Design and Technology Curriculum Milestone 3			
Area & NC links	**Key Vocabulary**	**Sticky Facts**	**Sticky Knowledge**
Food: Bread **(Linked to Harvest)** Generate innovative ideas through research and discussion with peers and adults to develop a design brief and criteria for a design specification. Explore a range of initial ideas, and make design decisions to develop a final product linked to user and purpose. Use words, annotated sketches and information and communication technology as appropriate to develop and communicate ideas. Write a step-by-step recipe, including a list of ingredients, equipment and utensils Select and use appropriate utensils and equipment accurately to measure and combine appropriate ingredients. Make, decorate and present the food product appropriately for the intended user and purpose. Carry out sensory evaluations of a range of relevant products and ingredients. Record the evaluations using e.g. tables/graphs/charts such as star diagrams. Evaluate the final product with reference back to the design brief and	Ingredients Quantities Shaping Mixing Topping Kneading Proving Baking Yeast Dough Grain Crust	• Bread is the product of baking a mixture of flour, water, salt, yeast and other ingredients • Basic process involves mixing of ingredients until the flour is converted into a dough. • Proofing is allowing the dough to ferment and rise. • Kneading the dough is important as it makes the bread light, airy and chewy. Assessment task: Children's own evaluation of their finished product. Is it fit for purpose? How did it work? (Photograph of finished product.)	• **Make bread and improve with their own bread recipe** • Measure accurately and calculate ratios of ingredients to scale up or down from a recipe. • Demonstrate a range of baking techniques to make their bread. • Present their final bread well. • Create and refine recipes, including ingredients, methods, cooking times for their bread. • When rubbing in flour and fat, keep ingredients and hands cool. • Yeast needs time and heat to prove to make the bread rise before baking. • It is important to finish the bread relating to the appearance of the product such as the shape, decoration and colour of the finished item.

design specification, taking into account the views of others when identifying improvements. Understand how key chefs have influenced eating habits to promote varied and healthy diets. Technical knowledge and understanding Know how to use utensils and equipment including heat sources to prepare and cook food. Understand about seasonality in relation to food products and the source of different food products. Know and use relevant technical and sensory vocabulary.			
Electrical systems Focus More complex switches and circuits (Create an alarm) **Children to create a board game linked to their topic.** *know how to use a variety of mechanical and electrical systems in their designs and products *use coding to create a programme to incorporate into design *the correct technical vocabulary for the projects they are undertaking	series circuit parallel circuit names of switches and components input device output device system monitor control program flowchart function innovative design specification design brief	• To understand how to use a variety of mechanical and electrical systems to design and make a finished product. • To use the correct technical vocabulary for the projects they are undertaking, such as series circuit, parallel circuit, names of switches etc. • To know that electrical components can be included in a variety of finished products to make them move, light up, make sounds etc. • To use a range of resources to create a finished product. Assessment task: Children's own evaluation of their finished product. Is it fit for purpose? How did it work? (Photograph of finished product.)	• I can create circuits using electronics kits that employ several components (such as LEDs, resistors, transistors and chips). • I know how to make a complete circuit and name its components. • I have a good understanding of electrical circuits and how to include them in my finished design.

	user purpose		
Frame Structures: Build and construct a bird box/ bug hotel. (Linked to Science) Carry out research into user needs and existing products, using surveys, interviews, questionnaires and web-based resources. Develop a simple design specification to guide the development of their ideas and products, taking account of constraints including time, resources and cost. Generate, develop and model innovative ideas, through discussion, prototypes and annotated sketches. Formulate a clear plan, including a step-by-step list of what needs to be done and lists of resources to be used. Competently select from and use appropriate tools to accurately measure, mark out, cut, shape and join construction materials to make frameworks. Use finishing and decorative techniques suitable for the product they are designing and making. Investigate and evaluate a range of existing frame structures. Critically evaluate their products against their design specification,	Hacksaw Card Strengthened 45 degree angle Vice Marking Sanding Pyramid	• Cut wood safely by using a vice that will fasten it tight to the table. • Strengthen corners of square frame with card triangles on both sides. • Use 45-degree angle cutter for exact fit. • Think about the size of the bird who will be using the bird box when designing the finished produce. • Wooden products need sanding to provide a safe and well-made finish. Assessment task: Children's own evaluation of their finished product. Is it fit for purpose? How did it work? (Photograph of finished product.)	• **Make a wooden box like structure for a bird box or hotel.** • Develop a range of practical skills to create products (such as cutting, nailing, gluing with glue gun, filling and sanding). • Hide joints to improve the look of a product. • Make sure their measurements are precise and accurate to make the wooden pyramid frame structure. • Ensure their product is strong through effective strengthening techniques. • Understand how to refine and finish appropriate materials with items such as sandpaper.

intended user and purpose, identifying strengths and areas for development, and carrying out appropriate tests. Research key events and individuals relevant to frame structures. Technical knowledge and understanding Understand how to strengthen, stiffen and reinforce 3-D frameworks. Know and use technical vocabulary relevant to the project.			
Textiles: **Design and make a Christmas Decoration.** Generate innovative ideas by carrying out research including surveys, interviews and questionnaires. Develop, model and communicate ideas through talking, drawing, templates, mock-ups and prototypes and, where appropriate, computer aided design. Design purposeful, functional, appealing products for the intended user that are fit for purpose based on a simple design specification. Produce detailed lists of equipment and fabrics relevant to their tasks. Formulate step-by-step plans and, if appropriate, allocate tasks within a team.	Cross stitch Running Stitch Seam Allowance Template Mock Up Swatches Tacking Wadding Hem	• Running stitch is best used for attaching decoration • When joining fabrics together, could use the blanket stitch, zig-zag stitch or blind stitch. • Tacking is a temporary stitch which holds material in place until it can be stitched permanently. • A seam allowance is the area between the fabric edge and the stitching line on two pieces of material being sewn together. • Wadding is the padding or insulation between materials. Assessment task: Children's own evaluation of their finished product. Is it fit for purpose? How did it work? (Photograph of finished product.)	• **Make a Christmas Decoration.** • Consider how would make the product attractive and strong. • Use a range of stitching techniques (such as back stitch for seams and running stitch to attach decoration). • Cut materials with precision and refine the finish with appropriate tools. • Create an animal creature that employs a seam allowance. • Think about how the product would be sold. • Use the qualities of materials to create suitable visual and tactile effects in the finish and decoration.

Select from and use a range of tools and equipment to make products that are accurately assembled and well finished. Work within the constraints of time, resources and cost. Investigate and analyse textile products linked to their final product. Compare the final product to the original design specification. Test products with intended user and critically evaluate the quality of the design, manufacture, functionality and fitness for purpose. Consider the views of others to improve their work. Technical knowledge and understanding A 3-D textile product can be made from a combination of accurately made pattern pieces, fabric shapes and different fabrics. Fabrics can be strengthened, stiffened and reinforced where appropriate.			
Fair Trade and Farming **Food:** **Design and make a healthy soup.** Have knowledge and understanding about food hygiene, nutrition, healthy eating and a varied diet. Be able to use appropriate equipment and utensils, and apply a range of techniques for measuring	Food Fat Sugar Carbohydrate Protein Vitamins Nutrients Nutrition Healthy Varied	• Practise techniques following a basic recipe to prepare and cook a savoury food product. • Ask questions about which ingredients could be changed or added in a basic recipe such as types of flour, seeds, garlic, vegetables. • Consider texture, taste, appearance and smell.	• know about other conditions that may affect food availability • know how food is processed into ingredients that can be eaten or used in cooking • know that different food and drink contain different substances – nutrients, water and fibre – that are needed for health

out, preparing and combining ingredients. Generate innovative ideas through research and discussion with peers and adults to develop a design brief and criteria for a design specification. Write a step-by-step recipe, including a list of ingredients, equipment and utensils Select and use appropriate utensils and equipment accurately to measure and combine appropriate ingredients. Make, decorate and present the food product appropriately for the intended user and purpose. Evaluate the final product with reference back to the design brief and design specification, taking into account the views of others when identifying improvements.	Gluten Dairy Allergy intolerance Savoury Source Seasonality	Assessment task: Children's own evaluation of their finished product. Is it fit for purpose? How did it work? (Photograph of finished product.)	
Mechanism: **Architecture through the ages:** **Pulleys and Gears** Generate innovative ideas by carrying out research using surveys, interviews, questionnaires and web-based resources. Develop a simple design specification to guide their thinking. Develop and communicate ideas through discussion, annotated drawings, exploded drawings and drawings from different views. Produce detailed lists of tools, equipment and materials. Formulate step-by-step plans and, if appropriate, allocate tasks within a team. Select from and use a range of tools and equipment to make products that	Temporary joins Permanent joins Rotation Spindle Drive shaft Axle Drive Belt Pulley wheel Motor Horizontal Vertical Electrical circuit Carousel	- Pulley systems are made from 2 pulley wheels attached to a drive shaft with a drive belt joining them. - A drive belt (elastic band) pulls on a pulley wheel to make it turn. - If you twist the drive belt, each pulley wheel will spin in an opposite direction to the other. - To change the speed of the turn, change the size of the pulley wheel. Assessment task: Children's own evaluation of their finished product. Is it fit for purpose? How did it work? (Photograph of finished product.)	**Design and make a moving mechanism linked to The Clock Works (English novel)** - Develop a rotary motion using a motor, pulley wheels, a drive belt and a drive shaft. - Use innovative combinations of electrical and mechanics in their product design; for example horizontal rotation. - Use different kinds of circuit and incorporate a switch in their product. - Refine their product and mechanism throughout the build process.

that are accurately assembled and well finished. Work within the constraints of time, resources and cost. Compare the final product to the original design specification. Test products with intended user and critically evaluate the quality of the design, manufacture, functionality and fitness for purpose. Consider the views of others to improve their work. Investigate famous manufacturing and engineering companies relevant to the project. • Understand that mechanical and electrical systems have an input, process and an output. • Understand how gears and pulleys can be used to speed up, slow down or change the direction of movement. • Know and use technical vocabulary relevant to the project. *how mechanical systems such as cams or pulleys or gears create movement			

Design Technology Project Skills			
Developing, Planning and Communicating Ideas	**Working with tools, materials and equipment to make products**	**Evaluate and improve processes and products**	**Inspiration from design in history**
• Use a range of information to inform their design including ***disassembling products***.	• Use a range of tools and materials precisely.	• Test and evaluate their final product's appearance and	• Combine elements of design from a range of inspirational designers throughout

• Take the users view into account and use market research to inform their designs. • Follow their design and adapt where necessary; identify good points and draw backs. • Produce detailed step by step plans.	• Change the way they're working if needed. • Ensure products have a high quality finish. • Make prototypes first, making constant refinements through ***focused practical tasks***	function against agreed design criteria. • Assess is it fit for purpose. • Identify improvements to be made.	history, giving reasons for choices. • Create innovative designs that improve upon existing products. • Evaluate the design of products so as to suggest improvements to the user experience.