

Reception			
Structures	Textiles	Structures	Mini: Cooking and Nutrition
Junk Modelling	Bookmarks	Boats	Biscuits/Buns
<ul style="list-style-type: none"> • Use a range of small tools, including scissors, paint brushes • safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function. • share their creations, explaining the process they have used. 	<ul style="list-style-type: none"> • Use a range of small tools, including scissors, paint brushes • safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function. • share their creations, explaining the process they have used. 	<ul style="list-style-type: none"> • Use a range of small tools, including scissors, paint brushes • safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function. • share their creations, explaining the process they have used. 	<ul style="list-style-type: none"> • Use a range of small tools, including cutlery • safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function. • share their creations, explaining the process they have used.

Year 1			
Structures	Mini Unit: Textiles	Cooking and Nutrition	Mechanisms
Windmills	Puppets	Smoothies	Buggies
<p>Conceptual</p> <ul style="list-style-type: none"> Know sails or blades of a windmill are moved by the wind. Know windmills generate power and were used for grinding flour. Know a structure is something built for a reason. Know stable structures do not topple. Know adding weight to the base of a structure can make it more stable. <p>Procedural</p> <ul style="list-style-type: none"> Find the middle of an object. Puncture holes. Add weight to a structure. Create supporting structures. Cut evenly and carefully. Make a stable structure. Make functioning sails/blades that attach to the supporting structure. <p>Disciplinary</p> <ul style="list-style-type: none"> Evaluate and improve a product. Follow design criteria to meet the needs of a user. Improve the windmill. 	<p>Conceptual</p> <ul style="list-style-type: none"> Know different types of fabric materials have different properties. Know what a template is a pre-made model. <p>Procedural</p> <ul style="list-style-type: none"> Thread a needle and join fabrics using a running stitch. Use a seam allowance to make sure that the patterns keep their shape. Join their two puppets' faces together as one. Finish fabrics by decorating with pipe cleaners or other pieces of fabric etc. <p>Disciplinary</p> <ul style="list-style-type: none"> Follow design criteria Draw a plan of what the final design will look like. using approximate measurements (of the hand) to meet the user's need. Generate Ideas using pictures and storybooks to draw and label a design idea. Use premade templates 	<p>Conceptual</p> <ul style="list-style-type: none"> Know fruits and vegetables come from plants (including trees). Know Fruits contain a plant's seeds and vegetables are other parts of the plant. Know food can come from farms and gardens. Fruits and vegetables are usually harvested in a particular season. Different foods are in season at different times of the year. Know we should eat 5 portions of fruit or vegetables each day. Know 'Eating a rainbow' means we should eat fruit and vegetables of different colours. Know fruits and vegetables both contain lots of good things for our bodies. Fruits contain more sugar, so we should eat less of them. Know we wash hands and tie hair back to stop the tiny living things on our hands getting onto the food and into our bodies. Know aprons protect our clothes and stop the tiny living things on them getting into food and into our bodies. <p>Procedural</p> <ul style="list-style-type: none"> Wash and drain fruits. Chop using the claw technique. Chop a range of foods, e.g. bananas, cucumber and prepared pears, pineapple, peppers and celery. Peel e.g. bananas, satsumas. Stir with wooden spoon. Use fruit juice to prevent browning. Follow simple recipes. Wash up items by removing excess food, washing, rinsing and drying. <p>Disciplinary</p> <ul style="list-style-type: none"> Evaluate final creation Make food choices based on colour 	<p>Conceptual</p> <ul style="list-style-type: none"> Know wheels need to be round to rotate and move. Understand that for a wheel to move it must be attached to a rotating axle. Know 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>Procedural</p> <ul style="list-style-type: none"> Design a vehicle that includes wheels, axles and axle holders, which will allow the wheels to move. Make a moving vehicle. <p>Disciplinary</p> <ul style="list-style-type: none"> Create clearly labelled drawings. Test and adapt the mechanisms to make sure the product works and identify what stops wheels from turning. Give examples of things that went well and things that need improving. <p>A moving buggy will include the body, wheels, axles, axle holders, and chassis. There are two types of axle: fixed and free. Fixed axles attach to the chassis. Free axles are not attached to the chassis and can spin within the chassis.</p>

Year 2			
Textiles	Mechanisms	Mechanisms	Mini: Cooking and Nutrition
Pouches	Fairground	Moving Monster	Balanced Diet Wraps
<p>Conceptual</p> <ul style="list-style-type: none"> Know sewing is a method of joining fabric. Know that different stitches can be used when sewing. Know the importance of tying a knot after sewing the final stitch. Know a thimble can be used to protect my fingers when sewing. <p>Procedural</p> <ul style="list-style-type: none"> Thread a needle. Sew a running stitch with even, regular-sized stitches and understand that both ends must be knotted. Prepare and cut fabric to make a pouch from a template. Pin a template to fabric. Use a running stitch to join the two pieces of fabric together. Decorate their pouch using other materials. <p>Disciplinary</p> <ul style="list-style-type: none"> Design a pouch. Selecting and cutting fabrics for sewing. Evaluate the quality of the stitching on own and others' work. Discuss as a class, the success of their stitching against the success criteria. Identifying aspects of their peers' work that they particularly like and why. 	<p>Conceptual</p> <ul style="list-style-type: none"> Know a Ferris wheel needs the wheel, frame, pods, a base, an axle and an axle holder. Know that different choices of material (e.g. thick card vs thin card) will affect the stability of the model. Know different materials have different properties and will have different uses. Know it is important to test the design as they go along to solve problems as they occur. <p>Procedural</p> <ul style="list-style-type: none"> Design and label a wheel. Label designs. Build a stable structure with a rotating wheel. Select appropriate materials based on their properties. Selecting a good linkage system to produce the desired motions. <p>Disciplinary</p> <ul style="list-style-type: none"> Follow a design brief to make a model wheel. Look at designs of others and make comments about what works well or could be better. Test and change their design. 	<p>Conceptual</p> <ul style="list-style-type: none"> Know a mechanism is a collection of moving parts Know that an input is what starts something working. Know that an output is what happens. Know the design has levers, linkages and pivots. <p>Procedural</p> <ul style="list-style-type: none"> Make linkages with card for levers and split pins for pivots. Select and assemble materials to create their planned monster features. Assemble the monster to their linkages without affecting how it works. Experimenting with linkages adjusting the widths, lengths and thicknesses of card used. Cut and assemble parts neatly. <p>Disciplinary</p> <ul style="list-style-type: none"> Design monsters suitable for children, which satisfy most of the design criteria. Make two design and listen to peer feedback to choose their best design. Creating shared design criteria for a moving monster as a class. Evaluating own designs against design criteria. Use peer feedback to say how to change a final design. 	<p>Conceptual</p> <ul style="list-style-type: none"> Know 'diet' means the food and drink that a person eats. Know what makes a balanced diet. Know the five main food groups: carbohydrates, fruits and vegetables, protein, dairy and oils and spreads. Know we should eat a range of different foods from each food group, and roughly how much of each food group. Know 'ingredients' means the items in a mixture or recipe. <p>Procedural</p> <ul style="list-style-type: none"> Chop foods safely to make a wrap. Grate foods to make a wrap. Snip smaller foods instead of cutting. Spread soft foods to make a wrap. Taste and evaluate different food combinations. Describe appearance, smell and taste. Design three wrap ideas. <p>Disciplinary</p> <ul style="list-style-type: none"> Review and give a score to evaluate. Make a plan. Follow a design brief. Construct a wrap that meets the design brief and their plan.

Year 3			
Textiles	Mechanisms	Cooking and Nutrition	Mini: Mechanical Systems
Cross Stitch/Applique	Moving Monster	Eating Seasonally	Card with a slider mechanism
<p>Conceptual</p> <ul style="list-style-type: none"> Know appliqué is a way of mending or decorating with small pieces of fabric. Know when two edges of fabric joined together are called a seam. Know seam allowance is leaving a space between stitches and edge of fabric. Know some products are turned inside out after sewing to hide stitches. <p>Procedural</p> <ul style="list-style-type: none"> Designing and making a template 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 a product (stuffing/sewing the edges). Evaluating an end product and thinking of other ways to create similar items. <p>Disciplinary</p> <ul style="list-style-type: none"> Follow design criteria to create a product. Develop own, individual design criteria. Identify a user's needs. Generate Ideas for a prototype using size and colour. Evaluate end product. 	<p>Conceptual</p> <ul style="list-style-type: none"> Know pneumatic systems draw in and release air. Known pneumatic systems can be used as part of a mechanism. Know an exploded diagram helps a designer to communicate design ideas to a client. <p>Procedural</p> <ul style="list-style-type: none"> Use syringes and balloons to create a pneumatic system to make a functional and appealing pneumatic toy. Select materials due to their functional and aesthetic characteristics. Build secure housing for a pneumatic system. Manipulate materials by cutting, creasing and folding. <p>Disciplinary</p> <ul style="list-style-type: none"> Create a range of quick thumbnail sketches to be first ideas. Design monsters suitable for children, which satisfy most of the design criteria. Make an exploded-diagrams through the eyes of a designer. Draw accurate diagrams with correct labels, arrows and explanations. 	<p>It is suggested that tart preparation takes place outside the lesson throughout the day with an additional adult who works with children to chop/peel the vegetables and bake the tarts.</p> <p>Conceptual</p> <ul style="list-style-type: none"> Know seasonal means foods that grow in a given season in a given country. Know some seasonal foods that grow in the UK and what season they grow in. Know eating seasonal foods can have a positive impact on the environment unlike importing out of season fruit or vegetables. Know words to describe the flavour and texture of foods. Know ways to cut and peel safely. Know the appearance of food is as important as taste. Know similar coloured fruits and vegetables often have similar nutritional benefits. <p>Procedural</p> <ul style="list-style-type: none"> Design a savoury vegetable tart recipe using seasonal ingredients. Taste seasonal ingredients. Describe the texture and flavour of ingredients. Peel vegetables by hand or with a peeler e.g. onion . Cut ingredients safely e.g. tomatoes. Choose ingredients based on a design brief. Follow the instructions within a recipe. Describe the benefits of seasonal fruits and vegetables and their impact on the environment. <p>Disciplinary</p> <ul style="list-style-type: none"> Evaluate the final savoury vegetable tart, describing things that could be changed or developed. 	<p>Conceptual</p> <ul style="list-style-type: none"> Know mechanisms control movement. Know how split pins create card-based mechanisms. Know that a design brief is a description of what is going to be designed and made. Know design criteria is what the product must have. Know hiding mechanisms makes a product more aesthetically pleasing. <p>Procedural</p> <ul style="list-style-type: none"> Produce a suitable plan for a design. Produce the structure of a card. Assemble the components necessary for all their structures/mechanisms. Hide the mechanical elements with more layers/spacers where needed. Use appropriate/correct images/text to meet the purpose of the card. <p>Disciplinary</p> <ul style="list-style-type: none"> Evaluate the work of others and receiving feedback on own work.

Year 4			
Electrical Systems	Cooking and Nutrition	Digital	Structures
Torches	Adapt a recipe	Mindful Moment Timer	Card with a pop up mechanism
<p>Conceptual</p> <ul style="list-style-type: none"> The housing or case protects the components inside. A torch has an electrical circuit inside that must be complete for the bulb to light. A switch can be used to complete and break an electrical circuit. A reflector has shiny material to make the bulb brighter. Electrical conductors are materials which electricity can pass through. Electrical insulators are materials which electricity cannot pass through. A battery contains stored electricity that can be used to power products. <p>Procedural</p> <ul style="list-style-type: none"> Create a functioning torch with a switch according to their design criteria, specification and target audience. Select materials to make the housing of the case, cutting holes for the circuit and components to go through. Create a functioning electrical circuit troubleshooting problems with the components. Cut, attach and assemble accurately so the finish and quality of the final torch makes it suitable to hold and carry. <p>Disciplinary</p> <ul style="list-style-type: none"> Create a suitable design that fits the design criteria and target audience. Select materials to decorate their torch and think about function additions to the design (e.g. handle, handstrap etc.) Test and evaluate the success of the final product. 	<p>Conceptual</p> <ul style="list-style-type: none"> Know beans and lentils are edible seeds from plants. Know seasoning adds to the taste of food. Seasoning can include salt, spices (like pepper), herbs, and sugar. Know spices are usually made from the seeds, roots, stem or fruits of a plant and add flavour to food. Know herbs are usually the leaves of a plant and add flavour to food. Know mushrooms are not plants nor animals. They are a type of fungus. Know some people are intolerant to certain types of food, like gluten or dairy products. This means their bodies cannot digest the foods. It can cause discomfort. Know hobs and hand blenders need to be used with care, keeping our fingers away. Know when blending hot liquids, the blender should be on and/or it is kept well away from the user. Know food preparation sources should be wiped down before and after use to stop the tiny living things on the surfaces getting onto food. Food preparation areas should be left clean so that food pests are not attracted. <p>Procedural</p> <ul style="list-style-type: none"> Chop a range of foods e.g. mushrooms/carrots. Crush garlic. Measure volumes in millilitres and litres using a measuring jug. Use a food processor or hand mixer. Use a hob to sauté and simmer food, and to boil (vegetables). Wash up items in the most appropriate order, starting with least dirty, and change washing up water as required. <p>Disciplinary</p> <ul style="list-style-type: none"> Make food choices based on colour; quantities of sugar, fat, and salt; dietary requirements; knowledge of food allergies. 	<p>Conceptual</p> <ul style="list-style-type: none"> Know what variables are in programming. Know some of the features of a micro:bit. Know an algorithm is a set of instructions to be followed by the computer. Know that it is important to check code for errors (debug). Know that a simulator can be used as a way of checking code works before installing it onto an electronic device. Know a prototype is a 3D model made out of cheap materials, that allows us to test design ideas and make better decisions about size, shape and materials. Know that an exhibition is a way for companies to showcase products, meet potential new customers and gather feedback from users. Understand what a logo is. <p>Procedural</p> <ul style="list-style-type: none"> Write design criteria for a programmed timer (micro:bit). Explore different mindfulness strategies. Develop a prototype case. Use computer-aided design (CAD), to produce a logo. Create a 3D model using modelling materials. Programming a micro:bit to time a set number of seconds/minutes upon button press. Evaluate a program against points on a design criteria and amending them to include any changes made. Document and evaluate a project. Test a program for bugs (errors in the code). <p>Disciplinary</p> <ul style="list-style-type: none"> Use an exhibition to gather feedback to make suggested improvements to a product. Describe advantages and disadvantages of existing products (timers). Use research to inform design criteria. 	<p>Conceptual</p> <ul style="list-style-type: none"> Know mechanisms control movement. Know how folds create paper-based mechanisms. Know that a design brief is a description of what is going to be designed and made. Know design criteria is what the product must have. Know hiding mechanisms makes a product more aesthetically pleasing. <p>Procedural</p> <ul style="list-style-type: none"> Produce a suitable plan for a design. Produce the structure of a card. Assemble the components necessary for all their structures/mechanisms. Hide the mechanical elements with more layers/spacers where needed. Use appropriate/correct images/text to meet the purpose of the card. <p>Disciplinary</p> <ul style="list-style-type: none"> Evaluate the work of others and receiving feedback on own work.

Year 5			
Structures	Cooking and Nutrition	Digital/Programming	Structures
<p>Bridges</p> <p>Conceptual</p> <ul style="list-style-type: none"> • Know triangles can be used to reinforce bridges. • Know that properties are words that describe materials. • Know material selection is important based on their properties. • Know material (functional and aesthetic) properties of wood. • Identify beam, arch and truss bridges • <p>Procedural</p> <ul style="list-style-type: none"> • Design a stable structure able to support weight. • Create a truss bridge frame structure with focus on triangulation modelled by the teacher • Make beam bridges. • Use triangles to create truss bridges that span a given distance and support a load. • Select appropriate tools and equipment for particular tasks. • Identify where a structure needs reinforcement/card corners for support. • Understand basic wood functional properties. • Supported by the teacher, measure, mark and cut wood safely and accurately to make a wooden bridge. • Use sand paper to smooth rough edges. <p>Disciplinary</p> <ul style="list-style-type: none"> • Identify some areas for improvement, reinforcing their bridges as necessary. • Suggest points for improvements for own bridges and those designed by others. 	<p>Adapting a Recipe</p> <p>Conceptual</p> <ul style="list-style-type: none"> • Know pasta is made from wheat flour and water (and sometimes egg). • Know couscous is a type of pasta. • Know High risk foods that are cooked and ready to eat should be served immediately or kept in the fridge for 2-4 days. • Know to use a poor thermal conductor (thermal insulator) when stirring hot food or removing food from the oven. <p>Procedural</p> <ul style="list-style-type: none"> • Use a can opener. • Chop a range of foods such as tomatoes, onions and cauliflower. • Measure mass in grams and kilograms using a balance. • Use a blender or hand-held blender. • Use a whisk • Use a hob to boil (pasta). • Use an oven to roast vegetables and brown cheese. <p>Disciplinary</p> <ul style="list-style-type: none"> • Make food choices based on colour; quantities of sugar, fat, and salt; dietary requirements; knowledge of food allergies; food miles; plus time taken to prepare. 	<p>Monitoring Device</p> <p>Conceptual</p> <ul style="list-style-type: none"> • Know a 'device' is equipment created for a certain job and that monitoring devices observe and record. • Know monitoring devices can sense temperature and can trigger a program. • Know that conditional statements (and, or, if Booleans) in programming are a set of rules which are followed if certain conditions are met. • Components need to be connected correctly to function. • Know some facts about the history and development of plastic. <p>Procedural</p> <ul style="list-style-type: none"> • Write the program that monitors the temperature and creates an alert. • Identify errors (bugs) in a code and ways to fix (debug) them. • Explain the key features of their programmed device. • Know what a virtual model is. • Build brick models and experiment with CAD software to design virtual models. <p>Disciplinary</p> <ul style="list-style-type: none"> • Research key information for an animal to create design criteria for monitoring device. • Plan and evaluate a case/stand. • Explaining how the product's programmed features would be useful for an animal carer. 	<p>Mini: Mechanical Systems</p> <p>Card with a pivot mechanism</p> <p>Conceptual</p> <ul style="list-style-type: none"> • Know mechanisms control movement. • Know how sliders create card-based mechanisms. • Know that a design brief is a description of what is going to be designed and made. • Know design criteria is what the product must have. • Know hiding mechanisms makes a product more aesthetically pleasing. <p>Procedural</p> <ul style="list-style-type: none"> • Produce a suitable plan for a design. • Produce the structure of a card. • Assemble the components necessary for all their structures/mechanisms. • Hide the mechanical elements with more layers/spacers where needed. • Use appropriate/correct images/text to meet the purpose of the card. <p>Disciplinary</p> <ul style="list-style-type: none"> • Evaluate the work of others and receiving feedback on own work.

Year 6			
Mini: Cooking and Nutrition	Mini: Structures	Electrical Systems:	Digital/Programming:
3 Course Meal Design	Shelters	Steady hand game	StepCounter
<p>Conceptual Design Values: Use design criteria based on the values of Inclusivity and Accessibility. Identify User Needs: Use interviews to identify user needs. Generate Ideas: Take photographs and use these as inspiration. Communicate Designs: A model is a way of showing a design idea in 3D. Communicate Designs: When designers communicate their ideas, they need to be drawn at the right size. Communicate Designs: Talk about simple design ideas with others.</p> <p>Procedural Prepare: Crack eggs. Combine & Assemble: Rub flour into butter. Shape and cut using cutters. Cook: Use an oven to bake food.</p> <p>Disciplinary Make food choices based on colour; quantities of sugar, fat, and salt; dietary requirements; knowledge of food allergies; food miles; time taken to prepare; plus carbon footprint of production and transport; occasion; and cost.</p>	<p>Conceptual</p> <ul style="list-style-type: none"> Know structures can be strengthened by manipulating materials and shapes. Know what a frame structure is. Know how triangulation can strengthen a frame structure. <p>Procedural</p> <ul style="list-style-type: none"> Design and make a shelter with a frame structure and use triangulation. Measure, mark and cut wood to create a structure. Safely use a hacksaw to saw marked pieces of wood accurately so pieces fit together. Reinforce and add decoration to structures. Improving a design plan based on peer evaluation. <p>Disciplinary</p> <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. Understand how 3D modelling can be used by designers. 	<p>Conceptual</p> <ul style="list-style-type: none"> Know 'form' means the shape and appearance of an object. Know the difference between 'form' and 'function'. Know 'fit for purpose' means a product works how it should and is easy to use. Know 'form over purpose' means a product looks good but does not work well. Know the importance of 'form follows function' when designing: the product. Know the diagram perspectives 'top view', 'side view' and 'back'. <p>Procedural</p> <ul style="list-style-type: none"> 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. <p>Disciplinary</p> <ul style="list-style-type: none"> Draw a design from three different perspectives. Gather images and information about existing children's toys. Analyse a selection of existing children's toys. Generate ideas through sketching and discussion. Model ideas through prototypes. Test their own and others' finished games, identifying what went well and making suggestions for improvement. 	<p>Conceptual</p> <ul style="list-style-type: none"> Know accelerometers can detect movement. Know sensors can be useful in products so they can function without human input. Know magnetometers are devices that measure the Earth's magnetic field to say which direction you are facing. Know 'multifunctional' means an product has more than one function. Know about sustainable design. <p>Procedural</p> <ul style="list-style-type: none"> Place and manoeuvring 3D objects, using CAD. Change the properties or combine 3D objects, using CAD. Program an N,E, S,W cardinal compass. Demonstrate a functional program as part of a product concept. Identify errors (bugs) in the code and suggest ways to fix (debug) them. <p>Disciplinary</p> <ul style="list-style-type: none"> Write a design brief and develop design criteria to enable them to fulfil a client's request. Develop ideas with annotated sketches. Consider materials and their functional properties (e.g. sustainable and recyclable). Explain material choices and why they were chosen as part of a product concept. Explaining how my program fits the design criteria Explaining the key functions and features to a client as part of a product concept pitch.