



Design & Technology Small Steps of Progression

Structures

	Reception	Year1	Year2	Year3	Year4	Year5	Year6
Design	<ul style="list-style-type: none"> -Make verbal plans and material choices -Design a junk model -Use knowledge from exploration to inform design 	<ul style="list-style-type: none"> -Understand the importance of a clear design criteria -Include individual preferences and requirements in a design 	<ul style="list-style-type: none"> -Generate and communicate ideas using sketching and modelling -Explore ideas around the design brief 	<ul style="list-style-type: none"> -Add key features to a design to appeal to a specific person/purpose -Draw & label features on design, including 3D shapes that will create features, colours and materials needed 	<ul style="list-style-type: none"> -Design a structure that is aesthetically pleasing & select suitable materials for the desired effect -Build frame structures designed to support weight 	<ul style="list-style-type: none"> -Design a stable structure that is able to support weight. -Create a frame structure with a focus on triangulation 	<ul style="list-style-type: none"> -Design a place featuring a variety of different structures, giving careful consideration to how the structures will be used, considering effective and ineffective designs.
Make	<ul style="list-style-type: none"> -Consider material choices for the design (e.g. waterproof) -Join materials in a variety of ways (temporary & permanent) -Join different materials together -Describe the junk model and how they intend to put them together 	<ul style="list-style-type: none"> -Make stable structures using card, tape & glue -Learn how to turn 2D nets into 3D structures -Follow instructions to cut & assemble a supporting structure -Include a functioning part (e.g. a turbine) into the main structure 	<ul style="list-style-type: none"> -Make a structure according to the design criteria -Create joints and structures from paper/card and tape -Build a strong and stiff structure by folding paper 	<ul style="list-style-type: none"> -Construct a range of 3D geometric shapes using nets -Create special features for individual designs -Make facades from a range of recycled materials 	<ul style="list-style-type: none"> -Create a range of different shaped frame structures -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 	<ul style="list-style-type: none"> - 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 appropriate materials is an important part of the design process -Understand basic wood functional 	<ul style="list-style-type: none"> -Build a range of structures drawing 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

						properties	
Evaluate	<ul style="list-style-type: none"> -Check if their model matches their plan -Make predictions about a feature of their model (e.g. will it float) and evaluate it against the design criteria -Test their design and consider what could have been done differently if they were to do it again 	<ul style="list-style-type: none"> -Evaluate a structure according to the design criteria, testing whether the structure is strong and stable and altering it if it isn't -Suggest points for improvement 	<ul style="list-style-type: none"> -Explore the features of a structure -Compare the stability of different shapes -Test the strength of own structure -Identify the weakest part of a structure -Evaluate the strength, stiffness and stability of own structure 	<ul style="list-style-type: none"> -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. 	<ul style="list-style-type: none"> -Evaluate structures made by the class. -Describe what characteristics of a design and construction made it the most effective -Consider effective and ineffective designs. 	<ul style="list-style-type: none"> -Adapt and improve own structure by identifying points of weakness and reinforcing them as necessary -Suggest points for improvements for own structures and those designed by others 	<ul style="list-style-type: none"> -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.
Technical knowledge	<ul style="list-style-type: none"> -Know there are a range of different materials that can be used to make a model & that they are all slightly different -Make simple suggestions to fix their junk models 	<ul style="list-style-type: none"> -Understand that you can change the shape of materials to improve the strength and stiffness of a structure -Understand that cylinders are a strong type of structure -Understand that axels are used in structures and mechanisms to make parts in a circle turn -Know that a structure is something that has been made and put together 	<ul style="list-style-type: none"> -Know that shapes & structures with wide, flat bases or legs are the most stable -Understand that the shape of a structure affects its strength -Know that a 'stable' structure is one that is firmly fixed and unlikely to change or move -Know that a stiff material or structure is one which does not bend easily 	<ul style="list-style-type: none"> Understand that wide and flat based objects are more stable -Understand the importance of strength and stiffness in structures 	<ul style="list-style-type: none"> -Understand what a frame structure is. -Know that a 'free-standing' structure is one which can stand on its own 	<ul style="list-style-type: none"> -Understand some different ways to reinforce structures -Understand how triangles can be used to reinforce structures -Know that properties are words that describe the form and function of materials -Understand why material selection is important based on properties -Understand the material (functional and aesthetic) properties of wood 	<ul style="list-style-type: none"> -Know that structures can be strengthened by manipulating materials and shapes
Additional knowledge		<ul style="list-style-type: none"> -Know a client is a person I am designing for -Know that design criteria is a list of points to ensure the product meets the clients needs and wants 	<ul style="list-style-type: none"> -Know that natural structures are those found in nature -Know that man-made structures are those made by people 	<ul style="list-style-type: none"> -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 	<ul style="list-style-type: none"> -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 	<ul style="list-style-type: none"> -Understand how to carry and use a saw safely 	<ul style="list-style-type: none"> -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

				specification is a list of success criteria for a product.	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.		model to test a design idea
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Mechanisms/mechanical systems

	Reception	Year1	Year2	Year3	Year4	Year5	Year6
Design	<ul style="list-style-type: none"> -Make verbal plans and material choices -Design a moving model -Use knowledge from exploration to inform design 	<ul style="list-style-type: none"> -Explain how to adapt mechanisms, using bridges or guides to control the movement -Design a moving product for a given audience -Create clearly labelled drawings that illustrate movement 	<ul style="list-style-type: none"> -Select a suitable linkage system to produce the desired motion -Create a class design criteria for a moving product -Design a moving product for a specific audience in accordance with a design criteria 	<ul style="list-style-type: none"> -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 	<ul style="list-style-type: none"> 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 	<ul style="list-style-type: none"> -Design a pop-up product which uses a mixture of structures and mechanisms. -Name each mechanism, input and output accurately -Storyboard ideas for a product 	<ul style="list-style-type: none"> -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 drawing cross-sectional diagrams to show the inner-workings of my design
Make	<ul style="list-style-type: none"> -Work with an adult to explore making models that have a moving part -Talk about their design with an adult and make adaptations 	<ul style="list-style-type: none"> -Follow a design to create moving models that use levers and sliders -Adapt mechanisms, when: <ul style="list-style-type: none"> ● they do not work as 	<ul style="list-style-type: none"> -Select materials according to their characteristics -Follow a design brief -Make linkages using card for levers and split pins for pivots 	<ul style="list-style-type: none"> -Create a pneumatic system to create a desired motion -Build secure housing for a pneumatic system -Use syringes and 	<ul style="list-style-type: none"> -Measure, mark, cut and assemble with increasing accuracy -Make a model based on a chosen design 	<ul style="list-style-type: none"> -Follow a design brief to make a pop up product, neatly and with focus on accuracy -Make mechanisms and/or structures 	<ul style="list-style-type: none"> -Measure, mark and check the accuracy of the jelutong and dowel pieces required -Measure, mark and cut components

	as they go	they should. <ul style="list-style-type: none"> ● to fit their product design ● to improve how they work after testing their product 	-Experiment with linkages adjusting the widths, lengths and thicknesses of card used. -Cut and assemble components neatly	balloons to create different types of pneumatic systems to make a functional and appealing pneumatic toy -Select materials due to their functional and aesthetic characteristics -Manipulate materials to create different effects by cutting, creasing, folding and weaving		using sliders, pivots and folds to produce movement. -Use layers and spacers to hide the workings of mechanical parts for an aesthetically pleasing result	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 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	-Check if their product matches their plan -Make predictions about a feature of their product (e.g. will it move) and evaluate it against the design criteria -Test their design and consider what could have been done differently if they were to do it again	-Test a finished product, seeing whether it moves as planned and if not, explaining why and how it can be fixed -Review the success of a product by testing it with its intended audience -Test wheel and axle mechanisms, identifying what stops the wheels from turning, and recognising that a wheel needs an axle in order to move	-Evaluate different designs. -Test and adapt a design -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 receive feedback on own work -Apply points of improvement to their product -Describe changes they would make/do if they were to do the project again
Technical Knowledge	-Know that wheels need to be round to rotate and move	-Know that a mechanism is the parts of an object that move together -Know that a slider	-Know that different materials have different properties and are therefore suitable for different	-Understand how pneumatic systems work -understand that pneumatic systems	-Understand that all moving things have kinetic energy -Understand that kinetic energy is the	-Know that mechanisms control movement -Understand that mechanisms can be	-Understand that the mechanism in an automata uses a system of cams, axles and followers

		<p>mechanism moves an object from side to side</p> <ul style="list-style-type: none"> -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 -Understand that for a wheel to move it must be attached to a rotating axle -Know that an axle moves within an axle holder which is fixed to the vehicle or toy -Know that the frame of a vehicle (chassis) needs to be balanced 	<p>uses</p> <ul style="list-style-type: none"> -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 	<p>can be used as part of a mechanism</p> <ul style="list-style-type: none"> -Know that pneumatic systems operate by drawing in, releasing and compressing air 	<p>energy that something (object/person) has by being in motion</p> <ul style="list-style-type: none"> -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 	<p>used to change one kind of motion into another</p> <ul style="list-style-type: none"> -Understand how to use sliders, pivots and folds to create paper-based mechanisms 	<ul style="list-style-type: none"> -Understand that different shaped cams produce different outputs
<p>Additional Knowledge</p>		<ul style="list-style-type: none"> -Know that in Design and technology we call a plan a 'design' -Know some real-life items that use wheels such as wheelbarrows, hamster wheels and vehicles 	<ul style="list-style-type: none"> -Know the features of a wheeled product include the wheel, frame, pods, a base and an axle holder -Know that it is important to test my design as I go along so that I can solve any problems that may occur 	<ul style="list-style-type: none"> -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 	<ul style="list-style-type: none"> -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 	<ul style="list-style-type: none"> -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 	<ul style="list-style-type: none"> -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.

				paper quickly	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 and evaluate design ideas and models against a list of design criteria		
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Cooking & Nutrition

	Reception	Year1	Year2	Year3	Year4	Year5	Year6
Design	-Design a recipe as a class -Design packaging	-Design packaging by hand or using ICT software	-Design a healthy product based on a combination of foods that work well together	-Create a healthy and nutritious recipe for a savoury product using seasonal ingredients, considering the taste, texture, smell and appearance of the dish	-Design a product 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 appealing packaging to reflect a recipe	-Write a recipe, explaining the key steps, method and ingredients -Include facts and drawings from research undertaken
Make	-Chop plasticine safely -Chop vegetables with support	-Chop fruit & vegetables safely	-Slice food safely using a claw or bridge grip -Construct a product 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	-Follow a baking recipe, from start to finish, including the preparation of ingredients -Cook safely, following basic hygiene rules	-Cut and prepare vegetables safely -Use equipment safely, including knives, hot pans and hob -Know how to avoid	-Follow a recipe, including using the correct quantities of each ingredient -Adapt a recipe based on research -Work to a given

				instructions within a recipe	-Adapt a recipe to improve it or change it to meet new criteria (e.g. from savoury to sweet)	cross-contamination -Follow a step by step method carefully to make a recipe	timescale -Work safely and hygienically with independence
Evaluate	<ul style="list-style-type: none"> -Taste the product and giving opinions. -Describe some of the following when tasting food: look, feel, smell and taste -Choose their favourite packaging design and explaining why 	<ul style="list-style-type: none"> -Taste and evaluate different food combinations -Describe appearance, smell and taste -Suggest information to be included on packaging 	<ul style="list-style-type: none"> -Describe the taste, texture and smell of fruit and vegetables. -Taste testing food combinations and final products -Describe the information that should be included on a label -Evaluate which grip was most effective 	<ul style="list-style-type: none"> -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 product 	<ul style="list-style-type: none"> -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). 	<ul style="list-style-type: none"> -Identify the nutritional differences between different products and recipes -Identify and describing healthy benefits of food groups 	<ul style="list-style-type: none"> -Evaluate a recipe, considering: taste, smell, texture and origin of the food group -Taste testing and scoring 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	<ul style="list-style-type: none"> -Know that soup is ingredients (usually vegetables and liquid) blended together -Know that vegetables are grown -Recognise and name some common vegetables -Know that different vegetables taste different -Know that eating vegetables is good for us -Discuss why different 	<ul style="list-style-type: none"> -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 mixes ingredients together into a smooth liquid. -Know that a fruit has seeds and a vegetable does not. 	<ul style="list-style-type: none"> -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 	<ul style="list-style-type: none"> -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 	<ul style="list-style-type: none"> -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 	<ul style="list-style-type: none"> -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 by substituting ingredients -Know that I can use a nutritional calculator to see how healthy a 	<ul style="list-style-type: none"> -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

	<p>packages might be used or different foods</p>	<ul style="list-style-type: none"> -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). 	<p>sugar</p> <ul style="list-style-type: none"> -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' 	<ul style="list-style-type: none"> -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 	<p>importance of budgeting while planning ingredients for biscuits</p>	<p>food option is.</p> <ul style="list-style-type: none"> -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 	<p>eating to remove any dirt and insecticides</p> <ul style="list-style-type: none"> -Understand what happens to a certain food before it appears on the supermarket shelf (Farm to Fork)
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Textiles

	Reception	Year1	Year2	Year3	Year4	Year5	Year6
Design	<ul style="list-style-type: none"> -Discuss what a good design needs -Design a simple pattern with paper -Choose from available materials. 	<ul style="list-style-type: none"> -Use a template to create a design for a product (e.g. puppet) 	<ul style="list-style-type: none"> -Create a design for a product 	<ul style="list-style-type: none"> -Design and make a template from an existing product and apply individual design criteria 	<ul style="list-style-type: none"> -Write design criteria for a product, articulating decisions made -Design a personalised product 	<ul style="list-style-type: none"> Design a product, considering the main component shapes required and creating an appropriate template Consider the proportions of individual components 	<ul style="list-style-type: none"> -Design a product in accordance to a specification linked to set of design criteria -Annotate designs, to explain their decisions
Make	<ul style="list-style-type: none"> -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 	<ul style="list-style-type: none"> -Cut fabric neatly with scissors -Using joining methods to decorate a product (glue, simple running stitch) -Sequence steps for construction 	<ul style="list-style-type: none"> -Select and cut fabrics for sewing -Decorate a pouch using fabric glue or running stitch -Thread a needle. -Sew running stitch, with evenly spaced, neat, even stitches to join fabric -Neatly pin and cut fabric using a template 	<ul style="list-style-type: none"> -Follow design criteria to create a product -Select and cut fabrics with ease using fabric scissors -Thread needles with greater independence -Tie knots with greater independence -Sew cross stitch to join fabric -Decorate fabric using appliqué -Complete design ideas with stuffing and sewing the edges based on design ideas 	<ul style="list-style-type: none"> -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 -Incorporate a fastening to a design 	<ul style="list-style-type: none"> -Create a 3D stuffed product 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 attach pieces of fabric decoration -Sew blanket stitch to join fabric. -Apply blanket stitch so the spaces between the stitches are even and regular 	<ul style="list-style-type: none"> -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 a strong running stitch, making small, neat stitches and following the edge -Tie strong knots -Decorate 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

<p>Evaluate</p>	<p>-Reflect on a finished product and comparing to their design</p>	<p>-Reflect on a finished product, explaining likes and dislikes</p>	<p>-Explore troubleshooting scenarios posed by teacher -Evaluate the quality of the stitching on others' work -Discuss as a class, the success of their stitching against the success criteria -Identify aspects of their peers' work that they particularly like and why</p>	<p>-Evaluate an end product and thinking of other ways in which to create similar items.</p>	<p>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 modifications for improvement -Articulate the advantages and disadvantages of different fastening types</p>	<p>-Test and evaluate an end product and giving point for further improvements</p>	<p>-Reflect on their work continually throughout the design, make and evaluate process</p>
<p>Knowledge</p>	<p>-Know that a design is a way of planning our idea before we start. -Know that threading is putting one material through an object</p>	<p>-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</p>	<p>-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</p>	<p>-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</p>	<p>-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</p>	<p>-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</p>	<p>-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</p>

Electrical systems

	Year3	Year4	Year5	Year6
Design	<ul style="list-style-type: none"> -Carry out research based on a given product -Generate a final design for the product with consideration to the client's needs and design criteria -Design product that fits the requirements of a given brief. -Plan the positioning of the bulb (circuit component) and its purpose 	<ul style="list-style-type: none"> -Design a product, giving consideration to the target audience and creating both design and success criteria focusing on features of individual design ideas 	<ul style="list-style-type: none"> -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. -Develop design criteria that clarifies the target user 	<ul style="list-style-type: none"> -Design a product - identifying and naming the components required -Draw a design from three different perspectives -Generate ideas through sketching and discussion -Model ideas through prototypes -Understand the purpose of products (toys), including what is meant by 'fit for purpose' and 'form over function'
Make	<ul style="list-style-type: none"> -Create a final design for the product - Explore how to improve its strength and allow it to withstand the weight of the circuit - 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 	<ul style="list-style-type: none"> -Make a product 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 	<ul style="list-style-type: none"> -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 	<ul style="list-style-type: none"> -Construct a stable base for a game -Accurate cutting, folding and assembling a net -Decorate the base of the game to a high quality finish -Make and test a circuit. -Incorporate a circuit into a base
Evaluate	<ul style="list-style-type: none"> -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 justifying opinions -Revisit the requirements of the client to review developing design ideas and check that they fulfil their needs 	<ul style="list-style-type: none"> -Evaluate electrical products -Test and evaluate the success of a final product 	<ul style="list-style-type: none"> -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 evaluating a set of instructions to build a product 	<ul style="list-style-type: none"> -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.
Technical knowledge	<ul style="list-style-type: none"> -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.) 	<ul style="list-style-type: none"> -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 	<ul style="list-style-type: none"> -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 rotational 	<ul style="list-style-type: none"> -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

	<ul style="list-style-type: none"> -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 	<p>electricity that can be used to power products</p> <ul style="list-style-type: none"> -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 	<p>movement, causing the motor's axle to spin</p> <ul style="list-style-type: none"> -Know a motorised product is one which uses a motor to function 	
<p>Additional knowledge</p>	<ul style="list-style-type: none"> -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) 	<ul style="list-style-type: none"> -Know the features of a product: 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. 	<ul style="list-style-type: none"> -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 	<ul style="list-style-type: none"> -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'