



Barnfields Primary School

Design Technology Curriculum Knowledge and Skills Progression Map

<p>EYFS Framework Linked Prime Areas of Learning – Physical Development and Personal, Social and Emotional Development <i>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.</i></p>
<p>ELG: Fine Motor Skills</p> <ul style="list-style-type: none"> Use a range of small tools, including scissors, paintbrushes and cutlery. <p>Development Matters Statements</p> <ul style="list-style-type: none"> 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. <p>ELG: Managing Self</p> <ul style="list-style-type: none"> Manage their own basic hygiene and personal needs, including dressing, going to the toilet and understanding the importance of healthy food choices. <p>Development Matters Statements</p> <ul style="list-style-type: none"> 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 <p>** Development Matters statements repeated in skills.</p>

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	<p>Design - purposeful, functional, appealing products for themselves and other users based on design criteria.</p> <p>Design - generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and, where appropriate, information and communication technology.</p>	<p>Select from and use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing].</p> <p>Select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics.</p>	<p>Explore and evaluate a range of existing products evaluate their ideas and products against design criteria.</p>	<p>Build structures, exploring how they can be made stronger, stiffer and more stable.</p> <p>Explore and use mechanisms [for example, levers, sliders, wheels and axles], in their products.</p>	<p>Use the basic principles of a healthy and varied diet to prepare dishes</p> <p>To understand where food comes from.</p>
KS2	<p>Use research and develop design</p>	<p>Select from and use a wider range</p>	<p>Investigate and analyse a range of</p>	<p>Apply their understanding of how</p>	<p>Understand and apply the</p>



	<p>criteria to inform the design of innovative, functional, appealing products that are fit for purpose, aimed at particular individuals or groups.</p> <p>Generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design</p>	<p>of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing].</p> <p>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</p>	<p>existing products, evaluate their ideas and products against their own design criteria and consider the views of others to improve their work.</p> <p>Understand how key events and individuals in design and technology have helped shape the world.</p>	<p>to strengthen, stiffen and reinforce more complex structures.</p> <p>Understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages].</p> <p>Understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors].</p> <p>Apply their understanding of computing to program, monitor and control their products.</p>	<p>principles of a healthy and varied diet.</p> <p>Prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques.</p> <p>Understand seasonality and know where and how a variety of ingredients are grown, reared, caught and processed.</p>
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EYFS (Reception)					
EYFS ELG Expressive Art and Design	Development Matters (Reception)		Autumn	Spring	Summer
<p><u>Creating with Materials</u></p> <p>•Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function.</p> <p>•Share their creations, explaining the process they have used.</p>	<p>Explore, use and refine a variety of artistic effects to express their ideas and feelings.**</p>	<p>Key Knowledge</p>	<ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • 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.



	<p>Explore, use and refine a variety of artistic effects to express their ideas and feelings.**</p> <p>Return to and build on their previous learning, refining ideas and developing their ability to represent them.</p> <p>Create collaboratively, sharing ideas, resources and skills.</p>	<p>Key Skills</p>	<ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • 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.
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Year 1				
KS1 Knowledge End Points (NC)	Unit	Autumn: Templates and Joining To design and make a hand puppet for a young child to play with.	Spring: Food Technology - Fruit To make a healthy fruit salad for my friend.	Summer: Wheels and Axles To design and make a vehicle fit for royalty.
<p><u>Designing:</u> Is able to design purposeful, functional, appealing products for themselves and other users based on design criteria.</p> <p>Can generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and, where appropriate, information and communication technology.</p> <p><u>Making:</u> Is able to select from and use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing].</p> <p>Can select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics.</p> <p><u>Evaluating:</u> Can explore and evaluate a range of existing products evaluate their ideas and products against design criteria.</p> <p><u>Technical Knowledge</u> Can build structures, exploring how they can be made stronger, stiffer and more stable.</p> <p>Is able to explore and use mechanisms [for example, levers, sliders, wheels and axles], in their products.</p> <p><u>Food Technology:</u> Uses the basic principles of a healthy and varied diet to prepare dishes, understanding where food comes from.</p>	<p>Key Knowledge</p>	<ul style="list-style-type: none"> To know what design criteria is and how it can be used to create a product. To know which equipment is needed to sew material together. To know and use key vocabulary, as relevant to the project: seam, thread, stitch To know how to evaluate their product against the design criteria and suggest improvements. 	<ul style="list-style-type: none"> It is important to wash hands before preparing food and also to wash fruit before we eat it. Simple utensils can be used to process food and make it easier to eat. Fruit is an essential part of a balanced diet and 5 portions of fruit and vegetables are recommended per day. Fruit and vegetables can be farmed or grown at home. A fruit usually contains a plant or tree's edible seed. A vegetable is a plant used for food. Nutrients are the things in food that the body needs to remain healthy. Pith is the soft white lining inside fruit such as oranges A fruit salad is a cold dish composed of fresh fruit Sensory evaluation is when senses are used to evaluate qualities such as appearance, smell, taste, texture (mouth feel). A Kebab has cooked and/or fresh ingredients on a skewer. 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 prepare for eating (including peeling, chopping, steaming and boiling) To know that some ingredients are easier to acquire according to the season. 	<ul style="list-style-type: none"> A mechanism is a device used to create movement in a product and wheels and axles are examples of this. To know the difference and distinguish between fixed and freely moving axles, using technical vocabulary relevant to the project. To know the purpose of their product (that the finished model can be moved on wheels with ease) To know what components are needed to construct a moving vehicle and use this to select materials according to which are most suitable.



			<ul style="list-style-type: none"> To know the food groups that different healthy foods belong to and demonstrate by selecting appropriate combinations for a singular meal. To know the source of their food. 	
	Key Skills	<ul style="list-style-type: none"> Design and create a puppet, sewing the material together effectively at the seams. Thread and use a needle safely. Evaluate own and each other's product(s) against the design criteria. 	<ul style="list-style-type: none"> Design appealing products for a particular user based on simple design criteria. Generate initial ideas and design criteria through investigating a variety of fruit and vegetables. Communicate these ideas through talk and drawings. Use simple utensils and equipment to e.g. peel, cut, slice, squeeze, grate and chop safely. Select from a range of fruit and vegetables according to their characteristics e.g. colour, texture and taste to create a chosen product. Taste and evaluate a range of fruit and vegetables to determine the intended user's preferences. Evaluate ideas and finished products against design criteria, including intended user and purpose. 	<ul style="list-style-type: none"> Generate initial ideas and simple design criteria. Develop and communicate ideas through drawings and mock-ups. Use a range of tools and equipment to perform practical tasks, such as cutting and joining to allow movement and finishing. Select from and using a range of materials and components, such as paper, card, plastic and wood, according to their characteristics. Use wheels and axles as mechanisms in their product. Evaluate the success of their product against the design criteria.

Year 2				
KS1 Knowledge End Points (NC)	Unit	Autumn: Sliders and Levers To design a slider to show an aspect of Tudor life to Y1 pupils.	Spring: Freestanding Structures To design and make a Tudor house to show how quickly a fire could spread.	Summer: Food Technology – Vegetables To prepare a healthy soup or roasted vegetable dish to share with our parents.
<u>Designing:</u> Is able to design purposeful, functional, appealing products for themselves and other users based on design criteria. Can generate, develop, model and communicate	Key Knowledge	<ul style="list-style-type: none"> Understand that different mechanisms produce different types of movement. Know and use technical vocabulary relevant to the project. Understand the steps to make a moving picture. 	<ul style="list-style-type: none"> To know how to join components together effectively. Know that a range of tools can be used for different purposes: cutting, sticking, curling, bending, joining etc. To understand how structures can be 	<ul style="list-style-type: none"> To know the purpose of different tools and which to select for use in preparing food (eg colander, sieve, spatula, peeler). To know how to wash, peel, slice and grate vegetables, selecting and use appropriate kitchen equipment safely



<p>their ideas through talking, drawing, templates, mock-ups and, where appropriate, information and communication technology.</p> <p><u>Making:</u> 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.</p> <p><u>Evaluating:</u> Can explore and evaluate a range of existing products evaluate their ideas and products against design criteria.</p> <p><u>Technical Knowledge</u> 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 their products.</p> <p><u>Food Technology:</u> Uses the basic principles of a healthy and varied diet to prepare dishes understanding where food comes from.</p>		<ul style="list-style-type: none"> Understand that products are designed for users based on criteria, and what simple criteria for a moving slider could be: the mechanism should work smoothly, it should make the right type of movement 	made stronger and stiffer.	<p>and purposefully.</p> <ul style="list-style-type: none"> To know how to grow vegetables from seed 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 and demonstrate by selecting appropriate combinations for a singular meal. To know the source of their food.
	Key Skills	<ul style="list-style-type: none"> Generate ideas based on simple design criteria and their own experiences Develop, model and communicate their ideas through drawings and mock-ups with card and paper. Plan and suggest steps in the creation phase. Select and use tools, explaining their choices, to cut, shape and join paper and card. 	<ul style="list-style-type: none"> Explore initial ideas using drawings and mock-ups. Use tools for different purposes: cutting, sticking, curling, bending, joining etc. Select and use a range of materials and components, such as paper, card, plastic and wood according to their characteristics. Build structures by selecting appropriate materials and investigating ways to strengthen them. Evaluate their ideas throughout the process and review their products against original criteria 	<ul style="list-style-type: none"> Design appealing products for a particular user based on simple design criteria. Generate initial ideas and design criteria through investigating a variety of fruit and vegetables. Communicate these ideas through talk and drawings. Use simple utensils and equipment to e.g. peel, cut, slice, squeeze, grate and chop safely. Select from a range of fruit and vegetables according to their characteristics e.g. colour, texture and taste to create a chosen product. Taste and evaluate a range of fruit and vegetables to determine the intended user's preferences. Evaluate ideas and finished products against design criteria, including intended user and purpose.

Year 3				
KS2 Knowledge End Points (NC)	Unit	Autumn: Shell Structure To design a chocolate packaging container to hold a piece of Christmas chocolate.	Spring: Food Technology – Healthy and Varied Diet To make a roll of bread fit for the Pharaoh's meal.	Summer: 2D shape to 3D product To design and make a bag for a family member to raise money for the WWF.
<p><u>Designing</u> Can use research and develop design criteria to inform the design of innovative, functional,</p>		<ul style="list-style-type: none"> Know how to use and manipulate materials in order to create a structure Packaging can come in different shapes and sizes. 	<ul style="list-style-type: none"> It is important to wash hands before preparing food and also to wash fruit before we eat it. Simple utensils can be used to process 	<ul style="list-style-type: none"> To know how to specify a design to make it more appealing to a specific target group. To know different types of stitches for the



<p>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.</p> <p><u>Making</u> 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.</p> <p><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.</p>	<p>Key Knowledge</p>	<ul style="list-style-type: none"> • Branding is important to promote your product. • Products have a slogan to advertise. • Different techniques can be used to strengthen packaging. • Make simple drawings and label part. • Begin to select tools and materials; use vocab' to name and describe them • Measure, cut and score with some accuracy • Use hand tools safely and appropriately • Assemble, join and combine materials in order to make a product • To investigate the construction of existing structures and evaluate their own design against the design criteria 	<p>food and make it easier to eat.</p> <ul style="list-style-type: none"> • A range of utensils can be used for a range of techniques to prepare ingredients hygienically including the bridge and claw technique, grating, peeling, chopping, slicing, mixing, spreading, kneading and baking. • The food's appearance is how it looks to the eye. • The food's texture is how the product feels in the mouth. • Sensory evaluation means evaluating food products in terms of the taste, smell, texture and appearance. • A preference test means trying different things (foods) and deciding which is preferred. • Processed food includes ingredients that have been changed in some way to enable them to be eaten or used in food preparation and cooking. 	<p>purpose of functionality and aesthetics.</p> <ul style="list-style-type: none"> • Know and use technical vocabulary relevant to the project. • Know how to evaluate their product against the product criteria they have generated individually, as a means to improve their work.
<p><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.</p> <p><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</p>	<p>Key Skills</p>	<ul style="list-style-type: none"> • Use research to inform the design criteria for a shelter suitable to the context of an era. • Generate ideas by drawing on their own and other people's experiences • Develop their design ideas through discussion, observation, drawing and modelling • Identify a purpose for what they intend to design and make • Identify simple design criteria • Use existing designs to inform own and communicate ideas through discussion, annotated sketches, cross-sectional diagrams and computer aided design (word.doc with shape manipulation) • Compare designs and understand the necessary features of a suitable structure (considering locational aspects; indoor/outdoor, speed of accessibility, strength and space). • To investigate the construction of existing structures and evaluate their own design 	<ul style="list-style-type: none"> • Generate and clarify ideas through discussion with peers and adults to develop design criteria including appearance, taste, texture and aroma for an appealing product for a particular user and purpose. • Use annotated sketches and appropriate information and communication technology, such as web-based recipes, to develop and communicate ideas. • Plan the main stages of a recipe, listing ingredients, utensils and equipment. • Select and use appropriate utensils and equipment to prepare and combine ingredients. • Select from a range of ingredients to make appropriate food products, thinking about sensory characteristics. • Carry out sensory evaluations of a variety of ingredients and products. Record the evaluations using e.g. tables and simple graphs. • Evaluate the ongoing work and the final 	<ul style="list-style-type: none"> • Design and make a functional bag with a fastening, communicating initial ideas through annotated sketches • Use research into the features of an appealing functional bag to inform design criteria. • Select and use a range of tools to perform practical tasks; stitching and sewing (joining), cutting and systematically work through phases of a design. • Investigate the effect of different stitches in joining seams and how they contribute to the overall effectiveness and durability of the product. • Evaluate the outcome with reference to the design criteria



<p>a variety of ingredients are grown, reared, caught and processed.</p>		<p>against the design criteria</p>	<p>product with reference to the design criteria and the views of others.</p> <ul style="list-style-type: none"> • Know how to use appropriate equipment and utensils to prepare and combine food. • Know about a range of fresh and processed ingredients appropriate for their product, and whether they are grown, reared or caught. • Know and use relevant technical and sensory vocabulary appropriately. 	
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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.
<p><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.</p> <p><u>Making</u> 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.</p> <p><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</p>	<p>Key Knowledge</p>	<ul style="list-style-type: none"> • Particular dishes are associated with different cultures and places • Some ingredients are easier to grow in some parts of the world than in others (owing to conditions such as climate) and are often found in dishes that originate where they are found • Some ingredients are more readily available at certain times of the year than others, owing to changes in climate. • Ingredients are grown under different farming practices and organic ingredients can be more expensive • Some flavours complement each other more than others and some ingredients go well together • A healthy dish can involve more than one food group, or one food group if it is part of a healthy balanced diet. • Food being served to the public is regulated in accordance with good food hygiene practices. • Washing hands and ingredients, where appropriate, reduces microorganisms and cooking instructions are important for this purpose too. • Ingredients, flavours and textures can be 	<ul style="list-style-type: none"> • Levers and linkage are mechanisms are devices that are used to create movement in a product. • Humans have used levers since the stone age • The earliest remaining writings regarding levers date from the 3rd century BC and were provided by the ancient Greek mathematician, 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 	<ul style="list-style-type: none"> • 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 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.



<p>Understands how key events and individuals in design and technology have helped shape the world.</p> <p><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.</p>		<p>changed through boiling, grilling, baking and frying.</p>	<p>in place and control movement.</p> <ul style="list-style-type: none"> • A paper fastener that joins card strips together is a 'loose pivot'. • A paper fastener that joins card 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. 	
<p><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.</p>	<p>Key Skills</p>	<ul style="list-style-type: none"> • Generate innovative ideas through research and discussion with peers and adults to develop a design brief and criteria for a design specification. • Explore a range of initial ideas, and make design decisions to develop a final product linked to user and purpose. • Use words, annotated sketches and information and communication technology as appropriate to develop and communicate ideas. • consider the availability and costings of resources when planning out designs; • Make, decorate and present the food product appropriately for the intended user and purpose. • Carry out sensory evaluations of a range of relevant products and ingredients. Record the evaluations using e.g. tables/graphs/charts such as star diagrams. • Evaluate the final product with reference back to the design brief and design specification, considering the views of others when identifying improvements. • Understand how key chefs have influenced eating habits to promote varied and healthy diets. • Select and use a range of utensils, including knives, chopping boards, weighing scales, measuring jugs, 	<ul style="list-style-type: none"> • 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 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. 	<ul style="list-style-type: none"> • 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 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 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.



		<p>baking trays.</p> <ul style="list-style-type: none"> Select and use a range of healthy ingredients such as bread, fruits, vegetables and spreads (considering and giving reasons for choices). Review which dishes were most popular and use this as a means to evaluate own dish and suggest improvements, relating this process to real life scenarios (such as developing a menu/informing stock purchase) Review work against own design criteria, including aspects such as presentation, food combinations, popularity and healthiness. 		
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Year 5				
KS2 Knowledge End Points (NC)	Unit	Autumn: Frame Structures To design and make a structure which Mayans could use to worship.	Spring: Food Technology - Culture and Seasonality To make Victorian cakes for hungry guests.	Summer: Pulleys and Gears To design and make a plastic pollution catcher for the sea.
<p><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,</p>	<p>Key Knowledge</p>	<ul style="list-style-type: none"> To know how to work safely using tools and equipment. To know how to strengthen a material or structure design using materials Understand how to assess the quantity of materials needed for a structure. Cross-sectional and exploded diagrams, prototypes, pattern pieces and computer- 	<ul style="list-style-type: none"> To know about the benefits of whole grain flour, opposed to a plain flour To know about the influence of specific manufacturers and consider the importance and usefulness of market research in this context. 	<ul style="list-style-type: none"> Mechanical systems and pulleys have an input, process and output and that gears and pulleys can be used to speed up, slow down or change the direction of movement. Develop their use of technical vocabulary, for example, knowing how to check that a motorshaft rotates when



<p>annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design.</p> <p><u>Making</u> 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.</p> <p><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.</p> <p><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.</p> <p><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.</p>		<p>aided design can support the design process overall.</p> <ul style="list-style-type: none"> Knows the value of and is able to make a prototype for design (e.g. a smaller version in a different medium) to inform subsequent improvement and to support the communication of ideas. To know how a more complex structure can be supported by an internal frame. 	<ul style="list-style-type: none"> To know the importance of clear and accurate food labelling and knowledge of ingredients, with particular reference to food allergies. To know the different tools and ingredients typically involved in baking. Victoria sponge, or the Victoria sandwich cake, a two-layer, sponge-like, airy cake with a layer of jam and cream in the middle and a dusting of icing sugar on the top. 	<p>powered.</p> <ul style="list-style-type: none"> To know that a frame structure can be reinforced and strengthened with triangular shapes at the corners. Build on existing knowledge of axles and wheels, with a focus on ensuring that fixed axles allow the wheels to rotate freely and continuously when a pulley is attached. Know how to measure and cut different materials, including dowel, accurately and safely. Know the importance of a process of review of each construction phase to ensure that each part works and is secure to achieve a fully effective end product.
	<p>Key Skills</p>	<ul style="list-style-type: none"> Select and use a wider range of tools and equipment to perform practical tasks (including a hammer to join wire to wood, pliers to manipulate a structure into the shape of a figure) and using equipment safely. Evaluate their own and others' products, against design criteria and identifying and communicating how refinement of building processes, as well as the outcome itself, could be improved. 	<ul style="list-style-type: none"> Evaluate a range of cakes, through taste, to inform own design criteria which children subsequently review their own product against, considering appearance, flavour, texture and ingredients. Record evaluative data in a table to support comparison Carrying out and articulating the findings of research carried out in groups. Reviewing, considering and suggesting ways in which a recipe could be adapted to be made healthier (eg recipes involving white flour/salt/sugar) 	<ul style="list-style-type: none"> Build and reinforce a rectangular frame with triangles. Reinforce axles with bearings securing axle holders and checking that wheels move freely. Building a pulley system with a secure fit. Create a chassis in order to hold a motor which will enable the vehicle to be powered. Assess to identify and address potential weaknesses and apply knowledge of strengthening, reinforcing and stiffening. Critically evaluate the quality of the design, manufacture, functionality, innovation and fitness for purpose, throughout the process and when the final product is in use, referring back to the design criteria. Follow step-by-step plans with referral to lists of tools, equipment and materials needed.



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: More Complex Switches and Circuits To design and make an alarm system to keep themselves safe on their walk to school.	Autumn: Combining Different Fabrics To design and make a memory cushion for ourselves as a keepsake of our time at Barnfields.
<p><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.</p> <p><u>Making</u> 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.</p> <p><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.</p> <p><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,</p>	<p>Key Knowledge</p>	<ul style="list-style-type: none"> Particular dishes are associated with different cultures and places Some ingredients are easier to grow in some parts of the world than in others (owing to conditions such as climate) and are often found in dishes that originate where they are found Some ingredients are more readily available at certain times of the year than others, owing to changes in climate. Ingredients are grown under different farming practices and organic ingredients can be more expensive Some flavours complement each other more than others and some ingredients go well together A healthy dish can involve more than one food group, or one food group if it is part of a healthy balanced diet. Local restaurants cater for the local community and menus are designed so that they appeal to lots of people. Food being served to the public is regulated in accordance with good food hygiene practices. Washing hands and ingredients, where appropriate, reduces microorganisms and cooking instructions are important for this purpose too. Ingredients, flavours and textures can be changed through boiling, grilling, baking and frying. 	<ul style="list-style-type: none"> To understand how research is used to develop a design specification for a functional product that responds automatically to changes in the environment, considering constraints including time, resources and cost. To understand how to generate and develop innovative ideas and share and clarify these through discussion. To understand how to communicate ideas through annotated sketches, pictorial representations of electrical circuits or circuit diagrams. To understand how to formulate a step-by-step plan to guide making, listing tools, equipment, materials and components. To understand how to competently select and accurately assemble materials, and securely connect electrical components to produce a reliable, functional product. To understand how to create and modify a computer control program to enable an electrical product to work automatically in response to changes in the environment. To understand how to continually evaluate and modify the working features of the product to match the initial design specification. To understand how to investigate famous inventors who developed ground-breaking electrical systems and components. To understand and use electrical systems in their products. To understand how to use computing to program, monitor and control their products. 	<ul style="list-style-type: none"> To know how to specify a design to make it more appealing to a specific target group. To know different types of stitches for the purpose of functionality and aesthetics. Know and use technical vocabulary relevant to the project. Know how to evaluate their product against the product criteria they have generated individually, as a means to improve their work.



<p>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.</p> <p><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.</p>	<p>Key Skills</p>	<ul style="list-style-type: none"> • Generate innovative ideas through research and discussion with peers and adults to develop a design brief and criteria for a design specification. • Explore a range of initial ideas, and make design decisions to develop a final product linked to user and purpose. • Use words, annotated sketches and information and communication technology as appropriate to develop and communicate ideas. • consider the availability and costings of resources when planning out designs; • Make, decorate and present the food product appropriately for the intended user and purpose. • Carry out sensory evaluations of a range of relevant products and ingredients. Record the evaluations using e.g. tables/graphs/charts such as star diagrams. • Evaluate the final product with reference back to the design brief and design specification, taking into account the views of others when identifying improvements. • Understand how key chefs have influenced eating habits to promote varied and healthy diets. • Select and use a range of utensils, including knives, chopping boards, weighing scales, measuring jugs, baking trays. • Select and use a range of healthy ingredients such as bread, fruits, vegetables and spreads (considering and giving reasons for choices). • Review which dishes were most popular and use this as a means to evaluate own dish and suggest improvements, relating this process to real life scenarios (such as developing a menu/informing stock purchase) • Review work against own design criteria, including aspects such as presentation, 	<ul style="list-style-type: none"> • Investigate electrical sensors such as light dependent resistors (LDRs) and a range of switches such as push-to-make switches, push-to-break switches, toggle switches, micro switches and reed switches. • Drawing on previous science understanding, explore a range of electrical systems that could be used to control their products. Look also back to skills in Design and technology covered by the year 4. • Drawing on related computing activities, write computer control programs that include inputs, outputs and decision making. Test out the programs using electrical components connected to interface boxes or standalone boxes. 	<ul style="list-style-type: none"> • Use research into the features of an appealing functional cushion to inform design criteria • Select and use a range of tools to perform practical tasks; stitching and sewing (joining), cutting and systematically work through phases of a design. • Investigate the effect of different stitches in joining seams and how they contribute to the overall effectiveness and durability of the product. • Evaluate the outcome with reference to the design criteria
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