

Providing the rich soil that enables  
our children to develop deep roots and flourish.

### **Immersion Curriculum: Design and Technology Y3/4 (Cycle A)**

At Amberley, each unit of design and technology contains the key elements of: mastering practical skills, design, make, evaluate and improve, and taking inspiration from design through a topic of either food, materials, textiles, electrical and electronics, computing, construction and mechanics.



#### **Intent:**

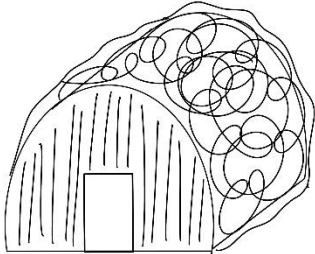
For all learners to...

- work with tools, equipment, materials and components to make quality products,
  - making creative and informed choices on the way
- pupils to critique, evaluate and test their ideas and products and works of others
  - foster enjoyment in designing and making things for a specific purpose
- pupils to have progressive development of knowledge and skills of the DT curriculum
- pupils learn to take managed risks becoming resourceful and innovative learners

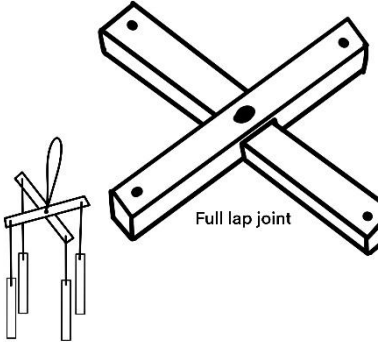
#### **Impact:**

The children of Amberley will understand and develop the traits and skills needed to become a Design Technologist. They understand that DT is about solving problems, and they strive to be creative, aiming to show perseverance when solving these problems

Project		Milestone for end of Year 4	National Curriculum Objectives: By the end of the Key Stage 2	Technical drawing/photo
Roman tools, weapons and shields		<ul style="list-style-type: none"> <li>• Cut materials accurately and safely by selecting appropriate tools</li> <li>• Measure and mark out to the nearest millimetre</li> <li>• Apply appropriate cutting and shaping techniques that include cut within the perimeter of the material (such as slots or cut outs)</li> <li>• Select appropriate joining techniques</li> </ul>	<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> <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>	
<b>Duration</b>	<b>Cycle</b>	<p><b>Ongoing Milestones:</b></p> <ul style="list-style-type: none"> <li>• Choose suitable techniques to construct products or to repair items</li> <li>• Strengthen materials using suitable techniques</li> <li>• Design with purpose by identifying opportunities to design.</li> <li>• Make products by working efficiently (such as by carefully selecting materials).</li> <li>• Refine work and techniques as work progresses, continually evaluating the product design</li> <li>• Improve upon existing designs giving reasons for choices</li> <li>• Disassemble products to understand how they work</li> </ul>	<p><b>Key Vocabulary for the Year:</b></p> <p>Cutting, measure, shaping, safely, tools, combining, joining techniques, strengthen, centimetre, product, millimetre,</p>	
Term 1`	A			

Project		Milestone for end of Year 4	National Curriculum Objectives: By the end of the Key Stage 2	Technical drawing/photo
Anderson Shelter		<ul style="list-style-type: none"> <li>Identify some of the great designers in all areas of the study (including pioneers in horticultural techniques) to generate ideas for designs</li> <li>Cut materials accurately and safely by selecting appropriate tools</li> <li>Measure and mark out to the nearest millimetre</li> <li>Apply appropriate cutting and shaping techniques that include cut within the perimeter of the material (such as slots or cut outs)</li> <li>Select appropriate joining techniques</li> </ul>	<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> <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> <p><b>Key Vocabulary for the Year:</b></p> <p>Cutting, measure, shaping, safely, tools, combining, joining techniques, strengthen, centimetre, product, millimetre,</p>	
Duration	Cycle	<p><b>Ongoing Milestones:</b></p> <ul style="list-style-type: none"> <li>Choose suitable techniques to construct products or to repair items</li> <li>Strengthen materials using suitable techniques</li> <li>Design with purpose by identifying opportunities to design.</li> <li>Make products by working efficiently (such as by carefully selecting materials).</li> <li>Refine work and techniques as work progresses, continually evaluating the product design</li> <li>Improve upon existing designs giving reasons for choices</li> <li>Disassemble products to understand how they work</li> </ul>		
Term 2	A			

Project		Milestone for end of Year 4	National Curriculum Objectives: By the end of the Key Stage 2	Technical drawing/photo
Exploring zip lines and pulleys		<ul style="list-style-type: none"> <li>Identify some of the great designers in all areas of the study (including pioneers in horticultural techniques) to generate ideas for designs</li> <li>Use scientific knowledge of the transference of forces to choose appropriate mechanisms for a product (such as levers, winding mechanisms, pulleys and gears) s</li> </ul>	<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> <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> <p><b>Key Vocabulary for the Year:</b></p> <p>Winding mechanism, product (repeated: taught in Key Stage 1)</p> <p>Forces, transference, pulleys</p>	<p>The technical drawing shows two components. The top component is a pulley, represented as a horizontal cylinder with two circular openings at each end. A bucket is suspended from a rope that passes through both openings. The bottom component is a zipline, shown as a diagonal line with a hook at the top end and a seat at the bottom end. The pulley is labeled 'Pulley' and the zipline is labeled 'Zipline'.</p>
<b>Duration</b>	<b>Cycle</b>	<p><b>Ongoing Milestones:</b></p> <ul style="list-style-type: none"> <li>Choose suitable techniques to construct products or to repair items</li> <li>Strengthen materials using suitable techniques</li> <li>Design with purpose by identifying opportunities to design.</li> <li>Make products by working efficiently (such as by carefully selecting materials).</li> <li>Refine work and techniques as work progresses, continually evaluating the product design</li> <li>Improve upon existing designs giving reasons for choices</li> <li>Disassemble products to understand how they work</li> </ul>		
Term 3	A			

Project		Milestone for end of Year 4	National Curriculum Objectives: By the end of the Key Stage 2	Technical drawing/photo
Wind Chimes		<ul style="list-style-type: none"> <li>Identify some of the great designers in all areas of the study (including pioneers in horticultural techniques) to generate ideas for designs</li> <li>Cut materials accurately and safely by selecting appropriate tools</li> <li>Measure and mark out to the nearest millimetre</li> <li>Apply appropriate cutting and shaping techniques that include cut within the perimeter of the material (such as slots or cut outs)</li> </ul>	<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> <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>	
<b>Duration</b>	<b>Cycle</b>	<p><b>Ongoing Milestones:</b></p> <ul style="list-style-type: none"> <li>Choose suitable techniques to construct products or to repair items</li> <li>Strengthen materials using suitable techniques</li> <li>Design with purpose by identifying opportunities to design.</li> <li>Make products by working efficiently (such as by carefully selecting materials).</li> <li>Refine work and techniques as work progresses, continually evaluating the product design</li> <li>Improve upon existing designs giving reasons for choices</li> <li>Disassemble products to understand how they work</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> </ul> <p>apply their understanding of computing to program, monitor and control their products.</p>		
Term 4	A	<p><b>Key Vocabulary for the Year:</b></p> <p>Cutting, measure, shaping, safely, tools, combining, joining techniques, strengthen, centimetre, product, millimetre, slot, cut out, chisel, joint, lap joint,</p>		

Project		Milestone for end of Year 4	National Curriculum Objectives: By the end of the Key Stage 2	Technical drawing/photo
Bug hotels and bird boxes		<ul style="list-style-type: none"> <li>Identify some of the great designers in all areas of the study (including pioneers in horticultural techniques) to generate ideas for designs</li> <li>Cut materials accurately and safely by selecting appropriate tools</li> <li>Measure and mark out to the nearest millimetre</li> <li>Apply appropriate cutting and shaping techniques that include cut within the perimeter of the material (such as slots or cut outs)</li> </ul>	<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> <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> </ul> <p>apply their understanding of computing to program, monitor and control their products.</p> <p><b>Key Vocabulary for the Year:</b></p> <p>Cutting, prototype, measure, shaping, safely, tools, combining, joining techniques, strengthen, centimetre, product, millimetre, slot, cut out, chisel, joint, lap joint,</p>	<p>Bug Box                      Bird House</p>
<b>Duration</b>	<b>Cycle</b>	<p><b>Ongoing Milestones:</b></p> <ul style="list-style-type: none"> <li>Choose suitable techniques to construct products or to repair items</li> <li>Strengthen materials using suitable techniques</li> <li>Design with purpose by identifying opportunities to design.</li> <li>Make products by working efficiently (such as by carefully selecting materials).</li> <li>Refine work and techniques as work progresses, continually evaluating the product design</li> <li>Improve upon existing designs giving reasons for choices</li> <li>Disassemble products to understand how they work</li> </ul>		
Term 5/6	A			

Focus		Milestone for end of Lower Key Stage 2 (Year 4)	National Curriculum Objectives: By the end of the Key Stage 2
<b>Food: Dessert</b>		<ul style="list-style-type: none"> <li>Prepare ingredients hygienically using appropriate utensils.</li> <li>Measure ingredients to the nearest gram accurately.</li> <li>Follow a recipe.</li> <li>Assemble or cook ingredients (controlling the temperature of the oven or hob, if cooking).</li> </ul>	<ul style="list-style-type: none"> <li>Understand and apply the principles of a healthy and varied diet</li> <li>Prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques</li> <li>Understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed.</li> </ul> <p><u>Links to PSHCE curriculum</u></p> <ul style="list-style-type: none"> <li>What constitutes a healthy diet (including understanding calories and other nutritional content)</li> <li>The principles of planning and preparing a range of healthy meals</li> </ul>
<b>Duration</b>	<b>Cycle</b>		
1 week	A	<p><b>Ongoing:</b></p> <ul style="list-style-type: none"> <li>Design with purpose by identifying opportunities to design.</li> <li>Make products by working efficiently (such as by carefully selecting materials).</li> </ul>	<p><b>Key Vocabulary for the Year:</b></p> <p>Seasonality, grown, reared, caught, processed, healthy, utensil, recipe, weigh, scales, raw, grams, kilograms, millilitres, litres, stir, combine, mix, assemble, ingredients, measure, hygienically, cook, prototype, design, evaluate.</p> <p>Appropriate vocabulary will be selected from this list based on content.</p>