

WHITLEY MEMORIAL C of E AIDED PRIMARY SCHOOL



'Let your light shine' – Matthew 5:16

DESIGN & TECHNOLOGY- MECHANICS & ELECTRICS

Overview	
	<p>Key Stage 1</p> <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>Design</p> <ul style="list-style-type: none">• design purposeful, functional, appealing products for themselves and other users based on design criteria• generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and, where appropriate, information and communication technology <p>Make</p> <ul style="list-style-type: none">• select from and use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing]• select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics <p>Evaluate</p> <ul style="list-style-type: none">• explore and evaluate a range of existing products• evaluate their ideas and products against design criteria <p>Technical knowledge</p> <ul style="list-style-type: none">• build structures, exploring how they can be made stronger, stiffer and more stable• explore and use mechanisms [for example, levers, sliders, wheels and axles] in their products <p>Cooking and Nutrition</p> <ul style="list-style-type: none">• use the basic principles of a healthy and varied diet to prepare dishes• understand where food comes from <p>Key Stage 2</p> <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>Design</p> <ul style="list-style-type: none">• 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• generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design <p>Make</p> <ul style="list-style-type: none">• select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately• 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 <p>Evaluate</p> <ul style="list-style-type: none">• investigate and analyse a range of existing products• evaluate their ideas and products against their own design criteria and consider the views of others to improve their work• understand how key events and individuals in design and technology have helped shape the world <p>Technical knowledge</p> <ul style="list-style-type: none">• apply their understanding of how to strengthen, stiffen and reinforce more complex structures

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	<ul style="list-style-type: none"> • understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages] • understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors] • apply their understanding of computing to program, monitor and control their products <p>Cooking and Nutrition</p> <ul style="list-style-type: none"> • understand and apply the principles of a healthy and varied diet • prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques • understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed 					
Year Group	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
<p>Key Learning: National Curriculum knowledge covered</p> <p>Key Progressive Skills: National Curriculum skills covered</p>	<p>To create products using levers and wheels</p> <p><i>To plan and develop ideas through comparison of existing products, discussion, drawings and using templates and evaluate ideas and completed projects verbally</i></p>	<p>To create products using (winding - not KS1 NC) mechanisms. (Why do we remember Grace Darling? Polar Express Happily ever after)</p> <p>To recognise if a battery operated device works or not. Not KS1 NC</p> <p>To diagnose faults in battery operated devices (such as low battery, water damage or battery terminal damage).Not KS1 NC</p> <p><i>To plan and develop ideas through comparison of existing products, discussion, drawings and using templates and evaluate ideas and completed projects in written form</i></p>	<p>To use scientific knowledge of the transference of forces to choose appropriate mechanisms for a product (such as levers, winding mechanisms, pulleys and gears). To create series circuits.</p> <p><i>To plan and develop ideas through research of existing products, discussion, annotated sketches, using templates and computer-aided design.</i> <i>To have understanding of how key events and structures have helped shape the world (relevant to current task).</i> <i>To evaluate ideas and completed projects against a design criteria (success criteria) to improve work.</i></p>	<p>To use scientific knowledge to choose appropriate mechanisms for a product. To create parallel circuits.</p> <p><i>To plan and develop ideas through research of existing products, discussion, annotated sketches, using templates and computer-aided design.</i> <i>To have an understanding of how key events and structures have helped shape the world (relevant to current task).</i> <i>To evaluate ideas and completed projects against a design criteria (success criteria) to improve work.</i></p>	<p>To convert rotary motion to linear using cams. To create circuits using electronics kits that employs a number of components (such as LEDs, resistors, transistors and chips).</p> <p><i>To plan and develop ideas through research of existing products, discussion, annotated sketches, cross-sectional diagrams and computer-aided design.</i> <i>To have an understanding of how key events and structures have helped shape the world (relevant to current task).</i> <i>To evaluate ideas and completed projects against a own design criteria (success criteria), decide whether it is fit for purpose and listen to</i></p>	

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		<p>To create products using winding mechanisms. To recognise if a battery operated device works or not. To diagnose faults in battery operated devices (such as low battery, water damage or battery terminal damage).</p> <p><i>To plan and develop ideas through comparison of existing products, discussion, drawings and using templates and evaluate ideas and completed projects in written form</i></p>			<p><i>the views of others to improve work.</i></p>	
<p>How the Skills/ Learning Will Take Place Eg What will be made?</p>	<p>Owl Calendar with moving Wings (lever) Barnaby Bear Picture/Toy with slider</p>	<p>Create a simple pulley to deliver Mr Grinlings lunch at his lighthouse.</p> <p>Research transport looking specifically at wheels and axels.</p> <p>Create a vehicle that has wheels and axels.</p> <p>Research moving pictures in books.</p> <p>Design a moving picture using a wheel, slider or lever mechanism.</p>			<p>Children learn the individual parts/components of a circuit, then use these to create their own circuits based according to specific criteria. Children learn to record these down in diagrams, and use these diagrams to create own designs.</p>	

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<p>Key Vocabulary National Curriculum and other</p>	<p>Mechanism, lever, split pin, pivots, move, moving part, push, pull, up, down, horizontal, vertical Slider, up, down, left, right, move, push, pull</p>	<p>Pulley Mechanism Moving Criteria Axel Wheel Strength Lever Slider Evaluate Mock up</p>			<p>Circuit, cell, wire, bulb, buzzer, danger, electrical safety sign, insulator, conductor, diagram.</p>	