



## Lacewood Primary School

### Knowledge and Skills Progression Plan for Design Technology

#### Golden Threads

Under the 'Golden Threads' Design Technology learning is organised into areas which we feel will provide coherence throughout the curriculum and support children in building knowledge and making learning stick.

Textiles
Structures
Mechanisms
Electrical Systems (KS2)
*Food

#### EYFS Design Technology - Knowledge and Understanding and Composite Questions for Exploration

##### Knowledge and Understanding Core Strands from the Curriculum

##### FS1

To create imaginative and complex "small worlds" selecting and placing objects to represent different features.

##### Composite Questions/Lines of Enquiry

How can I create shapes to represent an enclosure/place with different materials (mark making, block play, malleable materials etc.)?  
 What different shapes and forms can I create using a range of malleable materials?  
 How can I make use of the materials around me to support my imaginative play, storytelling and role play?

##### FS2

To build on prior learning and refine and develop their use of materials and tools – (link to UTW NW), transient art, collage and sculpture etc.

##### Composite Questions/Lines of Enquiry

What are the basic techniques of sculpture/3d design and building?  
 What different ways can I find to create images and representations of stories, characters and the things I have learnt about using loose parts and materials?  
 How can I improve my technique and tool use when creating representations of pictures, patterns, shape and form?

##### Knowledge and Understanding Core Strands from the Curriculum

To understand the use of basic creative tools and techniques for different materials

##### Composite Questions/Lines of Enquiry

How can this paper/card/fabric/material be folded, scrunched, cut, manipulated to create different shapes?  
 What different ways can I find to fix materials together?  
 Which material is the best to suit a particular purpose? (with support)

To understand how artists communicate working theories, feelings and understandings through the arts .to create representations of imaginary and real-life ideas, events, people and objects.

##### Composite Questions/Lines of Enquiry

How can I use the materials available to me to show what I have learnt about a particular technique or the techniques of a particular artist?  
 What do I notice, think, feel about the ideas, structures, models and objects created by different people?

##### Knowledge and Understanding Core Strands from the Curriculum

N/A

To use their increasing understanding of a variety of techniques, materials, tools and processes to develop their own ideas and communicate their understanding.





##### Composite Questions/Lines of Enquiry


How can I utilise my inspiration from the works of others in my own designs and creations?  
 How many different uses can I find and explore for a particular material?

		What processes, materials and tools will help me to achieve a desired result?
<b>End Point FS1</b>		<b>End Point FS2</b>
<p>I can create simple 3-dimensional shapes, structures and models using a variety of materials.</p> <p>I know basic methods to connect, build and balance different materials.</p> <p>I can decide which material or tool will best fulfil the purpose of my project.</p> <p>I can create an enclosure using a range of materials including loose parts, card/paper and malleable materials.</p> <p>I can create an enclosure or structure to represent a feature of my imaginative play. E.g. a castle for a dragon, a tower for a Princess etc.</p> <p>I can create a sculptured form from a malleable material.</p>		<p>I can find out and discover different uses and properties of a wide range of materials and loose parts.</p> <p>I can design and make a model or structure in 3-dimensional form using the range of materials available to me.</p> <p>I can adapt, extend or amend my methods based on my prior learning or from what I find out through my explorations.</p> <p>I can make decisions about the best material, process and tools to use for a specific purpose.</p> <p>I know the techniques and materials of famous artists such as Goldsworthy and can explore and utilise this in my own creations and designs.</p> <p>I know how some architects, sculptors (Goldsworthy, Moore etc.) express their feelings and ideas.</p> <p>I know different techniques for building, joining and assembling materials such as cardboard, paper and natural materials.</p> <p>I know how to create simple moving parts on a model or image.</p> <p>I can take inspiration from the ideas of others to create my own representation of imaginary and real-life events, people and objects.</p> <p>I can use what I have learnt to design, plan and create my own representations in 3-dimensional form.</p> <p>I can show and describe the improvement in my work from the beginning of the year to the end.</p> <p>I can describe the processes I have used/will use to develop my ideas.</p> <p>I can independently create 3-dimensional shapes and forms for a specific purpose with an increasingly wide range of materials.</p>
<b>EYFS- ELG</b>		
<ul style="list-style-type: none"> <li>• Safely use and explore a variety of materials, tools and techniques experimenting with colour, design, texture, form and function.</li> <li>• Share their creations, explaining the processes they have used.</li> <li>• Make use of props and materials when role playing characters in narratives and stories.</li> </ul>		
<b>Design Technology NC</b>	<b>Key Stage 1 National Curriculum Expectations</b>	<b>Key Stage 2 National Curriculum Expectations</b>
	<p>Through a variety of creative and practical activities, pupils should be taught the knowledge, understanding and skills needed to engage in an iterative process of designing and making. They should work in a range of relevant contexts [for example, the home and school, gardens and playgrounds, the local community, industry and the wider environment].</p> <p>When designing and making, pupils should be taught to:</p> <p><b>Design</b></p> <ul style="list-style-type: none"> <li>• Design purposeful, functional, appealing products for themselves and other users based on design criteria</li> <li>• Generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and,</li> </ul>	<p>Through a variety of creative and practical activities, pupils should be taught the knowledge, understanding and skills needed to engage in an iterative process of designing and making. They should work in a range of relevant contexts [for example, the home, school, leisure, culture, enterprise, industry and the wider environment].</p> <p>When designing and making, pupils should be taught to:</p> <p><b>Design</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> </ul> <p><b>Make</b></p> <ul style="list-style-type: none"> <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> </ul>

	<p>where appropriate, information and communication technology</p> <p><b>Make</b></p> <ul style="list-style-type: none"> <li>Select from and use 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> </ul> <p><b>Evaluate</b></p> <ul style="list-style-type: none"> <li>Explore and evaluate a range of existing products</li> <li>Evaluate their ideas and products against design criteria</li> </ul> <p><b>Technical knowledge</b></p> <ul style="list-style-type: none"> <li>Build structures, exploring how they can be made stronger, stiffer and more stable</li> <li>Explore and use mechanisms [for example, levers, sliders, wheels and axles] in their products</li> </ul>	<ul style="list-style-type: none"> <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> </ul> <p><b>Evaluate</b></p> <ul style="list-style-type: none"> <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> </ul> <p><b>Technical knowledge</b></p> <ul style="list-style-type: none"> <li>Apply their understanding of how to strengthen, stiffen and reinforce more complex structures</li> <li>Understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages]</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>
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**Using Our Lacewood Learning Buddies in Design and Technology**

	<ul style="list-style-type: none"> <li>Exploring and practising using the creative tools and techniques of different materials.</li> <li>Being absorbed in a project from the research, plan/design and making stage right through to the evaluation stage</li> <li>Planning and thinking through a process to complete a project with a purpose.</li> <li>Evaluating processes and adapting techniques to make improvements to their work.</li> <li>Having opportunities to try out a range of tools, techniques and processes that involve an element of risk taking and create a sense of awe.</li> </ul>
	<ul style="list-style-type: none"> <li>Constantly and consistently reviewing and evaluating their work, identifying what went well and what they would do differently next time.</li> <li>Building on prior knowledge and skills as the golden threads are revisited</li> <li>Using what they have learnt to make adjustments and adaptations accordingly</li> <li>Creating a sense of pride in the creation of an end product as a culmination of all their research, planning, designing and making e.g. a hand puppet, a working lighthouse, a healthy meal etc.</li> </ul>
	<ul style="list-style-type: none"> <li>Opportunities to listen to the ideas of others and to explain their own ideas to help others improve their work.</li> <li>Collaboration and negotiation to create a shared product</li> <li>The chance to learn from mistakes and build resilience by overcoming problems and difficulties</li> <li>Excitement and awe about creating a product that utilises different and enticing tools and techniques</li> </ul>
	<ul style="list-style-type: none"> <li>The opportunity to see a process through step-by-step from beginning to end</li> <li>Developing their understanding through questioning, observation and evaluation</li> <li>Looking for patterns and connections – across the golden threads, through previous projects and across curriculum subjects</li> <li>Breaking projects down into small steps and focussing on one step at a time</li> </ul>

Key themes		Y1	Y2	Y3	Y4	Y5	Y6
		Textiles: Puppets	Structures: Baby bears Chair	Electrical Systems: Electric poster	Electrical Systems: Torches	Electrical Systems: Lighthouses	Structure: Playgrounds
		Food: Fruit and Vegetables	Mechanisms: Fairground wheel	Textiles: Egyptian Collars	Structures: Pavillions	Food: What could be healthier?	Food: Come dine with me
		Mechanisms: Making a moving storybook	Food: A balanced diet	Food: Eating Seasonally	Food: Adapting a recipe	Mechanical Systems: Making a pop-up book	Textiles: Cushions
		Textiles - Puppets		Textiles – Egyptian Collars			Textiles - Cushions
Textiles 	Key Questions	<p>What do we mean by joining technique?            What are safety pins?            Can you find the stapler and staples?            Can you find the glue?            Which method of joining fabric needs drying time?            Why do we need to be careful when pinning and stapling?            What is a template?            Which words would you use to describe fabric?            Why do you need to draw a design idea first?            Which joining technique would be best to use for a pouch to hold marbles?</p>		<p>What do we mean by joining technique?            What is a template?            What is applique?            What is a running stitch?            What is a cross stitch?            What does synthetic mean?            What does unique mean?            What is 'pinking'?            What do we mean by 'embellish'?            Why are material properties useful to know when designing a product?</p>			<p>What do we mean by an objects form?            What is fabric?            What is a template?            What are the properties of fabric?            What do we call a material that does not allow water to pass through it?            What do you need to be when measuring?            What do we mean by a target audience?            What do we mean by target client or customer?            What do we call the join where 2 pieces of fabric connect?            What advice would you give to someone making a Cushion?</p>
	Design	<ul style="list-style-type: none"> <li>Using a template to create a design for a puppet</li> </ul>		<ul style="list-style-type: none"> <li>Designing and making a template and applying individual design criteria.</li> </ul>			<ul style="list-style-type: none"> <li>Designing a cushion in accordance to specification linked to set of design criteria to fit a specific theme</li> <li>Annotating designs</li> </ul>

	<b>Make</b>	<ul style="list-style-type: none"> <li>• Cutting fabric neatly with scissors</li> <li>• Using joining methods to decorate a puppet</li> <li>• Sequencing steps for construction</li> </ul>		<ul style="list-style-type: none"> <li>• Following design criteria to create an Egyptian collar.</li> <li>• Selecting and cutting fabrics with ease using fabric scissors.</li> <li>• Threading needles with greater independence.</li> <li>• Tying knots with greater independence.</li> <li>• Sewing cross stitch to join fabric.</li> <li>• Decorating fabric using appliqué.</li> <li>• Completing design ideas with embellishing the collars based on design ideas (Egyptian collars).</li> </ul>			<ul style="list-style-type: none"> <li>• Using a template when pinning panels onto fabric</li> <li>• Marking and cutting fabric accurately, in accordance with a design</li> <li>• Sewing a strong running stitch, making small, neat stitches and following the edge</li> <li>• Tying strong knots</li> <li>• Decorating a cushion - attaching objects using thread and adding a secure fastening</li> <li>• Learning different decorative stitches</li> <li>• Sewing accurately with even regularity of stitches</li> </ul>
	<b>Evaluate</b>	<ul style="list-style-type: none"> <li>• Reflecting on a finished product, explaining likes and dislikes</li> </ul>		<ul style="list-style-type: none"> <li>• Evaluating an end product and thinking of other ways in which to create similar items</li> </ul>			<ul style="list-style-type: none"> <li>• Evaluating work continually as it is created.</li> </ul>
	<b>Textiles Knowledge</b>						
		<ul style="list-style-type: none"> <li>• To know that 'joining technique' means connecting two pieces of material together</li> <li>• To know that there are various temporary methods of joining fabric by using</li> </ul>		<ul style="list-style-type: none"> <li>• To know that applique is a way of mending or decorating a textile by applying smaller pieces of fabric to larger pieces.</li> <li>• To know that when two edges of fabric have been joined together it is called a seam.</li> </ul>			<ul style="list-style-type: none"> <li>• To understand that it is important to design clothing with the client/target customer in mind</li> <li>• To know that using a template (or clothing pattern) helps to accurately mark out a</li> </ul>


	<p>staples, glue or pins</p> <ul style="list-style-type: none"> <li>• To understand that different techniques for joining materials can be used for different purposes</li> <li>• To understand that a template (or fabric pattern) is used to cut out the same shape multiple times</li> <li>• To know that drawing a design idea is useful to see how an idea will look</li> </ul> <p><b><u>Vocabulary:</u></b></p> <ul style="list-style-type: none"> <li>• Decorate</li> <li>• Design</li> <li>• Fabric</li> <li>• Glue</li> <li>• Model</li> <li>• Hand puppet</li> <li>• Safety pin</li> <li>• Staple</li> <li>• Stencil</li> <li>• Template</li> </ul>		<ul style="list-style-type: none"> <li>• To know that it is important to leave space on the fabric for the seam.</li> <li>• To understand that some products are turned inside out after sewing so the stitching is hidden.</li> </ul> <p><b><u>Vocabulary:</u></b></p> <ul style="list-style-type: none"> <li>• appliqué</li> <li>• cross-stitch</li> <li>• fabric</li> <li>• running stitch</li> <li>• patch</li> <li>• thread</li> <li>• embellish</li> <li>• template</li> <li>• cotton</li> <li>• silk</li> <li>• polyester</li> <li>• wrinkle</li> <li>• tear</li> <li>• water-resistant</li> <li>• breathable</li> <li>• matt</li> <li>• shiny</li> <li>• biodegrade</li> <li>• pinking</li> </ul>			<p>design on fabric</p> <ul style="list-style-type: none"> <li>• To understand the importance of consistently sized stitches.</li> </ul> <p><b><u>Vocabulary</u></b></p> <ul style="list-style-type: none"> <li>• Adapt</li> <li>• Accurate</li> <li>• Annotate</li> <li>• Design</li> <li>• Design criteria</li> <li>• Detail</li> <li>• Fabric</li> <li>• Fastening</li> <li>• Knot</li> <li>• Properties</li> <li>• Running-stitch</li> <li>• Seam</li> <li>• Sew</li> <li>• Shape</li> <li>• Target audience</li> <li>• Target customer</li> <li>• Template</li> <li>• Thread</li> <li>• Unique</li> <li>• Waterproof</li> </ul>

<b>Cooking and nutrition</b>	<b>Fruit and Vegetables</b>	<b>A balanced diet</b>	<b>Eating seasonally</b>	<b>Adapting a recipe</b>	<b>What could be healthier?</b>	<b>Come dine with me</b>
 <p><b>Key Questions</b></p>	<p>Which foods are vegetables? Which food is a fruit? What is a blender? How do we identify a fruit? Where do tomatoes grow? Where do potatoes grow? What part of the spinach plant do we eat? Which part of the cucumber plant do we eat? Why is a carrot a vegetable? How do you make a banana smoothie?</p>	<p>What is a blender? How do we identify a fruit? What do we mean by diet? What appliance is used to keep food cool and fresh? What are nutrients? What information is on food packaging? Why is it important to eat a balanced diet? What are ingredients? Where does sugar come from?</p>	<p>What do we mean by diet? What are nutrients? What do we call the cooking instructions to make a dish? What affects whether fruit and vegetables grow? What do we mean be seasonal food? When a food is 'in season' what do we mean? What do we call it when a food is brought to our country? What do we call it when a food is sent to another country? How can you keep safe when cooking in the kitchen?</p>	<p>What do we call the cooking instructions to make a dish? When a food is 'in season' what do we mean? In a recipe, what is the method? What do we mean by quantity? Where would you need to put baked biscuits to cool? What must you use to remove hot food from the oven? What do we mean by a budget? What is the technique for combining sugar and butter called? Why do we sieve flour? How could you improve this recipe?</p>	<p>Which meat comes from a cow? What do we call the cooking instructions to make a dish? What does a balanced diet consist of? In a recipe, what is the method? What is cross-contamination? Why does a farm need land and water? What do we mean by research? What do we mean by welfare? What is the 'farm to fork' process?</p>	<p>What is cross-contamination? When does cross contamination occur? What do we mean by flavour? What does the word 'reared' mean in farming? In a recipe, what is the method? What is a national dish? What is a processed food? Why do fruits and vegetables need to be washed? What do you need to remember when slicing fruit and vegetables? What is a healthy diet?</p>

	<b>Design</b>	<ul style="list-style-type: none"> <li>• Designing smoothie carton packaging by-hand or on ICT software</li> </ul>	<ul style="list-style-type: none"> <li>• Designing a healthy wrap based on a food combination which work well together</li> </ul>	<ul style="list-style-type: none"> <li>• Creating a healthy and nutritious recipe for a savoury tart using seasonal ingredients, considering the taste, texture, smell and appearance of the dish</li> </ul>	<ul style="list-style-type: none"> <li>• Designing a biscuit within a given budget, drawing upon previous taste testing</li> </ul>	<ul style="list-style-type: none"> <li>• Adapting a traditional recipe, understanding that the nutritional value of a recipe alters if you remove, substitute or add additional ingredients</li> <li>• Writing an amended method for a recipe to incorporate the relevant changes to ingredients</li> <li>• Designing appealing packaging to reflect a recipe</li> </ul>	<ul style="list-style-type: none"> <li>• Writing a recipe, explaining the key steps, method and ingredients</li> <li>• Including facts and drawings from research undertaken</li> </ul>
	<b>Make</b>	<ul style="list-style-type: none"> <li>• Chopping fruit and vegetables safely to make a smoothie</li> <li>• Identifying if a food is a fruit or a vegetable</li> <li>• Learning where and how fruits and vegetables grow</li> </ul>	<ul style="list-style-type: none"> <li>• Slicing food safely using the bridge or claw grip</li> <li>• Constructing a wrap that meets a design brief</li> </ul>	<ul style="list-style-type: none"> <li>• Knowing how to prepare themselves and a work space to cook safely in, learning the basic rules to avoid food contamination</li> <li>• Following the instructions within a recipe</li> </ul>	<ul style="list-style-type: none"> <li>• Following a baking recipe</li> <li>• Cooking safely, following basic hygiene rules</li> <li>• Adapting a recipe</li> </ul>	<ul style="list-style-type: none"> <li>• Cutting and preparing vegetables safely</li> <li>• Using equipment safely, including knives, hot pans and hobs</li> <li>• Knowing how to avoid cross-contamination</li> <li>• Following a step by step method carefully to make a recipe</li> </ul>	<ul style="list-style-type: none"> <li>• Following a recipe, including using the correct quantities of each ingredient</li> <li>• Adapting a recipe based on research</li> <li>• Working to a given timescale</li> <li>• Working safely and hygienically with independence</li> </ul>

	<b>Evaluate</b>	<ul style="list-style-type: none"> <li>• Tasting and evaluating different food combinations</li> <li>• Describing appearance, smell and taste</li> <li>• Suggesting information to be included on packaging</li> </ul>	<ul style="list-style-type: none"> <li>• Describing the taste, texture and smell of fruit and vegetables</li> <li>• Taste testing food combinations and final products</li> <li>• Describing the information that should be included on a label</li> <li>• Evaluating which grip was most effective</li> </ul>	<ul style="list-style-type: none"> <li>• Establishing and using design criteria to help test and review dishes</li> <li>• Describing the benefits of seasonal fruits and vegetables and the impact on the environment</li> <li>• Suggesting points for improvement when making a seasonal tart.</li> </ul>	<ul style="list-style-type: none"> <li>• Evaluating a recipe, considering: taste, smell, texture and appearance</li> <li>• Describing the impact of the budget on the selection of ingredients</li> <li>• Evaluating and comparing a range of products</li> <li>• Suggesting modifications</li> </ul>	<ul style="list-style-type: none"> <li>• Identifying the nutritional differences between different products and recipes</li> <li>• Identifying and describing healthy benefits of food groups</li> </ul>	<ul style="list-style-type: none"> <li>• Evaluating a recipe, considering: taste, smell, texture and origin of the food group</li> <li>• Taste testing and scoring final products</li> <li>• Suggesting and writing up points of improvements in productions</li> <li>• Evaluating health and safety in production to minimise cross contamination</li> </ul>
<b>Cooking and Nutrition Knowledge</b>							

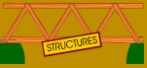
	<ul style="list-style-type: none"> <li>• Understanding the difference between fruits and vegetables</li> <li>• To understand that some foods typically known as vegetables are actually fruits (e.g. cucumber)</li> <li>• To know that a blender is a machine which mixes ingredients together into a smooth liquid</li> <li>• To know that a fruit has seeds and a vegetable does not</li> <li>• To know that fruits grow on trees or vines</li> <li>• To know that vegetables can grow either above or below ground</li> <li>• To know that vegetables can come from different parts of the plant (e.g. roots: potatoes, leaves: lettuce, fruit: cucumber)</li> </ul> <p><b><u>Vocabulary:</u></b></p> <ul style="list-style-type: none"> <li>• Blender</li> <li>• Carton</li> <li>• Fruit</li> <li>• Healthy</li> <li>• Ingredients</li> <li>• Peel</li> <li>• Peeler</li> <li>• Recipe</li> <li>• Slice</li> <li>• Smoothie</li> <li>• Stencil</li> <li>• Template</li> </ul>	<ul style="list-style-type: none"> <li>• To know that ‘diet’ means the food and drink that a person or animal usually eats</li> <li>• To understand what makes a balanced diet</li> <li>• To know where to find the nutritional information on packaging</li> <li>• To know that the five main food groups are: Carbohydrates, fruits and vegetables, protein, dairy and foods high in fat and sugar</li> <li>• To understand that I should eat a range of different foods from each food group, and roughly how much of each food group</li> <li>• To know that nutrients are substances in food that all living things need to make energy, grow and develop</li> <li>• To know that ‘ingredients’ means the items in a mixture or recipe</li> <li>• To know that I should only have a maximum of five teaspoons of sugar a day to stay healthy</li> <li>• To know that many food and drinks we do</li> </ul>	<ul style="list-style-type: none"> <li>• To know that not all fruits and vegetables can be grown in the UK</li> <li>• To know that climate affects food growth</li> <li>• To know that vegetables and fruit grow in certain seasons</li> <li>• To know that cooking instructions are known as a ‘recipe’</li> <li>• To know that imported food is food which has been brought into the country</li> <li>• To know that exported food is food which has been sent to another country.</li> <li>• To understand that imported foods travel from far away and this can negatively impact the environment</li> <li>• To know that each fruit and vegetable gives us nutritional benefits because they contain vitamins, minerals and fibre</li> <li>• To understand that vitamins, minerals and fibre are important for energy, growth and maintaining health</li> <li>• To know safety rules for using, storing and cleaning a knife safely</li> <li>• To know that similar coloured fruits and</li> </ul>	<ul style="list-style-type: none"> <li>• To know that the amount of an ingredient in a recipe is known as the ‘quantity’</li> <li>• To know that it is important to use oven gloves when removing hot food from an oven</li> <li>• To know the following cooking techniques: sieving, creaming, rubbing method, cooling</li> <li>• To understand the importance of budgeting while planning ingredients for biscuits</li> </ul> <p><b><u>Vocabulary:</u></b></p> <ul style="list-style-type: none"> <li>• Adapt</li> <li>• Budget</li> <li>• Cooling rack</li> <li>• Creaming</li> <li>• Equipment</li> <li>• Evaluation</li> <li>• Flavour</li> <li>• Ingredients</li> <li>• Method</li> <li>• Net</li> <li>• Packaging</li> <li>• Prototype</li> <li>• Quantity</li> <li>• Recipe</li> <li>• Rubbing</li> <li>• Sieving</li> <li>• Target audience</li> <li>• Unit of measurement</li> <li>• Utilities</li> </ul>	<ul style="list-style-type: none"> <li>• To understand where meat comes from - learning that beef is from cattle and how beef is reared and processed, including key welfare issues</li> <li>• To know that I can adapt a recipe to make it healthier by substituting ingredients</li> <li>• To know that I can use a nutritional calculator to see how healthy a food option is</li> <li>• To understand that ‘cross-contamination’ means that bacteria and germs have been passed onto ready-to-eat foods and it happens when these foods mix with raw meat or unclean objects</li> </ul> <p><b><u>Vocabulary:</u></b></p> <ul style="list-style-type: none"> <li>• Beef</li> <li>• Cross-contamination</li> <li>• Diet</li> <li>• Ethical issues</li> <li>• Farm</li> <li>• Healthy</li> <li>• Ingredients</li> <li>• Method</li> <li>• Nutrients</li> <li>• Packaging</li> <li>• Reared</li> <li>• Recipe</li> <li>• Research</li> <li>• Substitute</li> <li>• Supermarket</li> <li>• Vegan</li> </ul>	<ul style="list-style-type: none"> <li>• To know that ‘flavour’ is how a food or drink tastes</li> <li>• To know that many countries have ‘national dishes’ which are recipes associated with that country</li> <li>• To know that ‘processed food’ means food that has been put through multiple changes in a factory</li> <li>• To understand that it is important to wash fruit and vegetables before eating to remove any dirt and insecticides</li> <li>• To understand what happens to a certain food before it appears on the supermarket shelf (Farm to Fork)</li> </ul> <p><b><u>Vocabulary:</u></b></p> <ul style="list-style-type: none"> <li>• Accompaniment</li> <li>• Collaboration</li> <li>• Cookbook</li> <li>• Cross-contamination</li> <li>• Equipment</li> <li>• Farm</li> <li>• Flavour</li> <li>• Illustration</li> <li>• Imperative-verb</li> <li>• Ingredients</li> <li>• Method</li> <li>• Nationality</li> <li>• Preparation</li> <li>• Processed</li> <li>• Reared</li> <li>• Recipe</li> <li>• Research</li> <li>• Storyboard</li> <li>• Target audience</li> </ul>
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	<ul style="list-style-type: none"> <li>● Vegetable</li> </ul>	<p>not expect to contain sugar do; we call these 'hidden sugars'</p> <p><b>Vocabulary:</b></p> <ul style="list-style-type: none"> <li>● Alternative</li> <li>● Diet</li> <li>● Balanced diet</li> <li>● Evaluation</li> <li>● Expensive</li> <li>● Healthy</li> <li>● Ingredients</li> <li>● Nutrients</li> <li>● Packaging</li> <li>● Refrigerator</li> <li>● Sugar</li> <li>● Substitute</li> </ul>	<p>vegetables often have similar nutritional benefits</p> <p><b>Vocabulary:</b></p> <ul style="list-style-type: none"> <li>● Climate</li> <li>● Dry climate</li> <li>● Exported</li> <li>● Imported</li> <li>● Mediterranean climate</li> <li>● Nationality</li> <li>● Nutrients</li> <li>● Polar climate</li> <li>● Recipe</li> <li>● Seasonal food</li> <li>● Seasons</li> <li>● Temperate climate</li> <li>● Tropical climate</li> </ul>		<ul style="list-style-type: none"> <li>● Vegetarian</li> <li>● Welfare</li> </ul>	<ul style="list-style-type: none"> <li>● Top tips</li> <li>● Unit of measurement</li> </ul>
<p><b>Mechanisms / Mechanical systems</b></p> 	<p><b>Mechanisms: Making a moving storybook</b></p> <p><b>Key Questions</b></p> <p>What is design criteria? Why is important to plan a design before making it? What is a mechanism? What does a slider mechanism do? What are the main parts of a slider mechanism? What are the different ways things can move? What does the slider mechanism in your storybook do?</p>	<p><b>Mechanisms: Fairground wheel</b></p> <p>What is a mechanism? What is a structure? How does the Ferris wheel spin? What does the word stable mean? What does the word strong mean? What does the word weak mean? Which materials are stiff? Which materials are flexible? Which materials are strong? What are the main parts of a Ferris wheel?</p>			<p><b>Mechanical Systems: Making a pop-up book</b></p> <p>What is a design brief? What is a list of design criteria? What is a mechanism? What movement do sliders create? What is an input? What is an output? What is a prototype? What is a template? What is an exploded diagram?</p>	

	<b>Design</b>	<ul style="list-style-type: none"> <li>• Explaining how to adapt mechanisms, using bridges or guides to control the movement</li> <li>• Designing a moving story book for a given audience</li> </ul>	<ul style="list-style-type: none"> <li>• Selecting a suitable linkage system to produce the desired motions</li> <li>• Designing a wheel</li> <li>• Selecting appropriate materials based on their properties</li> </ul>			<ul style="list-style-type: none"> <li>• Designing a pop-up book which uses a mixture of structures and mechanisms</li> <li>• Naming each mechanism, input and output accurately</li> <li>• Storyboarding ideas for a book</li> </ul>	
	<b>Make</b>	<ul style="list-style-type: none"> <li>• Following a design to create moving models that use levers and sliders</li> </ul>	<ul style="list-style-type: none"> <li>• Selecting materials according to their characteristics</li> <li>• Following a design brief</li> </ul>			<ul style="list-style-type: none"> <li>• Following a design brief to make a pop-up book, neatly and with focus on accuracy</li> <li>• Making mechanisms and/or structures using sliders, pivots and folds to produce movement</li> <li>• Using layers and spacers to hide the workings of mechanical parts for an aesthetically pleasing result</li> </ul>	
	<b>Evaluate</b>	<ul style="list-style-type: none"> <li>• Testing a finished product, seeing whether it moves as planned and if not, explaining why and how it can be fixed</li> <li>• Reviewing the success of a product by testing it with its intended audience</li> </ul>	<ul style="list-style-type: none"> <li>• Evaluating different designs</li> <li>• Testing and adapting a design</li> </ul>			<ul style="list-style-type: none"> <li>• Evaluating the work of others and receiving feedback on own work</li> <li>• Suggesting points for improvement</li> </ul>	

**Mechanisms / Mechanical systems Knowledge**


	<ul style="list-style-type: none"> <li>• To know that a mechanism is the parts of an object that move together</li> <li>• To know that a slider mechanism moves an object from side to side</li> <li>• To know that a slider mechanism has a slider, slots, guides and an object</li> <li>• To know that bridges and guides are bits of card that purposefully restrict the movement of the slider</li> </ul> <p><b>Additional</b></p> <ul style="list-style-type: none"> <li>• To know that in Design and technology we call a plan a 'design'</li> </ul> <p><b>Vocabulary:</b></p> <ul style="list-style-type: none"> <li>• Assemble</li> <li>• Design</li> <li>• Evaluation</li> <li>• Mechanism</li> <li>• Model</li> <li>• Sliders</li> <li>• Stencil</li> <li>• Target audience</li> <li>• Template</li> <li>• Test</li> </ul>	<ul style="list-style-type: none"> <li>• To know that different materials have different properties and are therefore suitable for different uses</li> </ul> <p><b>Additional</b></p> <ul style="list-style-type: none"> <li>• To know the features of a ferris wheel include the wheel, frame, pods, a base an axle and an axle holder</li> <li>• To know that it is important to test my design as I go along so that I can solve any problems that may occur</li> </ul> <p><b>Vocabulary:</b></p> <ul style="list-style-type: none"> <li>• Axle</li> <li>• Decorate</li> <li>• Evaluation</li> <li>• Ferris wheel</li> <li>• Mechanism</li> <li>• Stable</li> <li>• Strong</li> <li>• Test</li> <li>• Waterproof</li> <li>• Weak</li> </ul>			<ul style="list-style-type: none"> <li>• To know that mechanisms control movement</li> <li>• To understand that mechanisms that can be used to change one kind of motion into another</li> <li>• To understand how to use sliders, pivots and folds to create paper-based Mechanisms</li> </ul> <p><b>Additional</b></p> <ul style="list-style-type: none"> <li>• To know that a design brief is a description of what I am going to design and make</li> <li>• To know that designers often want to hide mechanisms to make a product more aesthetically pleasing</li> </ul> <p><b>Vocabulary:</b></p> <ul style="list-style-type: none"> <li>• Aesthetic</li> <li>• Computer-aided design (CAD)</li> <li>• Caption</li> <li>• Design</li> <li>• Design brief</li> <li>• Design criteria</li> <li>• Exploded-diagram</li> <li>• Function</li> <li>• Input</li> <li>• Linkage</li> <li>• Mechanism</li> <li>• Motion</li> <li>• Output</li> <li>• Pivot</li> </ul>	
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					<ul style="list-style-type: none"> <li>• Prototype</li> <li>• Slider</li> <li>• Structure</li> <li>• Template</li> </ul>		
<b>Structures</b> 			<b>Structures: Baby bear's chair</b>		<b>Structures: Constructing a pavillion</b>		<b>Structures: Playgrounds</b>
	<b>Key Questions</b>		<p>What is a structure?          What is a man-made object?          What is a natural object?          What do we mean by strong?          What do we mean by weak?          What do we mean by stable?          What do we mean by stiff?          What is the function of a chair?          Why is it important to test something?          Which object is the most stable and why?</p>		<p>What is a list of design criteria?          What is aesthetics?          What do you call the material on the outside of structures to add protection or improve its aesthetics?          What is a theme?          What is a pavillion?          What does inspiration mean?          What is a products function?          What does stable mean?          How can you make a structure stronger?          How can I improve a tents stability and aesthetics?</p>		<p>How can you make a structure stronger?          What is a prototype?          What is jelutong?          What are the material properties of softwood (pine)?          What does a plan view look like?          What does to modify mean?          What are the health and safety rules for woodwork tools?          Can you name some wood work tools?</p>
		<b>Design</b>		<ul style="list-style-type: none"> <li>• Generating and communicating ideas using sketching and modelling</li> <li>• Learning about different types of structures, found in the natural world and in everyday objects</li> </ul>		<ul style="list-style-type: none"> <li>• Designing a stable pavillion structure that is aesthetically pleasing and selecting materials to create a desired effect</li> <li>• Building frame structures designed to support weight</li> </ul>	

	<b>Make</b>		<ul style="list-style-type: none"> <li>• Making a structure according to design criteria</li> <li>• Creating joints and structures from paper/card and tape</li> <li>• Building a strong and stiff structure by folding paper</li> </ul>		<ul style="list-style-type: none"> <li>• Creating a range of different shaped frame structures</li> <li>• Making a variety of free standing frame structures of different shapes and sizes</li> <li>• Selecting appropriate materials to build a strong structure and for the cladding</li> <li>• Reinforcing corners to strengthen a structure</li> <li>• Creating a design in accordance with a plan</li> <li>• Learning to create different textural effects with materials</li> </ul>		<ul style="list-style-type: none"> <li>• Building a range of play apparatus structures drawing upon new and prior knowledge of structures</li> <li>• Measuring, marking and cutting wood to create a range of structures</li> <li>• Using a range of materials to reinforce and add decoration to structures</li> </ul>
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	<b>Evaluate</b>		<ul style="list-style-type: none"> <li>• Exploring the features of structures</li> <li>• Comparing the stability of different shapes</li> <li>• Testing the strength of own structures</li> <li>• Identifying the weakest part of a structure</li> <li>• Evaluating the strength, stiffness and stability of own structure</li> </ul>		<ul style="list-style-type: none"> <li>• Evaluating structures made by the class</li> <li>• Describing what characteristics of a design and construction made it the most effective</li> <li>• Considering effective and ineffective designs</li> </ul>		<ul style="list-style-type: none"> <li>• Improving a design plan based on peer evaluation</li> <li>• Testing and adapting a design to improve it as it is developed</li> <li>• Identifying what makes a successful structure</li> </ul>
<b>Structures Knowledge</b>							

		<ul style="list-style-type: none"> <li>• To know that shapes and structures with wide, flat bases or legs are the most stable</li> <li>• To understand that the shape of a structure affects its strength</li> <li>• To know that materials can be manipulated to improve strength and stiffness</li> <li>• To know that a structure is something which has been formed or made from parts</li> <li>• To know that a 'stable' structure is one which is firmly fixed and unlikely to change or move</li> <li>• To know that a 'strong' structure is one which does not break easily</li> <li>• To know that a 'stiff' structure or material is one which does not bend easily</li> </ul> <p><b><u>Additional</u></b></p> <ul style="list-style-type: none"> <li>• To know that natural structures are those found in nature</li> <li>• To know that man-made structures are those made by people</li> </ul>		<ul style="list-style-type: none"> <li>• To understand what a frame structure is</li> <li>• To know that a 'free-standing' structure is one which can stand on its own.</li> </ul> <p><b><u>Additional</u></b></p> <ul style="list-style-type: none"> <li>• To know that a pavilions ia a decorative building or structure for leisure activities</li> <li>• To know that cladding can be applied to structures for different effects.</li> <li>• To know that aesthetics are how a product looks</li> <li>• To know that a product's function means its purpose</li> <li>• To understand that the target audience means the person or group of people a product is designed for</li> <li>• To know that architects consider light, shadow and patterns when designing.</li> </ul> <p><b><u>Vocabulary</u></b></p> <ul style="list-style-type: none"> <li>• Aesthetic</li> <li>• Cladding</li> <li>• Design criteria</li> <li>• Evaluation</li> <li>• Frame structure</li> <li>• Function</li> <li>• Inspiration</li> <li>• Pavilion</li> <li>• Reinforce</li> <li>• Stable</li> <li>• Structure</li> </ul>		<ul style="list-style-type: none"> <li>• To know that structures can be strengthened by manipulating materials and shapes</li> </ul> <p><b><u>Additional</u></b></p> <ul style="list-style-type: none"> <li>• To understand what a 'footprint plan' is</li> <li>• To understand that in the real world, design, can impact users in positive and negative ways</li> <li>• To know that a prototype is a cheap model to test a design idea</li> </ul> <p><b><u>Vocabulary:</u></b></p> <ul style="list-style-type: none"> <li>• Adapt</li> <li>• Apparatus</li> <li>• Bench hook</li> <li>• Cladding</li> <li>• Coping saw</li> <li>• Design</li> <li>• Dowel</li> <li>• Evaluation</li> <li>• Feedback</li> <li>• Idea</li> <li>• Jelutong</li> <li>• Landscape</li> <li>• Mark out</li> <li>• Measure</li> <li>• Modify</li> <li>• Natural materials</li> <li>• Plan view</li> <li>• Playground</li> <li>• Prototype</li> <li>• Reinforce</li> <li>• Sketch</li> <li>• Strong</li> <li>• Structure</li> <li>• Tenon saw</li> <li>• Texture</li> </ul>
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			<p><b>Vocabulary:</b></p> <ul style="list-style-type: none"> <li>● Function</li> <li>● Man-made</li> <li>● Mould</li> <li>● Natural</li> <li>● Stable</li> <li>● Stiff</li> <li>● Strong</li> <li>● Structure</li> <li>● Test</li> <li>● Weak</li> </ul>		<ul style="list-style-type: none"> <li>● Target audience</li> <li>● Target customer</li> <li>● Texture</li> <li>● Theme</li> </ul>		<ul style="list-style-type: none"> <li>● User</li> <li>● Vice</li> <li>● Weak</li> </ul>
<p><b>Electrical Systems</b></p>				<p><b>Electrical Systems: Electric poster</b></p>	<p><b>Electrical Systems: Torches</b></p>	<p><b>Electrical Systems: Lighthouses</b></p>	
	<p style="writing-mode: vertical-rl; transform: rotate(180deg);"><b>Key Questions</b></p>			<p><b>What is the definition for information design?</b>  <b>What is a list of design criteria?</b>  <b>Why is it important to write a list of design criteria?</b>  <b>What is an electrical system?</b>  <b>What is an electrical product?</b>  <b>Why do we use corrugated cardboard to mount the poster?</b>  <b>Which circuit component is the battery holder?</b>  <b>Which circuit component is the bulb?</b>  <b>Which circuit component is the crocodile clip?</b>  <b>Why is information design important?</b></p>	<p><b>What is electricity?</b>  <b>Can you name the components / symbols on a series circuit?</b>  <b>What is a conductor?</b>  <b>What is an insulator?</b>  <b>How many paths do series circuits have?</b>  <b>Can you name a portable form of electricity?</b>  <b>Can you list some electrical health and safety tips?</b></p>	<p><b>Who invented the lighthouse?</b>  <b>Why were they invented?</b>  <b>Are all lighthouses the same?</b>  <b>What do lighthouses have in common?</b>  <b>What is an electrical system?</b>  <b>What do we mean by product analysis?</b>  <b>What are the different components of a circuit?</b>  <b>What happens if there is a break in the circuit?</b>  <b>What does 'to investigate' mean?</b></p>	

	Design			<ul style="list-style-type: none"> <li>• Carry out research based on a given topic (e.g. The Romans) to develop a range of initial ideas</li> <li>• Generate a final design for the electric poster with consideration to the client's needs and design criteria</li> <li>• Design an electric poster that fits the requirements of a given brief</li> <li>• Plan the positioning of the bulb (circuit component) and its purpose</li> </ul>	<ul style="list-style-type: none"> <li>• Designing a torch, giving consideration to the target audience and creating both design and success criteria focusing on features of individual design ideas</li> </ul>	<ul style="list-style-type: none"> <li>• Designing an electronic lighthouse with a copper track circuit and components</li> <li>• Creating a labelled circuit diagram showing positive and negative parts in relation to the LED and the battery</li> <li>• Writing design criteria for a working lighthouse</li> <li>• Compiling a moodboard relevant to my chosen theme and purpose</li> </ul>	
	Make			<ul style="list-style-type: none"> <li>• Create a final design for the electric poster</li> <li>• Mount the poster onto corrugated card to improve its strength and withstand the weight of the circuit on the rear</li> <li>• Measure and mark materials out using a template or ruler</li> <li>• Fit an electrical component (bulb)</li> <li>• Learn ways to give the final product a higher quality finish (e.g. framing to conceal a roughly cut edge)</li> </ul>	<ul style="list-style-type: none"> <li>• Making a torch with a working electrical circuit and switch</li> <li>• Using appropriate equipment to cut and attach materials</li> <li>• Assembling a torch according to the design and success criteria</li> </ul>	<ul style="list-style-type: none"> <li>• Making a functional series circuit</li> <li>• Creating an electronic lighthouse, referring to a design criteria.</li> <li>• Mapping out where different components of the circuit will go</li> </ul>	

Evaluate

- Learning to give and accept constructive criticism on own work and the work of others
- Testing the success of initial ideas against the design criteria and justifying opinions
- Revisiting the requirements of the client to review developing design ideas and check that they fulfil their needs

- Evaluating electrical products
- Testing and evaluating the success of a final product and taking inspiration from the working product.

- Evaluating a peer's product against design criteria and suggesting modifications that could be made to improve the reliability or aesthetics of it or to incorporate another type of circuit component.

Electrical Systems Knowledge

				<ul style="list-style-type: none"> <li>• To understand that an electrical system is a group of parts (components) that work together to transport electricity around a circuit</li> <li>• To understand common features of an electric product (switch, battery or plug, dials, buttons etc.)</li> <li>• To list examples of common electric products (kettle, remote control etc.)</li> <li>• To understand that an electric product uses an electrical system to work (function)</li> <li>• To know the name and appearance of a bulb, battery, battery holder and crocodile wire to build simple circuits</li> </ul> <p><b><u>Additional</u></b></p> <ul style="list-style-type: none"> <li>• To understand the importance and purpose of information design</li> <li>• To understand how material choices (such as mounting paper to corrugated card) can improve a product to serve its purpose (remain rigid without bending when the electrical circuit is attached).</li> </ul>	<ul style="list-style-type: none"> <li>• To understand that electrical conductors are materials which electricity can pass through</li> <li>• To understand that electrical insulators are materials which electricity cannot pass through</li> <li>• To know that a battery contains stored electricity that can be used to power products</li> <li>• To know that an electrical circuit must be complete for electricity to flow</li> <li>• To know that a switch can be used to complete and break an electrical circuit</li> </ul> <p><b><u>Additional</u></b></p> <ul style="list-style-type: none"> <li>• To know the features of a torch: case, contacts, batteries, switch, reflector, lamp, lens</li> <li>• To know facts from the history and invention of the electric light bulb(s) - by Sir Joseph Swan and Thomas Edison</li> </ul> <p><b><u>Vocabulary:</u></b></p> <ul style="list-style-type: none"> <li>• Battery</li> <li>• Bulb</li> <li>• Buzzer</li> <li>• Cell</li> <li>• Component</li> <li>• Conductor</li> </ul>	<ul style="list-style-type: none"> <li>• To know the key components used to create a functioning circuit</li> <li>• To know that copper is a conductor and can be used as part of a circuit</li> <li>• To understand that breaks in a circuit will stop it from working</li> <li>• To understand that a series circuit only has one path for the electrical current to flow from positive to negative</li> <li>• To know that we use symbols to represent components in a circuit diagram</li> <li>• To know the names of the components in a basic series circuit: crocodile wires, LED (light-emitting diode), battery holder, battery, cell</li> </ul> <p><b><u>Additional</u></b></p> <ul style="list-style-type: none"> <li>• To know that product analysis is critiquing the strengths and weaknesses of a product</li> <li>• To know that ‘mass production’ is when a product is made in large quantities by a machine, usually in a factory</li> <li>• To know that one-off production is when only one of a product is made by</li> </ul>	
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