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 and  foods high in fat and sugar.  • To understand that I should eat a range of different foods from each food group, and roughly how much of each food group.  • To know that ‘ingredients’ means the items in a mixture  or 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 the  environment.  • 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 is  falling 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 out  and 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 a  recipe alters if you remove, substitute or add additional ingredients.  • Writing an amended method for a recipe to incorporate the relevant  changes to ingredients.  • Designing appealing packaging to reflect a recipe.  • 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 and  recipes.  • 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 associated  with that country.  • To know that ‘processed food’ means food that has been put through multiple  changes in a factory.  • To understand that it is important to wash fruit and vegetables before eating to  remove any dirt and insecticides.  • To understand what happens to a certain food before it appears on the  supermarket shelf (Farm to Fork). |
| 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 a  template.  **Evaluate**  • Troubleshooting scenarios posed by teacher.  • Evaluating the quality of the stitching on others’ work.  • Discussing as a class, the success of their stitching  against 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) or  embellishing 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 design  criteria.  • 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 considered  successful.  • 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 together  for example a zipper, toggle, button, press stud and velcro.  • To know that different fastening types are useful for different purposes.  • To know that creating a mock up (prototype) of their design is useful for checking ideas and proportions. | **Design**  • Designing a stuffed toy, considering the main component shapes required  and 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 and  regular.  **Evaluate**  • Testing and evaluating an end product and giving point for further  improvements. **Knowledge**  • To know that blanket stitch is useful to reinforce the edges of a fabric  material or join two pieces of fabric.  • To understand that it is easier to finish simpler designs to a high standard.  • To know that soft toys are often made by creating appendages separately  and then attaching them to the main body.  • To know that small, neat stitches which are pulled taut are important to  ensure that the soft toy is strong and holds the stuffing securely. | **Design**  • Designing a waistcoat in accordance to a specification linked to set of design  criteria.  • 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 evaluate  process.**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 a  design 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 exploded  diagrams).  **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 of  seconds/minutes upon button press.  **Evaluate**  **•** Investigating and analysing a range of timers by identifying and comparing their  advantages and disadvantages.  • Evaluating my Micro:bit program against points on my design criteria and  amending 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 before  installing 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 us  to 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, meet  potential 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 and  CAD 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 or  visual) 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 make  more sustainable choices.  • Explaining key functions in my program (audible alert, visuals).  • Explaining how my product would be useful for an animal carer including  programmed features.  **Knowledge**  • To know that a ‘device’ means equipment created for a certain purpose or job and  that monitoring devices observe and record.  • To know that a sensor is a tool or device that is designed to monitor, detect and  respond to changes for a purpose.  • To understand that conditional statements (and, or, if booleans) in programming  are 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 are  sustainable 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 of  a 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 to  determine 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 3D  shapes 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 the  finished 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 selecting  materials 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 most  effective.  • 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 and  support 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 corners  for support.  • Explaining why selecting appropriating materials is an important part of the  design process.  • Understanding basic wood functional properties.  **Evaluate**  • Adapting and improving own bridge structure by identifying points of  weakness and reinforcing them as necessary.  • Suggesting points for improvements for own bridges and those designed by  others. **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 of  materials.  • 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 careful  consideration to how the structures will be used, considering effective and  ineffective designs.  **Make**  **•** Building a range of play apparatus structures drawing upon new and prior  knowledge of structures.  • Measuring, marking and cutting wood to create a range of structures.  • Using a range of materials to reinforce and add decoration to structures.  **Evaluate**  • 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. |