Year 4 – Autumn 1

DT: Cooking and nutrition – Adapt a recipe

Big question: How can we adapt a recipe to create a new product that meets a budget and appeals to a target audience?

Prior learning:	**Knowledge:**	**Skills:**	**Vocabulary:**
• Year 1 – Smoothies • Year 2 – Balanced diet • Year 3 – Eating Seasonally **Future learning:** • Year 5 – Develop a recipe • Year 6 – Come dine with me	• That the amount of an ingredient in a recipe is known as the 'quantity'. • That safety and hygiene are important when cooking. • The following cooking techniques: sieving, measuring, mixing/stirring, cutting out and shaping. • The importance of budgeting while planning ingredients for a recipe. • That products often have a target audience.	• Evaluating and comparing a range of products. • Following a baking recipe. • Understanding safety and hygiene rules. • Identifying a target audience. • Designing a biscuit within a given budget. • Suggesting modifications. • Adapting a recipe.	adapt addition appearance budget buttery combine comment compare construct cream crunchy cuboid cut

		• Conducting market research. • Evaluating an adapted recipe.	design evaluate fold hygiene ingredients layout market research modify multiplication opinion pounds sieve sift target audience taste texture unique

			wooden spoon
Critical Content Statements: • Quantities determine how much of each ingredient is used in a recipe. • Safety and hygiene practices prevent contamination and accidents. • Cooking techniques such as sieving, mixing, and shaping affect texture and appearance. • Budgeting ensures recipes are cost-effective. • Target audiences influence design choices for flavour, appearance, and packaging. • Adapting a recipe involves adding or changing ingredients to create a new product. • Market research helps identify preferences and trends. • Evaluating an adapted recipe ensures it meets design criteria and user expectations.		**Common Misconceptions Pupils May Have:** • Thinking appearance always determines taste. • Believing more expensive ingredients always make a better product. • Assuming hygiene rules are optional. • Thinking adapting a recipe means completely changing it rather than modifying it. • Believing budgeting is not important for recipe planning. • Assuming market research is unnecessary for food design.	

Year 4 – Autumn 2			
DT: Structures – Pavilions Big question: How can we design and build a pavilion that is strong, stable, and visually appealing?			
Prior learning: • Year 2 – Baby bear's chair **Future learning:** • Year 5 – Bridges • Year 6 – Playgrounds	**Knowledge:** • To understand what a frame structure is. • To know that a 'free-standing' structure is one that can stand on its own. • To know that a pavilion is a decorative building or structure for leisure activities. • To know that cladding can be applied to structures for different effects. • To know that aesthetics are how a product looks.	**Skills:** • Designing a stable pavilion structure that is aesthetically pleasing and selecting materials to create a desired effect. • Building frame structures designed to support weight. • 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 for the cladding. • Reinforcing corners to strengthen a structure. • Creating a design in accordance with a plan. • Learning to create different textural effects with materials.	**Vocabulary:** 3D shapes cladding design criteria innovative natural reinforce structure

Critical Content Statements: • A frame structure is made from connected parts that form a rigid framework. • Free-standing structures can stand without external support. • Pavilions are decorative structures designed for leisure activities. • Cladding adds texture, colour, and protection to structures. • Aesthetics influence the visual appeal of a product. • Reinforcing corners strengthens the structure and improves stability. • Selecting appropriate materials ensures strength and durability. • Testing and evaluating designs helps improve stability and appearance.		**Common Misconceptions Pupils May Have:** • Thinking adding more material automatically makes a structure stronger. • Believing aesthetics are more important than stability. • Assuming all shapes provide equal strength. • Thinking cladding improves structural strength rather than appearance. • Believing reinforcement is unnecessary for small structures. • Assuming testing is not needed once the structure is built.	

Year 4 - Spring 1
DT: Textiles – Fastenings Big question: How can we design and make a textile product with a fastening that is functional and attractive?

Prior learning:	**Knowledge:**	**Skills:**	**Vocabulary:**
• Year 1 – Puppets • Year 2 – Pouch • Year 3 - Cushions **Future learning:** • Year 5 – Stuffed toys • Year 6 – Waistcoats	• Designing and making a template from an existing cushion and applying individual design criteria. • 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	• Writing design criteria for a product, articulating decisions made. • Designing a personalised book sleeve. • 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. • 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.	criteria fabric fastening fix mock-up stitch template

	collars based on design ideas (Egyptian collars). • Evaluating an end product and thinking of other ways in which to create similar items.	• Articulating the advantages and disadvantages of different fastening types.	
Critical Content Statements: • Templates help cut fabric accurately to the correct size and shape. • Fastenings make textile products functional and secure. • Cross stitch joins fabric strongly and neatly. • Knots at the start and end of stitching prevent seams from unravelling. • Appliqué adds decorative detail to fabric. • Design criteria guide decisions about function and appearance. • Testing and evaluating ensures the product meets user needs. • Comparing fastening types helps choose the most suitable option.		**Common Misconceptions Pupils May Have:** • Thinking fastenings are only decorative, not functional. • Believing more stitching automatically makes a product stronger. • Assuming knots are not necessary at the end of stitching. • Thinking templates are optional for accurate cutting. • Believing any stitch type will work for joining fabric. • Assuming testing is unnecessary once the product is finished.	

Year 4 – Spring 2			
DT – Electrical Systems – Torches Big question: How can we design and make a torch that works using a complete electrical circuit?			
Prior learning: • Electrical systems: electric poster **Future learning:** • Electrical systems: Doodlers • Electrical systems: Steady Hand Game	**Knowledge:** • 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. • An electrical circuit must be complete for electricity to flow. • A switch can be used to complete and break an electrical circuit.	**Skills:** • Designing a torch, giving consideration to the target audience and creating both design and success criteria focusing on features of individual design ideas. • Making a torch with a working electrical circuit and switch. • Using appropriate equipment to cut and attach materials. • Assembling a torch according to the design and success criteria. • Evaluating electrical products. • Testing and evaluating the success of a final product.	**Vocabulary:** battery bulb buzzer circuit diagram component conductor electrical item electricity electronic item insulator series circuit switch

<table>
<tr><td></td><td></td><td></td><td>target audience
test
torch
wire</td></tr>
<tr><td colspan="2">Critical Content Statements:
Electrical conductors allow electricity to flow; insulators prevent it.
A battery stores electricity and powers circuits.
A complete circuit is necessary for electricity to flow.
A switch controls the flow of electricity by completing or breaking the circuit.
Designing a torch involves considering function, safety, and user needs.
Correct assembly of components ensures the torch works effectively.
Testing confirms the circuit works and meets design criteria.
Evaluating the product helps identify improvements for future designs.</td><td colspan="2">Common Misconceptions Pupils May Have:
Thinking electricity can pass through insulators.
Believing batteries do not store electricity.
Assuming a circuit does not need to be complete to work.
Thinking the bulb will light without proper connections.
Believing decoration affects how the torch works.
Assuming testing is unnecessary once the torch is assembled.</td></tr>
</table>

Year 4 – Summer 1			
Mechanical systems – Slingshot car Big question: How can we design and build a slingshot car that travels the furthest distance?			
Prior learning: • Mechanical systems – Pneumatic toys – Year 3 **Future learning:** • Mechanical systems – Pop up book – Year 5	**Knowledge:** **Design** To know: • Extra information on drawings or diagrams can help the user understand a design or idea. • An exploded diagram shows how the parts of a product fit together.	**Skills:** **Design** Taking part in structured brainstorming sessions. Developing drawing and sketching skills with a focus on clarity and simplicity. Beginning to recognise the benefit of a range of diagram types or prototypes to communicate ideas. (e.g. sketches, cross-sectional diagrams, thumbnail sketches and exploded diagrams). Creating prototypes using materials with similar properties to their final design.	**Vocabulary:** bearing chassis force machine mechanism prototype target audience

	• A prototype is a detailed model that helps users understand how a product will work. • A problem or need is something that a designer can help to solve. • A target audience is a group of people that might like the idea. **Make** To know: • Different tools and equipment have different dangers. • A ruler can be used to measure length. • Scissors are useful for cutting out complex shapes.	Creating simple design criteria that outline basic functionality and appeal to individual users or target audiences. Developing designs by adding details and justifications about materials, tools and methods. **Make** Following detailed safety instructions. Using a ruler as a measuring tool with increasing accuracy by creating spaced marks using millimetres and measuring lengths of objects. Handle different sizes and types of scissors with confidence. With close supervision, using a hot glue gun to join wooden materials (e.g. lolly sticks). Selecting equipment required for a series of tasks based on the plan and explaining why each piece is suitable for each stage. **Evaluate** Explaining why they think certain aspects of a peer's design are effective or why they suggested specific improvements.	

	• A hot glue gun can be used to join materials. • Different pieces of equipment will be used at different stages in a plan. **Evaluate** To know: • The better the suggestions, the better the feedback. • They can choose to use feedback or not. • Some products are more successful than others because of their function. • Designers and inventors create products.	Reflecting on feedback to decide if and how it could be used to improve future iterations. Investigating and analysing a range of existing products by looking at their functionality and appeal. 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. Evaluating how effective their chosen materials and tools were in fulfilling the design brief.	

	• Choices of materials and equipment can affect the final product. • Feedback is ideas and suggestions from other people that can help improve their work. **Technical** To know: • A mechanical system can allow us to move something more easily. • • Mechanical systems have more than one mechanism that moves to make them work. • Mechanical systems are often hidden in products to make them look more appealing.		

Critical Content Statements:	**Common Misconceptions Pupils May Have:**
• Exploded diagrams show how parts fit together in a product. • Prototypes help test ideas before making the final product. • Mechanical systems use mechanisms to make movement easier. • Accurate measuring and cutting improve performance and appearance. • A strong chassis and secure joints help the car travel further. • Design criteria guide decisions about function and appeal. • Testing and comparing distances helps evaluate success. • Feedback improves future designs and functionality.	• Thinking appearance alone determines how far the car travels. • Believing more glue automatically makes the car stronger. • Assuming any material will work for the chassis. • Thinking measuring accurately is not important for performance. • Believing testing is unnecessary once the car is built. • Assuming adding more decorations improves speed or distance.

Year 4 – Summer 2			
DT: Digital World – Mindful moments timer Big question: How can we design and program a mindful moments timer that is functional and user-friendly?			
Prior learning: • N/A **Future learning:**	**Knowledge:** • To understand what variables are in programming.	**Skills:** • Writing design criteria for a programmed timer (micro:bit).	**Vocabulary:** advantage

• Year 5 – Monitoring devices • Year 6 – Navigating the world	• 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 code for errors (bugs). • To know that a simulator can be used as a way of checking 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	• Exploring different mindfulness strategies. • Applying the results of research to further inform my design criteria. • Developing a prototype case for a 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. • Creating a 3D using modelling materials. • Programming a micro:bit in the Microsoft micro:bit editor, to time a set number of seconds/minutes upon button press.	aesthetic annotate assemble block brand brand identity bug clipart coding computer-aided design (CAD) criteria debug design develop disadvantage display ergonomic

	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.	• Investigating and analysing a range of timers by identifying and comparing their advantages and disadvantages. • Evaluating a program against points on a design criteria and amending them to include any changes made. • Documenting and evaluating a project. • Understanding what a logo is and why they are important in the world of design and business. • Testing a program for bugs (errors in the code). • Finding and fixing bugs (debug) in code. • Using an exhibition to gather feedback.	evaluate exhibition feedback form function join logo loop mindfulness model net program prototype research script sketchpad test timer

		• Gathering feedback from the user to make suggested improvements to a product.	user variable
Critical Content Statements: • Variables store values that can change during a program. • Algorithms are step-by-step instructions for a computer. • A micro:bit can be programmed to perform tasks like timing. • Simulators allow testing code before using real hardware. • Ergonomic and aesthetic design improves usability and appeal. • Prototypes help test ideas before final production. • Debugging ensures programs run correctly. • Feedback from users helps refine and improve designs.		**Common Misconceptions Pupils May Have:** • Thinking an algorithm is just a single command rather than a set of instructions. • Confusing ‘ergonomic’ with ‘aesthetic’. • Believing code does not need testing before use. • Assuming simulators and real devices behave exactly the same. • Thinking variables cannot change once set. • Believing logos are only decorative and not important for branding.	