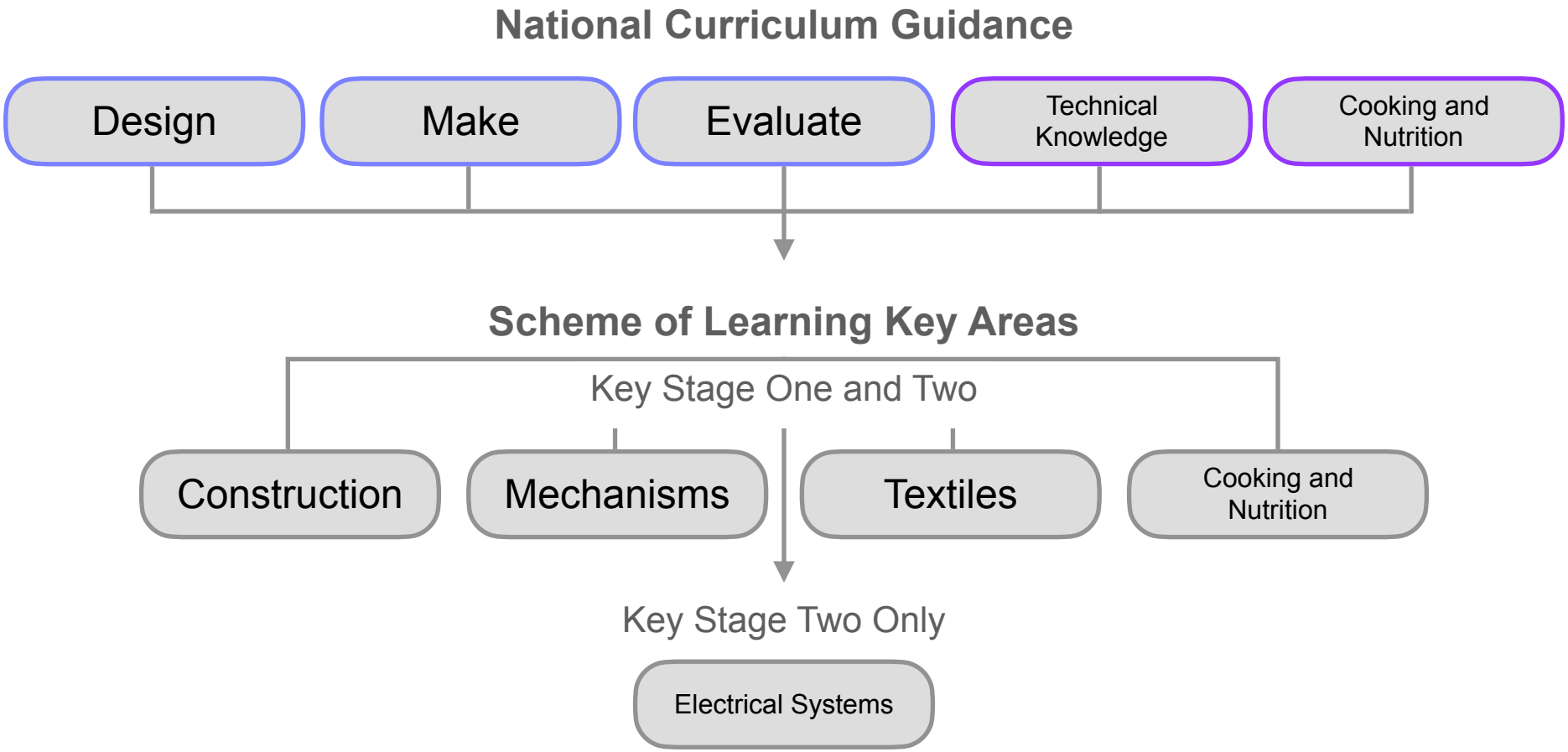
Progression in Design and Technology

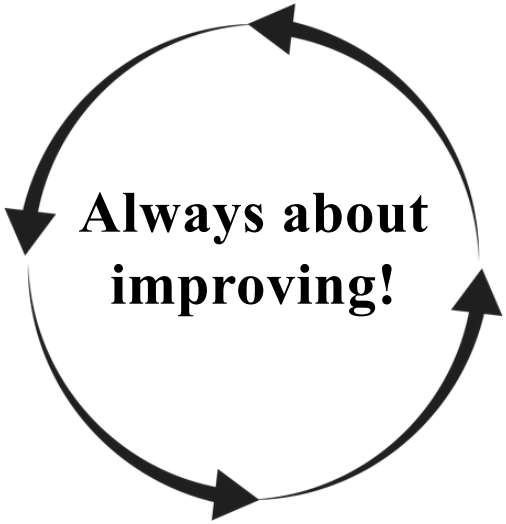
How is the Design and Technology Scheme of Work Organised?



The Design Process

Problem
(can be a big question)

Research



Evaluate

Ideas
(Analysis of ideas –
choose best ideas)

Try it!
(make it)

Construction

		EYFS	Year 1	Year 2
Skills	Design	• Notice and discuss materials around them e.g. utensils for cooking, tree barks on a walk, soft furnishings in the classroom. • Discuss reasons that make activities safe or unsafe e.g. hygiene and electrical awareness.	• Identify a target group for what they intend to design and make. • Develop their design ideas applying findings from their earlier research. • Learning the importance of a clear design criteria. • Including individual preferences and requirements in a design. • Make their design using appropriate techniques.	• Generate and communicate ideas using sketching and modelling. • Learning about different types of structures, found in the natural world and in everyday objects • Identify a purpose for what they intend to design and make. • Identify simple design criteria.
	Make	• Uses one-handed tools and equipment, e.g. makes snips in paper with child scissors. • Children should use a range of tools including scissors, hole punch, stapler, glue spreader, rolling pin, cutter and grater. • Learn to record their experiences by, for example, drawing, writing, voice recording or modelling. • Handles tools, objects, construction and malleable materials safely and with increasing control. • Uses various construction materials. • Beginning to construct, stacking blocks vertically and horizontally, making enclosures and creating spaces. • Joins construction pieces together to build and balance. • Realises tools can be used for a purpose.	• Suggest ideas and explain what they are going to do. • Model their ideas in card and paper. • Making stable structures from card, tape and glue. • Learning how to turn 2D nets into 3D structures. • Following instructions to cut and assemble the supporting structure. • Making functioning axles which are assembled into a main supporting structure. • With help measure, mark out, cut and shape a range of materials • Assemble, join and combine materials and components together using a variety of temporary methods. • Use simple finishing techniques to improve the appearance of their product.	• Develop their design ideas through discussion, observation, drawing and modelling. • Make simple drawings and label parts. • Making a structure according to design criteria. • Creating joints and structures. • Building a strong and stiff structure. • Measure, cut and score with some accuracy • Use hand tools safely and appropriately. • Cut, shape and join fabric to make a simple garment. • Use basic sewing techniques • Choose and use appropriate finishing techniques

	Evaluate	• Learning about how everyday objects work by dismantling things and looking closely at their component parts.	• Evaluate product by discussing how well it works in relation to the purpose. • Evaluate products as they are developed, identifying strengths and possible changes. • Evaluate product by asking questions about what they have made and how they have gone about it.	• Evaluate against their design criteria. • Evaluate products as they are developed, identifying strengths and possible changes they might make. • Exploring the features of structures. • Comparing the stability of different shapes. • Testing the strength of own structures. • Identifying the weakest part of a structure. • Evaluating the strength, stiffness and stability of own structure.
Knowledge	**Technical**	• Learning to construct with a purpose in mind, e.g. using scissors, glue, string and a hole-punch to make a bag to store items.	• To understand that the shape of materials can be changed to improve the strength and stiffness of structures. • To understand that cylinders are a strong type of structure. • To begin to understand that different structures are used for different purposes. • To know that a structure is something that has been made and put together. • To explore and use mechanisms [e.g. levers, sliders, wheels and axles], in their products. • To understand about the simple working characteristics of materials and components. • To understand about the movement of simple mechanisms including levers, sliders.	• To know that shapes and structures with wide, flat bases or legs are the most stable. • To understand that the shape of a structure affects its strength. • To know that materials can be manipulated to improve strength and stiffness. • To know that a structure is something which has been formed or made from parts. • To know that a ‘stable’ structure is one which is firmly fixed and unlikely to change or move. • To know that a ‘strong’ structure is one which does not break easily. • To know that a ‘stiff’ structure or material is one which does not bend easily. • To understand about the movement of simple mechanisms including levers, sliders, wheels and axels. • To know the correct technical vocabulary for the projects they are undertaking.
	Additional	• Design and make, e.g. words such as ‘join', ‘build' and ‘shape' as well as evaluative and comparative language - ‘longer', ‘shorter', ‘lighter', ‘heavier' and ‘stronger’.	• To know that natural structures are those found in nature. • To know that man-made structures are those made by people. • To know that a façade is the front of a structure. • To know that a paper net is a flat 2D shape that can become a 3D shape once assembled. • To know that a design specification is a list of success criteria for a product.	• To know the correct technical vocabulary for the projects they are undertaking. • To know that cladding can be applied to structures for different effects. • To know that aesthetics are how a product looks. • To know that architects consider light, shadow and patterns when designing.

Construction

		Year 3	Year 4
Skills	**Design**	• Generate ideas for an item, considering its purpose and the user/s. • Plan the order of their work before starting. • Designing with key features to appeal to a specific person/ purpose. • Drawing and labelling using 2D shapes, labelling: -the 3D shapes that will create the features - materials needed and colours. • Designing and/or decorating on CAD software.	• Generate ideas, considering the purposes for which they are designing. • Make labelled drawings from different views showing specific features. • Develop a clear ideas of what has to be done, planning how to use materials, equipment and processes, and suggesting alternative methods of making if the first attempts fails. • Designing a stable structure that is aesthetically pleasing and selecting materials to create a desired effect. • Building frame structures designed to support weight.
	Make	• Explore, develop and communicate design proposals by modelling ideas. • Make drawings with labels when designing. • Constructing a range of 3D geometric shapes using nets. • Creating special features for individual designs. • Making facades from a range of recycled materials. • Select tools and techniques for making their product. • Measure, mark out, cut, score and assemble components with more accuracy. • Work safely and accurately with a range of simple tools. • Use finishing techniques to strengthen and improve the appearance of their product using a range of equipment including ICT.	• Select appropriate tools and techniques for making their product. • Measure, mark out, cut and shape a range of materials, using appropriate tools, equipment and techniques. • Join and combine materials and components accurately in temporary and permanent ways. • Use simple graphical communication techniques. • Creating a range of different shaped frame structures. • Making a variety of free standing frame structures of different shapes and sizes. • Selecting appropriate materials to build a strong structure and for the cladding. • Reinforcing corners to strengthen a structure. • Creating a design in accordance with a plan. • Learning to create different textural effects with materials.
	Evaluate	• Disassemble and evaluate familiar products. • Evaluating own work and the work of others based on the aesthetic of the finished product and in comparison to the original design. • Suggesting points for modification of the individual designs.	• Evaluate products and identify criteria that can be used for their own designs. • Evaluate their product against original design criteria. • Disassemble and evaluate familiar products. • Describing what characteristics of a design and construction made it the most effective. • Considering effective and ineffective designs. • Evaluate their products carrying out appropriate tests.

Knowledge	**Technical**	• To understand that wide and flat based objects are more stable. • To understand the importance of strength and stiffness in structures. • To apply their understanding of how to strengthen, stiffen and reinforce more complex structures. • To apply their understanding of computing to program, monitor and control their products. • To know that a single fabric shape can be used to make a 3D textiles product.	• Apply their understanding of how to strengthen, stiffen and reinforce more complex structures. • Apply their understanding of computing to program, monitor and control their products. • Understand how levers and linkages or pneumatic systems create movement. • To know that a ‘free-standing’ structure is one which can stand on its own.
	Additional	• To know that a client is the person I am designing for. • To know that a paper net is a flat 2D shape that can become a 3D shape once assembled. • To know that a design specification is a list of success criteria for a product. • To know that a product’s function means its purpose. • To understand that the target audience means the person or group of people a product is designed for.	• To know that a client is the person I am designing for. • To know that design criteria is a list of points to ensure the product meets the clients needs and wants. • To know that a windmill harnesses the power of wind for a purpose like grinding grain, pumping water or generating electricity. • To know that windmill turbines use wind to turn and make the machines inside work. • To know that a windmill is a structure with sails that are moved by the wind. • To know the three main parts of a windmill are the turbine, axle and structure. • To understand how to use a bench hook and saw safely.

Construction

		Year 5	Year 6
Skills	**Design**	• Generate ideas through brainstorming and identify a purpose for their product. • Draw up a specification for their design. • Develop a clear idea of what has to be done, planning how to use materials, equipment and processes, and suggesting alternative methods of making if the first attempts fail. • Use results of investigations, information sources, including ICT when developing design ideas. • Designing a stable structure that is able to support weight. • Creating frame structure with focus on triangulation.	• Communicate their ideas through detailed labelled drawings. • Develop a design specification. • Explore, develop and communicate aspects of their design proposals by modelling their ideas in a variety of ways. • Plan the order of their work, choosing appropriate materials, tools and techniques. • Designing a shelter featuring a variety of different structures, giving careful consideration to how the structures will be used, considering effective and ineffective designs.
	Make	• Use skills in using different tools and equipment safely and accurately. • Cut and join with accuracy to ensure a good-quality finish to the product. • Independently measuring and marking wood accurately. • Selecting appropriate tools and equipment for particular tasks • Using the correct techniques to saws safely. • Identifying where a structure needs reinforcement and using card corners for support. • Explaining why selecting appropriating materials is an important part of the design process. • Understanding basic wood functional properties.	• Select appropriate tools, materials, components and techniques. • Assemble components make working models. • Use tools safely and accurately. • Construct products using permanent joining techniques. • Make modifications as they go along. • Achieve a quality product. • Building a range of structures drawing upon new and prior knowledge of structures. • Measuring, marking and cutting wood to create a range of structures. • Using a range of materials to reinforce and add decoration to structures.
	Evaluate	• Evaluate a product against the original design specification. • Evaluate it personally and seek evaluation from others. • Adapting and improving own structure by identifying points of weakness and reinforcing them as necessary. • Suggesting points for improvements for own structure and those designed by others.	• Evaluate their products, identifying strengths and areas for development, and carrying out appropriate tests. • Record their evaluations using drawings with labels. • Improving a design plan based on peer evaluation. • Testing and adapting a design to improve it as it is developed. • Identifying what makes a successful structure.

Knowledge	**Technical**	• Apply their understanding of how to strengthen, stiffen and reinforce more complex structures. • Apply their understanding of computing to program, monitor and control their products. • Understand how to program a computer to monitor changes in the environment / control their products. • Know how to reinforce/strengthen a 3D framework. • To understand how triangles can be used to reinforce. • To know that properties are words that describe the form and function of materials. • To understand why material selection is important based on their properties. • To understand the material (functional and aesthetic) properties of wood.	• Apply their understanding of how to strengthen, stiffen and reinforce more complex structures. • Understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages]. • Apply their understanding of computing to program, monitor and control their products. • Understand how to program a computer to monitor changes in the environment / control their products. • To know that structures can be strengthened by manipulating materials and shapes.
	Additional	• To understand how to carry and use a saw safely.	• To understand what a 'footprint plan' is. • To understand that in the real world, design, can impact users in positive and negative ways. • To know that a prototype is a cheap model to test a design idea.

Mechanisms

		EYFS	Year 1	Year 2
Skills	Design	• Design with a purpose in mind, using a variety of resources. • Create simple representations of events, people and objects.	• Explaining how to adapt mechanisms to control the movement. • Designing a moving picture for a given audience. • Designing a vehicle that includes wheels, axles and axle holders, which will allow the wheels to move. • Creating clearly labelled drawings which illustrate movement. • Identify a target group for what they intend to design and make. • Develop their design ideas applying findings from their earlier research.	• Selecting a suitable linkage system to produce the desired motions. • Designing and selecting appropriate materials based on their properties. • Creating a class design criteria. • Designing for a specific audience in accordance with a design criteria.
	Make	• Uses simple tools to effect changes to materials. • With support, begin to incorporate moving parts in to models. For example, use split pins to make body parts move. • Teach children the skills they need to use equipment safely, e.g. cutting with scissors or using tools. • Selects tools and techniques needed to shape, assemble and join materials they are using. • Manipulates materials to achieve a planned effect.	• Following a design to create moving models that use levers and sliders. • Ability to adapt mechanisms. • With help measure, mark out, cut and shape a range of materials. • Assemble, join and combine materials and components together using a variety of temporary methods e.g. glues or masking tape.	• Selecting materials according to their characteristics. • Following a design brief. • Making linkages using card for levers and split pins for pivots. • Experimenting with linkages adjusting the widths, lengths and thicknesses of card used. • Cutting and assembling components neatly.
	Evaluate	• Learning about how everyday objects work by dismantling things and looking closely at their component parts.	• Testing a finished product, seeing whether it moves as planned and if not, explaining why and how it can be fixed. • Reviewing the success of a product by testing it with its intended audience. • Testing mechanisms, identifying what stops wheels from turning.	• Evaluating different designs. • Testing and adapting a design. • Evaluating own designs against design criteria. • Using peer feedback to modify a final design.

Knowledge	**Technical**	• Learning to construct with a purpose in mind, e.g. using scissors, glue, string and a hole-punch to make a bag to store items. • To selects tools and techniques needed to shape, assemble and join materials they are using.	• To know that a mechanism is the parts of an object that move together. • To know that a slider mechanism moves an object from side to side. • To know that a slider mechanism has a slider, slots, guides and an object. • To know that wheels need to be round to rotate and move. • To understand that for a wheel to move it must be attached to a rotating axle. • To know that an axle moves within an axle holder, which is fixed to the vehicle or toy. • To know that the frame of a vehicle (chassis) needs to be balanced. • Explore and use mechanisms [e.g. levers, sliders, wheels and axles], in their products.	• To know that different materials have different properties and are therefore suitable for different uses. • To know that mechanisms are a collection of moving parts that work together as a machine to produce movement. • To know that there is always an input and output in a mechanism. • To know that an input is the energy that is used to start something working. • To know that an output is the movement that happens as a result of the input. • To know that a lever is something that turns on a pivot. • To know that a linkage mechanism is made up of a series of levers. • Explore and use mechanisms [e.g. levers, sliders, wheels and axles], in their products.
	Additional	• Explain why safety is an important factor in handling tools, equipment and materials, and have sensible rules for everybody to follow.	• To know that in design and technology we call a plan a ‘design’. • To know some real-life items that use wheels such as wheelbarrows, hamster wheels and vehicles.	• To know that it is important to test my design as I go along so that I can solve any problems that may occur.

Mechanisms

		Year 3	Year 4
Skills	Design	• Generate ideas for an item, considering its purpose and the user/s. • Plan the order of their work before starting. • Designing with key features to appeal to a specific person/ purpose. • Developing design criteria from a design brief. • Generating ideas using thumbnail sketches and exploded diagrams. • Learning that different types of drawings are used in design to explain ideas clearly.	• Drawing a net to create a structure from choosing shapes that increase or decrease speed as a result of air resistance. • Personalising a design.
	Make	• Creating a system to create a desired motion. • Building secure housing using various materials to create different types of systems to make a functional and appealing product. • Selecting materials due to their functional and aesthetic characteristics. • Manipulating materials to create different effects by cutting, creasing, folding, weaving	• Measuring, marking, cutting and assembling with increasing accuracy. • Making a model based on a chosen design.
	Evaluate	• Using the views of others to improve designs. • Testing and modifying the outcome, suggesting improvements. • Understanding the purpose of exploded-diagrams through the eyes of a designer and their client.	• Evaluating the speed of a final product based on: the effect of shape on speed and the accuracy of workmanship on performance.
	Technical	• To understand how different systems work. • Understand how levers and linkages or pneumatic systems create movement. • To understand that pneumatic systems can be used as part of a mechanism. • To know that pneumatic systems operate by drawing in, releasing and compressing air.	• To understand that all moving things have kinetic energy. • To understand that kinetic energy is the energy that something (object/person) has by being in motion. • To know that air resistance is the level of drag on an object as it is forced through the air. • To understand that the shape of a moving object will affect how it moves due to air resistance.

Knowledge	**Additional**	• To understand how sketches, drawings and diagrams can be used to communicate design ideas. • To know that exploded-diagrams are used to show how different parts of a product fit together. • To know that thumbnail sketches are small drawings to get ideas down on paper quickly.	• To understand that products change and evolve over time. • To know that aesthetics means how an object or product looks in design and technology. • To know that a template is a stencil you can use to help you draw the same shape accurately. • To know that a birds-eye/aerial view means a view from a high angle (as if a bird in flight). • To know that graphics are images which are designed to explain or advertise something. • To know that it is important to assess and evaluate design ideas and models against a list of design criteria.

		Mechanisms	
		Year 5	**Year 6**
Skills	**Design**	• Experimenting with a range of cams, creating a design for an automata toy based on a choice of cam to create a desired movement. • Understanding how linkages change the direction of a force. • Making things move at the same time. • Understanding and drawing cross-sectional diagrams to show the inner-working.	• Naming each mechanism, input and output accurately. • Using various types of diagrams to communicate ideas. • Understanding and drawing cross-sectional diagrams to show the inner-working.
	Make	• Measuring, marking and checking the accuracy of the jelutong and dowel pieces required. • Measuring, marking and cutting components accurately using a ruler and scissors. • Assembling components accurately to make a stable frame. • Understanding that for the frame to function effectively, the components must be cut accurately and the joints of the frame secured at right angles. • Selecting appropriate materials based on the materials being joined and the speed at which the glue needs to dry/set.	• Following a design brief to neatly assemble and with focus on accuracy. • Making mechanisms and/or structures using sliders, pivots, folds and pneumatic systems to produce movement. • Using layers and spacers to hide the workings of mechanical parts for an aesthetically pleasing result.

	Evaluate	• Evaluating the work of others and receiving feedback on own work. • Applying points of improvements. • Describing changes they would make/do if they were to do the project again.	• Evaluating the work of others and receiving feedback on own work. • Suggesting points for improvement.
Knowledge	**Technical**	• To understand that the mechanism in an automata uses a system of cams, axles and followers. • To understand that different shaped cams produce different outputs.	• To know that mechanisms control movement. • To understand that mechanisms that can be used to change one kind of motion into another.
	Additional	• To know that an automata is a hand powered mechanical toy. • To know that a cross-sectional diagram shows the inner workings of a product. • To understand how to use a bench hook and saw safely. • To know that a set square can be used to help mark 90° angles.	• To know that a design brief is a description of what I am going to design and make. • To know that designers often want to hide mechanisms to make a product more aesthetically pleasing.

Textiles

		EYFS	Year 1	Year 2
Skills	Design	• To explore different fabric with their hands. • To use textiles creatively in various activities. • To see what happens when different types of fabric get wet. • To use fabrics and dressing-up clothes to create characters.	• Using a template to create a design.	• Using a template to create a design.
	Make	• To use scissors to cut and trim fabric, yarn and string. • To spread glue and stick fabric, yarn and wool on to a chosen surface. • To use fabric creatively with other resources, such as paint or wax crayons.	• Cutting fabric neatly with scissors. • Using joining methods to decorate. • Sequencing steps for construction.	• Selecting and cutting fabrics for sewing. • Decorating using fabric glue or running stitch. • Threading a needle. • Neatly pinning and cutting fabric using a template.
	Evaluate	• To discuss different kinds of textile, what they are used for and why. • Talk about different textiles and clothing styles that are suitable for different types of weather, and why. • Discuss aspects of clothing and their purpose, for example, pockets, collars and hoods.	• Reflecting on a finished product, explaining likes and dislikes.	• Troubleshooting scenarios posed by teacher. • Evaluating the quality of others' work. • Discussing as a class, the success of their work against the success criteria. • Identifying aspects of their peers' work that they particularly like and why.
Knowledge		• To wool, fabric, cotton, and yarn of different colours, lengths and shapes. • Exploring the origins of textiles - for example, wool comes from sheep and cotton from a plant. • To investigating the properties of textiles. • Exploring the uses of fabrics for clothing, protection, or display • Using fabric in imaginative play through den-making and tent-making or dressing up in different clothes. • Consider why people wear certain types of clothing, such as uniforms, and how these clothes are made and designed (for example, made for warmth, protection, camouflage or ceremony).	• To know that 'joining technique' means connecting two pieces of material together. • To know that there are various temporary methods of joining fabric by using staples, glue or pins. • To understand that different techniques for joining materials can be used for different purposes. • To understand that a template (or fabric pattern) is used to cut out the same shape multiple times. • To know that drawing a design idea is useful to see how an idea will look.	• To know that sewing is a method of joining fabric. • To know that different stitches can be used when sewing. • To understand the importance of tying a knot after sewing the final stitch. • To know that a thimble can be used to protect my fingers when sewing.

Textiles

		Year 3	Year 4
Skills	**Design**	• Designing and making a template from an existing cushion and applying individual design criteria.	• Writing design criteria for a product, articulating decisions made.
	Make	• Following design criteria to create a cushion. • Selecting and cutting fabrics with ease using fabric scissors. • Threading needles with greater independence. • Tying knots with greater independence. • Sewing cross stitch to join fabric. • Decorating fabric using appliqué. • Completing design ideas with stuffing and sewing the edges (Cushions) ***or*** embellishing based on design ideas. • Sewing running stitch, with evenly spaced, neat, even stitches to join fabric.	• Making and testing a paper template with accuracy and in keeping with the design criteria. • Measuring, marking and cutting fabric using a paper template. • Selecting a stitch style to join fabric, working neatly sewing small neat stitches. • Incorporating fastening to a design.
	Evaluate	• Evaluating an end product and thinking of other ways in which to create similar items.	• Testing and evaluating an end product against the original design criteria. • Deciding how many of the criteria should be met for the product to be considered successful. • Suggesting modifications for improvement. • Articulating the advantages and disadvantages of different fastening types.
Knowledge		• To know that applique is a way of mending or decorating a textile by applying smaller pieces of fabric to larger pieces. • To know that when two edges of fabric have been joined together it is called a seam. • To know that it is important to leave space on the fabric for the seam. • To understand that some products are turned inside out after sewing so the stitching is hidden.	• To know that a fastening is something which holds two pieces of material together for example a zipper, toggle, button, press stud and velcro. • To know that different fastening types are useful for different purposes. • To know that creating a mock up (prototype) of their design is useful for checking ideas and proportions.

Textiles

		Year 5	Year 6
Skills	Design	• Designing considering the main component shapes required and creating an appropriate template. • Considering the proportions of individual components.	• Designing in accordance to specification linked to set of design criteria to fit a specific theme. • Annotating designs.
	Make	• Creating a 3D item from a 2D design. • Measuring, marking and cutting fabric accurately and independently. • Creating strong and secure blanket stitches when joining fabric. • Threading needles independently. • Using applique to attach pieces of fabric decoration. • Sewing blanket stitch to join fabric. • Applying blanket stitch so the space between the stitches are even and regular.	• Using a template when pinning panels onto fabric. • Marking and cutting fabric accurately, in accordance with a design. • Sewing a strong running stitch, making small, neat stitches and following the edge. • Tying strong knots. • Decorating - attaching objects using thread and adding a secure fastening. • Learning different decorative stitches. • Sewing accurately with even regularity of stitches.
	Evaluate	• Testing and evaluating an end product and giving points for further improvements.	• Evaluating work continually as it is created.
Knowledge Technical		• To know that blanket stitch is useful to reinforce the edges of a fabric material or join two pieces of fabric. • To understand that it is easier to finish simpler designs to a high standard. • To know that soft toys are often made by creating appendages separately and then attaching them to the main body. • To know that small, neat stitches which are pulled taut are important to ensure that the item is strong and holds the stuffing securely.	• To understand that it is important to design clothing with the client/ target customer in mind. • To know that using a template (or clothing pattern) helps to accurately mark out a design on fabric. • To understand the importance of consistently sized stitches.

Cooking and Nutrition

		EYFS	Year 1	Year 2
Skills	**Design**	• Observing food plants growing. • Children to try a variety of healthy food grown at school/locally. • Begin to discuss the ways on which we stay healthy and safe.	• Design simples recipes based on foods of interest. E.g. what to include to make a sandwich, salad, etc.	• Designing a healthy wrap based on a food combination which work well together.
	Make	• Beginning to understand some of the tools, techniques and processes involved in food preparation. E.g. taking turns stirring the mixture for a cake and then watching it rise while cooking. • Children should practise stirring, mixing, pouring and blending ingredients during cookery activities. • Buttering bread/toast.	• Chopping fruit and vegetables safely. • Identifying if a food is a fruit or a vegetable. • Learning where and how fruits and vegetables grow.	• Slicing food safely using the bridge or claw grip. • Constructing a wrap that meets a design brief.
	Evaluate	• Food tasting whilst learning about different religious holidays. • Discuss what they like and dislike.	• Tasting and evaluating different food combinations. • Describing appearance, smell and taste. • Suggesting information to be included on packaging.	• Describing the taste, texture and smell of fruit and vegetables. • Taste testing food combinations and final products. • Describing the information that should be included on a label. • Evaluating which grip was most effective.

Knowledge	**Technical**	• Manage their own hygiene by washing and drying their hands. • Children understand and make healthy choices in relation to healthy eating and exercise.	• Understanding the difference between fruits and vegetables. • To understand that some foods typically known as vegetables are actually fruits (e.g. cucumber). • To know that a fruit has seeds and a vegetable does not. • To know that fruits grow on trees or vines. • To know that vegetables can grow either above or below ground. • To know that vegetables can come from different parts of the plant (e.g. roots: potatoes, leaves: lettuce, fruit: cucumber).	• To know that 'diet' means the food and drink that a person or animal usually eats. • To understand what makes a balanced diet. • To know where to find the nutritional information on packaging. • To know that the five main food groups are: Carbohydrates, fruits and vegetables, protein, dairy and foods high in fat and sugar. • To understand that I should eat a range of different foods from each food group, and roughly how much of each food group. • To know that nutrients are substances in food that all living things need to make energy, grow and develop. • To know that 'ingredients' means the items in a mixture or recipe. • To know that I should only have a maximum of five teaspoons of sugar a day to stay healthy. • To know that many food and drinks we do not expect to contain sugar do; we call these 'hidden sugars'.

Cooking and Nutrition

		Year 3	Year 4
Skills	Design	• Creating a healthy and nutritious recipe for a savoury dish using seasonal ingredients, considering the taste, texture, smell and appearance of the dish.	• Designing a biscuit within a given budget, drawing upon previous taste testing.
	Make	• Knowing how to prepare themselves and a work space to cook safely in, learning the basic rules to avoid food contamination. • Following the instructions within a recipe.	• Following a baking recipe. • Cooking safely, following basic hygiene rules • Adapting a recipe.
	Evaluate	• Establishing and using design criteria to help test and review dishes. • Describing the benefits of seasonal fruits and vegetables and the impact on the environment. • Suggesting points for improvement when making a seasonal dish.	• Evaluating a recipe, considering: taste, smell, texture and appearance. • Describing the impact of the budget on the selection of ingredients. • Evaluating and comparing a range of products. • Suggesting modifications.
Knowledge	Technical	• To know that not all fruits and vegetables can be grown in the UK. • To know that climate affects food growth. • To know that vegetables and fruit grow in certain seasons. • To know that cooking instructions are known as a 'recipe'. • To know that imported food is food which has been brought into the country. • To know that exported food is food which has been sent to another country. • To understand that imported foods travel from far away and this can negatively impact the environment. • To know that each fruit and vegetable gives us nutritional benefits because they contain vitamins, minerals and fibre. • To understand that vitamins, minerals and fibre are important for energy, growth and maintaining health. • To know safety rules for using, storing and cleaning a knife safely. • To know that similar coloured fruits and vegetables often have similar nutritional benefits.	• To know that the amount of an ingredient in a recipe is known as the 'quantity'. • To know that it is important to use oven gloves when removing hot food from an oven. • To know the following cooking techniques: sieving, creaming, rubbing method, cooling. • To understand the importance of budgeting while planning ingredients for biscuits.

Cooking and Nutrition

		Year 5	Year 6
Skills	Design	• Adapting a traditional recipe, understanding that the nutritional value of a recipe alters if you remove, substitute or add additional ingredients. • Writing an amended method for a recipe to incorporate the relevant changes to ingredients. • Designing appealing packaging to reflect a recipe.	• Writing a recipe, explaining the key steps, method and ingredients. • Including facts and drawings from research undertaken.
	Make	• Cutting and preparing food safely. • Using equipment safely, including knives, hot pans and hobs. • Knowing how to avoid cross-contamination. • Following a step by step method carefully to make a recipe.	• Following a recipe, including using the correct quantities of each ingredient. • Adapting a recipe based on research. • Working to a given timescale • Working safely and hygienically with independence.
	Evaluate	• Identifying the nutritional differences between different products and recipes. • Identifying and describing healthy benefits of food groups.	• Evaluating a recipe, considering: taste, smell, texture and origin of the food group. • Taste testing and scoring final products. • Suggesting and writing up points of improvements in productions. • Evaluating health and safety in production to minimise cross contamination.
Knowledge	Technical	• To understand where meat comes from - learning that beef is from cattle and how beef is reared and processed, including key welfare issues. • To know that I can adapt a recipe to make it healthier by substituting ingredients. • To know that I can use a nutritional calculator to see how healthy a food option is. • To 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.	• To know that 'flavour' is how a food or drink tastes. • To know that many countries have 'national dishes' which are recipes associated with that country. • To know that 'processed food' means food that has been put through multiple changes in a factory. • To understand that it is important to wash fruit and vegetables before eating to remove any dirt and insecticides. • To understand what happens to a certain food before it appears on the supermarket shelf (Farm to Fork).

Electrical Systems (KS2)

		Year 3	Year 4
Skills	Design	• Carry out research based on a given topic to develop a range of initial ideas. • Generate a final design with consideration to the client's needs and design criteria. • Design that fits the requirements of a given brief. • Plan the positioning of the bulb (circuit component) and its purpose.	• Designing, giving consideration to the target audience and creating both design and success criteria focusing on features of individual design ideas.
	Make	• Mount onto corrugated card to improve its strength and withstand the weight of the circuit on the rear. • Measure and mark materials out using a template or ruler. • 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).	• Making an electrical system with a working electrical circuit and switch. • Using appropriate equipment to cut and attach materials. • Assembling according to the design and success criteria.
	Evaluate	• Learning to give and accept constructive criticism on own work and the work of others. • Testing the success of initial ideas against the design criteria and justifying opinions. • Revisiting the requirements of the client to review developing design ideas and check that they fulfil their needs.	• Evaluating electrical products. • Testing and evaluating the success of a final product.
Knowledge	Technical	• To understand that an electrical system is a group of parts (components) that work together to transport electricity around a circuit. • To understand common features of an electric product (switch, battery or plug, dials, buttons etc.). • To list examples of common electric products (kettle, remote control etc.). • To understand that an electric product uses an electrical system to work (function). • To know the name and appearance of a bulb, battery, battery holder and crocodile wire to build simple circuits.	• To understand that electrical conductors are materials which electricity can pass through. • To understand that electrical insulators are materials which electricity cannot pass through. • To know that a battery contains stored electricity that can be used to power products. • To know that an electrical circuit must be complete for electricity to flow. • To know that a switch can be used to complete and break an electrical circuit.

	Additional	• To understand the importance and purpose of information design. • To 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).	• To know facts from the history and invention of the electric light bulb(s) - by Sir Joseph Swan and Thomas Edison.

		Electrical Systems (KS2)	
		Year 5	**Year 6**
Skills	**Design**	• Identifying factors that could be changed on existing products and explaining how these would alter the form and function of the product. • Developing design criteria based on finding from investigating existing products. • Developing design criteria that clarifies the target user.	• Designing a steady hand game - identifying and naming the components required. • Drawing a design from different perspectives. • Generating ideas through sketching and discussion. • Modelling ideas through prototypes. • Understanding the purpose of products, including what is meant by 'fit for purpose' and 'form over function'.
	Make	• Altering a product's form and function by tinkering with its configuration. • Making a functional series circuit, incorporating a motor. • Constructing a product with consideration for the design criteria. • Breaking down the construction process into steps so that others can make the product.	• Constructing a stable base for a game. • Accurately cutting, folding and assembling a net. • Decorating the base of the game to a high quality finish. • Making and testing a circuit Incorporating a circuit into a base.
	Evaluate	• Carry out a product analysis to look at the purpose of a product along with its strengths and weaknesses. • Determining which parts of a product affect its function and which parts affect its form. • Analysing whether changes in configuration positively or negatively affect an existing product. • Peer evaluating a set of instructions to build a product.	• Testing own and others finished games, identifying what went well and making suggestions for improvement. • Gathering images and information about existing products. • Analysing a selection of existing products.

Knowledge	**Technical**	• To know that series circuits only have one direction for the electricity to flow. • To know when there is a break in a series circuit, all components turn off. • To know that an electric motor converts electrical energy into rotational movement, causing the motor's axle to spin. • To know a motorised product is one which uses a motor to function.	• To know that batteries contain acid, which can be dangerous if they leak. • To know the names of the components in a basic series circuit including a buzzer.
	Additional	• To know that product analysis is critiquing the strengths and weaknesses of a product. • To know that 'configuration' means how the parts of a product are arranged.	• To know that 'form' means the shape and appearance of an object. • To know the difference between 'form' and 'function'. • To understand that 'fit for purpose' means that a product works how it should and is easy to use. • To know that 'form over purpose' means that a product looks good but does not work very well. • To know the importance of 'form follows function' when designing: the product must be designed primarily with the function in mind. • To understand the diagram perspectives 'top view', 'side view' and 'back'.