Design and Technology
Knowledge and Skill Progression Overview

Textiles 							
	EYFS	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
Skills: Design	**Please refer to EYFS framework** Discuss what a good design needs. Design a simple pattern with paper. Design a bookmark. Choose from available materials.	Use a template to create a design for a puppet.		**(Cross-stitch and appliqué Cushions or Egyptian collars.)** Design and make a template from an existing cushion and apply individual design criteria.	Write design criteria for a product, articulating decisions made. Design a personalised book sleeve.	Design a stuffed toy, considering the main component shapes required and creating an appropriate template. Consider the proportions of individual components.	Design a waistcoat in accordance to a specification linked to set of design criteria. Annotate designs, to explain their decisions.
Make	Develop fine motor/cutting skills with scissors. Explore fine motor/threading and weaving (under, over technique) with a variety of materials. Use a prepared needle and wool to practise threading.	Cut fabric neatly with scissors. Use joining methods to decorate a puppet. Sequence steps for construction.		Follow design criteria to create a cushion or Egyptian collar. Select and cut fabrics with ease using fabric scissors. Thread needles with greater independence. Ty knots with greater independence.	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. Work neatly by sewing small, straight stitches.	Create a 3D stuffed toy from a 2D design. Measure, mark and cut fabric accurately and independently. Create strong and secure blanket stitches when joining fabric. Thread needles independently. Use appliqué to	Use a template when cutting fabric to ensure they achieve the correct shape. Use pins effectively to secure a template to fabric without creases or bulges. Mark and cut fabric accurately, in accordance with their design.

				Sew cross stitch to join fabric. Decorating fabric using appliqué. Complete design ideas with stuffing and sewing the edges (Cushions) or embellishing the collars based on design ideas (Egyptian collars).	Incorporate a fastening to a design.	attach pieces of fabric decoration. Sew blanket stitch to join fabric. Apply blanket stitch so the spaces between the stitches are even and regular.	Sew a strong running stitch, making small, neat stitches and following the edge. Ty strong knots. Decorating a waistcoat, attaching features (such as appliqué) using thread. Finish the waistcoat with a secure fastening (such as buttons). Learn different decorative stitches. Sew accurately with evenly spaced, neat stitches.
Evaluate	Reflect on a finished product and compare to their design.	Reflect on a finished product, explaining likes and dislikes.		Evaluate an end product and thinking of other ways in which to create similar items.	Test and evaluate an end product against the original design criteria. Decide how many of the criteria should be met for the product to be considered successful. Suggest	Test and evaluate an end product and give point for further improvements.	Reflect on their work continually throughout the design, make and evaluate process.

					modifications for improvement. Articulate the advantages and disadvantages of different fastening types.		
Knowledge	Know that a design is a way of planning our idea before we start. Know that threading is putting one material through an object.	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		Know that applique is a way of mending or decorating a textile by applying smaller pieces of fabric to larger pieces. 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.	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 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.	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.

		see how an idea will look.					

Structure 							
	EYFS	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
Skills: Design	**(Junk Modelling)** Make verbal plans and material choices. Develop a junk model.	Learn the importance of a clear design criteria. Include individual preferences and requirements in a design.	Generate and communicate ideas using sketching and modelling. Learn about different types of structures, found in the natural world and in everyday objects.	**(Constructing a Castle)** Design a castle with key features to appeal to a specific person/purpose. Draw and label a castle design using 2D shapes, labelling: -the 3D shapes that will create the features - materials needed and colours. Design and/or decorate a castle tower on CAD software.	Design a stable pavilion structure that is aesthetically pleasing and selecting materials to create a desired effect. Build frame structures designed to support weight.	Design a stable structure that is able to support weight.	Design a playground featuring a variety of different structures, giving careful consideration to how the structures will be used, considering effective and ineffective designs.
Make	Improve fine motor/scissor	Make stable structures from	Make a structure according to	Construct a range of 3D geometric	Create a range of different shaped frame structures.	Create a frame structure with a	Build a range of play apparatus structures drawing

	skills with a variety of materials. Join materials in a variety of ways (temporary and permanent). Join different materials together. Describe their junk model, and how they intend to put it together.	card, tape and glue. Learn how to turn 2D nets into 3D structures. Follow instructions to cut and assemble the supporting structure of a windmill. Make functioning turbines and axles which are assembled into a main supporting structure.	design criteria. Create joints and structures from paper/card and tape. Build a strong and stiff structure by folding paper.	shapes using nets. Create special features for individual designs. Make facades from a range of recycled materials.	Make a variety of free standing frame structures of different shapes and sizes. Select appropriate materials to build a strong structure and cladding. Reinforce corners to strengthen a structure. Create a design in accordance with a plan. Learn to create different textural effects with materials.	focus on triangulation. Make a range of different shaped beam bridges. Use triangles to create truss bridges that span a given distance and support a load. Build a wooden bridge structure. Independently measure and mark wood accurately. Select appropriate tools and equipment for particular tasks. Use the correct techniques to saws safely. Identify where a structure needs reinforcement and using card corners for support. Explain why selecting appropriating materials is an important part of the design process. Understand basic	upon new and prior knowledge of structures. Measure, mark and cut wood to create a range of structures. Use a range of materials to reinforce and add decoration to structures.

Evaluate	Give a verbal evaluation of their own and others' junk models with adult support. Check to see if their model matches their plan. Consider what they would do differently if they were to do it again. Describe their favourite and least favourite part of their model.	Evaluate a windmill according to the design criteria, testing whether the structure is strong and stable and altering it if it isn't. Suggest points for improvements.	Explore the features of structures. Compare the stability of different shapes. Test the strength of own structures. Identify the weakest part of a structure. Evaluate the strength, stiffness and stability of own structure.	Evaluate own work and the work of others based on the aesthetic of the finished product and in comparison to the original design. Suggest points for modification of the individual designs.	Evaluate structures made by the class. Describe what characteristics of a design and construction made it the most effective. Consider effective and ineffective designs.	wood functional properties. Adapt and improve own bridge structure by identifying points of weakness and reinforcing them as necessary. Suggest points for improvements for own bridges and those designed by others.	Improve a design plan based on peer evaluation. Test and adapt a design to improve it as it is developed. Identify what makes a successful structure.
Knowledge: **Technical**	Know there are a range to different materials that can be used to make a model and that they are all slightly different. Make simple suggestions to fix their junk model.	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).	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. Know that materials can be manipulated to improve strength and stiffness. Know that a structure is	Understand that wide and flat based objects are more stable. Understand the importance of strength and stiffness in structures.	Understand what a frame structure is. Know that a 'free-standing' structure is one which can stand on its own.	Understand some different ways to reinforce 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	Know that structures can be strengthened by manipulating materials and shapes.

		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.	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.			is important based on properties. Understand the material (functional and aesthetic) properties of wood.	
Additional		Know that a client is the person I am designing for. Know that design criteria is a list of points to ensure the product meets	Know that natural structures are those found in nature. Know that man-made structures	Know the following features of a castle: flags, towers, battlements, turrets, curtain walls, moat, drawbridge and	Know that a pavilion is a decorative building or structure for leisure activities. Know that	Understand the difference between arch, beam, truss and suspension bridges.	Understand what a 'footprint plan' is. Understand that in the real world, design, can impact users in positive

		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.	are those made by people.	gatehouse - and their purpose. Know that a façade is the front of a structure. Understand that a castle needed to be strong and stable to withstand enemy attack. 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.	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 how to carry and use a saw safely.	and negative ways. Know that a prototype is a cheap model to test a design idea.

Mechanisms 						
EYFS	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
Skills: Design		Create a class design criteria for a moving Christmas Character. Design a moving monster for a specific audience in accordance with a design criteria.	**(Pneumatic Toys)** Design a toy which uses a pneumatic system. Develop design criteria from a design brief. Generate ideas using thumbnail sketches and exploded diagrams. Learn that different types of drawings are used in design to explain ideas clearly.	Design a shape that reduces air resistance. 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. 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. Understand how linkages change the direction of a force. Make things move at the same time. Understand and draw cross-sectional diagrams to show the inner-workings of my design.
Make		Make linkages using card for levers and split pins for pivots. Experiment with linkages adjusting the widths, lengths and thicknesses of card used. Cut and assemble components neatly.	Create a pneumatic system to create a desired motion. Build secure housing for a pneumatic system. Use syringes and balloons to create different types of pneumatic systems to make a functional and appealing pneumatic toy. Select materials due to their functional	Measure, mark, cut and assemble with increasing accuracy. Make a model based on a chosen design.	Follow a design brief to make a pop-up book, neatly and with focus on 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.	Measure, mark and cut components accurately using a ruler and scissors. Assemble components accurately to make a stable frame. Understand that for the frame to function effectively the components must be cut accurately and the joints of the

			and aesthetic characteristics. Manipulate materials to create different effects by cutting, creasing, folding and weaving.		Measure, mark and check the accuracy of the jelutong and dowel pieces required.	frame secured at right angles. Select appropriate materials based on the materials being joined and the speed at which the glue needs to dry/set.
Evaluate		Evaluate own designs against design criteria. Use peer feedback to modify a final design.	Use the views of others to improve designs. Test and modify the outcome, suggesting improvements. Understand the purpose of exploded-diagrams through the eyes of a designer and their client.	Evaluate the speed of a final product based on: the effect of shape on speed and the accuracy of workmanship on performance.	Evaluate the work of others and receiving feedback on own work. Suggest points for improvement.	Evaluate the work of others and receiving feedback on own work. Apply points of improvement to their toys. Describe changes they would make/do if they were to do the project again.
Knowledge: **Technical**		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.	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 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.	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.	Understand that the mechanism in an automata uses a system of cams, axles and followers. Understand that different shaped cams produce different outputs.

Additional		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.	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.	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 it is important to assess	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.	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.

				and evaluate design ideas and models against a list of design criteria.		

Electrical systems 							
Skills: Design	**EYFS**	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
				(Electrical posters) Carry out research based on a given topic (e.g. The Romans) to develop a range of initial ideas. Generate a final design for the electric poster with consideration to	Design a torch, giving consideration to the target audience and creating both design and success criteria focusing on features of individual design ideas.	Identify factors that could be changed on existing products and explaining how these would alter the form and function of the product. Develop design criteria based on findings from investigating existing products.	Design a steady hand game - identify and name the components required. Draw a design from three different perspectives. Generate ideas through sketching and discussion.

Make				the client's needs and design criteria. Design an electric poster that fits the requirements of a given brief. Plan the positioning of the bulb (circuit component) and its purpose. Create a final design for the electric poster. Mount the poster onto corrugated card to improve its strength and allow it to 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	Make a torch with a working electrical circuit and switch. Use appropriate equipment to cut and attach materials. Assemble a torch according to the design and success criteria.	Develop design criteria that clarifies the target user. Alter a product's form and function by tinkering with its configuration. Make a functional series circuit, incorporating a motor. Construct a product with consideration for the design criteria. Break down the construction process into steps so that others can make the product.	Model ideas through prototypes. Understand the purpose of products (toys), including what is meant by 'fit for purpose' and 'form over function'. Construct a stable base for a game. Accurately cut, fold and assemble a net. Decorate the base of the game to a high quality finish. Make and test a circuit. Incorporate a circuit into a base.

				conceal a roughly cut edge).			
Evaluate				Learn to give and accept constructive criticism on own work and the work of others. Test the success of initial ideas against the design criteria and justify opinions. Revisit the requirements of the client to review develop design ideas and check that they fulfil their needs.	Evaluate electrical products. Test and evaluate the success of a final product.	Carry out a product analysis to look at the purpose of a product along with its strengths and weaknesses. Determine which parts of a product affect its function and which parts affect its form. Analyse whether changes in configuration positively or negatively affect an existing product. Peer evaluate a set of instructions to build a product.	Test own and others finished games, identifying what went well and making suggestions for improvement. Gather images and information about existing children's toys. Analyse a selection of existing children's toys.
Knowledge: Technical				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	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	Know that series circuits only have one direction for the electricity to flow. Know when there is a break in a series circuit, all components turn off. Know that an electric motor converts electrical energy into	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.

				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.	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.	rotational movement, causing the motor's axle to spin. Know a motorised product is one which uses a motor to function.	
Additional				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	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 that product analysis is critiquing the strengths and weaknesses of a product. Know that 'configuration' means how the parts of a product are arranged.	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.

				(remain rigid without bending when the electrical circuit is attached).			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'.

Cooking and Nutrition 							
Skills:	**EYFS**	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
Design	Design a soup recipe as a class. Design soup packaging.	Design smoothie carton packaging by-hand or on ICT software.	Design a healthy wrap based on a food combination which work well together.	Create a healthy and nutritious recipe for a savoury tart using seasonal ingredients, considering the taste, texture, smell and appearance of the dish.	Design a biscuit within a given budget, drawing upon previous taste testing judgements.	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 an appealing packaging to reflect a recipe.	Write a recipe, explaining the key steps, method and ingredients. Including facts and drawings from research undertaken.
Make	Chop plasticine safely. Chop vegetables with support.	Chop fruit and vegetables safely to make a smoothie.	Slice food safely using the bridge or claw grip. Construct a wrap that meets a design brief.	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.	Follow a baking recipe, from start to finish, including the preparation of ingredients. Cook safely, following basic hygiene rules. Adapt a recipe to improve it or change it to meet new criteria (e.g. from savoury to sweet).	Cut and prepare vegetables 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.	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.

Evaluate	Taste the soup and giving opinions. Describe some of the following when tasting food: look, feel, smell and taste. Choose their favourite packaging design and explaining why.	Taste and evaluate different food combinations. Describe appearance, smell and taste. Suggest information to be included on packaging.	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.	Establish and use design criteria to help test and review dishes. Describe the benefits of seasonal fruits and vegetables and the impact on the environment. Suggest points for improvement when making a seasonal tart.	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 food products. Suggest modifications to a recipe (e.g. This biscuit has too many raisins, and it is falling apart, so next time I will use less raisins).	Identify the nutritional differences between different products and recipes. Identify and describe healthy benefits of food groups.	Evaluate a recipe, considering: taste, smell, texture and origin of the food group. Taste test and score final products. Suggest and write up points of improvements when scoring others' dishes, and when evaluating their own throughout the planning, preparation and cooking process. Evaluate health and safety in production to minimise cross contamination.
Knowledge	Know that soup is ingredients (usually vegetables and liquid) blended together. Know that vegetables are grown. Recognise and name some common vegetables.	Understand the difference between fruits and vegetables. Understand that some foods typically known as vegetables are actually fruits (e.g. cucumber). Know that a blender is a machine which	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 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	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:	Understand where meat comes from - learning that beef is from cattle and how beef is reared and processed, including key welfare issues. Know that I can adapt a recipe to make it healthier	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

	Know that different vegetables taste different. Know that eating vegetables is good for us. Discuss why different packages might be used for different foods.	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 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	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.	sieving, creaming, rubbing method, cooling. Understand the importance of budgeting while planning ingredients for biscuits.	by substituting ingredients. Know that I can use a nutritional calculator to see how healthy a food option is. Understand that 'cross-contamination' means bacteria and germs have been passed onto ready-to-eat foods and it happens when these foods mix with raw meat or unclean objects.	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).

			we do not expect to contain sugar do; we call these ‘hidden sugars’.	Know that similar coloured fruits and vegetables often have similar nutritional benefits.			