	Year 6
Vocabulary 	Battery Bulb Circuit Circuit component Information design Initial ideas Information Public Research Wire	Battery Bulb Buzzer Cell Component Conductor Copper Electrical item Electricity Function Insulator Series circuit Switch Torch Wire	Circuit Coin cell battery Component Conductor Copper Function Innovative Insulator LED Modify Series circuit Switch Test	Backboard Buzzer Assemble Magnetic field Pliers Battery pack Benefit Circuit symbol Fine motor skills Fit for purpose Form Function Gross motor skills Insulator LED User

By the end of Year 6…

Primary School Outcomes

Through a variety of creative and practical activities, pupils will have the knowledge, understanding and skills needed to engage in an iterative process of designing and making, working in a range of relevant contexts.

As designers:

- Pupils can 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.
- Pupils can generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design.

As makers:

- Pupils can select from and use a wider range of tools and equipment to perform practical tasks such as cutting, shaping, joining and finishing, accurately.
- Pupils can 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.

As evaluators:

- Pupils can investigate and analyse a range of existing products.
- Pupils can evaluate their ideas and products against their own design criteria and consider the views of others to improve their work.
- Pupils can understand how key events and individuals in design and technology have helped shape the world.

Having acquired technical knowledge:

- Pupils can apply their understanding of how to strengthen, stiffen and reinforce more complex structures.
- Pupils understand and use mechanical systems in their products, for example, gears, pulleys, cams, levers and linkages.
- Pupils understand and use electrical systems in their products, for example, series circuits incorporating switches, bulbs, buzzers and motors.
- Pupils can apply their understanding of computing to program, monitor and control their products.

Pupils understand cooking and nutrition

As part of their work with food, pupils have been taught how to cook and apply the principles of nutrition and healthy eating. This has Instilled a love of cooking in pupils and has also opened the door to one of the great expressions of human creativity. Pupils have developed a crucial life skill that enables them to feed themselves and others affordably and well, now and in later life.

- Pupils understand and apply the principles of a healthy and varied diet.
- Pupils can prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques.
- Pupils understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed.

Pupils have been inspired, demonstrated creativity and imagination and have designed and made products that solve real life and relevant problems. They have acquired a broad range of subject knowledge and drawn on disciplines such as mathematics, science, engineering, computing and art. They have learned how to take risks, become resourceful, innovative enterprising and capable citizens. Through the evaluation of past and present design and technology, they have developed a critical understanding of its impact on daily life and the wider world. They are ready to make an essential contribution to the creativity, culture, wealth and well-being of the nation.