Key skills and progression



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|  | Year 1/2 | Year 3 | Year 4 | Year 5 | Year 6 |
| Cooking and nutrition | **Design**• Designing three wrap ideas based on a food combination which work well together.**Make**• Chopping foods safely to make a wrap.• Constructing a wrap that meets a design brief.• Grating foods to make a wrap.• Snipping smaller foods instead of cutting.**Evaluate**• Describing the taste, texture and smell of fruit and vegetables.• Taste testing food combinations and final products.• Describing the information that should be included on a label.•Evaluating food by giving a score.**Knowledge****•** To know that ‘diet’ means the food and drink that a person or animal usually eats.• To understand what makes a balanced diet.• To know that the five main food groups are:Carbohydrates, fruits and vegetables, protein, dairy andfoods high in fat and sugar.• To understand that I should eat a range of different foods from each food group, and roughly how much of each food group.• To know that ‘ingredients’ means the items in a mixtureor recipe. | **Design**• Designing a recipe for a savoury tart.**Make****•** Following the instructions within a recipe.• Tasting seasonal ingredients.• Selecting seasonal ingredients.• Peeling ingredients safely.• Cutting safely with a vegetable knife**Evaluate**Establishing and using design criteria to help test and review dishes.• Describing the benefits of seasonal fruits and vegetables and the impact on the environment.• Suggesting points for improvement when making a seasonal tart.**Knowledge**• To know that not all fruits and vegetables can be grown in the UK.• To know that climate affects food growth.• To know that vegetables and fruit grow in certain seasons.• To know that cooking instructions are known as a ‘recipe’.• To know that imported food is food which has been brought into the country.• To know that exported food is food which has been sent to another country..• To know that eating seasonal foods can have a positive impact on theenvironment.• To know that similar coloured fruits and vegetables often have similar nutritional benefits.• To know that the appearance of food is as important as taste. | **Design**• Designing a biscuit within a given budget, drawing upon previous taste testing judgements.**Make**• Following a baking recipe, including the preparation of ingredients.• Cooking safely, following basic hygiene rules.• Adapting a recipe to meet the requirements of a target audience.**Evaluate****•** Evaluating a recipe, considering: taste, smell, texture and appearance.• Describing the impact of the budget on the selection of ingredients.• Evaluating and comparing a range of food products.• Suggesting modifications to a recipe (e.g. This biscuit has too many raisins, and it isfalling apart, so next time I will use less raisins).**Knowledge**• To know that the amount of an ingredient in a recipe is known as the ‘quantity.’• To know that safety and hygiene are important when cooking.• To know the following cooking techniques: sieving, measuring, stirring, cutting outand shaping.•To understand the importance of budgeting while planning ingredients for biscuits.• To know that products often have a target audience. | **Design**• Adapting a traditional recipe, understanding that the nutritional value of arecipe alters if you remove, substitute or add additional ingredients.• Writing an amended method for a recipe to incorporate the relevantchanges to ingredients.• Designing appealing packaging to reflect a recipe.• Researching existing recipes to inform ingredient choices.**Make**• Cutting and preparing vegetables safely.• Using equipment safely, including knives, hot pans and hobs.• Knowing how to avoid cross-contamination.• Following a step by step method carefully to make a recipe.**Evaluate**• Identifying the nutritional differences between different products andrecipes.• Identifying and describing healthy benefits of food groups.**Knowledge**• To understand where meat comes from - learning that beef is from cattle and how beef is reared and processed.• To know that recipes can be adapted to suit nutritional needs and dietary requirements.• To know that I can use a nutritional calculator to see how healthy a food option is.• To 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.• To know that coloured chopping boards can prevent cross contamination.• To know that nutritional information is found on food packaging.• To know that food packaging serves many purposes. | **Design**• Writing a recipe, explaining the key steps, method and ingredients.• Including facts and drawings from research undertaken.**Make**• Following a recipe, including using the correct quantities of each ingredient.• Adapting a recipe based on research.• Working to a given timescale.• Working safely and hygienically with independence.**Evaluate****•** Evaluating a recipe, considering: taste, smell, texture and origin of the food group.• Taste testing and scoring final products.• Suggesting and writing up points of improvements when scoring others’ dishes,and when evaluating their own throughout the planning, preparation and cooking process.• Evaluating health and safety in production to minimise cross contamination**Knowledge**• To know that ‘flavour’ is how a food or drink tastes.• To know that many countries have ‘national dishes’ which are recipes associatedwith that country.• To know that ‘processed food’ means food that has been put through multiplechanges in a factory.• To understand that it is important to wash fruit and vegetables before eating toremove any dirt and insecticides.• To understand what happens to a certain food before it appears on thesupermarket shelf (Farm to Fork). |
| Textiles | **Design**• Designing a pouch.**Make**• Selecting and cutting fabrics for sewing.• Decorating a pouch using fabric glue or running stitch.• Threading a needle.• Sewing running stitch, with evenly spaced, neat,even stitches to join fabric.• Neatly pinning and cutting fabric using atemplate.**Evaluate**• Troubleshooting scenarios posed by teacher.• Evaluating the quality of the stitching on others’ work.• Discussing as a class, the success of their stitchingagainst the success criteria.• Identifying aspects of their peers’ work that they particularly like and why.**Knowledge**• To know that sewing is a method of joining fabric.• To know that different stitches can be used when sewing.• To understand the importance of tying a knot after sewing the final stitch.• To know that a thimble can be used to protect my fingers when sewing. | **Design**• Designing and making a template from an existing cushion and applying individual design criteria.**Make**• Following design criteria to create a cushion or Egyptian collar.• Selecting and cutting fabrics with ease using fabric scissors.• Threading needles with greater independence.• Tying knots with greater independence.• Sewing cross stitch to join fabric.• Decorating fabric using appliqué.• Completing design ideas with stuffing and sewing the edges (Cushions) orembellishing the collars based on design ideas (Egyptian collars).**Evaluate**• Evaluating an end product and thinking of other ways in which to create similar items.**Knowledge**•To know that applique is a way of mending or decorating a textile by applying smaller pieces of fabric to larger pieces.•To know that when two edges of fabric have been joined together it is called a seam.•To know that it is important to leave space on the fabric for the seam.•To understand that some products are turned inside out after sewing so the stitching is hidden. | **Design**• Writing design criteria for a product, articulating decisions made.• Designing a personalised book sleeve.**Make****•** Making and testing a paper template with accuracy and in keeping with the designcriteria.• Measuring, marking and cutting fabric using a paper template.• Selecting a stitch style to join fabric.• Working neatly by sewing small, straight stitches.• Incorporating a fastening to a design.**Evaluate**• Testing and evaluating an end product against the original design criteria.• Deciding how many of the criteria should be met for the product to be consideredsuccessful.• Suggesting modifications for improvement.• Articulating the advantages and disadvantages of different fastening types**Knowledge**• To know that a fastening is something which holds two pieces of material togetherfor example a zipper, toggle, button, press stud and velcro.• To know that different fastening types are useful for different purposes.• To know that creating a mock up (prototype) of their design is useful for checking ideas and proportions. | **Design**• Designing a stuffed toy, considering the main component shapes requiredand creating an appropriate template.• Considering the proportions of individual components. **Make****•** Creating a 3D stuffed toy from a 2D design.• Measuring, marking and cutting fabric accurately and independently .• Creating strong and secure blanket stitches when joining fabric.• Threading needles independently.• Using appliqué to attach pieces of fabric decoration.• Sewing blanket stitch to join fabric.• Applying blanket stitch so the spaces between the stitches are even andregular.**Evaluate**• Testing and evaluating an end product and giving point for furtherimprovements. **Knowledge**• To know that blanket stitch is useful to reinforce the edges of a fabricmaterial or join two pieces of fabric.• To understand that it is easier to finish simpler designs to a high standard.• To know that soft toys are often made by creating appendages separatelyand then attaching them to the main body.• To know that small, neat stitches which are pulled taut are important toensure that the soft toy is strong and holds the stuffing securely. | **Design**• Designing a waistcoat in accordance to a specification linked to set of designcriteria.• Annotating designs, to explain their decisions**Make****•** Using a template when cutting fabric to ensure they achieve the correct shape.• Using pins effectively to secure a template to fabric without creases or bulges.• Marking and cutting fabric accurately, in accordance with their design.• Sewing a strong running stitch, making small, neat stitches and following the edge.• Tying strong knots.• Decorating a waistcoat, attaching features (such as appliqué) using thread.• Finishing the waistcoat with a secure fastening (such as buttons).• Learning different decorative stitches.• Sewing accurately with evenly spaced, neat stitches.**Evaluate**• Reflecting on their work continually throughout the design, make and evaluateprocess.**Knowledge**• To understand that it is important to design clothing with the client/ target customer in mind.• To know that using a template (or clothing pattern) helps to accurately mark out adesign on fabric.• To understand the importance of consistently sized stitches. |
| Mechanisms mechanical systems | **Design**• Creating a class design criteria for a moving monster.• Designing a moving monster for a specific audience in accordance with a design criteria.**Make****•** Making linkages using card for levers and split pins for pivots.• Experimenting with linkages adjusting the widths, lengths and thicknesses of card used. • Cutting and assembling components neatly.**Evaluate****•** Evaluating own designs against design criteria.• Using peer feedback to modify a final design.**Knowledge**• To know that mechanisms are a collection of moving parts that work together as a machine to produce movement.• To know that there is always an input and output in a mechanism. • To know that an input is the energy that is used to start something working. • To know that an output is the movement that happens as a result of the input. • To know that a lever is something that turns on a pivot. • To know that a linkage mechanism is made up of a series of levers. | **Design**Creating simple design criteria that outline basic functionality and appeal to individual users or target audiences.● Taking part in structured idea blasting sessions.● Coming up with more ideas and considering the feasibility of their ideas in the classroom.● Developing drawing and sketching skills with a focus on clarity and simplicity.● Developing designs by adding detail and justifications about materials, tools, methods.● Beginning to recognise the benefit of a range of diagram types or prototypes to communicate ideas. (eg. sketches, cross-sectional diagram, thumbnail sketches and explodeddiagrams).**Make**Selecting equipment required for a series of tasks based on the plan. Explain why each piece is suitable for each stage.● Suggesting simple safety rules based on their understanding of tool dangers.● Participating in discussions about classroom safety procedures.● Cutting out more complex shapes accurately.● Handle different sizes and types of scissors with confidence.● Using PVA glue to join corrugated card and light wood (e.g. balsa wood).● Choosing shapes to suit the function of a product.● Painting or colouring precisely to improve the finish.● Making facades from a range of materials.● Sealing edges with tape to cover gaps in joins.Evaluate**Evaluate**Analysing why specific products, designers or inventors are successful.● Evaluating their designs by comparing them against design criteria and considering feedback from peers to suggest improvements.● Explaining why they think certain aspects of a peer's design are effective or why they suggested specific improvements.● Reflecting on feedback to decide if and how it could be used to improve future iterations.**Knowledge** Beginning to understand how mechanisms work.● Recognising pneumatic systems in everyday objects (e.g. car boot, adjustable chair.) | **Design**• Writing design criteria for a programmed timer (Micro:bit).• Exploring different mindfulness strategies.• Applying the results of my research to further inform my design criteria.• Developing a prototype case for my mindful moment timer.• Using and manipulating shapes and clipart by using computer-aided design (CAD),to produce a logo.• Following a list of design requirements.**Make**• Developing a prototype case for my mindful moment timer.• Creating 3D structures using modelling materials.• Programming a micro:bit in the Microsoft micro:bit editor, to time a set number ofseconds/minutes upon button press. **Evaluate****•** Investigating and analysing a range of timers by identifying and comparing theiradvantages and disadvantages.• Evaluating my Micro:bit program against points on my design criteria andamending them to include any changes I made.• Documenting and evaluating my project.• Understanding what a logo is and why they are important in the world of design and business.• Testing my program for bugs (errors in the code).• Finding and fixing the bugs (debug) in my code.• Using an exhibition to gather feedback.• Gathering feedback from the user to make suggested improvements to a product.**Knowledge****•** To understand what variables are in programming.• To know some of the features of a Micro:bit.• To know that an algorithm is a set of instructions to be followed by the computer.• To know that it is important to check my code for errors (bugs).• To know that a simulator can be used as a way of checking your code works beforeinstalling it onto an electronic device.•To understand the terms 'ergonomic' and 'aesthetic'.•To know that a prototype is a 3D model made out of cheap materials, that allows usto test design ideas and make better decisions about size, shape and materials.• To know that an exhibition is a way for companies to showcase products, meetpotential new customers and gather feedback from users. | **Design**• Researching (books, internet) for a particular (user’s) animal’s needs.• Developing design criteria based on research.• Generating multiple housing ideas using building bricks.• Understanding what a virtual model is and the pros and cons of traditional andCAD modelling.• Placing and manoeuvring 3D objects, using CAD.• Changing the properties of, or combining one or more 3D objects, using CAD.**Make****•** Understanding the functional and aesthetic properties of plastics.• Programming to monitor the ambient temperature and coding an (audible orvisual) alert when the temperature rises above or falls below a specified range. **Evaluate**• Stating an event or fact from the last 100 years of plastic history.• Explaining how plastic is affecting planet Earth and suggesting ways to makemore sustainable choices.• Explaining key functions in my program (audible alert, visuals).• Explaining how my product would be useful for an animal carer includingprogrammed features.**Knowledge**• To know that a ‘device’ means equipment created for a certain purpose or job andthat monitoring devices observe and record.• To know that a sensor is a tool or device that is designed to monitor, detect andrespond to changes for a purpose.• To understand that conditional statements (and, or, if booleans) in programmingare a set of rules which are followed if certain conditions are met.• To understand key developments in thermometer history.• To know events or facts that took place over the last 100 years in the history of plastic, and how this is changing our outlook on the future.• To know the 6Rs of sustainability.• To understand what a virtual model is and the pros and cons of traditional vs CAD modelling. | **Design**• Writing a design brief from information submitted by a client.• Developing design criteria to fulfil the client’s request.• Considering and suggesting additional functions for my navigation tool.• Developing a product idea through annotated sketches.• Placing and manoeuvring 3D objects, using CAD.• Changing the properties of, or combining one or more 3D objects, using CAD.**Make**• Considering materials and their functional properties, especially those that aresustainable and recyclable (for example, cork and bamboo).• Explaining material choices and why they were chosen as part of a product concept.• Programming an N,E,S,W cardinal compass.**Evaluate**• Explaining how my program fits the design criteria and how it would be useful as part ofa navigation tool.• Developing an awareness of sustainable design.• Identifying key industries that utilise 3D CAD modelling and explaining why.• Describing how the product concept fits the client’s request and how it will benefit the customers.• Explaining the key functions in my program, including any additions.• Explaining how my program fits the design criteria and how it would be useful as part of a navigation tool.• Explaining the key functions and features of my navigation tool to the client as part of a product concept pitch.• Demonstrating a functional program as part of a product concept pitch**Knowledge**• To know that accelerometers can detect movement.• To understand that sensors can be useful in products as they mean the product can function without human input.• To know that designers write design briefs and develop design criteria to enable them to fulfil a client’s request.• To know that ‘multifunctional’ means an object or product has more than one function.• To know that magnetometers are devices that measure the Earth’s magnetic field todetermine which direction you are facing. |
| Structures | **Structure:**To produce a finished chair structure and evaluate its strength, stiffness and stability.**Design****•** Generating and communicating ideas using sketching and modelling.**Make**• Making a structure according to design criteria. • Creating joints and structures from paper/card and tape.• Building a strong and stiff structure by folding paper.Evaluate**Knowledge****•** To know that materials can be manipulated to improve strength and stiffness.• To know that a structure is something which has been formed or made from parts. • To know that a ‘stable’ structure is one which is firmly fixed and unlikely to change or move. • To know that a ‘strong’ structure is one which does not break easily. • To know that a ‘stiff’ structure or material is one which does not bend easily | **Design**• Designing a castle with key features to appeal to a specific person/purpose.• Drawing and labelling a castle design using 2D shapes, labelling: -the 3Dshapes that will create the features - materials needed and colours.• Designing and/or decorating a castle tower on CAD software.**Make****•** Constructing a range of 3D geometric shapes using nets .• Creating special features for individual designs.• Making facades from a range of recycled materials.**Evaluate**• Evaluating own work and the work of others based on the aesthetic of thefinished product and in comparison, to the original design.• Suggesting points for modification of the individual designs.**Knowledge**• To understand that wide and flat based objects are more stable.• To understand the importance of strength and stiffness in structures. | **Design**• Designing a stable pavilion structure that is aesthetically pleasing and selectingmaterials to create a desired effect.• Building frame structures designed to support weight.**Make**• Creating a range of different shaped frame structures.• Making a variety of free-standing frame structures of different shapes and sizes.• Selecting appropriate materials to build a strong structure and cladding.• Reinforcing corners to strengthen a structure.• Creating a design in accordance with a plan.• Learning to create different textural effects with materials.**Evaluate****•** Evaluating structures made by the class.• Describing what characteristics of a design and construction made it the mosteffective.• Considering effective and ineffective designs.**Knowledge**• To understand what a frame structure is.• To know that a ‘free-standing’ structure is one which can stand on its own. | **Design**• Designing a stable structure that is able to support weight.• Creating a frame structure with a focus on triangulation.**Make**• Making a range of different shaped beam bridges.• Using triangles to create truss bridges that span a given distance andsupport a load.• Building a wooden bridge structure.• Independently measuring and marking wood accurately.• Selecting appropriate tools and equipment for particular tasks.• Using the correct techniques to saws safely.• Identifying where a structure needs reinforcement and using card cornersfor support.• Explaining why selecting appropriating materials is an important part of thedesign process.• Understanding basic wood functional properties. **Evaluate** • Adapting and improving own bridge structure by identifying points ofweakness and reinforcing them as necessary.• Suggesting points for improvements for own bridges and those designed byothers. **Knowledge****•** To understand some different ways to reinforce structures.• To understand how triangles can be used to reinforce bridges.• To know that properties are words that describe the form and function ofmaterials.• To understand why material selection is important based on properties.• To understand the material (functional and aesthetic) properties of wood. | **Design**• Designing a playground featuring a variety of different structures, giving carefulconsideration to how the structures will be used, considering effective andineffective designs.**Make****•** Building a range of play apparatus structures drawing upon new and priorknowledge of structures.• Measuring, marking and cutting wood to create a range of structures.• Using a range of materials to reinforce and add decoration to structures.**Evaluate**• Improving a design plan based on peer evaluation.• Testing and adapting a design to improve it as it is developed.• Identifying what makes a successful structure.**Knowledge**• To know that structures can be strengthened by manipulating materials and shapes. |