

**Y3 Design and Technology**

**Can you create....  
A lunchbox for Will to help encourage a healthy lifestyle?**

Term: Autumn 1

**Aspect of Design and Technology: Structures**

Designing	Making	Evaluating	Technical knowledge and understanding
<ul style="list-style-type: none"> <li>Generate realistic ideas and design criteria collaboratively through discussion, focusing on the needs of the user and purpose of the product.</li> <li>Develop ideas through the analysis of existing products and use annotated sketches and prototypes to model and communicate ideas.</li> </ul>	<ul style="list-style-type: none"> <li>Order the main stages of making.</li> <li>Select and use appropriate tools to measure, mark out, cut, score, shape and assemble with some accuracy.</li> <li>Explain their choice of materials according to functional properties and aesthetic qualities.</li> <li>Use finishing techniques suitable for the product they are creating.</li> </ul>	<ul style="list-style-type: none"> <li>Investigate and evaluate a range of existing shell structures including the materials, components and techniques that have been used.</li> <li>Test and evaluate their own products against design criteria and the intended user and purpose.</li> </ul>	<ul style="list-style-type: none"> <li>Develop and use knowledge of how to construct strong, stiff shell structures.</li> <li>Develop and use knowledge of nets of cubes and cuboids and, where appropriate, more complex 3D shapes.</li> <li>Know and use technical vocabulary relevant to the project.</li> </ul>
Key Vocabulary			Knowledge Overview
ANCHOR WORDS	GOLDBLOCKS WORDS	STEP ON WORDS	<p><u>By the end of this unit, the pupils should know:</u></p> <ul style="list-style-type: none"> <li>That CAD can be used to improve the accuracy and appearance of products.</li> <li>Tabs can be used to join sheet materials together.</li> <li>It is important to be accurate when cutting and joining nets as this will affect the quality of the product.</li> <li>Graphic design can be used to achieve the desired appearance of a product.</li> </ul>
<p><b>Edge</b> – where two surfaces meet at an angle.</p> <p><b>Face</b> – a surface of a geometric shape.</p>	<p><b>Net</b> – the flat or opened out shape of an object such as a box.</p> <p><b>Shell structure</b> – a hollow structure with a thing outer covering.</p>	<p><b>CAD</b> – Computer Aided Design</p> <p><b>Font</b> – a printer’s term meaning the style of letting being used.</p> <p><b>Prism</b> – a solid geometric shape with ends that are similar, equal and parallel.</p>	
<p><b>“Bridging Back”</b> (previous years/cross-curricular content)</p> <p><b>Y1 – “A play area for children in school to play on”</b></p> <ul style="list-style-type: none"> <li>That different sheet materials can be joined together in different ways.</li> <li>Wider bases give structures greater stability (avoiding ‘toppling’ over)</li> </ul>			<p><b>“Bridging Forward”</b> (future years/cross curricular content)</p> <p><b>Y4 – “A railway carriage for teachers at Dane Bank”</b></p> <ul style="list-style-type: none"> <li>A prototype can be evaluated to allow the initial design to be improved.</li> <li>Graphic design can be used to achieve the desired appearance of a product.</li> </ul>

**Can you create....  
A moving volcano leaflet to explain to KS1 how a volcano works?**

Term: Autumn 2

**Aspect of Design and Technology: Mechanical Systems**

Designing		Making		Evaluating		Technical knowledge and understanding	
<ul style="list-style-type: none"> <li>Generate realistic ideas and their own design criteria through discussion, focusing on the needs of the user.</li> <li>Use annotated sketches and prototypes to develop, model and communicate ideas.</li> </ul>		<ul style="list-style-type: none"> <li>Order the main stages of making.</li> <li>Select from and use appropriate tools with some accuracy to cut, shape and join paper and card.</li> <li>Select from and use finishing techniques suitable for the product they are creating.</li> </ul>		<ul style="list-style-type: none"> <li>Investigate and analyse books and, where available, other products with lever and linkage mechanisms.</li> <li>Evaluate their own products and ideas against criteria and user needs, as they design and make.</li> </ul>		<ul style="list-style-type: none"> <li>Understand and use lever and linkage mechanisms.</li> <li>Distinguish between fixed and loose pivots.</li> <li>Know and use technical vocabulary relevant to the project.</li> </ul>	
Key Vocabulary				Knowledge Overview			
ANCHOR WORDS		GOLDBLOCKS WORDS		STEP ON WORDS		By the end of this unit, the pupils should know:	
<p><b>Lever</b> – a rigid bar which moves around a pivot.</p> <p><b>Slider</b> – a rigid bar which moves backwards and forwards along a straight line.</p>		<p><b>Loose pivot</b> – a fastener that joins two moving pieces together.</p> <p><b>Fixed pivot</b> – a fastener that joins a moving piece to a fixed piece.</p> <p><b>Mechanism</b> – a device used to create movement in a product.</p>		<p><b>Linkage</b> – the pieces joining one or more levers to produce the type of movement required.</p> <p><b>System</b> – a set of related parts or components used to create an outcome.</p>			
<p><b>“Bridging Back”</b> (previous years/cross-curricular content)</p> <p><b>Y2 – “An information page to teach younger children about the UK”</b></p> <ul style="list-style-type: none"> <li>Levers and sliders must be made accurately to allow them to move.</li> <li>Having levers and sliders makes a product more interesting to the user.</li> </ul>				<p><b>“Bridging Forward”</b> (future years/cross curricular content)</p> <p><b>Y5 – “An Anglo-Saxon well to teach younger children how they work”</b></p> <ul style="list-style-type: none"> <li>Cams can be an off-centre or specially-shaped wheel.</li> <li>The distance between the cam and the pivot point of the lever will affect the amount of movement with more movement close to the pivot.</li> <li>There are 4 different types of cams: an egg cam; an off-centre cam; a peg cam and a snail cam.</li> </ul>			

**Can you create...  
A beach bag for visitors to remind them of their holiday?**

Term: Summer 2

**Aspect of Design and Technology: Textiles**

Designing	Making	Evaluating	Technical knowledge and understanding
<ul style="list-style-type: none"> <li>Generate realistic ideas through discussion and design criteria for an appealing, functional product fit for purpose and specific user/s.</li> <li>Produce annotated sketches, prototypes, final product sketches and pattern pieces.</li> </ul>	<ul style="list-style-type: none"> <li>Plan the main stages of making.</li> <li>Select and use a range of appropriate tools with some accuracy e.g. cutting, joining and finishing.</li> <li>Select fabrics and fastenings according to their functional characteristics e.g. strength, and aesthetic qualities e.g. pattern.</li> </ul>	<ul style="list-style-type: none"> <li>Investigate a range of 3-D textile products relevant to the project.</li> <li>Test their product against the original design criteria and with the intended user.</li> <li>Take into account others' views.</li> <li>Understand how a key event/ individual has influenced the development of the chosen product and/or fabric.</li> </ul>	<ul style="list-style-type: none"> <li>Know how to strengthen, stiffen and reinforce existing fabrics.</li> <li>Understand how to securely join two pieces of fabric together.</li> <li>Understand the need for patterns and seam allowances.</li> <li>Know and use technical vocabulary relevant to the project</li> </ul>

**Key Vocabulary**

**Knowledge Overview**

ANCHOR WORDS	GOLDBLOCKS WORDS	STEP ON WORDS	<u>By the end of this unit, the pupils should know:</u>
<p><b>Sew</b> – to join pieces of fabric with stitches.</p> <p><b>Needle</b> – a thin instrument made of steel with a hole at one end for thread and a sharp point.</p> <p><b>Stitch</b> – a single loop of thread pulled through material.</p>	<p><b>Seam</b> – a rod or pin upon which another part rotates, swings or moves back and forth.</p> <p><b>Pattern/template</b> – a shape drawn to exact shape and size and used to assist cutting out.</p> <p><b>Embroidery</b> – to decorate fabric with stitches.</p>	<p><b>Prototype</b> – an original model on which later stages of design are based and developed.</p> <p><b>Applique</b> – to attach a decorative fabric item on to another piece of fabric with glue.</p> <p><b>Aesthetics</b> – how appealing a product looks to the intended user.</p>	<ul style="list-style-type: none"> <li>Back stitches; backwards running stitch; over sew stitch; blanket stitch and running stitch are all different types of stitches.</li> <li>That different types of stitches give different outcomes.</li> <li>J-cloth or dipryl fabric can be used for prototypes because it is cheap and easy to source.</li> <li>Different fabrics are all constructed in different ways giving them different properties – this also makes them more suited to different purposes.</li> <li>Canvas is a woven fabric - it is known for being durable, sturdy, and heavy duty.</li> <li>Fabric can be closed using different fastenings, such as – buttons and Velcro.</li> </ul>

**“Bridging Back”** (previous years/cross-curricular content)

**“Bridging Forward”** (future years/cross curricular content)

**Y2 – “A coat to keep the alien dry”**

**Y5 – “An insulated bag to help us transport frozen food home”**

- Fabric can be joined in a variety of ways, including – gluing, stapling, pinning and sewing.
- Different ways of joining fabrics are stronger than others.
- Fabric patterns are used to show the designer how to cut out the fabric.

- That there are environmental issues related to the wastage of materials and this is the reason that mock ups are used before final designs are completed. (link to Geography – “fast fashion”)
- How to join textiles together by sewing and making seams.