Barnfields Primary School

Design Technology Curriculum Knowledge and Skills Progression Map

EYFS Framework

Linked Prime Areas of Learning – Physical Development and Personal, Social and Emotional Development

These are all key skills and children develop at their own rate in these. We will use next steps to move each child on through these skills using our ongoing individual assessments.

ELG: Fine Motor Skills

- **Use a range of small tools, including scissors, paintbrushes and cutlery.**

Development Matters Statements

- **Develop their small motor skills so that they can use a range of tools competently, safely and confidently.**
- **Use their core muscle strength to achieve a good posture when sitting at a table or sitting on the floor.**
- **Progress towards a more fluent style of moving, with developing control and grace.**

ELG: Managing Self

- **Manage their own basic hygiene and personal needs, including dressing, going to the toilet and understanding the importance of healthy food choices.**

Development Matters Statements

- **Know and talk about the different factors that support their overall health and wellbeing:**

regular physical activity, healthy eating, toothbrushing sensible amounts of 'screen time', having a good sleep routine, being a safe pedestrian

**** Development Matters statements repeated in skills.**

National Curriculum

Through a variety of creative and practical activities, pupils should be taught the knowledge, understanding and skills needed to engage in an iterative process of designing and making. They should work in a range of relevant contexts.

	Designing	Making	Evaluating	Technical Knowledge	Food Technology
KS1	Design - purposeful, functional, appealing products for themselves andother users based on	Select from and use a range oftools and equipment to perform practical tasks [for	Explore and evaluate a range of existing products evaluate their ideas and products against design criteria.	Build structures, exploringhow they can be made stronger, stiffer and more stable.	Use the basic principles of a healthy and varied diet to preparedishes

	design criteria. Design - generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and, where appropriate, information and communication technology.	example, cutting, shaping, joining and finishing]. Select from and use a wide range of materials and components, including construction materials, textilesand ingredients, according to their characteristics.		Explore and use mechanisms [for example, levers, sliders, wheels and axles], in their products.	To understand where food comesfrom.
KS2	Use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose, aimedat particular individuals or groups. Generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design	Select from and use a wider range of tools and equipment toperform practical tasks [for example, cutting, shaping, joining and finishing]. Accurately select from and use awide range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities	Investigate and analyse a range of existing products, evaluate their ideas and products against their own design criteria and consider the views of others to improve their work. Understand how key events and individuals indesign and technology have helped shape the world.	Apply their understanding of how to strengthen, stiffen andreinforce more complex structures. Understand and use mechanical systems in their products [for example, gears,pulleys, cams, levers and linkages]. Understand and use electricalsystems in their products [for example, series circuits incorporating switches, bulbs,buzzers and motors]. Apply their understanding of computing to program, monitor and control their products.	Understand and apply the principles of a healthy and varieddiet. Prepare and cook a variety ofpredominantly savoury dishesusing a range of cooking techniques. Understand seasonality and knowwhere and how a variety of ingredients are grown, reared, caught and processed.

EYFS (Reception)					
EYFS ELG Expressive Art and Design	**Development Matters (Reception)**		**Autumn**	**Spring**	**Summer**
<u>Creating with Materials</u> **•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.**	Explore, use and refine a variety of artistic effects to express their ideas and feelings.**	**Key Knowledge**	• To know how to safely construct with a purpose and evaluate their designs. • To know the names of different tools and techniques that can be used to create projects. • Know that collage can be used to create texture. • Know how materials can be stuck together. • Know how to use scissors safely. • Know the difference between some materials and how the feel of them can affect what they look like.	• To identify and select resources and tools to achieve a particular outcome. • To know how to describe ways of safely using and exploring a variety of materials. • Know that texture means how something feels. • Know ways to join materials together. • Know how to select different materials for different effects. • Know how to identify something that is 3D.	• To know the different uses and purposes of a range of media and materials. • To know how to select tools and techniques needed to shape, assemble and join materials they are using. • Know that Andy Goldsworthy is a sculptor. • Know that sculptures can be made out of lots of different things. • Know that a sculpture is a 3D form of art. • Know what natural materials are. • Know that some sculptures are very famous.

	Explore, use and refine a variety of artistic effects to express their ideas and feelings.** Return to and build on their previous learning, refining ideas and developing their ability to represent them. Create collaboratively, sharing ideas, resources and skills.	**Key Skills**	• Uses simple tools and techniques competently and appropriately. • To use resources to create own project. • Explore malleable and construction materials making 3D representations. • Selects appropriate resources and adapts work where necessary. • Say what they have represented in their models/sculptures. • Share resources with their friends. • Talk about what they have created. • Make simple puppets. • To plan, carry out and evaluate and change where necessary.	• Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function. • Constructs with a purpose in mind, using a variety of resources. • Experiment with different textures and describe them. • Make sculptures using dough, construction materials and junk modelling. • Choose the correct tools for their intended outcome. • Experiment with different ways to join materials. • Make links with models they have created before. • Talk about how they created their work.	• Manipulates materials to achieve a planned effect. • Apply artistic effects to their own creations. • Explain reasons for their choices of equipment or effect. • Complete sculptures from natural materials using a similar style to Andy Goldsworthy. • To use what they have learnt about media and materials in an original way and be able to explain their choices. • Plan a model/sculpture before they create it. • Evaluate their model/sculpture and talk about which ideas worked and which ideas didn't work and how they could do things differently next time. • Work collaboratively to produce a model/sculpture.

					• Share ideas about what they want to create and how they could do this.

Year 1				
KS1 Knowledge End Points (NC)	**Unit**	**Autumn** **Textiles: Templates and Joining** **To design and make an Autumn leaf hanging decoration for our classroom.**	**Spring** **Mechanisms: Wheels and Axles** **To design and make a helpful invention on wheels for a King or Queen.**	**Summer** **Food Technology - Fruit** **To make a healthy fruit salad for my friend.**
Designing: Is able to design purposeful, functional, appealing products for themselves and other users based on design criteria. Can generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and, where appropriate, information and communication technology. Making: Is able to select from and use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing]. Can select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics. Evaluating: Can explore and evaluate a range of existing products evaluate their ideas and products against design criteria.	**Key Knowledge**	• To understand what design criteria are and how they help to plan and create a product. • To know which tools and materials are needed to join textiles (e.g., glue, staples, stitching). • To learn and use simple key vocabulary relevant to textiles: template, join, stitch, seam. • To know how to evaluate their finished decoration by comparing it to their design and suggest simple improvements.	• To know the purpose of their product: it should move easily on wheels. • To know that a mechanism is a device that creates movement in a product. • To know that wheels and axles are types of mechanisms that help things move easily. • To understand the difference between fixed and freely moving axles using simple technical words. • To know which components and materials are needed to build a moving invention and choose suitable ones.	• To know that we must wash our hands and wash fruit and vegetables before eating. • To know that simple tools like peelers and knives help prepare food safely. • To understand that eating fruit and vegetables helps keep us healthy. • To know that fruit usually has seeds inside. • To understand that vegetables are parts of plants we eat. • To know that food gives us nutrients to make our bodies strong. • To know that a fruit salad is made by mixing different fresh fruits. • To understand that we use our senses to taste and describe

Technical Knowledge Can build structures, exploring how theycan be made stronger, stiffer and more stable. Is able to explore and use mechanisms [for example, levers, sliders, wheels andaxles], in their products. Food Technology: Uses the basic principles of a healthy and varied diet to prepare dishes, understanding where food comes from.				food. • To know that some food is cooked and some is eaten raw. • To understand that food comes from farms, shops, or gardens. • To know that some foods grow at different times of the year (seasons).
	Key Skills	• To use a template to cut out shapes accurately. • To join materials together using appropriate methods (glue, stitching, or stapling). • To practise threading a needle and sewing simple stitches (if age-appropriate). • To explore and talk about how well their decoration meets the design criteria. • To share their work and give positive feedback to others.	• To generate simple design ideas and criteria for their invention. • To communicate ideas through drawings and simple models (mock-ups). • To use a range of tools and equipment safely to cut, join, and assemble parts that allow movement. • To select materials like paper, card, plastic, and wood based on their properties. • To use wheels and axles effectively as moving parts in their invention. • To evaluate how well their invention works against their design criteria.	• To design appealing products for a specific user using simple design criteria. • To generate initial ideas and design criteria by exploring a variety of fruits and vegetables. • To communicate ideas clearly through discussion and drawings. • To use simple utensils and equipment safely (peeling, cutting, slicing, squeezing, grating, chopping). • To select fruits and vegetables based on their colour, texture, and taste to create a chosen product. • To taste and evaluate a range

				of fruits and vegetables to understand the preferences of the intended user. • To evaluate their ideas and finished products against the design criteria, considering the user and purpose.

Year 2				
KS1 Knowledge End Points (NC)	**Unit**	**Autumn** **Mechanisms: Sliders and Levers** **To design a moving picture that helps tell the story of The Great Paper Caper.**	**Spring** **Spring: Food Technology – Vegetables** **To prepare a healthy soup or roasted vegetable dish to share with our parents.**	**Summer** **Structures: Freestanding Structures** **To design and make a model piece of a playground equipment that children would play on.**
Designing: Is able to design purposeful, functional, appealing products for themselves and other users basedon design criteria. Can generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and, where appropriate, information and communication technology. Making: Is able to select from and use a range of tools and equipment to perform practical tasks [for example,cutting, shaping, joining and finishing]. Can select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according totheir characteristics.	**Key Knowledge**	• To understand that products are designed for specific users using design criteria. • To know simple design criteria for a moving slider, such as: - The mechanism should move smoothly. - It should produce the correct type of movement. • To understand that different mechanisms create different types of movement. • To know and use relevant technical vocabulary for the project. • To understand the steps involved in making a moving picture. • To know that evaluating	• To know the purpose of different tools and which to select for use in preparing food (e.g., colander, sieve, spatula, peeler). • To know how to wash, peel, slice and grate vegetables, selecting and use appropriate kitchen equipment safely and purposefully. • To know how to grow vegetables from seed and prepare for eating (including peeling, chopping, steaming, and boiling). • To know that some ingredients are easier to acquire according to the season. • To know the food groups that different healthy foods belong	• To know that a freestanding structure can stand on its own without being fixed to something else. • To know that structures need to be strong, stable, and balanced. • To understand that materials can be shaped, folded, rolled, or joined to make them stronger or more stable. • To know the names and purposes of basic tools and materials used in constructing models (e.g., scissors, card, glue, tape, split pins). • To understand that playground equipment is designed for children and must be safe, stable, and fun. • To know that products are designed for a specific purpose

Evaluating: Can explore and evaluate a range of existing products evaluate their ideas and products against design criteria. Technical Knowledge Can build structures, exploring how they can be made stronger, stiffer and more stable Is able to explore and use mechanisms [for example, levers,sliders, wheels and axles], in theirproducts. Food Technology: Uses the basic principles of a healthy and varied diet to preparedishes understanding where food comes from.		against a success criteria is more purposeful than a vague evaluation.	to and demonstrate by selecting appropriate combinations for a singular meal. • To know the source of their food.	and user.
	Key Skills	• To generate ideas based on simple design criteria and the reading text as inspiration. • To develop, model, and communicate ideas clearly through drawings and mock-ups using card and paper. • To plan and sequence the steps needed to create their moving picture. • To select appropriate tools for cutting, shaping, and joining paper and card, and explain their choices. • To use tools safely and effectively to cut, fold, and join materials. • To create simple mechanisms (sliders and levers) that produce movement in their product. • To test and adapt their mechanism to improve	• To design appealing products for a specific user using simple design criteria. • To investigate different fruits and vegetables to generate initial ideas and design criteria. • To communicate design ideas clearly through discussion and drawings. • To use simple utensils safely and effectively (peeling, cutting, slicing, squeezing, grating, chopping). • To select vegetables based on characteristics like colour, texture, and taste to create their product. • To taste and evaluate different vegetables to understand the preferences of the intended user. • To evaluate their ideas and	• To generate ideas for a product based on simple design criteria and real-life examples. • To draw and label designs that show what the product will look like and how it will function. • To explore how to make structures stronger and more stable by folding, joining, and reinforcing materials. • To use tools and equipment safely to cut, shape, and join materials. • To select materials based on their suitability for building a freestanding structure. • To assemble components to make a stable model of playground equipment. • To evaluate their product by discussing what worked well and what could be improved, using the design criteria.

		smoothness and function. • To evaluate their finished product against the design criteria, suggesting improvements.	finished products against the design criteria, considering the user and purpose.	

Year 3				
KS2 Knowledge End Points (NC)	**Unit**	**Autumn** **Structures: Shell Structures** **To design a chocolate packaging container to hold a piece of Christmas chocolate.**	**Spring** **Food and Nutrition: Healthy and Varied Diet** **To make healthy banana & oat mini cakes for Little Red to take to Grandma.**	**Summer** **Textiles: 2D Shape to 3D Product** **To design and make a bag to keep my tuck money in.**
Designing Can use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose, aimed at particular individuals or groups. Is able to generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design. Making Is able to select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], Can accurately select from and use a	**Key Knowledge**	• To know what a shell structure is: a hollow structure that gets its strength from its shape rather than internal supports. • To understand that shell structures are often used for packaging because they protect contents while being lightweight. • To know common materials used for packaging (e.g., cardboard, plastic, paper) and their properties. • To understand how different shapes (boxes, cylinders, prisms) affect the strength and appearance of a package.	• To know what makes a diet healthy and varied, including the importance of fruits, whole grains, and less sugar. • To understand the nutritional benefits of ingredients like bananas and oats. • To know how to read and follow a simple recipe, including measuring ingredients accurately. • To understand the importance of food hygiene and safety when preparing food (washing hands, cleaning surfaces). • To know the purpose of different	• To know that templates are used to create accurate 2D fabric shapes. • To understand how 2D fabric shapes can be joined to make a 3D product (e.g., a bag). • To know different methods of joining fabric (e.g., gluing, simple stitching). • To understand the purpose and function of a bag and how it meets the needs of a user. • To know that different fabrics have different properties (e.g., strength, texture, thickness).

wide range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities. <u>Evaluating</u> Is able to investigate and analyse a range of existing products. Can evaluate their ideas and products against their own design criteria and consider the views of others to improve their work Understands how key events and individuals in design and technology have helped shape the world. <u>Technical Knowledge</u> Applies their understanding of how to strengthen, stiffen and reinforce more complex structures. Understands and can use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages]. Understands and can use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors]. Applies their understanding of computing to program, monitor and control their products. <u>Food technology</u> Understand and can apply the principles of a healthy and varied diet.		• To know the importance of designing packaging that protects the product, is attractive to users, and is easy to open. • To know how to measure and mark materials accurately to ensure parts fit together well. • To understand how joining methods (folding, gluing, taping) are used to construct shell structures. • To understand the importance of considering the user and purpose when designing a product.	kitchen tools and equipment (e.g., mixing bowls, spoons, measuring scales). • To understand how to combine and prepare ingredients using techniques like mashing, mixing, and baking. • To know how to evaluate the taste, texture, and appearance of their food product.	• To know key vocabulary related to textiles: seam, stitch, thread, template, fabric. • To understand how to evaluate a textile product based on functionality, appearance, and durability.
	Key Skills	• To generate and develop design ideas based on simple design criteria. • To produce detailed drawings and plans to communicate design ideas clearly. • To measure, mark, cut, and score materials accurately. • To use a range of joining techniques (gluing, folding, taping) to construct shell structures. • To select appropriate materials based on their properties and the	• To plan and follow a simple recipe step-by-step. • To select and use kitchen tools safely and effectively for preparing ingredients. • To measure and combine ingredients accurately. • To prepare ingredients using appropriate techniques such as mashing and mixing. • To bake the mini cakes safely, following instructions and timing carefully.	• To generate ideas and develop a simple design for a small bag with a specific purpose and user in mind. • To create and use a template to accurately cut 2D shapes from fabric. • To select appropriate fabric and joining methods for their bag. • To use a simple stitch (e.g., running stitch) to join fabric securely. • To thread a needle and use tools safely and appropriately. • To assemble a 3D textile product from 2D shapes.

Can prepare and cook a variety of predominantly savory dishes using a range of cooking techniques understand seasonality and know where and how a variety of ingredientsare grown, reared, caught and processed.		product's purpose. • To assemble and shape materials to create a strong and functional packaging container. • To evaluate their finished product against the design criteria, considering strength, usability, and appearance. • To suggest improvements for their design or finished product.	• To taste and evaluate their mini cakes, considering healthiness, flavor, texture, and appearance. • To suggest improvements based on their evaluation.	• To evaluate their finished bag against the design criteria and suggest possible improvements.

Year 4				
KS2 Knowledge End Points (NC)	**Unit**	**Autumn** **Food Technology – Healthy and Varied Diet** **To make an Italian inspired meal to enjoy.**	**Spring** **Levers and Linkages** **To design and make a moving picture to show how Vikings travelled.**	**Summer** **Simple Programming and Control** **To design a simple circuit to control and make a torch or lamp.**
Designing Can use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose, aimed at particular individuals or groups. Is able to generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design.	**Key Knowledge**	• To know that certain dishes and ingredients are associated with specific cultures and countries. • To understand that some ingredients grow better in certain climates, which influences regional and cultural dishes. • To know that many ingredients are seasonal and more available or affordable at particular times of	• Levers and linkage are mechanisms are devices that are used to create movementin a product. • Humans have used levers since the Stone Age. • The earliest remaining writings regarding levers date from the 3rd century BC andwere provided by the ancient Greek mathematician,	• Understand and use computing to program and control products containing electrical systems, such as series circuits incorporating switches, bulbs and buzzers. • Discuss, investigate and, where practical and safe, disassemble different examples of relevant battery-powered products, including some programmable and programmed commercially

Making Is able to select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], Can accurately select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities. Evaluating Is able to investigate and analyse a range of existing products. Can evaluate their ideas and products against their own design criteria and consider the views of others to improve their work Understands how key events and individuals in design and technology have helped shape the world. Technical Knowledge Applies their understanding of how to strengthen, stiffen and reinforce more complex structures. Understands and can use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages]. Understands and can use electrical systems in their products [for example, series circuits incorporating switches,		year. • To understand the difference between farming practices, including organic, and how these affect price and availability. • To know that certain flavour combinations work well together, and that ingredients can be selected for taste, texture, and appearance. • To know that a healthy, balanced meal includes more than one food group, unless a food group is being balanced across a wider diet. • To know that food hygiene is important and that food served to others must follow safe handling and preparation guidelines. • To know that washing hands and ingredients helps remove microorganisms and that cooking further reduces bacteria. • To know that food can be changed in taste and texture using different cooking methods (e.g., boiling, baking, grilling, frying).	**Archimedes,** who was the first to mathematically describe how levers multiply force. • There are four types of lever: linear, reciprocating, rotary, oscillating. • To know and distinguish between fixed and loose pivots. • A lever is a rigid bar which moves around a pivot; they are used in many everyday products. • Linkage - the card strips joining one or more levers to produce the type of movement required are used as 'linkage'; this term is also used to describe the lever and linkage mechanism as a whole. • The slot is the hole through which a lever is placed to enable part of a picture to move. • The guide or bridge is a short card strip used to keep lever and linkage mechanisms in place and control movement. • A paper fastener that joins card strips together is a 'loose pivot'. • A paper fastener that joins card	available products. • Knows the different examples of switches, including those which are commercially available, which work in different ways. • Knows the dangers of mains electricity.

bulbs, buzzers and motors]. Applies their understanding of computing to program, monitor and control their products. <u>Food technology</u> Understand and can apply the principles of a healthy and varied diet. Can prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques understand seasonality and know where and how a variety of ingredients are grown, reared, caught and processed.			strips to the backing card is a 'fixed pivot' . • A system is a set of related parts or components used to create an outcome. • Systems have an input, process and an output. • In a lever and linkage mechanism, the 'input movement' is where the user pushes or pulls a card strip. • The 'output movement' is where one or more parts of the picture move.	
	Key Skills	• To generate creative ideas for a healthy Italian-inspired dish through discussion and research. • To develop a clear design brief and specification that considers purpose, audience, and health. • To explore, compare and refine initial ideas before making design decisions. • To plan a dish considering available resources, seasonality, and cost. • To select and use utensils correctly and safely (e.g., knives,	• Needs to include the evaluation of existing structures that will inform their own. • Generate realistic ideas and their own design criteria through discussion, focusing on the needs of the user. • Use annotated sketches and prototypes to develop, model and communicate ideas. • Order the main stages of making. • Select from and use appropriate tools with some accuracy to cut, shape and join	• Make manually controlled, simple series circuits with batteries and different types of switches, bulbs, motors and buzzers. • Select relevant components in the circuit - input devices e.g. switches, and output devices e.g. bulbs, motors and buzzers. • Find faults fault in a simple circuit and correct it. • Use a simple computer control program using an interface box, microcontroller or standalone control box to control output devices, e.g. bulbs and buzzers, using a repeating

		chopping boards, scales, measuring jugs, baking trays). • To prepare ingredients using appropriate techniques (e.g., chopping, grating, mixing, kneading, boiling, baking). • To make, decorate, and present a final food product attractively and appropriately. • To carry out sensory evaluations (taste, texture, appearance) and record findings using simple data charts (e.g., star diagrams or tally charts). • To evaluate the final product against the design brief, using peer and adult feedback to identify improvements. • To reflect on product popularity (e.g., through taste tests or surveys) and relate this to real-life applications like menu planning. • To explain their ingredient choices based on nutritional value, user needs, and food combinations.	paper and card. • Select from and use finishing techniques suitable for the product they are creating. • Investigate and analyse books and evaluate other products with lever and linkage mechanisms prior to making their own. • Evaluate their own products and ideas against criteria and user needs, as they design and make. • Use skills and techniques to measure, mark out, cut, join and finish.	sequence of instructions. • Make a variety of switches by using simple classroom materials e.g. card, corrugated plastic, aluminium foil, paper fasteners and paper clips. • Evaluate the effectiveness of their product against the design criteria and make suggestions for improvements.

Year 5				
KS2 Knowledge End Points (NC)	**Unit**	**<u>Autumn</u> Frame Structures To design and make a structure which Mayans could use to worship.**	**<u>Spring</u> Food Technology: Culture and Seasonality To make a mini herb frittata in a muffin tin to celebrate seasonal vegetables.**	**<u>Summer</u> Pulleys and Gears To design and make a plastic pollution catcher for the sea.**
<u>Designing</u> Can use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose, aimed at particular individuals or groups. Is able to generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design. <u>Making</u> Is able to select from and use a wider range of tools and equipment to perform practical tasks [for example,	**Key Knowledge**	• To understand that prototypes, cross-sectional diagrams, exploded diagrams, and pattern pieces are helpful in communicating design ideas. • To understand the role of computer-aided design (CAD) in supporting the design and modelling process. • To know how to use a prototype to test and improve elements of a design before final construction. • To know that a frame structure uses a framework to support a product and give it strength and stability.	• To know that different vegetables grow in different seasons, and that seasonality can influence flavour, cost, and sustainability. • To understand that whole grain flour contains more nutrients and fibre than plain (white) flour, and is often considered a healthier choice. • To know the importance of clear and accurate food labelling, especially in relation to allergies and dietary requirements. • To know how to identify and use tools and equipment involved in food	• To know that mechanical systems have an input, process and output, and that pulleys and gears can be used to change speed, direction, or force of movement. • To know that pulleys reduce the effort needed to lift or move objects and that gears can increase or reduce speed. • To know how to use technical vocabulary, such as pulley, gear, chassis, axle, bearing, drive belt, motor, transmission. • To understand that a frame

cutting, shaping, joining and finishing], Can accurately select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities. <u>Evaluating</u> Is able to investigate and analyse a range of existing products. Can evaluate their ideas and products against their own design criteria and consider the views of others to improve their work Understands how key events and individuals in design and technology have helped shape the world. <u>Technical Knowledge</u> Applies their understanding of how to strengthen, stiffen and reinforce more complex structures. Understands and can use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages]. Understands and can use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors]. Applies their understanding of computing to program, monitor and control their products. <u>Food technology</u>		• To understand that internal frameworks (e.g. stiffening ribs, cross-bracing) can help support larger and more complex structures. • To know how to strengthen, stiffen, and reinforce materials using techniques such as folding, layering, or triangulation. • To understand how to work safely and appropriately when using tools and materials, including those for joining (e.g., wood, card, wire, glue, tape). • To know how to estimate and measure materials accurately and assess quantities needed for a structure.	preparation and baking (e.g. muffin tins, whisks, measuring jugs, knives). • To know how market research (such as surveys and taste testing) can help inform a successful food product. • To understand how ingredients and flavours from different cultures can influence recipes. • To know that recipes can be adapted to be healthier by reducing sugar, fat or salt, or by substituting ingredients (e.g., using whole grains, more vegetables, or herbs for flavour).	structure can be reinforced using triangular shapes for strength and rigidity. • To know that fixed axles allow wheels to rotate freely and continuously, and that axles can be reinforced using bearings or holders. • To know how to measure and cut a range of materials accurately and safely, including dowel and wood. • To understand the importance of testing, reviewing and refining each stage of construction to ensure stability and function. • To understand the role of a chassis in supporting a motor and ensuring structural integrity. • To know how to evaluate a product for function, durability, fitness for purpose, and innovation against design criteria.
	Key Skills	• To research and explore how places of worship are structured and apply features to their own Maya-inspired design.	• To carry out research and product tasting to explore a range of savoury baked goods, recording	• To follow a step-by-step design plan, including creating tool, equipment, and material lists.

Understand and can apply the principles of a healthy and varied diet. Can prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques understand seasonality and know where and how a variety of ingredients are grown, reared, caught and processed.		• To generate creative, purposeful ideas and develop these into a detailed design. • To create labelled drawings, prototypes and/or cross-sectional diagrams to communicate ideas clearly. • To select from a range of materials and tools, choosing appropriately based on the design purpose and structural strength. • To measure, cut and join materials accurately to create a solid frame structure. • To safely use a variety of tools including saws, hammers, pliers, and glue guns, understanding how to control risk. • To create a prototype and use it to test and refine part of the structure. • To evaluate their own and others' products against the design criteria, identifying successes and areas for improvement. • To reflect on how improvements to processes (e.g. joining methods,	preferences and features. • To generate ideas based on seasonal ingredients and user preferences, creating clear design criteria for their frittata. • To plan and follow a recipe, using a sequence of steps and considering timing, hygiene, and equipment use. • To prepare and handle ingredients safely and hygienically, including chopping vegetables and cracking eggs. • To measure ingredients accurately using appropriate tools (e.g. weighing scales, spoons, jugs). • To safely use tools and equipment, such as whisks, knives, graters, and muffin tins. • To evaluate their product based on appearance, flavour, texture, and suitability for the intended user, using sensory vocabulary.	• To measure, mark and cut materials accurately, using appropriate tools and techniques safely. • To construct and reinforce a frame, including adding triangular supports at corners. • To build and fit a pulley system, ensuring a secure and functional setup. • To design and build a chassis that supports a motor, ensuring power can be transmitted effectively. • To attach axles and wheels so they rotate freely, reinforcing them with holders or bearings where needed. • To test and modify parts throughout construction to check they are secure and function correctly. • To use technical vocabulary when communicating ideas and explaining function. • To critically evaluate their product throughout the process and on completion, identifying strengths, weaknesses and areas for improvement in relation to the design criteria.

		reinforcement) could strengthen the outcome.	• To record and compare evaluation data using tables or charts. • To reflect on their dish and suggest improvements or adaptations to improve healthiness or meet user needs.	

Year 6				
KS2 Knowledge End Points (NC)	**Unit**	**Autumn** **Food Technology - Culture and Seasonality** **To design and create a snack for ourselves to enjoy at the Christmas party.**	**Spring** **Electrical Systems: More Complex Switches and Circuits** **To design and make a wire buzzer game.**	**Summer** **Textiles: Combining Different Fabrics** **To design and make a memory cushion for ourselves as a keepsake of our time at Barnfields.**
Designing Can use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose, aimed at particular individuals or groups. Is able to generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design. Making	**Key Knowledge**	• To know that certain dishes are associated with different cultures and places. • To understand that some ingredients grow more easily in certain climates or regions and often appear in local cuisines. • To know that ingredient availability can vary by season. • To understand the difference between farming practices, e.g. organic vs conventional, and their	• To understand how switches (push-to-make, toggle, reed) and sensors (LDRs) control electrical circuits. • To know how systems have inputs, processes and outputs. • To know how to draw and interpret circuit diagrams. • To understand how to use research to develop a design specification. • To know how to write and test computer control programs with	• To know how to tailor a design to suit a specific user by considering their preferences, age, and purpose of the product • To understand and apply a range of stitches (e.g. running, backstitch, blanket stitch) for both function and decoration, selecting the most appropriate for different parts of the product • To know and accurately use key technical vocabulary related to textiles, fabric properties, and

Is able to select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], Can accurately select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities. <u>Evaluating</u> Is able to investigate and analyse a range of existing products. Can evaluate their ideas and products against their own design criteria and consider the views of others to improve their work Understands how key events and individuals in design and technology have helped shape the world. <u>Technical Knowledge</u> Applies their understanding of how to strengthen, stiffen and reinforce more complex structures. Understands and can use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages]. Understands and can use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors]. Applies their understanding of computing to program, monitor and		impact on cost. • To recognise flavour combinations and how some ingredients complement one another. • To know what makes a dish healthy and how it fits into a balanced diet. • To understand the importance of food hygiene regulations for public consumption. • To know that good hygiene includes washing hands and ingredients, and following safe cooking instructions. • To understand how cooking methods (boiling, grilling, baking, frying) change ingredients' taste, texture, and appearance. • To know that local restaurants and food providers tailor menus for community preferences	inputs, outputs, and decision-making (e.g. using microcontrollers). • To understand the importance of evaluating a system for reliability and functionality. • To know how inventors have influenced electrical system development.	construction processes. • To understand how to critically evaluate a textile product, identifying how well it meets design criteria and user needs, and suggesting realistic improvements.
	Key Skills	• Generate innovative ideas through research and discussion, creating a design brief and specification. • Develop and communicate ideas using annotated sketches and digital tools. • Consider ingredient availability	• Use research to develop a purposeful and functional electrical product. • Generate and clarify ideas through discussion and annotated diagrams. • Formulate step-by-step plans and resource lists.	• Conduct focused research into the features and purpose of memory cushions to inform meaningful and functional design decisions. • Generate and communicate increasingly detailed design ideas, using annotated sketches, templates, and ICT to visualise

control their products. Food technology Understand and can apply the principles of a healthy and varied diet. Can prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques understand seasonality and know where and how a variety of ingredients are grown, reared, caught and processed.		and cost when planning. • Select and use utensils accurately and safely (e.g. knives, chopping boards, weighing scales). • Prepare and cook food using a range of ingredients and methods. • Present and decorate dishes for the intended purpose and audience. • Carry out sensory evaluations and record results using charts and graphs (e.g. star diagrams). • Evaluate the product using design criteria and peer feedback to suggest improvements. • Understand how chefs have influenced healthy eating habits. • Review dish popularity and use results to reflect on improvements, as in real-life food industries.	• Accurately assemble electrical components into a working system. • Use computing to write programs that control outputs in response to inputs. • Modify and refine circuits to improve reliability and function. • Evaluate the product during and after construction, using the initial design brief for reflection.	final products. • Confidently select and use appropriate tools and equipment, including pins, needles, fabric scissors and embellishments, working with precision and independence. • Apply a variety of stitches and joining techniques, evaluating their suitability for structure, durability, and decorative effect. • Plan and follow a sequenced process from prototype to final product, adjusting techniques where necessary based on testing and feedback. • Evaluate the final product with reference to individual criteria and user feedback, considering the effectiveness of stitching, fabric choice, aesthetic appeal, and personalisation.