



# Design Technology

## Progression of Skills and Knowledge

### Early Years

#### Design Technology within the Early Years Foundation Stage

This subject comes under the area of learning known as Physical Development and Expressive Arts and Design.

Early substantive and implicit skills will be planned and delivered through a tailored, 'in the moment' approach to engage all children of differing needs, prior experience and interest and will be evident through a range of child led and adult focussed activities.

Three and Four Year Olds typically (some children may have gaps in these areas):

Personal, Social and Emotional Development	<ul style="list-style-type: none"> <li>Select and use activities and resources, with help when needed. This helps them to achieve a goal they have chosen or one which is suggested to them.</li> </ul>
Physical Development	<ul style="list-style-type: none"> <li>Use large-muscle movements to wave flags and streamers, paint and make marks.</li> <li>Choose the right resources to carry out their own plan.</li> <li>Use one-handed tools and equipment, for example, making snips in paper with scissors.</li> </ul>
Understanding the World	<ul style="list-style-type: none"> <li>Explore how things work.</li> </ul>
Expressive Arts and Design	<ul style="list-style-type: none"> <li>Make imaginative and complex 'small worlds' with blocks and construction kits, such as a city with different buildings and a park.</li> <li>Explore different materials freely, in order to develop their ideas about how to use them and what to make.</li> <li>Develop their own ideas and then decide which materials to use to express them.</li> <li>Create closed shapes with continuous lines and begin to use these shapes to represent objects.</li> </ul>

Reception children typically:

Physical Development	<ul style="list-style-type: none"> <li>Progress towards a more fluent style of moving, with developing control and grace.</li> <li>Develop their small motor skills so that they can use a range of tools competently, safely and confidently.</li> <li>Use their core muscle strength to achieve good posture when sitting at a table or sitting on the floor.</li> </ul>
Expressive Arts and Design	<ul style="list-style-type: none"> <li>Explore, use and refine a variety of artistic effects to express their ideas and feelings.</li> <li>Return to and build on their previous learning, refining ideas and developing their ability to represent them.</li> <li>Create collaboratively, sharing ideas, resources and skills.</li> </ul>

The relevant Early Learning Goals are (expectations for the end of Year R):

- Physical Development – Fine Motor Skills – Use a range of small tools, including scissors, paintbrushes and cutlery.
- Expressive Arts and Design – Creating with Materials – Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function.
- Expressive Arts and Design – Creating with Materials – Share their creations, explaining the process they have used.

How does Design Technology link to our curricular aspirations?

One of our four curricular aspirations is for children to independently follow a recipe to bake bread. The children have a broad range of experiences of mixing ingredients and substances and using a range of different cooking tools. They can follow a simple recipe and know basic rules of hygiene when cooking.



## Years One

	Autumn Term	Spring Term	Summer Term
<b>Focus for this Unit</b>	Moving Minibeasts	Eat More Fruit and Vegetables	Puppets
<b>Learning Journey and Outcomes</b>	<p>Children find out what a sliding mechanism is, and how it can be used to make a simple moving picture. They will then explore the sliding mechanism themselves making a variety of simple moving pictures with different minibeasts.</p> <p>Children then explore moving pictures with a lever, a pivot mechanism and wheel mechanisms. They then apply what they have learnt about the three different types of moving mechanisms to design their own moving minibeast picture for an author who is creating a children's book about minibeasts. Children think carefully about the mechanism they are going to make, the equipment they will need, and their order of work, before beginning to create their moving picture based on their design. They then evaluate their completed moving minibeast picture.</p>	<p>Children discuss and make lists of as many fruits and vegetables as they can. They pick their favourite and present the data in a pictogram. They then look closely at a variety of fruits and vegetables and use their senses to describe the different features of the fruits and vegetables as well as their sense of taste. They discuss safety and food hygiene in relation to food.</p> <p>They discuss and think about food preparation and practice using different tools safely, using the appropriate language. They look at a variety of different foods and the importance of eating more fruit and vegetables than certain other groups of foods. They then design some new recipes using only fruits and vegetables, making sure they are colourful, tasty and healthy. They then evaluate all they have learnt and recreate their recipe designs making sure they are being safe and hygienic.</p>	<p>Children discuss and explore a range of puppets, their features, what materials are used and what they are used for. They choose their favourite puppet, draw and label it.</p> <p>Children explore and discuss a variety of different finger puppets. They work with fabric to create, make and decorate a finger puppet. They learn different sewing techniques to use when creating a puppet, practising these skills before making their product. They use the skills they have acquired to design and make their own glove puppet. They share, demonstrate and evaluate their puppets.</p>
<b>Unit Focus (National Curriculum Links)</b>	<ul style="list-style-type: none"> <li>• Design purposeful, functional, appealing products for themselves and others based on design criteria.</li> <li>• Generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and where appropriate, information and communication technology</li> <li>• Select from a range of tools and equipment to perform practical tasks (for example cutting, shaping, joining and finishing).</li> <li>• Select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics.</li> <li>• Explore and evaluate a range of existing products.</li> <li>• Evaluate their ideas and products against design criteria.</li> <li>• Explore and use mechanisms.</li> </ul>	<ul style="list-style-type: none"> <li>• Design purposeful, functional, appealing products for themselves and others based on design criteria.</li> <li>• Generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and where appropriate, information and communication technology</li> <li>• Select from a range of tools and equipment to perform practical tasks (for example cutting, shaping, joining and finishing).</li> <li>• Select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics.</li> <li>• Explore and evaluate a range of existing products.</li> <li>• Use the basic principles of a healthy and varied diet to prepare dishes.</li> <li>• Understand where food comes from.</li> </ul>	<ul style="list-style-type: none"> <li>• Design purposeful, functional, appealing products for themselves and others based on design criteria.</li> <li>• Generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and where appropriate, information and communication technology</li> <li>• Select from a range of tools and equipment to perform practical tasks (for example cutting, shaping, joining and finishing).</li> <li>• Select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics.</li> <li>• Explore and evaluate a range of existing products.</li> <li>• Evaluate their ideas and products against design criteria.</li> </ul>
<b>Key Knowledge</b>	<ul style="list-style-type: none"> <li>• I can make a sliding mechanism out of card.</li> <li>• I know what a pivot and lever are.</li> <li>• I can use a pivot and lever mechanism using card and a split pin.</li> <li>• I can make a wheel mechanism using card and a split pin.</li> <li>• I can match a mechanism to the type of movement they produce.</li> </ul>	<ul style="list-style-type: none"> <li>• I can name a variety of fruits and vegetables.</li> <li>• I can use adjectives to describe the taste, smell and texture of a variety of fruits and vegetables.</li> <li>• I know that some fruits and vegetables need to be washed, cut, cored, peeled or grated before they can be eaten.</li> </ul>	<ul style="list-style-type: none"> <li>• I can explore a variety of puppets, identifying and labelling their features.</li> <li>• I can cut out felt using a simple template.</li> <li>• I can stick pieces of felt together to make a finger puppet.</li> </ul>



	<ul style="list-style-type: none"> <li>I can design a moving minibeast picture to include a variety of moving mechanisms.</li> <li>I can follow a design to create a moving minibeast picture for a particular purpose.</li> <li>I can evaluate my finished moving minibeast picture by identifying things that worked well and things that could be improved.</li> </ul>	<ul style="list-style-type: none"> <li>I understand basic food hygiene, e.g. washing hands, tying long hair back and keeping surfaces clean.</li> <li>I can use a knife to cut some fruits and vegetables in different ways.</li> <li>I can grate an apple and a carrot.</li> <li>I can peel a banana, apple and cucumber.</li> </ul>	<ul style="list-style-type: none"> <li>I can add pieces of felt and other materials to a finger puppet to create features, such as eyes, hats and mouths.</li> <li>I can use running stitch to join two pieces of fabric together.</li> <li>I can use overstitch to join two pieces of fabric together.</li> <li>I can sew a button onto a piece of fabric.</li> <li>I can design a glove puppet for a particular purpose.</li> <li>I can follow a design to make a glove puppet by sewing two pieces of fabric together and adding decorations.</li> <li>I can evaluate my finished glove puppet by identifying what went well and what could be improved.</li> </ul>
<b>Links to Prior Knowledge</b>	In Year R, children have used a range of tools to create images and structures. They are confident with cutting and sticking and have used split pins to create moving parts in their work. They have experience of planning how to complete tasks (e.g. to make something) and can do some basic problem solving.	One of our four curricular aspirations is for children to independently follow a recipe to bake bread. The children have a broad range of experiences of mixing ingredients and substances and using a range of different cooking tools. They can follow a simple recipe and know basic rules of hygiene when cooking.	Pupils have explored and experimented with different materials through activities such as collage and making props for role play. They have experience of using a range of puppets in their role play.
<b>Links to Future Units</b>	This unit links to the 'Storybooks' unit in LKS2 where pupils extend and apply their understanding of different kinds of mechanisms to make their own storybooks.	If pupils complete Cycle B after cycle A, they will apply some of these skills to making their own pizzas. This unit links to the 'Seasonal Food' unit in KS2 where pupils prepare a range of different seasonal food.	This unit links to the Christmas Stockings unit in LKS2, where pupils extend their textiles skills to design and make Christmas stockings. They learn new stitches, finishing skills and explore a range of techniques for decoration.
<b>Skills to be Taught</b>			
<b>Design</b>	Children can: <ul style="list-style-type: none"> <li>use their knowledge of existing products and their own experience to help generate their ideas;</li> <li>design products that have a purpose and are aimed at an intended user;</li> <li>explain how their products will look;</li> <li>understand and follow simple design criteria;</li> <li>work in a range of relevant contexts, for example imaginary, story-based</li> </ul>	Children can: <ul style="list-style-type: none"> <li>use their knowledge of existing products and their own experience to help generate their ideas;</li> </ul>	Children can: <ul style="list-style-type: none"> <li>use their knowledge of existing products and their own experience to help generate their ideas;</li> <li>design products that have a purpose and are aimed at an intended user;</li> <li>explain how their products will look and work through talking and simple annotated drawings;</li> <li>plan and test ideas using templates and mock-ups;</li> <li>understand and follow simple design criteria; work in a range of relevant contexts, for example imaginary, story-based, home, school and the wider environment.</li> </ul>
<b>Make</b>	Children can: Planning: <ul style="list-style-type: none"> <li>with support, follow a simple plan;</li> <li>begin to select from a range of hand tools and equipment, such as scissors,</li> <li>select from a range of materials and components according to their characteristics;</li> </ul> Practical skills and techniques:	Children can: Planning: <ul style="list-style-type: none"> <li>with support, follow a simple plan or recipe;</li> <li>begin to select from a range of hand tools and equipment, such as scissors, graters, zesters, safe knives, juicer;</li> </ul> Practical skills and techniques:	Children can: Planning: <ul style="list-style-type: none"> <li>with support, follow a simple plan;</li> <li>begin to select from a range of hand tools and equipment, such as scissors;</li> <li>select from a range of materials, textiles and components according to their characteristics;</li> </ul> Practical skills and techniques:



	<ul style="list-style-type: none"> <li>with help, measure and mark out;</li> <li>cut, shape and score materials with some accuracy;</li> <li>assemble, join and combine materials, components or ingredients;</li> <li>begin to use simple finishing techniques to improve the appearance of their product, such as adding simple decorations.</li> </ul>	<ul style="list-style-type: none"> <li>learn to use hand tools and kitchen equipment safely and appropriately and learn to follow hygiene procedures;</li> <li>use a range of materials and components, including food ingredients;</li> <li>combine ingredients;</li> <li>cut, peel and grate ingredients, including measuring and weighing ingredients using measuring cups;</li> </ul>	<ul style="list-style-type: none"> <li>use a range of materials and components, including textiles;</li> <li>with help, measure and mark out;</li> <li>cut, shape and score materials with some accuracy;</li> <li>assemble, join and combine materials;</li> <li>demonstrate how to cut, shape and join fabric to make a simple product;</li> <li>manipulate fabrics in simple ways to create the desired effect;</li> <li>use a basic running stitch;</li> <li>begin to use simple finishing techniques to improve the appearance of their product, such as adding simple decorations.</li> </ul>
<b>Evaluate</b>	<p>Children can:</p> <ul style="list-style-type: none"> <li>explore and evaluate existing products mainly through discussions, comparisons and simple written evaluations;</li> <li>explain positives and things to improve for existing products;</li> <li>explore what materials products are made from;</li> <li>talk about their design ideas and what they are making;</li> <li>as they work, start to identify strengths and possible changes they might make to refine their existing design;</li> <li>evaluate their products and ideas against their simple design criteria;</li> <li>start to understand that the iterative process sometimes involves repeating different stages of the process.</li> </ul>	<p>Children can:</p> <ul style="list-style-type: none"> <li>explain positives and things to improve for existing products;</li> <li>as they work, start to identify strengths and possible changes they might make to refine their existing design;</li> <li>evaluate their products and ideas against their simple design criteria;</li> </ul>	<p>Children can:</p> <ul style="list-style-type: none"> <li>explore and evaluate existing products mainly through discussions, comparisons and simple written evaluations;</li> <li>explain positives and things to improve for existing products;</li> <li>explore what materials products are made from;</li> <li>talk about their design ideas and what they are making;</li> <li>as they work, start to identify strengths and possible changes they might make to refine their existing design;</li> <li>evaluate their products and ideas against their simple design criteria;</li> <li>start to understand that the iterative process sometimes involves repeating different stages of the process.</li> </ul>
<b>Technical Skills</b>	<p>Children can:</p> <ul style="list-style-type: none"> <li>talk about and start to understand the simple working characteristics of materials and components;</li> <li>explore and create products using mechanisms, such as levers, sliders and wheels.</li> </ul>		<p>Children can:</p> <ul style="list-style-type: none"> <li>talk about and start to understand the simple working characteristics of materials and components;</li> </ul>
<b>Cooking and Nutrition</b>		<p>Children can:</p> <ul style="list-style-type: none"> <li>explain where in the world different foods originate from;</li> <li>understand that all food comes from plants or animals;</li> <li>understand that food has to be farmed, grown elsewhere (e.g. home) or caught;</li> <li>understand that everyone should eat at least five portions of fruit and vegetables every day and start to explain why;</li> </ul>	
<b>Key Vocabulary</b>			

**Key Vocabulary**

Mechanism, lever, slider, slot, pivot, guide/bridge, masking tape, fastener, pull/push, down, straight, work, design, evaluate, purpose

Preparing Fruit & Vegetables: Fruit, vegetables, soft, juicy, crunchy, sticky, smooth, sharp, crisp, sour hard, flesh, skin, seed, pip, core, slicing, peeling, cutting, squeezing, healthy diet, choosing, ingredients, planning, tasting, arranging

Pattern, join, mark out, decorate, running stitch, needle, fabric. Template, quality, suitable, features, dye, over stitch, design, fray, mock-up, seam.



## Years Two and Three – Cycle A

	<b>Autumn Term</b>	<b>Spring Term</b>	<b>Summer Term</b>
<b>Focus for this Unit</b>	Seasonal Stockings	British Inventors	Making Mini Greenhouses
<b>Learning Journey and Outcomes</b>	Children find out where the tradition of the Christmas stocking is thought to have come from. They learn how to join two pieces of fabric together. They look at examples of different stitches, and learn how to secure their first and last stitch with a hidden knot. They discuss the different ways in which sewing skills can be used to make Christmas stockings visually appealing, and compare and contrast different examples. They explore how embellishments and the skills of embroidery and appliqué can be used to decorate fabric. They discuss the importance of design criteria; they choose a user for their product, and tailor the design criteria to suit this person's likes and dislikes. They plan and design their Christmas stocking. Children then use their knowledge of joining techniques and decorative sewing skills to make their Christmas stockings according to their plans and design criteria. They evaluate their own completed Christmas stocking by answering and asking questions.	Children are introduced to a range of British inventors - Alexander Graham Bell, Tim Berners-Lee and W B Wilkinson (the telephone, the World Wide Web, reinforced concrete and waterproof fabric), making their own inventions linked to each inventor. They reflect on the inventions that they have investigated so far and are introduced to a few more inventors and their creations. The children are challenged to think about which inventions have changed people's lives the most. They discuss the inventions and how things changed when they were created and how they could change things as they are developed in the future.	Children find out the purpose of a greenhouse, and how it can help plants to grow. They explore the factors that make a structure stable, and then apply this knowledge and understanding to greenhouses. They investigate the best frame size and shape for a stable structure that also lets in the maximum amount of sunlight. They share ideas for which materials they think might be suitable for the frame and the sections within the frame of a mini green house. They explore and compare suitable materials. They then use what they have discussed to design and plan their mini greenhouse before making their mini greenhouses according to their plans and design criteria. Finally, children discuss, evaluate and assess different aspects of each other's designs as a class.
<b>Unit Focus (National Curriculum Links)</b>	<ul style="list-style-type: none"> <li>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.</li> <li>Generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer aided design.</li> <li>Select from and use a wider range of tools and equipment to perform practical tasks (for example cutting, shaping, joining and finishing) accurately.</li> <li>Select from and use a wider range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities</li> <li>Investigate and analyse a range of existing products.</li> <li>Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work.</li> </ul>	<ul style="list-style-type: none"> <li>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.</li> <li>Generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer aided design</li> <li>Understand how key events and individuals in design and technology have helped shape the world.</li> <li>Apply their understanding of how to strengthen, stiffen and reinforce more complex structures.</li> </ul>	<ul style="list-style-type: none"> <li>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.</li> <li>Generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer aided design.</li> <li>Select from and use a wider range of tools and equipment to perform practical tasks (for example cutting, shaping, joining and finishing) accurately.</li> <li>Select from and use a wider range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities</li> <li>Investigate and analyse a range of existing products.</li> <li>Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work.</li> <li>Understand how key events and individuals in design and technology have helped shape the world.</li> <li>Apply their understanding of how to strengthen, stiffen and reinforce more complex structures.</li> </ul>
<b>Key Knowledge</b>	<ul style="list-style-type: none"> <li>I can explain the difference between the function and visual appeal of a product.</li> </ul>	<ul style="list-style-type: none"> <li>I can explain how concrete is used to make structures more stable.</li> </ul>	<ul style="list-style-type: none"> <li>I know what a greenhouse is and how they work.</li> <li>I can explore a range of different greenhouses.</li> </ul>



	<ul style="list-style-type: none"> <li>• I can evaluate the function and visual appeal of a variety of Christmas stockings.</li> <li>• I can use pins to temporarily fasten two pieces of fabric together.</li> <li>• I can use running stick, back stitch, overstitch and zigzag stitch to join two pieces of fabric together.</li> <li>• I can hide the finishing knot.</li> <li>• I can identify a variety of decorative techniques that have been used to decorate Christmas stockings.</li> <li>• I can sew a button, bead, sequin or pipe cleaner onto a piece of fabric.</li> <li>• I can embroider shapes and patterns into a piece of fabric.</li> <li>• I can use appliqué to add decoration to a piece of fabric.</li> <li>• I can design a Christmas stocking incorporating a range of decorative techniques.</li> <li>• I can use a template to cut out front and back pattern pieces.</li> <li>• I can follow a design to create a Christmas stocking.</li> <li>• I can evaluate the function and visual appeal of my finished Christmas stocking.</li> </ul>	<ul style="list-style-type: none"> <li>• I can create a structure strong enough to hold a dictionary using just newspaper and tape.</li> </ul>	<ul style="list-style-type: none"> <li>• I know how greenhouses are used today.</li> <li>• I can explain how the shape of a structure affects its stability.</li> <li>• I know that the weight of the structure needs to be evenly spread on the base to make it secure.</li> <li>• I know that the wider a structure's base is, the more stable it will be.</li> <li>• I can use 3D nets to explore potential structures for a greenhouse, assessing their stability.</li> <li>• I can investigate ways of making a structure more stable, e.g. by inserting dowelling or adding triangles at the joins.</li> <li>• I can experiment with a range of materials to test which would be most appropriate for making the structure of a mini greenhouse.</li> <li>• I can design a mini greenhouse using specific design criteria.</li> <li>• I can select appropriate tools and materials to make a mini greenhouse.</li> <li>• I can follow my design to make a mini greenhouse.</li> <li>• I can evaluate my finished mini greenhouse for stability, effectiveness and visual appeal.</li> </ul>
<b>Links to Prior Knowledge</b>	<p>In KS1, pupils made puppets, learning how to cut pattern pieces following a template and how to use basic stitches to join fabric. They can sew buttons on to fabric and can follow design to make a product.</p>	<p>In KS1 pupils have explored a range of different products and have learnt how designers and inventors come up with new ideas to solve problems. They have made products following different design criteria and understand the process of designing.</p>	<p>In KS1, pupils explored toy garages and designed and made their own. They know what stable means and can make simple changes to a design to make it fit for purpose and hold a given object.</p>
<b>Links to Future Units</b>	<p>In UKS2, pupils make a bag, designing their own pattern pieces and applying a wide range of stitches both for joining and decoration. They have to select materials according to a design criteria and ensure they use appropriate finishing techniques.</p>	<p>In UKS2, pupils explore inventions from China and how these are similar and different to those of British inventors. They have to apply their knowledge of materials to meet design criteria and work with prototypes as part of the design process.</p>	<p>In UKS2, make bird boxes and bridges. They extend their knowledge of different kinds of structures and how they can be designed to hold different loads. They explore how to shape and join materials and solve problems in the design process.</p>
<b>Skills to be Taught</b>			
<b>Design</b>	<p>Children can:</p> <ul style="list-style-type: none"> <li>• identify the design features of their products that will appeal to intended customers;</li> <li>• use their knowledge of a broad range of existing products to help generate their ideas;</li> <li>• design innovative and appealing products that have a clear purpose and are aimed at a specific user;</li> <li>• use annotated sketches to develop and communicate their ideas;</li> <li>• when designing, explore different initial ideas before coming up with a final design;</li> </ul>	<p>Children can:</p> <ul style="list-style-type: none"> <li>• use their knowledge of a broad range of existing products to help generate their ideas;</li> <li>• when designing, explore different initial ideas before coming up with a final design;</li> <li>• when planning, start to explain their choice of materials and components including function and aesthetics;</li> <li>• test ideas out through using prototypes;</li> <li>• use computer-aided design to develop and communicate their ideas develop and follow simple design criteria;</li> </ul>	<p>Children can:</p> <ul style="list-style-type: none"> <li>• identify the design features of their products that will appeal to intended customers;</li> <li>• use their knowledge of a broad range of existing products to help generate their ideas;</li> <li>• design innovative and appealing products that have a clear purpose and are aimed at a specific user;</li> <li>• explain how particular parts of their products work;</li> <li>• use annotated sketches and cross-sectional drawings to develop and communicate their ideas;</li> <li>• when designing, explore different initial ideas before coming up with a final design;</li> </ul>



	<ul style="list-style-type: none"> <li>when planning, start to explain their choice of materials and components including function and aesthetics;</li> <li>work in a broader range of relevant contexts, for example entertainment, the home, school, leisure, food industry and the wider environment.</li> </ul>		<ul style="list-style-type: none"> <li>when planning, start to explain their choice of components including function and aesthetics;</li> <li>work in a broader range of relevant contexts, for example entertainment, the home, school, leisure, food industry and the wider environment.</li> </ul>
<b>Make</b>	<p>Children can:</p> <p>Planning:</p> <ul style="list-style-type: none"> <li>with growing confidence, carefully select from a range of tools and equipment, explaining their choices;</li> <li>select from a range of materials and components according to their functional properties and aesthetic qualities;</li> <li>place the main stages of making in a systematic order;</li> </ul> <p>Practical skills and techniques</p> <ul style="list-style-type: none"> <li>learn to use a range of tools and equipment safely, appropriately and accurately;</li> <li>use a wider range of materials and components, including textiles</li> <li>with growing independence, measure and mark out to the nearest cm and millimetre;</li> <li>assemble, join and combine material and components with some degree of accuracy;</li> <li>demonstrate how to measure, cut, shape and join fabric with some accuracy to make a simple product;</li> <li>join textiles with an appropriate sewing technique;</li> <li>begin to select and use different and appropriate finishing techniques to improve the appearance of a product such as hemming</li> </ul>	<p>Children can:</p> <p>Planning:</p> <ul style="list-style-type: none"> <li>select from a range of materials and components according to their functional properties and aesthetic qualities;</li> <li>place the main stages of making in a systematic order;</li> </ul> <p>Practical skills and techniques</p> <ul style="list-style-type: none"> <li>learn to use a range of tools and equipment safely, appropriately and accurately and learn to follow hygiene procedures;</li> <li>use a wider range of materials and components, including construction materials and kits and mechanical and electrical components;</li> <li>with growing independence, measure and mark out to the nearest cm and millimetre;</li> <li>cut, shape and score materials with some degree of accuracy;</li> </ul>	<p>Children can:</p> <p>Planning:</p> <ul style="list-style-type: none"> <li>with growing confidence, carefully select from a range of tools and equipment, explaining their choices;</li> <li>select from a range of materials and components according to their functional properties and aesthetic qualities;</li> <li>place the main stages of making in a systematic order;</li> </ul> <p>Practical skills and techniques</p> <ul style="list-style-type: none"> <li>learn to use a range of tools and equipment safely, appropriately and accurately;</li> <li>use a wider range of materials and components, including construction materials and kits;</li> <li>with growing independence, measure and mark out to the nearest cm and millimetre;</li> <li>cut, shape and score materials with some degree of accuracy;</li> </ul>
<b>Evaluate</b>	<p>Children can:</p> <ul style="list-style-type: none"> <li>explore and evaluate existing products, explaining the purpose of the product and whether it is designed well to meet the intended purpose;</li> <li>explore what materials products are made from and suggest reasons for this;</li> <li>consider their design criteria as they make progress and are willing to alter their plans, sometimes considering the views of others if this helps them to improve their product;</li> <li>evaluate their product against their original design criteria;</li> </ul>	<p>Children can:</p> <ul style="list-style-type: none"> <li>explore and evaluate existing products, explaining the purpose of the product and whether it is designed well to meet the intended purpose;</li> <li>explore what materials/ingredients products are made from and suggest reasons for this;</li> <li>evaluate the key events, including technological developments, and designs of individuals in design and technology that have helped shape the world</li> </ul>	<p>Children can:</p> <ul style="list-style-type: none"> <li>explore and evaluate existing products, explaining the purpose of the product and whether it is designed well to meet the intended purpose;</li> <li>explore what materials products are made from and suggest reasons for this;</li> <li>consider their design criteria as they make progress and are willing to alter their plans, sometimes considering the views of others if this helps them to improve their product;</li> <li>evaluate their product against their original design criteria;</li> </ul>



<b>Technical Skills</b>	Children can: <ul style="list-style-type: none"> <li>understand that materials have both functional properties and aesthetic qualities;</li> </ul>	Children can: <ul style="list-style-type: none"> <li>understand that materials have both functional properties and aesthetic qualities;</li> <li>apply their understanding of how to strengthen, stiffen and reinforce more complex structures in order to create more useful characteristics of products;</li> </ul>	Children can: <ul style="list-style-type: none"> <li>understand that materials have both functional properties and aesthetic qualities;</li> <li>apply their understanding of how to strengthen, stiffen and reinforce more complex structures in order to create more useful characteristics of products;</li> </ul>
<b>Cooking and Nutrition</b>			
<b>Key Vocabulary</b>			
<b>Key Vocabulary</b>	Fastening, compartment, zip, finishing technique, function, prototype, back stitch, felted, woven, knitted, bonded. Aesthetics, seam allowance, pinning, embroidery, back/blanket/cross stitch.	Language of description and discussion: It looks / tastes / feels / sounds / smells like ... It appears to be.....because... It seems to be like.....because... I think it looks like.....because... It reminds me of...because..... Why? How? What? Tell Me About...	Shell, structure, net, marking out, material, joining, three dimensional, stiff Assemble, prism, vertex, breadth, capacity, scoring, adhesives, reduce, reuse, recycle, corrugating, ribbing, laminating

## Years Two and Three – Cycle B

	<b>Autumn Term</b>	<b>Spring Term</b>	<b>Summer Term</b>
<b>Focus for this Unit</b>	Vehicles	Perfect Pizzas	Stable Structures
<b>Learning Journey and Outcomes</b>	Children explore and discuss a variety of different vehicles, their features and what they are used for. They choose their favourite vehicle to compare, draw and label. They understand how different parts of vehicles help to make them work and practise attaching wheels to axles and chassis. They explore and discuss the different ways of creating the vehicle's body and use a variety of different boxes and modelling equipment to explore different ways of creating the bodies of vehicles. Children design their own vehicle using the techniques previously explored, as well as following the success criteria. Children follow their designs to create and make their vehicles using a range of craft materials. They share their vehicles, making sure that wheels are working and the chassis is	Children discuss their favourite pizza and compile information into a pictogram. They consider healthy eating and complete a balanced plate by sorting their favourite pizza ingredients. Children explore and discuss what pizza bases are made from and where they would be placed on the balanced diet plate. They explore a variety of bread-based products and decide which would make a good base for a pizza. They then explore and discuss a variety of pizza toppings. They look at food categories and balanced diets, and sort pizza toppings into groups. Children design and make a healthy and balanced pizza, making sure they remember to follow the pizza criteria. They evaluate their pizzas once they have been made.	Children explore and compare existing toy car garage structures. They look at the materials, features and think about their purpose as they begin to think about their own designs. Children examine the different parts of toy garage structures and think about their features and purposes. Then they compare a picture of a product to a plan and begin to think about their own design ideas as they modify existing plans. Children explore the properties of different materials and think about which ones are suitable for each section of their stable structure. They think about strength, stability, malleability and other features. Children follow their own design plans and use the resources provided to build their own stable structures. They develop their fine motor skills,



	<p>strong. They evaluate their vehicle, explaining how their vehicle could be improved if they were to make it again.</p>		<p>concentration and perseverance as they draw, cut and stick with precision. Children look at different criteria and assess whether their structures are successful. They think about features including the stability and firmness of their structure as well as features specific to their own design criteria.</p>
<p><b>Unit Focus (National Curriculum Links)</b></p>	<ul style="list-style-type: none"> <li>• Design purposeful, functional, appealing products for themselves and others based on design criteria.</li> <li>• Generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and where appropriate, information and communication technology</li> <li>• Select from a range of tools and equipment to perform practical tasks (for example cutting, shaping, joining and finishing).</li> <li>• Select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics.</li> <li>• Explore and evaluate a range of existing products.</li> <li>• Evaluate their ideas and products against design criteria.</li> <li>• Explore and use mechanisms.</li> </ul>	<ul style="list-style-type: none"> <li>• Design purposeful, functional, appealing products for themselves and others based on design criteria.</li> <li>• Generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and where appropriate, information and communication technology</li> <li>• Select from a range of tools and equipment to perform practical tasks (for example cutting, shaping, joining and finishing).</li> <li>• Select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics.</li> <li>• Explore and evaluate a range of existing products.</li> <li>• Evaluate their ideas and products against design criteria.</li> <li>• Use the basic principles of a healthy and varied diet to prepare dishes.</li> <li>• Understand where food comes from.</li> </ul>	<ul style="list-style-type: none"> <li>• Design purposeful, functional, appealing products for themselves and others based on design criteria.</li> <li>• Generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and where appropriate, information and communication technology</li> <li>• Select from a range of tools and equipment to perform practical tasks (for example cutting, shaping, joining and finishing).</li> <li>• Select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics.</li> <li>• Explore and evaluate a range of existing products.</li> <li>• Build structures, exploring how they can be made stronger, stiffer and more stable.</li> </ul>
<p><b>Key Knowledge</b></p>	<ul style="list-style-type: none"> <li>• I can investigate a range of vehicles, identifying and labelling their features.</li> <li>• I know what an axle is.</li> <li>• I know what a chassis is.</li> <li>• I can explore different ways of using axles, chassis and wheels to create a moving base.</li> <li>• I can design a vehicle with wheels, axles and chassis, as well as a body.</li> <li>• I can follow a design to make a moving vehicle.</li> <li>• I can evaluate my finished moving vehicle.</li> </ul>	<ul style="list-style-type: none"> <li>• I can name a variety of pizza toppings.</li> <li>• I can use the model of the balanced plate to evaluate how healthy different pizzas are.</li> <li>• I can explore different types of bread and evaluate which would work best for a pizza base.</li> <li>• I can identify which food group a variety of pizza toppings belong to.</li> <li>• I can sort pizza toppings into groups based on different criteria, e.g. animal vs plant products.</li> <li>• I can explain why each of the food groups is important for a balanced diet.</li> <li>• I can design and make a healthy pizza following given criteria.</li> <li>• I can evaluate my finished pizza, saying what I think and feel about it.</li> </ul>	<ul style="list-style-type: none"> <li>• I can identify the features of toy garages.</li> <li>• I know what the word 'stable' means.</li> <li>• I can make changes to the design of a stable structure to make it fit for purpose.</li> <li>• I can explore a range of materials and evaluate the usefulness of their properties for a particular project.</li> <li>• I can explore how to make stable structures that hold a given object.</li> <li>• I can follow a design to make a stable structure.</li> <li>• I know some ways to make a structure more stable.</li> <li>• I can evaluate my finished structure against a set of given criteria.</li> </ul>
<p><b>Links to Prior Knowledge</b></p>	<p>Children know what vehicles are – they are aware of the different parts of them and have used them in their play. Some children will have made simple vehicles as part of their role play activities. They can cut and stick.</p>	<p>One of our four curricular aspirations is for children to independently follow a recipe to bake bread. The children have a broad range of experiences of mixing ingredients and substances and using a range of different cooking tools. They can follow a simple recipe and know basic rules of hygiene when cooking.</p>	<p>In Year R, children have used a range of tools to create structures. They are confident with cutting and sticking. They have experience of planning how to complete tasks (e.g. to make something) and can do some basic problem solving. Most children will have made simple structures as part of their play – e.g. junk modelling.</p>



<b>Links to Future Units</b>	In LKS2, pupils continue to extend their knowledge of materials, what they can be used for and effective joining techniques. They develop their making skills using a range of different tools.	This unit links to the 'Seasonal Food' unit in KS2 where pupils prepare a range of different seasonal food. If cycle A is completed after cycle B, pupils learn a range of techniques to prepare fruits and vegetable and develop further their understanding of hygiene.	This unit links to the 'Making Mini Greenhouses' unit in LKS2 where pupils have to explore the suitability of different materials for a purpose and develop their understanding of how to make structures more stable.
<b>Skills to be Taught</b>			
<b>Design</b>	Children can: <ul style="list-style-type: none"> <li>• use their knowledge of existing products and their own experience to help generate their ideas;</li> <li>• design products that have a purpose and are aimed at an intended user;</li> <li>• explain how their products will look and work through talking and simple annotated drawings;</li> <li>• design models using simple computing software;</li> <li>• plan and test ideas using templates and mock-ups;</li> <li>• understand and follow simple design criteria;</li> <li>• work in a range of relevant contexts, for example imaginary, story-based, home, school and the wider environment.</li> </ul>	Children can: <ul style="list-style-type: none"> <li>• use their knowledge of existing products and their own experience to help generate their ideas;</li> <li>• design products that have a purpose and are aimed at an intended user;</li> <li>• understand and follow simple design criteria;</li> </ul>	Children can: <ul style="list-style-type: none"> <li>• use their knowledge of existing products and their own experience to help generate their ideas;</li> <li>• design products that have a purpose and are aimed at an intended user;</li> <li>• explain how their products will look and work through talking and simple annotated drawings;</li> <li>• plan and test ideas using templates and mock-ups;</li> <li>• understand and follow simple design criteria;</li> <li>• work in a range of relevant contexts, for example imaginary, story-based, home, school and the wider environment.</li> </ul>
<b>Make</b>	Children can: Planning: <ul style="list-style-type: none"> <li>• begin to select from a range of hand tools and equipment, such as scissors</li> <li>• select from a range of materials, textiles and components according to their characteristics;</li> </ul> Practical skills and techniques: <ul style="list-style-type: none"> <li>• use a range of materials and components;</li> <li>• with help, measure and mark out;</li> <li>• cut, shape and score materials with some accuracy;</li> <li>• assemble, join and combine materials, components or ingredients;</li> <li>• begin to use simple finishing techniques to improve the appearance of their product, such as adding simple decorations.</li> </ul>	Children can: Planning: <ul style="list-style-type: none"> <li>• with support, follow a simple plan or recipe;</li> <li>• begin to select from a range of hand tools and equipment, such as scissors, graters, zesters, safe knives, juicer;</li> </ul> Practical skills and techniques: <ul style="list-style-type: none"> <li>• learn to use hand tools and kitchen equipment safely and appropriately and learn to follow hygiene procedures;</li> <li>• use a range of materials and components, including food ingredients;</li> <li>• assemble, join and combine ingredients;</li> <li>• cut, peel and grate ingredients, including measuring and weighing ingredients using measuring cups;</li> </ul>	Children can: Planning: <ul style="list-style-type: none"> <li>• begin to select from a range of hand tools and equipment, such as scissors</li> </ul> Practical skills and techniques: <ul style="list-style-type: none"> <li>• use a range of materials and components;</li> <li>• with help, measure and mark out;</li> <li>• cut, shape and score materials with some accuracy;</li> <li>• assemble, join and combine materials, components or ingredients;</li> <li>• begin to use simple finishing techniques to improve the appearance of their product, such as adding simple decorations.</li> </ul>
<b>Evaluate</b>	Children can: <ul style="list-style-type: none"> <li>• explore and evaluate existing products mainly through discussions, comparisons and simple written evaluations;</li> <li>• explain positives and things to improve for existing products;</li> <li>• talk about their design ideas and what they are making;</li> <li>• as they work, start to identify strengths and possible changes they might make to refine their existing design;</li> </ul>	Children can: <ul style="list-style-type: none"> <li>• explore and evaluate existing products mainly through discussions, comparisons and simple written evaluations;</li> <li>• evaluate their products and ideas against their simple design criteria;</li> </ul>	Children can: <ul style="list-style-type: none"> <li>• explore and evaluate existing products mainly through discussions, comparisons and simple written evaluations;</li> <li>• explain positives and things to improve for existing products;</li> <li>• explore what materials products are made from;</li> <li>• talk about their design ideas and what they are making;</li> </ul>



	<ul style="list-style-type: none"> <li>• evaluate their products and ideas against their simple design criteria;</li> <li>• start to understand that the iterative process sometimes involves repeating different stages of the process.</li> </ul>		<ul style="list-style-type: none"> <li>• as they work, start to identify strengths and possible changes they might make to refine their existing design;</li> <li>• evaluate their products and ideas against their simple design criteria;</li> <li>• start to understand that the iterative process sometimes involves repeating different stages of the process.</li> </ul>
<b>Technical Skills</b>	Children can: <ul style="list-style-type: none"> <li>• build simple structures, exploring how they can be made stronger, stiffer and more stable;</li> <li>• talk about and start to understand the simple working characteristics of materials and components;</li> <li>• explore and create products using mechanisms, such as levers, sliders and wheels.</li> </ul>		Children can: <ul style="list-style-type: none"> <li>• build simple structures, exploring how they can be made stronger, stiffer and more stable;</li> <li>• talk about and start to understand the simple working characteristics of materials and components;</li> </ul>
<b>Cooking and Nutrition</b>		Children can: <ul style="list-style-type: none"> <li>• name and sort foods into the five groups in the Eatwell Guide;</li> <li>• understand that everyone should eat at least five portions of fruit and vegetables every day and start to explain why;</li> <li>• use what they know about the Eatwell Guide to design and prepare dishes.</li> </ul>	
<b>Key Vocabulary</b>			
<b>Key Vocabulary</b>	Wheel, axel, fixed, free, design, make, cutting, joining, hacksaw, vice, dowel, body, cab, shaping	Preparing Fruit & Vegetables: Fruit, vegetables, soft, juicy, crunchy, sticky, smooth, sharp, crisp, sour hard, flesh, skin, seed pip, core, slicing, peeling, cutting, squeezing, healthy diet, choosing, ingredients, planning, tasting, arranging	Cut, fold, join, fix, weak, strong Structure, base, underneath, thicker, thinner, corner, point, straight, curved, rectangle, cube, cuboid, cylinder



## Years Four, Five and Six – Cycle A

	Autumn Term	Spring Term	Summer Term
Focus for this Unit	Team Repair	Bird House Builders	Chinese Inventions - Kites
Learning Journey and Outcomes	<p>The children work through a variety of electrical based challenges, included working with bulbs, batteries, sensors and games systems. They do design tasks, mending tasks and repair tasks. The lessons are all based through the charity 'Team Repair' who provide real world gadgets for the children to base the lessons around.</p>	<p>Children will look at a variety of different bird houses and discuss the differences in appearance, their functions and what types of birds they attract. Children discuss and explore different materials used to build bird houses and any additional features that have been added to them. They draw 3-D diagrams or exploded diagrams of different bird houses and discuss why creating a plan beforehand is important. Children explore and explain the various different woodwork equipment needed to build their bird houses.</p> <p>Children write a detailed plan and design a bird house with a specific bird in mind. They find information for the birds' requirements, decide on materials to use and equipment, think how to decorate it and any additional features as well as consider safety precautions. Children then make their bird houses. They collect the materials and tools they will need and work safely and carefully when constructing their bird house.</p> <p>Children evaluate their own design process and finished product.</p>	<p>Children are introduced to some of the greatest inventions from China: the moveable-type printing press, paper making, gunpowder, the compass and water powered machinery. They look at the design of each and think about advantages, disadvantages and improvements for each design. Children use their knowledge and understanding of materials and their properties to predict test results and evaluate different materials to be used to make the sail and the frame of a kite by making prototypes. They will think carefully about which properties make the materials desirable for these purposes and which properties they might want to avoid when choosing what to build a kite from.</p> <p>Children use their learning to decide upon materials to build a kite from. They generate design criteria for their kites and are conscientious in meeting these criteria within their design. Children use their designs to build and evaluate their own kite using the materials they chose. They think carefully about how to finish their kite to improve the aesthetics and make sure they are still meeting design criteria. When evaluating their design they have the opportunity to share and receive peer feedback and take this on board.</p>



<p><b>Unit Focus (National Curriculum Links)</b></p>	<ul style="list-style-type: none"> <li>• 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.</li> <li>• Generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer aided design.</li> <li>• Select from and use a wider range of tools and equipment to perform practical tasks (for example cutting, shaping, joining and finishing) accurately.</li> <li>• Select from and use a wider range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities</li> <li>• Investigate and analyse a range of existing products.</li> <li>• Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work.</li> <li>• Apply their understanding of how to strengthen, stiffen and reinforce more complex structures.</li> <li>• Understand and use electrical systems in their products (for example series circuits incorporating switches, bulbs, buzzers and motors).</li> <li>• Apply their understanding of computing to program, monitor and control their products.</li> </ul>	<ul style="list-style-type: none"> <li>• 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</li> <li>• Generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design</li> <li>• Select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately</li> <li>• Select from and use a wider range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities</li> <li>• Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work</li> </ul>	<ul style="list-style-type: none"> <li>• 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.</li> <li>• Generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer aided design.</li> <li>• Select from and use a wider range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities</li> <li>• Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work.</li> <li>• Understand how key events and individuals in design and technology have helped shape the world.</li> <li>• Understand and use mechanical systems in their products (for example gears, pulleys, cams, levers and linkages).</li> </ul>
<p><b>Key Knowledge</b></p>	<ul style="list-style-type: none"> <li>• I can explore and analyse illuminated signs.</li> <li>• I can create a simple circuit with incandescent bulbs and a switch.</li> <li>• I can describe the difference between an LED and an incandescent light bulb.</li> <li>• I can create a simple circuit with an LED bulb and a resistor.</li> <li>• I can make a circuit with a string of LED lights.</li> <li>• I can design an illuminated light box against a set of design criteria.</li> <li>• I can select materials, tools and components to create a free-standing structure.</li> <li>• I can make a stable, free-standing structure to house an electrical circuit.</li> <li>• I can strip, twist and join wire to make permanent connections.</li> <li>• I can insert an electrical circuit into a free-standing structure to create an illuminated light box.</li> <li>• I can evaluate the effectiveness of my finished product against the design criteria.</li> </ul>	<ul style="list-style-type: none"> <li>• I can investigate the appearance and function of a variety of different bird houses.</li> <li>• I can identify what materials have been used to construct a variety of bird houses and suggest how the parts have been joined together.</li> <li>• I know what a flat pack diagram is and can use it to identify each part of a structure.</li> <li>• I can create a flat pack diagram of a constructed bird house.</li> <li>• I can draw an exploded diagram.</li> <li>• I can identify the tools associated with basic woodworking.</li> <li>• I can measure, clamp, saw, sand and join wood.</li> <li>• I can use a hand drill to drill a hole in a piece of wood.</li> <li>• I know the safety rules I need to follow when doing woodworking.</li> <li>• I can design a bird house for a particular bird, taking into account the bird's needs.</li> <li>• I can select appropriate tools and materials to use when making a bird house.</li> <li>• I can create a sturdy bird house frame using wood.</li> </ul>	<ul style="list-style-type: none"> <li>• I can explain how the invention of paper helped shape the world.</li> <li>• I can explain the traditional method for making paper.</li> <li>• I can test a variety of types of paper for strength, absorbency, opacity, etc.</li> <li>• I know how gunpowder was invented.</li> <li>• I can explain how the invention of gunpowder helped shape the world.</li> <li>• I can explain how the invention of the compass changed the world.</li> <li>• I can make a hanging/floating compass.</li> <li>• I can explain what water-powered machines are and how they helped change the world.</li> <li>• I can explain why kites were first invented and how they were made.</li> <li>• I can make a variety of kite prototypes and test their effectiveness.</li> <li>• I can design, make and evaluate a kite according to specific design criteria.</li> </ul>



		<ul style="list-style-type: none"> <li>• I can evaluate my finished bird house, taking into account the views of others to improve my work.</li> <li>• I can use observation to evaluate the effectiveness of my bird house.</li> </ul>	
<b>Links to Prior Knowledge</b>	<p>In KS1 pupils have developed their understanding of how to make stable structures for a range of purposes. They have worked to create designs to given criteria and have explored a number of different finishing techniques to make their products more attractive.</p>	<p>In LKS2, pupils made mini-greenhouses:</p> <ul style="list-style-type: none"> <li>• I can explain how the shape of a structure affects its stability.</li> <li>• I know that the weight of the structure needs to be evenly spread on the base to make it secure.</li> <li>• I know that the wider a structure's base is, the more stable it will be.</li> <li>• I can use 3D nets to explore potential structures for a greenhouse, assessing their stability.</li> <li>• I can investigate ways of making a structure more stable, e.g. by inserting dowelling or adding triangles at the joins.</li> <li>• I can experiment with a range of materials to test which would be most appropriate for making the structure of a mini greenhouse.</li> <li>• I can select appropriate tools and materials to make a mini greenhouse.</li> </ul>	<p>In LKS2 pupils explored a range of different British inventions and used these as inspiration for their own inventions. Throughout the key stage they have made products following different design criteria and understand the process of designing. They know how to select materials and tools and to solve problems in the designing and making process.</p>
<b>Links to Future Units</b>	<p>In UKS2, pupils further develop their understanding of combing electrical circuits in their designs by making door entry buzzers/alarms.</p>	<p>Key Stage Three</p>	<p>Key Stage Three</p>
<b>Design</b>	<p>Children can:</p> <ul style="list-style-type: none"> <li>• identify the design features of their products that will appeal to intended customers;</li> <li>• use their knowledge of a broad range of existing products to help generate their ideas;</li> <li>• design innovative and appealing products that have a clear purpose and are aimed at a specific user;</li> <li>• explain how particular parts of their products work;</li> <li>• use annotated sketches and cross-sectional drawings to develop and communicate their ideas;</li> <li>• when designing, explore different initial ideas before coming up with a final design;</li> <li>• when planning, start to explain their choice of materials and components including function and aesthetics;</li> <li>• test ideas out through using prototypes;</li> <li>• use computer-aided design to develop and communicate their ideas develop and follow simple design criteria;</li> <li>• work in a broader range of relevant contexts, for example entertainment, the home, school, leisure, food industry and the wider environment.</li> </ul>	<p>Children can:</p> <ul style="list-style-type: none"> <li>• use research to inform and develop detailed design criteria to inform the design of innovative, functional and appealing products that are fit for purpose and aimed at a target market;</li> <li>• use their knowledge of a broad range of existing products to help generate their ideas;</li> <li>• design products that have a clear purpose and indicate the design features of their products that will appeal to the intended user;</li> <li>• explain how particular parts of their products work;</li> <li>• use annotated sketches, cross-sectional drawings and exploded diagrams (possibly including computer-aided design) to develop and communicate their ideas;</li> <li>• generate a range of design ideas and clearly communicate final designs;</li> <li>• consider the availability and costings of resources when planning out designs;</li> </ul>	<p>Children can:</p> <ul style="list-style-type: none"> <li>• use their knowledge of a broad range of existing products to help generate their ideas;</li> <li>• design products that have a clear purpose and indicate the design features of their products that will appeal to the intended user;</li> <li>• explain how particular parts of their products work;</li> <li>• use annotated sketches, cross-sectional drawings and exploded diagrams (possibly including computer-aided design) to develop and communicate their ideas;</li> <li>• generate a range of design ideas and clearly communicate final designs;</li> <li>• consider the availability and costings of resources when planning out designs;</li> <li>• work in a broad range of relevant contexts, for example conservation, the home, school, leisure, culture, enterprise, industry and the wider environment.</li> </ul>



<p><b>Make</b></p>	<p>Children can:</p> <p>Planning:</p> <ul style="list-style-type: none"> <li>with growing confidence, carefully select from a range of tools and equipment, explaining their choices;</li> <li>select from a range of materials and components according to their functional properties and aesthetic qualities;</li> <li>place the main stages of making in a systematic order;</li> </ul> <p>Practical skills and techniques</p> <ul style="list-style-type: none"> <li>learn to use a range of tools and equipment safely, appropriately and accurately;</li> <li>use a wider range of materials and components, including mechanical and electrical components;</li> <li>with growing independence, measure and mark out to the nearest cm and millimetre;</li> <li>cut, shape and score materials with some degree of accuracy;</li> <li>assemble, join and combine material and components with some degree of accuracy;</li> <li>begin to select and use different and appropriate finishing techniques to improve the appearance of a product such as digital graphics.</li> </ul>	<p>Children can:</p> <p>Planning</p> <ul style="list-style-type: none"> <li>independently plan by suggesting what to do next;</li> <li>with growing confidence, select from a wide range of tools and equipment, explaining their choices;</li> <li>select from a range of materials and components according to their functional properties and aesthetic qualities;</li> <li>create step-by-step plans as a guide to making;</li> </ul> <p>Practical skills and techniques</p> <ul style="list-style-type: none"> <li>learn to use a range of tools and equipment safely and appropriately and learn to follow hygiene procedures;</li> <li>independently take exact measurements and mark out, to within 1 millimetre;</li> <li>use a full range of materials and components, including construction materials and kits, textiles, and mechanical components;</li> <li>cut a range of materials with precision and accuracy;</li> <li>shape and score materials with precision and accuracy;</li> <li>assemble, join and combine materials and components with accuracy;</li> <li>refine the finish using techniques to improve the appearance of their product, such as sanding or a more precise scissor cut after roughly cutting out a shape.</li> </ul>	<p>Children can:</p> <p>Planning</p> <ul style="list-style-type: none"> <li>with growing confidence, select from a wide range of tools and equipment, explaining their choices;</li> <li>select from a range of materials and components according to their functional properties and aesthetic qualities;</li> </ul> <p>Practical skills and techniques</p> <ul style="list-style-type: none"> <li>learn to use a range of tools and equipment safely and appropriately and learn to follow hygiene procedures;</li> <li>independently take exact measurements and mark out, to within 1 millimetre;</li> <li>use a full range of materials and components, including construction materials and kits, textiles, and mechanical components;</li> <li>cut a range of materials with precision and accuracy;</li> <li>shape and score materials with precision and accuracy;</li> <li>assemble, join and combine materials and refine the finish using techniques to improve the appearance of their product, such as sanding or a more precise scissor cut after roughly cutting out a shape.</li> </ul>
<p><b>Evaluate</b></p>	<p>Children can:</p> <ul style="list-style-type: none"> <li>explore and evaluate existing products, explaining the purpose of the product and whether it is designed well to meet the intended purpose;</li> <li>explore what materials products are made from and suggest reasons for this;</li> <li>consider their design criteria as they make progress and are willing to alter their plans, sometimes considering the views of others if this helps them to improve their product;</li> <li>evaluate their product against their original design criteria;</li> </ul>	<p>Children can:</p> <ul style="list-style-type: none"> <li>complete detailed competitor analysis of other products on the market;</li> <li>critically evaluate the quality of design, manufacture and fitness for purpose of products as they design and make;</li> <li>evaluate their ideas and products against the original design criteria, making changes as needed.</li> </ul>	<p>Children can:</p> <ul style="list-style-type: none"> <li>complete detailed competitor analysis of other products on the market;</li> <li>critically evaluate the quality of design, manufacture and fitness for purpose of products as they design and make;</li> <li>evaluate their ideas and products against the original design criteria, making changes as needed.</li> </ul>



<b>Technical Skills</b>	Children can: <ul style="list-style-type: none"> <li>• understand that materials have both functional properties and aesthetic qualities;</li> <li>• apply their understanding of how to strengthen, stiffen and reinforce more complex structures in order to create more useful characteristics of products;</li> <li>• understand and demonstrate how mechanical and electrical systems have an input and output process;</li> <li>• make and represent simple electrical circuits, such as a series and parallel, and components to create functional products;</li> <li>• explain how mechanical systems such as levers and linkages create movement;</li> <li>• use mechanical systems in their products.</li> </ul>	Children can: <ul style="list-style-type: none"> <li>• apply their understanding of how to strengthen, stiffen and reinforce more complex structures in order to create more useful characteristics of products;</li> <li>• explain how mechanical systems, such as cams, create movement and use mechanical systems in their products;</li> </ul>	
<b>Cooking and Nutrition</b>			
<b>Key Vocabulary</b>	User, fault, toggle switch, insulator, conductor, battery holder, crocodile clip Series circuit, connection, push-to-make switch, push-to-break switch, innovative, appealing, control box, input device, output device, system	Reinforce, triangulation, stability, temporary, permanent, prototype, innovation, functional, design brief	Language of evaluation: My view is that....because... This is supported by the fact that... In my opinion... furthermore..... However... Possible improvements may include...

## Years Four, Five and Six – Cycle B

	<b>Autumn Term</b>	<b>Spring Term</b>	<b>Summer Term</b>
<b>Focus for this Unit</b>	Fashion and Textiles	Building Bridges	Burgers
<b>Learning Journey and Outcomes</b>	<p>Children discover how some natural and synthetic textiles are produced, and consider their uses in clothing. They then examine and describe old clothes (and how they are constructed). Children start to learn about the work of fashion designers, then discover some ways in which textiles may be joined and decorated.</p> <p>They then practise hand sewing stitches. Children learn how fashion designers use pattern pieces when making products, then make pattern pieces for a bag. Children learn how design features of pattern pieces are transferred to fabric. They then produce a small, simple bag using a given pattern piece. Children learn how to pin and hand-sew fabric pieces together, then design and make a</p>	<p>Children learn about how simple bridges are constructed using beams, pillars or piers, then make and test beam bridge designs. They learn how trusses are used in bridge design to spread out compression forces. They then build and test model truss bridges.</p> <p>Children learn how arches are used to spread and redirect compression forces acting on bridges. They then build and test model arch bridges.</p> <p>Children learn about how suspension bridges use tension to support bridge decks spanning large distances. They research and write about iconic suspension bridges. Having been presented with a design brief, children develop criteria for a</p>	<p>Children explore and discuss different burgers, restaurants and their preferences. They analyse nutrition facts and find out how to check nutrition labels. Children explore different burger patties including different methods for cooking them.</p> <p>They then create and taste three different burger patties before tasting and evaluating the recipes. Children explore and discuss the additional ingredients that may be found in burgers, such as vegetables and sauces, as well as accompanying side dishes. They make and taste three different burger sauces. Children explore and discuss a range of burger buns and their suitability. They taste and analyse different bread buns, thinking about their flavour, texture,</p>



	<p>simple fabric container. Children learn how to finish a hand-sewn product, then finish sewing and decorating their own bag designs.</p>	<p>bridge design that will meet the terms of the brief. They then design a bridge according to their criteria. Children consider ways in which they might test their bridge design once constructed and then build and test their designs.</p>	<p>appearance, shape and suitability for holding a burger together. Children use the skills and knowledge they have acquired to plan and design their own burger. They use their previous designs to create their burgers. They collect their ingredients and equipment carefully and consider food safety and hygiene when making their burgers. Once completed they taste their burgers and evaluate the process.</p>
<p><b>Unit Focus (National Curriculum Links)</b></p>	<ul style="list-style-type: none"> <li>• 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.</li> <li>• Generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer aided design.</li> <li>• Select from and use a wider range of tools and equipment to perform practical tasks (for example cutting, shaping, joining and finishing) accurately.</li> <li>• Select from and use a wider range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities</li> <li>• Investigate and analyse a range of existing products.</li> <li>• Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work.</li> </ul>	<ul style="list-style-type: none"> <li>• 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.</li> <li>• Generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer aided design.</li> <li>• Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work.</li> <li>• Apply their understanding of how to strengthen, stiffen and reinforce more complex structures.</li> </ul>	<ul style="list-style-type: none"> <li>• 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.</li> <li>• Generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer aided design.</li> <li>• Select from and use a wider range of tools and equipment to perform practical tasks (for example cutting, shaping, joining and finishing) accurately.</li> <li>• Investigate and analyse a range of existing products.</li> <li>• Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work.</li> <li>• Understand the principles of a healthy and varied diet.</li> <li>• Prepare and cook a variety of predominantly savoury dishes, using a range of cooking techniques.</li> </ul>
<p><b>Key Knowledge</b></p>	<ul style="list-style-type: none"> <li>• I can explain the process of turning raw cotton into cloth.</li> <li>• I know that products that are woven together are called textiles.</li> <li>• I know that different textiles have different properties, and can match these to their purpose.</li> <li>• I can identify straight stitch, zigzag stitch, whip/blanket stitch, blind stitch, buttonhole stitch and overlock stitch on a variety of ready-made garments.</li> <li>• I can describe what the job of a fashion designer entails.</li> <li>• I can sew a basting stitch.</li> <li>• I can sew a whip stitch.</li> <li>• I can sew a hem.</li> <li>• I can sew back stitch.</li> <li>• I can sew an appliqué decoration.</li> <li>• I can use back stitch to embroider.</li> <li>• I know what a pattern piece is and why they are important when designing a garment.</li> <li>• I can design a drawstring bag, including the necessary pattern pieces.</li> </ul>	<ul style="list-style-type: none"> <li>• I know what beams and pillars are and how they are used in bridge construction.</li> <li>• I can predict which beams will be strongest from their cross-section.</li> <li>• I can test the strength of different beam shapes using paper and card.</li> <li>• I can explain what a truss is and how trusses make bridges stronger.</li> <li>• I can identify the three types of trusses commonly used in bridge design.</li> <li>• I can build a truss bridge spanning a width of 40cm using paper straws.</li> <li>• I can use a fair test to evaluate the strength of my truss bridge.</li> <li>• I can explain how arches work to make bridges stronger.</li> <li>• I can test the arch heights to see which can bear the most load.</li> <li>• I can make an arch frame.</li> </ul>	<ul style="list-style-type: none"> <li>• I can explain why nutrition facts are important to read.</li> <li>• I know that making better food choices can make us healthier</li> <li>• I can read nutrition tables and interpret the information to answer questions</li> <li>• I can follow a recipe to prepare and cook patties</li> <li>• I can measure and mix ingredients correctly</li> <li>• I can explain the cooking skills required when preparing burger patties</li> <li>• I can make a simple sauce to go with a burger</li> <li>• I recognise sauces can be matched to different burger patties</li> <li>• I decide on sides to match a particular burger flavour</li> <li>• I make informed decisions about the type of ingredients to use</li> <li>• I investigate different products and evaluate them</li> <li>• I write a recipe for a burger</li> <li>• I choose appropriate ingredients to make burgers</li> <li>• I list the equipment and method needed to cook burgers</li> </ul>



	<ul style="list-style-type: none"> <li>• I can use pattern pieces to measure, mark, cut and sew fabric.</li> <li>• I can sew design elements according to design criteria.</li> <li>• I can join two pieces of fabric by hand sewing, using an appropriate stitch.</li> <li>• I can evaluate my finished product against a set of design criteria.</li> </ul>	<ul style="list-style-type: none"> <li>• I can explain how suspension bridges use tension forces to work.</li> <li>• I can design, make and evaluate a prototype suspension bridge using a scale of 1:100 according to specific design criteria.</li> </ul>	<ul style="list-style-type: none"> <li>• I follow a plan to make a burger</li> <li>• I use cooking utensils and equipment correctly</li> </ul>
<b>Links to Prior Knowledge</b>	<p>In LKS2, pupils made stockings:</p> <ul style="list-style-type: none"> <li>• I can explain the difference between the function and visual appeal of a product.</li> <li>• I can use pins to temporarily fasten two pieces of fabric together.</li> <li>• I can use running stick, back stitch, overstitch and zigzag stitch to join two pieces of fabric together.</li> <li>• I can hide the finishing knot.</li> <li>• I can identify a variety of decorative techniques that have been used to decorate Christmas stockings.</li> <li>• I can sew a button, bead, sequin or pipe cleaner onto a piece of fabric.</li> <li>• I can embroider shapes and patterns into a piece of fabric.</li> <li>• I can use appliqué to add decoration to a piece of fabric.</li> <li>• I can use a template to cut out front and back pattern pieces.</li> </ul>	<p>In LKS2, pupils made mini greenhouses, learning how to make a stable structure and reinforce joints:</p> <ul style="list-style-type: none"> <li>• I can explain how the shape of a structure affects its stability.</li> <li>• I know that the weight of the structure needs to be evenly spread on the base to make it secure.</li> <li>• I know that the wider a structure's base is, the more stable it will be.</li> <li>• I can investigate ways of making a structure more stable, e.g. by inserting dowelling or adding triangles at the joins.</li> <li>• I can experiment with a range of materials to test which would be most appropriate for making the structure of a mini greenhouse.</li> </ul>	<p>In LKS2, pupils learnt about seasonal food:</p> <ul style="list-style-type: none"> <li>• I know that different parts of the world have different seasonal food.</li> <li>• I can discuss the benefits and problems of unseasonal food being available in shops all year round.</li> <li>• I can practise cooking skills including slicing, dicing, beating, whisking, folding, sieving, rolling and grating.</li> <li>• I can follow a recipe to make fairy cakes.</li> <li>• I know some of the nutrients we get from fruits, vegetables, meat, fish and dairy products.</li> <li>• I know when certain meats are in season in the UK and which are available all year round.</li> <li>• I can follow a recipe to make meatballs.</li> <li>• I know some vegetarian options that provide the same nutrients as meat.</li> <li>• I can use what I have learnt about seasonal food to design healthy meals and menus.</li> </ul>
<b>Links to Future Units</b>	<p>Key Stage Three</p>	<p>Key Stage Three</p>	<p>Key Stage Three</p>
<b>Design</b>	<p>Children can:</p> <ul style="list-style-type: none"> <li>• use research to inform and develop detailed design criteria to inform the design of innovative, functional and appealing products that are fit for purpose and aimed at a target market;</li> <li>• use their knowledge of a broad range of existing products to help generate their ideas;</li> <li>• design products that have a clear purpose and indicate the design features of their products that will appeal to the intended user;</li> <li>• use annotated sketches and exploded diagrams to develop and communicate their ideas;</li> <li>• generate a range of design ideas and clearly communicate final designs;</li> <li>• consider the availability and costings of resources when planning out designs;</li> <li>• work in a broad range of relevant contexts, for example conservation, the home, school, leisure, culture, enterprise, industry and the wider environment.</li> </ul>	<p>Children can:</p> <ul style="list-style-type: none"> <li>• use research to inform and develop detailed design criteria to inform the design of innovative, functional and appealing products that are fit for purpose;</li> <li>• design products that have a clear purpose;;</li> <li>• explain how particular parts of their products work;</li> <li>• use annotated sketches, cross-sectional drawings and exploded diagrams (possibly including computer-aided design) to develop and communicate their ideas;</li> <li>• generate a range of design ideas and clearly communicate final designs;</li> <li>• work in a broad range of relevant contexts, for example conservation, the home, school, leisure, culture, enterprise, industry and the wider environment.</li> </ul>	<p>Children can:</p> <ul style="list-style-type: none"> <li>• use research to inform and develop detailed design criteria to inform the design of innovative, functional and appealing products that are fit for purpose and aimed at a target market;</li> <li>• use their knowledge of a broad range of existing products to help generate their ideas;</li> <li>• design products that have a clear purpose and indicate the design features of their products that will appeal to the intended user;</li> <li>• generate a range of design ideas and clearly communicate final designs;</li> <li>• consider the availability and costings of resources when planning out designs;</li> </ul>



<p><b>Make</b></p>	<p>Children can:</p> <p>Planning</p> <ul style="list-style-type: none"> <li>independently plan by suggesting what to do next;</li> <li>with growing confidence, select from a wide range of tools and equipment, explaining their choices;</li> <li>select from a range of materials and components according to their functional properties and aesthetic qualities;</li> <li>create step-by-step plans as a guide to making;</li> </ul> <p>Practical skills and techniques</p> <ul style="list-style-type: none"> <li>learn to use a range of tools and equipment safely and appropriately;</li> <li>independently take exact measurements and mark out, to within 1 millimetre;</li> <li>cut a range of materials with precision and accuracy;</li> <li>demonstrate how to measure, make a seam allowance, tape, pin, cut, shape and join fabric with precision to make a more complex product;</li> <li>join textiles using a greater variety of stitches, such as backstitch, whip stitch, blanket stitch;</li> <li>refine the finish using techniques to improve the appearance of their product, such as sanding or a more precise scissor cut after roughly cutting out a shape.</li> </ul>	<p>Children can:</p> <p>Planning</p> <ul style="list-style-type: none"> <li>independently plan by suggesting what to do next;</li> <li>with growing confidence, select from a wide range of tools and equipment, explaining their choices;</li> <li>select from a range of materials and components according to their functional properties and aesthetic qualities;</li> <li>create step-by-step plans as a guide to making;</li> </ul> <p>Practical skills and techniques</p> <ul style="list-style-type: none"> <li>learn to use a range of tools and equipment safely and appropriately;</li> <li>independently take exact measurements and mark out, to within 1 millimetre;</li> <li>use a full range of materials and components, including construction materials and kits;</li> <li>cut a range of materials with precision and accuracy;</li> <li>shape and score materials with precision and accuracy;</li> <li>assemble, join and combine materials and components with accuracy;</li> <li>refine the finish using techniques to improve the appearance of their product, such as sanding or a more precise scissor cut after roughly cutting out a shape.</li> </ul>	<p>Children can:</p> <p>Planning</p> <ul style="list-style-type: none"> <li>independently plan by suggesting what to do next;</li> <li>with growing confidence, select from a wide range of tools and equipment, explaining their choices;</li> <li>create step-by-step plans as a guide to making;</li> </ul> <p>Practical skills and techniques</p> <ul style="list-style-type: none"> <li>learn to use a range of tools and equipment safely and appropriately and learn to follow hygiene procedures;</li> </ul>
<p><b>Evaluate</b></p>	<p>Children can:</p> <ul style="list-style-type: none"> <li>complete detailed competitor analysis of other products on the market;</li> <li>critically evaluate the quality of design, manufacture and fitness for purpose of products as they design and make;</li> <li>evaluate their ideas and products against the original design criteria, making changes as needed.</li> </ul>	<p>Children can:</p> <ul style="list-style-type: none"> <li>critically evaluate the quality of design, manufacture and fitness for purpose of products as they design and make;</li> <li>evaluate their ideas and products against the original design criteria, making changes as needed.</li> </ul>	<p>Children can:</p> <ul style="list-style-type: none"> <li>complete detailed competitor analysis of other products on the market;</li> <li>critically evaluate the quality of manufacture and fitness for purpose of products as they design and make;</li> <li>evaluate their ideas and products against the original design criteria, making changes as needed.</li> </ul>
<p><b>Technical Skills</b></p>		<p>Children can:</p> <ul style="list-style-type: none"> <li>apply their understanding of how to strengthen, stiffen and reinforce more complex structures in order to create more useful characteristics of products;</li> </ul>	
<p><b>Cooking and Nutrition</b></p>			<p>Children can:</p> <ul style="list-style-type: none"> <li>know, explain and give examples of food that is grown (such as pears, wheat and potatoes), reared (such as poultry and cattle) and caught (such as fish) in the UK, Europe and the wider world;</li> <li>understand about seasonality, how this may affect the food availability and plan recipes according to seasonality;</li> <li>understand that food is processed into ingredients that can be eaten or used in cooking;</li> </ul>



			<ul style="list-style-type: none"> <li>demonstrate how to prepare and cook a variety of predominantly savoury dishes safely and hygienically including, where appropriate, the use of a heat source;</li> <li>demonstrate how to use a range of cooking techniques, such as griddling, grilling, frying and boiling;</li> <li>explain that foods contain different substances, such as protein, that are needed for health and be able to apply these principles when planning and preparing dishes;</li> <li>adapt and refine recipes by adding or substituting one or more ingredients to change the appearance, taste, texture and aroma;</li> <li>alter methods, cooking times and/or temperatures;</li> <li>measure accurately and calculate ratios of ingredients to scale up or down from a recipe;</li> </ul>
<b>Key Vocabulary</b>	Specification, tacking, working drawing, clasp, pinking shears, design criteria, hem, reinforce, stem stitch, satin stitch, tie dye. Applique, annotate, evaluate, innovation, functionality, renewable, authentic, chain stitch.	Reinforce, triangulation, stability, temporary, permanent, prototype, innovation, functional, design brief	Celebrating Culture & Seasonality: Ingredients, yeast, dough, wholemeal, unleavened, baking soda, spice, herbs, carbohydrate, sugar, fat, protein, vitamins, nutrients, gluten,

## Years Four, Five and Six – Cycle C

	<b>Autumn Term</b>	<b>Spring Term</b>	<b>Summer Term</b>
<b>Focus for this Unit</b>	Light Up Signs	Storybooks Mechanisms and Levers	Seasonal Food
<b>Learning Journey and Outcomes</b>	Children consider the purposes of illuminated signs, and identify a number of ways in which signs may be illuminated. They make simple circuits with one or more bulbs, considering how some of the components might be hidden in the construction of signs. They work in groups to design and make an illuminated sign for a given purpose. Children consider ways in which electrical components in a simple circuit can be partially 'hidden' inside products to make them more attractive, then go on to develop designs for their own decorative, light box-style sign. They then construct a light box sign using scrap/found materials such as cardboard packaging. Children design, make and test switches made using scrap materials, drawing pins, paper clips etc. Children consider ways in which lights in electronic products may be programmed and controlled, then 'debug' simple 'code block' programs to make an LED 'blink'.	Children examine a variety of books with moving mechanisms and discuss their design and construction using some technical vocabulary. They then more closely examine some moving mechanisms, sketching and labelling them. Children learn how to make some moving mechanisms using card or paper. They consider the importance, and effects, of good graphic design and font selection for storybooks. They then practise sketching, shading and writing techniques. Working either individually or in groups, children draw and annotate designs for a storybook with some moving mechanisms before making the book. They share, discuss and evaluate their storybooks with moving mechanisms.	Children learn why certain foods are seasonal and explore the pros and cons of foods from other parts of the world. They learn how fruits and vegetables are produced and some of the methods used to speed up growth before following recipes with fruit and vegetables. They then learn about meat, dairy and egg products and taste a variety of vegetarian alternatives. Finally, they learn about how fish is farmed and caught and learn about quality assurance marks.



<p><b>Unit Focus (National Curriculum Links)</b></p>	<ul style="list-style-type: none"> <li>• 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.</li> <li>• Generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer aided design.</li> <li>• Select from and use a wider range of tools and equipment to perform practical tasks (for example cutting, shaping, joining and finishing) accurately.</li> <li>• Select from and use a wider range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities</li> <li>• Investigate and analyse a range of existing products.</li> <li>• Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work.</li> <li>• Apply their understanding of how to strengthen, stiffen and reinforce more complex structures.</li> <li>• Understand and use electrical systems in their products (for example series circuits incorporating switches, bulbs, buzzers and motors).</li> <li>• Apply their understanding of computing to program, monitor and control their products.</li> </ul>	<ul style="list-style-type: none"> <li>• 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.</li> <li>• Generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer aided design.</li> <li>• Select from and use a wider range of tools and equipment to perform practical tasks (for example cutting, shaping, joining and finishing) accurately.</li> <li>• Select from and use a wider range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities</li> <li>• Investigate and analyse a range of existing products.</li> <li>• Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work.</li> <li>• Understand and use mechanical systems in their products (for example gears, pulleys, cams, levers and linkages).</li> </ul>	<ul style="list-style-type: none"> <li>• Understand the principles of a healthy and varied diet.</li> <li>• Prepare and cook a variety of predominantly savoury dishes, using a range of cooking techniques.</li> <li>• Understand seasonality and know where and how a variety of ingredients are grown, reared, caught and processed.</li> </ul>
<p><b>Key Knowledge</b></p>	<ul style="list-style-type: none"> <li>• I can explore and analyse illuminated signs.</li> <li>• I can create a simple circuit with incandescent bulbs and a switch.</li> <li>• I can describe the difference between an LED and an incandescent light bulb.</li> <li>• I can create a simple circuit with an LED bulb and a resistor.</li> <li>• I can make a circuit with a string of LED lights.</li> <li>• I can design an illuminated light box against a set of design criteria.</li> <li>• I can select materials, tools and components to create a free-standing structure.</li> <li>• I can make a stable, free-standing structure to house an electrical circuit.</li> <li>• I can strip, twist and join wire to make permanent connections.</li> <li>• I can insert an electrical circuit into a free-standing structure to create an illuminated light box.</li> <li>• I can evaluate the effectiveness of my finished product against the design criteria.</li> </ul>	<ul style="list-style-type: none"> <li>• I can explore moving parts in storybooks, suggesting how they work and what purpose they serve.</li> <li>• I can explain what the words 'linkage', 'pivot', 'rotate' and 'lever' mean.</li> <li>• I can use a paper concertina to make an object pop out of a book.</li> <li>• I can arrange and stick paper between pages to create a pop-out.</li> <li>• I can use levers to create moving parts.</li> <li>• I can create moving wheel mechanisms to create different effects.</li> <li>• I can experiment with different fonts and graphic design features.</li> <li>• I can design pages of a storybook to include moving mechanisms and appropriate graphic features.</li> <li>• I can follow my designs to create a storybook with moving mechanisms.</li> <li>• I can evaluate how well my moving mechanisms work.</li> <li>• I can evaluate the overall effectiveness of my storybook.</li> </ul>	<ul style="list-style-type: none"> <li>• I can explain what the term 'seasonal food' means.</li> <li>• I know that different parts of the world have different seasonal food.</li> <li>• I can discuss the benefits and problems of unseasonal food being available in shops all year round.</li> <li>• I know that some foods, like wheat, are available all year round in the UK.</li> <li>• I can practise cooking skills including slicing, dicing, beating, whisking, folding, sieving, rolling and grating.</li> <li>• I can follow a recipe to make fairy cakes.</li> <li>• I can describe the cycle of wheat production in the UK.</li> <li>• I can distinguish between fruits that are grown in the UK and those that are grown abroad.</li> <li>• I know how food producers can speed up or slow down the ripening process to make fruits and vegetables available all year round.</li> <li>• I know some of the nutrients we get from fruits, vegetables, meat, fish and dairy products.</li> <li>• I know when certain meats are in season in the UK and which are available all year round.</li> </ul>



			<ul style="list-style-type: none"> <li>I can follow a recipe to make meatballs.</li> <li>I know some vegetarian options that provide the same nutrients as meat.</li> <li>I can use what I have learnt about seasonal food to design healthy meals and menus.</li> </ul>
<b>Links to Prior Knowledge</b>	In KS1 pupils have developed their understanding of how to make stable structures for a range of purposes. They have worked to create designs to given criteria and have explored a number of different finishing techniques to make their products more attractive.	In KS1 children made simple moving pictures with basic mechanisms – pivots, levers and wheel mechanisms. They followed given designs to create their picture.	In KS1 pupils made pizzas and learnt how to prepare fruit and vegetables. They explored what a balanced diet is and can identify food groups for some foods. They began to design a product to a given set of criteria.
<b>Links to Future Units</b>	In UKS2, pupils further develop their understanding of combing electrical circuits in their designs by making door entry buzzers/alarms.	In UKS2, pupils apply the knowledge they have of moving parts to other contexts – e.g. during their building bridges units.	KS3
<b>Design</b>	<p>Children can:</p> <ul style="list-style-type: none"> <li>identify the design features of their products that will appeal to intended customers;</li> <li>use their knowledge of a broad range of existing products to help generate their ideas;</li> <li>design innovative and appealing products that have a clear purpose and are aimed at a specific user;</li> <li>explain how particular parts of their products work;</li> <li>use annotated sketches and cross-sectional drawings to develop and communicate their ideas;</li> <li>when designing, explore different initial ideas before coming up with a final design;</li> <li>when planning, start to explain their choice of materials and components including function and aesthetics;</li> <li>test ideas out through using prototypes;</li> <li>use computer-aided design to develop and communicate their ideas develop and follow simple design criteria;</li> <li>work in a broader range of relevant contexts, for example entertainment, the home, school, leisure, food industry and the wider environment.</li> </ul>	<p>Children can:</p> <ul style="list-style-type: none"> <li>identify the design features of their products that will appeal to intended customers;</li> <li>use their knowledge of a broad range of existing products to help generate their ideas;</li> <li>design innovative and appealing products that have a clear purpose and are aimed at a specific user;</li> <li>explain how particular parts of their products work;</li> <li>use annotated sketches and cross-sectional drawings to develop and communicate their ideas;</li> <li>when designing, explore different initial ideas before coming up with a final design;</li> <li>when planning, start to explain their choice of materials and components including function and aesthetics;</li> <li>test ideas out through using prototypes;</li> <li>use computer-aided design to develop and communicate their ideas develop and follow simple design criteria;</li> <li>work in a broader range of relevant contexts, for example entertainment, the home, school, leisure, food industry and the wider environment.</li> </ul>	<p>Children can:</p> <ul style="list-style-type: none"> <li>use their knowledge of a broad range of existing products to help generate their ideas;</li> <li>when designing, explore different initial ideas before coming up with a final design;</li> <li>work in a broader range of relevant contexts, for example entertainment, the home, school, leisure, food industry and the wider environment.</li> </ul>
<b>Make</b>	<p>Children can:</p> <p>Planning:</p> <ul style="list-style-type: none"> <li>with growing confidence, carefully select from a range of tools and equipment, explaining their choices;</li> <li>select from a range of materials and components according to their functional properties and aesthetic qualities;</li> <li>place the main stages of making in a systematic order;</li> </ul> <p>Practical skills and techniques</p>	<p>Children can:</p> <p>Planning:</p> <ul style="list-style-type: none"> <li>with growing confidence, carefully select from a range of tools and equipment, explaining their choices;</li> <li>place the main stages of making in a systematic order;</li> </ul> <p>Practical skills and techniques</p> <ul style="list-style-type: none"> <li>learn to use a range of tools and equipment safely, appropriately and accurately;</li> </ul>	<p>Children can:</p> <p>Planning:</p> <ul style="list-style-type: none"> <li>with growing confidence, carefully select from a range of tools and equipment, explaining their choices;</li> <li>place the main stages of making in a systematic order;</li> </ul> <p>Practical skills and techniques</p>



	<ul style="list-style-type: none"> <li>learn to use a range of tools and equipment safely, appropriately and accurately;</li> <li>use a wider range of materials and components, including mechanical and electrical components;</li> <li>with growing independence, measure and mark out to the nearest cm and millimetre;</li> <li>cut, shape and score materials with some degree of accuracy;</li> <li>assemble, join and combine material and components with some degree of accuracy;</li> <li>begin to select and use different and appropriate finishing techniques to improve the appearance of a product such as digital graphics.</li> </ul>	<ul style="list-style-type: none"> <li>use a wider range of materials and components, including construction materials and kits, textiles and mechanical and electrical components;</li> <li>with growing independence, measure and mark out to the nearest cm and millimetre;</li> <li>cut, shape and score materials with some degree of accuracy;</li> <li>assemble, join and combine material and components with some degree of accuracy;</li> </ul>	<ul style="list-style-type: none"> <li>learn to use a range of tools and equipment safely, appropriately and accurately and learn to follow hygiene procedures;</li> </ul>
<b>Evaluate</b>	<p>Children can:</p> <ul style="list-style-type: none"> <li>explore and evaluate existing products, explaining the purpose of the product and whether it is designed well to meet the intended purpose;</li> <li>explore what materials products are made from and suggest reasons for this;</li> <li>consider their design criteria as they make progress and are willing to alter their plans, sometimes considering the views of others if this helps them to improve their product;</li> <li>evaluate their product against their original design criteria;</li> </ul>	<p>Children can:</p> <ul style="list-style-type: none"> <li>explore and evaluate existing products, explaining the purpose of the product and whether it is designed well to meet the intended purpose;</li> <li>explore what materials products are made from and suggest reasons for this;</li> <li>consider their design criteria as they make progress and are willing to alter their plans, sometimes considering the views of others if this helps them to improve their product;</li> <li>evaluate their product against their original design criteria;</li> </ul>	<p>Children can:</p> <ul style="list-style-type: none"> <li>explore and evaluate existing products, explaining the purpose of the product and whether it is designed well to meet the intended purpose;</li> <li>explore what ingredients products are made from and suggest reasons for this;</li> <li>consider their design criteria as they make progress and are willing to alter their plans, sometimes considering the views of others if this helps them to improve their product;</li> <li>evaluate their product against their original design criteria;</li> </ul>
<b>Technical Skills</b>	<p>Children can:</p> <ul style="list-style-type: none"> <li>understand that materials have both functional properties and aesthetic qualities;</li> <li>apply their understanding of how to strengthen, stiffen and reinforce more complex structures in order to create more useful characteristics of products;</li> <li>understand and demonstrate how mechanical and electrical systems have an input and output process;</li> <li>make and represent simple electrical circuits, such as a series and parallel, and components to create functional products;</li> <li>explain how mechanical systems such as levers and linkages create movement;</li> <li>use mechanical systems in their products.</li> </ul>	<p>Children can:</p> <ul style="list-style-type: none"> <li>understand that materials have both functional properties and aesthetic qualities;</li> <li>apply their understanding of how to strengthen, stiffen and reinforce more complex structures in order to create more useful characteristics of products;</li> </ul>	
<b>Cooking and Nutrition</b>			<p>Children can:</p> <ul style="list-style-type: none"> <li>start to know when, where and how food is grown (such as herbs, tomatoes and strawberries) in the UK, Europe and the wider world;</li> <li>understand how to prepare and cook a variety of predominantly savoury dishes safely and hygienically;</li> </ul>



			<ul style="list-style-type: none"> <li>• use a range of techniques such as mashing, whisking, crushing, grating, cutting, kneading and baking;</li> <li>• explain that a healthy diet is made up of a variety and balance of different food and drink, as represented in the Eatwell Guide and be able to apply these principles when planning and cooking dishes;</li> <li>• understand that to be active and healthy, nutritious food and drink are needed to provide energy for the body;</li> <li>• prepare ingredients using appropriate cooking utensils;</li> <li>• measure and weigh ingredients to the nearest gram and millilitre;</li> <li>• start to independently follow a recipe;</li> </ul>
<b>Key Vocabulary</b>	User, fault, toggle switch, insulator, conductor, battery holder, crocodile clip Series circuit, connection, push-to-make switch, push-to-break switch, innovative, appealing, control box, input device, output device, system	Loose/fixed pivot, system, input, process output, linear, rotary, reciprocating, innovative, appealing, linkage, oscillating	Healthy & Varied Diet: Texture, taste, appearance, preference, greasy, moist, fresh, savoury, hygienic, edible, grown, reared, caught, frozen, tinned, processed, seasonal, harvested