

## Y4 Design and Technology

Can you create....			
A light up Iron Man to help children in Year 4 understand electrical circuits?			
Term: Autumn 1			
Aspect of Design and Technology: Electrical Systems			
Designing	Making	Evaluating	Technical knowledge and understanding
<ul style="list-style-type: none"> <li>Gather information about needs and wants, and develop design criteria to inform the design of products that are fit for purpose, aimed at particular individuals or groups.</li> <li>Generate, develop, model and communicate realistic ideas through discussion and, as appropriate, annotated sketches, cross-sectional and exploded diagrams.</li> </ul>	<ul style="list-style-type: none"> <li>Order the main stages of making.</li> <li>Select from and use tools and equipment to cut, shape, join and finish with some accuracy.</li> <li>Select from and use materials and components, including construction materials and electrical components according to their functional properties and aesthetic qualities.</li> </ul>	<ul style="list-style-type: none"> <li>Investigate and analyse a range of existing battery-powered products.</li> <li>Evaluate their ideas and products against their own design criteria and identify the strengths and areas for improvement in their work.</li> </ul>	<ul style="list-style-type: none"> <li>Understand and use electrical systems in their products, such as series circuits incorporating switches, bulbs and buzzers.</li> <li>Apply their understanding of computing to program and control their products.</li> <li>Know and use technical vocabulary relevant to the project.</li> </ul>
Key Vocabulary		Knowledge Overview	
ANCHOR WORDS	GOLDILOCKS WORDS	STEP ON WORDS	By the end of this unit, the pupils should know:
<p><b>Switch</b> – an element on an electrical circuit.</p> <p><b>Battery-powered</b> – a product that relies on a battery to function.</p>	<p><b>Circuit</b> – a path through which electricity passes.</p> <p><b>Conductor</b> – a material which allows an electrical current to pass through it.</p> <p><b>Insulator</b> – a material which does not easily allow an electrical current to pass through it.</p>	<p><b>Output devices</b> – components that produce an outcome, e.g. – bulbs and buzzers.</p> <p><b>Input devices</b> – components that are used to control an electrical circuit, e.g. – switches.</p>	<ul style="list-style-type: none"> <li>There are lots of different types of switches and circuits.</li> <li>Circuits must be complete to allow energy to flow.</li> <li>Electricity can be dangerous and must be handled with care.</li> <li>When making a circuit, if there is a break in the circuit, the electricity will not flow and the output device will not work.</li> <li>Switches can be made using items that can be found in the home, e.g. – tin foil, paper clips and card.</li> </ul>
<p><b>“Bridging Back”</b> (previous years/cross-curricular content)</p> <p>This is brand new content for Year 4.</p>		<p><b>“Bridging Forward”</b> (future years/cross curricular content)</p> <p><b>Y5 – “An automatic nightlight for employees in the workhouse”</b></p> <ul style="list-style-type: none"> <li>Light-dependent resistors (LDRs) can be used as a monitoring or input device which controls an LED as the output device.</li> <li>LEDs can produce a variety of light outputs, e.g. – steady light or flashing light.</li> </ul>	

## Y4 Design and Technology

Can you create.... A healthy lunch for children to eat at a Spring picnic?			
Term: Spring 1			
Aspect of Design and Technology: Food			
Designing	Making	Evaluating	Technical knowledge and understanding
<ul style="list-style-type: none"> <li>Generate and clarify ideas through discussion with peers and adults to develop design criteria including appearance, taste, texture and aroma for an appealing product for a particular user and purpose.</li> <li>Use annotated sketches and appropriate information and communication technology, such as web-based recipes, to develop and communicate ideas.</li> </ul>	<ul style="list-style-type: none"> <li>Plan the main stages of a recipe, listing ingredients, utensils and equipment.</li> <li>Select and use appropriate utensils and equipment to prepare and combine ingredients.</li> <li>Select from a range of ingredients to make appropriate food products, thinking about sensory characteristics.</li> </ul>	<ul style="list-style-type: none"> <li>Carry out sensory evaluations of a variety of ingredients and products. Record the evaluations using e.g. tables and simple graphs.</li> <li>Evaluate the ongoing work and the final product with reference to the design criteria and the views of others</li> </ul>	<ul style="list-style-type: none"> <li>Technical knowledge and understanding</li> <li>Know how to use appropriate equipment and utensils to prepare and combine food.</li> <li>Know about a range of fresh and processed ingredients appropriate for their product, and whether they are grown, reared or caught.</li> <li>Know and use relevant technical and sensory vocabulary appropriately.</li> </ul>
Key Vocabulary		Knowledge Overview	
ANCHOR WORDS	GOLDSLOCKS WORDS	STEP ON WORDS	By the end of this unit, the pupils should know:
<p><b>Slice</b> – to use a knife to cut in to or across.</p> <p><b>Grate</b> – to rub against a rough surface to make smaller pieces.</p> <p><b>Nutrients</b> – all the things in food that the body needs to remain healthy.</p>	<p><b>Seasonal</b> – a fruit or vegetable that is found in a particular season of the year.</p> <p><b>Appearance</b> – how the food looks to the eye.</p> <p><b>Texture</b> – how the product feels in the mouth.</p>	<p><b>Preference</b> – trying different foods and deciding what you like best.</p> <p><b>Processed food</b> – ingredients that have been changed in some way to enable them to be eaten or used in food preparation and cooking.</p>	<ul style="list-style-type: none"> <li>Some ingredients can be cooked using a heat source to change their texture, appearance or taste, e.g. – boiling an egg or roasting a pepper. (Science link: irreversible change)</li> <li>When creating products, the designer must be mindful of different preferences and culture traditions.</li> <li>Processed and fresh foods can be combined together to create a recipe.</li> <li>When cooking, it is important to keep raw and cooked foods separate.</li> <li>That there are two safe techniques for cutting – ‘the claw’ and ‘the bridge’.</li> </ul>
<p><b>“Bridging Back”</b> (previous years/cross-curricular content)</p> <p><b>Y2 – “A selection of healthy snacks for Bob to take to the moon”</b></p> <ul style="list-style-type: none"> <li>That there are safe and unsafe ways to use utensils when preparing food.</li> <li>How to use utensils to peel, chop, slice and grate a variety of vegetables.</li> </ul>			<p><b>“Bridging Forward”</b> (future years/cross curricular content)</p> <p><b>Y6 – “A dish for children in Y6 to eat to celebrate Brazilian culture”</b></p> <ul style="list-style-type: none"> <li>Recipes must be followed carefully and accurately to create a successful end product.</li> </ul>

## Y4 Design and Technology

### Can you create.... A railway carriage for teachers at Dane Bank?

Term: Summer 2

#### 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	GOLDILOCKS 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>A prototype can be evaluated to allow the initial design to be improved.</li> <li>How to use a range of approaches to score, cut and assemble materials.</li> <li>That acetate can be used to make a transparent section.</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>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>Prototype</b> – an original model on which later stages of design are based and developed.</p> <p><b>Corrugated</b> – shaped or bent in to parallel wave-like ridges and grooves.</p>			
<p><b>“Bridging Back”</b> (previous years/cross-curricular content)</p> <p><b>Y3 – “A lunchbox for Will to help encourage a healthy lifestyle”</b></p> <ul style="list-style-type: none"> <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> </ul>			<p><b>“Bridging Forward”</b> (future years/cross curricular content)</p> <p><b>Y6 – “A platform for Emmeline Pankhurst to use when delivering speeches”</b></p> <ul style="list-style-type: none"> <li>That different joins are suitable for different purposes and some are stronger than others.</li> <li>Triangulation of joints increases rigidity.</li> </ul>		