



BECOMING REFLECTIVE, INDEPENDENT & ASPIRATIONAL LEARNERS FOR LIFE

Immersion Curriculum: Design and Technology Y5/6

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

Focus		Milestone for the end of Year 6	National Curriculum Objectives: By the end of Key Stage 2
Food		<ul style="list-style-type: none"> • Understand the importance of correct storage and handling of ingredients (using knowledge of micro-organisms). • Measure accurately and calculate ratios of ingredients to scale up or down from a recipe. • Demonstrate a range of baking and cooking techniques. • Create and refine recipes, including ingredients, methods, cooking times and temperatures. 	<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. <p><u>Links to PSHCE curriculum</u></p> <ul style="list-style-type: none"> • What constitutes a healthy diet (including understanding calories and other nutritional content) • The principles of planning and preparing a range of healthy meals <p>Key Vocabulary for the Year:</p> <p>Bacteria, micro-organism, hygiene, recipe, ingredient, ratio, scale (up or down), baking, cooking, method, temperature, cooking time.</p>
	Duration		
	Cycle		
1 week	A	<p>Ongoing:</p> <ul style="list-style-type: none"> • Design with the user in mind, motivated by the service a product will offer (rather than simply for profit). • Make products through stages of prototypes, making continual refinements. • Ensure products have a high quality finish, using art skills where appropriate. • Use prototypes, cross-sectional diagrams and computer aided designs to represent designs. • Combine elements of design from a range of inspirational designers throughout history, giving reasons for choices. • Create innovative designs that improve upon existing products. • Evaluate the design of products so as to suggest improvements to the user experience 	

Focus		Milestone for the end of Year 6	National Curriculum Objectives: By the end of Key Stage 2
Materials (Taught through outdoor learning)		<ul style="list-style-type: none"> • Cut materials with precision and refine the finish with appropriate tools (such as sanding wood after cutting or a more precise scissor cut after roughly cutting out a shape). • Show an understanding of the qualities of materials to choose appropriate tools to cut and shape (such as the nature of fabric may require sharper scissors than would be used to cut paper). 	Design: * 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. Make: * 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. Evaluate: * 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. Technical knowledge * apply their understanding of how to strengthen, stiffen and reinforce more complex structures.
Duration	Cycle		
Taught weekly	A	Ongoing: <ul style="list-style-type: none"> • Design with the user in mind, motivated by the service a product will offer (rather than simply for profit). • Make products through stages of prototypes, making continual refinements. • Ensure products have a high quality finish, using art skills where appropriate. • Use prototypes, cross-sectional diagrams and computer aided designs to represent designs. • Combine elements of design from a range of inspirational designers throughout history, giving reasons for choices. • Create innovative designs that improve upon existing products. • Evaluate the design of products so as to suggest improvements to the user experience 	Key Vocabulary for the Year: Materials, precision, refine, finish, appropriate, sanding, qualities, properties, design, prototype, evaluate, design brief, specification. Use the correct vocabulary to name tools and component parts (eg. Screwdriver, bradawl, pulley etc)

Focus		Milestone for the end of Year 6	National Curriculum Objectives: By the end of Key Stage 2
Computing (Combined within computing curriculum Creative Media 3D modelling)		<ul style="list-style-type: none">• Write code to control and monitor models or products.	Design: * 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 Make: * 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 Evaluate: * 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 Technical knowledge: * apply their understanding of computing to program, monitor and control their products. Key Vocabulary for the Year: Architects, designers, engineers, three dimensional (3D), Computer aided design (CAD), special awareness, explore, virtual environment, aesthetic, software, hardware, internet, web, e-safety/online safety, risk,
Duration	Cycle	Ongoing: <ul style="list-style-type: none">• Design with the user in mind, motivated by the service a product will offer (rather than simply for profit).• Make products through stages of prototypes, making continual refinements.• Ensure products have a high quality finish, using art skills where appropriate.• Use prototypes, cross-sectional diagrams and computer aided designs to represent designs.• Combine elements of design from a range of inspirational designers throughout history, giving reasons for choices.• Create innovative designs that improve upon existing products.• Evaluate the design of products so as to suggest improvements to the user experience	
Term 3	A		

Focus		Milestone for the end of Year 6	National Curriculum Objectives: By the end of Key Stage 2
Construction (Taught through outdoor learning)		<ul style="list-style-type: none"> Develop a range of practical skills to create products (such as cutting, drilling and screwing, nailing, gluing, filing and sanding). 	<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. understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages].
Duration	Cycle		
Taught weekly	A		
		<p>Ongoing:</p> <ul style="list-style-type: none"> Design with the user in mind, motivated by the service a product will offer (rather than simply for profit). Make products through stages of prototypes, making continual refinements. Ensure products have a high quality finish, using art skills where appropriate. Use prototypes, cross-sectional diagrams and computer aided designs to represent designs. Combine elements of design from a range of inspirational designers throughout history, giving reasons for choices. Create innovative designs that improve upon existing products. Evaluate the design of products so as to suggest improvements to the user experience 	<p>Key Vocabulary for the Year:</p> <p>Cutting, drilling, screwing, nailing, gluing, filing, sanding, design, prototype, evaluate, design brief, specification.</p> <p>Use the correct vocabulary to name tools and component parts (eg. Screwdriver, bradawl, pulley etc)</p>

Focus		Milestone for the end of Year 6	National Curriculum Objectives: By the end of Key Stage 2
Mechanics (Taught through outdoor learning)		<ul style="list-style-type: none"> • Convert rotary motion to linear using cams. • Use innovative combinations of electronics (or computing) and mechanics in product designs. 	<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"> * understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages]. <p>Key Vocabulary for the Year:</p> <p>Rotary motion, linear, cams, innovative, combination, electronics, mechanics, design, prototype, evaluate, design brief, specification.</p> <p>Use the correct vocabulary to name tools and component parts (e.g. Screwdriver, bradawl, pulley etc.)</p>
Duration	Cycle		
Taught weekly	A		
		<p>Ongoing:</p> <ul style="list-style-type: none"> • Design with the user in mind, motivated by the service a product will offer (rather than simply for profit). • Make products through stages of prototypes, making continual refinements. • Ensure products have a high quality finish, using art skills where appropriate. • Use prototypes, cross-sectional diagrams and computer aided designs to represent designs. • Combine elements of design from a range of inspirational designers throughout history, giving reasons for choices. • Create innovative designs that improve upon existing products. • Evaluate the design of products so as to suggest improvements to the user experience 	

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Cycle B

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Intent:

For all learners to...

- work with tools, equipment, materials and components to make quality products,
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- 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
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- pupils learn to take managed risks becoming resourceful and innovative learners

Focus		Milestone for the end of Year 6	National Curriculum Objectives: By the end of Key Stage 2
Food: Burritos		<ul style="list-style-type: none"> Understand the importance of correct storage and handling of ingredients (using knowledge of micro-organisms). Measure accurately and calculate ratios of ingredients to scale up or down from a recipe. Demonstrate a range of baking and cooking techniques. Create and refine recipes, including ingredients, methods, cooking times and temperatures. 	<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.
Duration	Cycle		
1 week	B	<p>Ongoing:</p> <ul style="list-style-type: none"> Design with the user in mind, motivated by the service a product will offer (rather than simply for profit). Make products through stages of prototypes, making continual refinements. Ensure products have a high quality finish, using art skills where appropriate. Use prototypes, cross-sectional diagrams and computer aided designs to represent designs. <p>Combine elements of design from a range of inspirational designers throughout history, giving reasons for choices.</p> <ul style="list-style-type: none"> Create innovative designs that improve upon existing products. Evaluate the design of products so as to suggest improvements to the user experience 	<p><u>Links to PSHCE curriculum</u></p> <ul style="list-style-type: none"> What constitutes a healthy diet (including understanding calories and other nutritional content) The principles of planning and preparing a range of healthy meals <p>Key Vocabulary for the Year:</p> <p>Bacteria, micro-organism, hygiene, recipe, ingredient, ratio, scale (up or down), baking, cooking, method, temperature, cooking time.</p>

Focus		Milestone for the end of Year 6	National Curriculum Objectives: By the end of Key Stage 2
Materials (Taught through outdoor learning)		<ul style="list-style-type: none"> • Cut materials with precision and refine the finish with appropriate tools (such as sanding wood after cutting or a more precise scissor cut after roughly cutting out a shape). • Show an understanding of the qualities of materials to choose appropriate tools to cut and shape (such as the nature of fabric may require sharper scissors than would be used to cut paper). 	Design: * 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 Make: * 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. Evaluate: * 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 Technical knowledge * apply their understanding of how to strengthen, stiffen and reinforce more complex structures .
Duration	Cycle		
Taught weekly	B	Ongoing: <ul style="list-style-type: none"> • Design with the user in mind, motivated by the service a product will offer (rather than simply for profit). • Make products through stages of prototypes, making continual refinements. • Ensure products have a high quality finish, using art skills where appropriate. • Use prototypes, cross-sectional diagrams and computer aided designs to represent designs. • Combine elements of design from a range of inspirational designers throughout history, giving reasons for choices. • Create innovative designs that improve upon existing products. • Evaluate the design of products so as to suggest improvements to the user experience 	Key Vocabulary for the Year: Materials, precision, refine, finish, appropriate, sanding, qualities, properties, design, prototype, evaluate, design brief, specification. Use the correct vocabulary to name tools and component parts (eg. Screwdriver, bradawl, pulley etc)

Focus		Milestone for the end of Year 6	National Curriculum Objectives: By the end of Key Stage 2
Textiles		<ul style="list-style-type: none"> • Create objects (such as a cushion) that employ a seam allowance. • Join textiles with a combination of stitching techniques (such as back stitch for seams and running stitch to attach decoration). • Use the qualities of materials to create suitable visual and tactile effects in the decoration of textiles (such as a soft decoration for comfort on a cushion). 	<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
Duration	Cycle		
1 week	B		
		<p>Ongoing:</p> <ul style="list-style-type: none"> • Design with the user in mind, motivated by the service a product will offer (rather than simply for profit). • Make products through stages of prototypes, making continual refinements. • Ensure products have a high quality finish, using art skills where appropriate. • Use prototypes, cross-sectional diagrams and computer aided designs to represent designs. • Combine elements of design from a range of inspirational designers throughout history, giving reasons for choices. • Create innovative designs that improve upon existing products. • Evaluate the design of products so as to suggest improvements to the user experience 	<p>Key Vocabulary for the Year:</p> <p>Employ, seam allowance, join, textiles, combination, stitching, techniques, back stitch, running stitch, decoration, qualities, create, suitable, visual, tactile.</p>

Focus		Milestone for the end of Year 6	National Curriculum Objectives: By the end of Key Stage 2
Electricals and Electronics		<ul style="list-style-type: none"> • Create circuits using electronics kits that employ a number of components (such as LEDs, resistors, transistors and chips). 	<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"> * understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors]
Duration	Cycle	<p>Ongoing:</p> <ul style="list-style-type: none"> • Design with the user in mind, motivated by the service a product will offer (rather than simply for profit). • Make products through stages of prototypes, making continual refinements. • Ensure products have a high quality finish, using art skills where appropriate. • Use prototypes, cross-sectional diagrams and computer aided designs to represent designs. • Combine elements of design from a range of inspirational designers throughout history, giving reasons for choices. • Create innovative designs that improve upon existing products. • Evaluate the design of products so as to suggest improvements to the user experience 	<p>Key Vocabulary for the Year:</p> <p>Circuits, electronics, employ, components, LEDs, resistors, transistors, chips.</p>
2 weeks	B		

Focus		Milestone for the end of Year 6	National Curriculum Objectives: By the end of Key Stage 2
Construction (Taught through outdoor learning)		<ul style="list-style-type: none"> • Develop a range of practical skills to create products (such as cutting, drilling and screwing, nailing, gluing, filing and sanding). 	<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 * understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages]
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Taught weekly	B	<p>Ongoing:</p> <ul style="list-style-type: none"> • Design with the user in mind, motivated by the service a product will offer (rather than simply for profit). • Make products through stages of prototypes, making continual refinements. • Ensure products have a high quality finish, using art skills where appropriate. • Use prototypes, cross-sectional diagrams and computer aided designs to represent designs. • Combine elements of design from a range of inspirational designers throughout history, giving reasons for choices. • Create innovative designs that improve upon existing products. • Evaluate the design of products so as to suggest improvements to the user experience 	
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Focus		Milestone for the end of Year 6	National Curriculum Objectives: By the end of Key Stage 2
Mechanics (Taught through outdoor learning)		<ul style="list-style-type: none"> • Convert rotary motion to linear using cams. • Use innovative combinations of electronics (or computing) and mechanics in product designs. 	Design: * 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 Make: * 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 Evaluate: * 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 Technical knowledge: * understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages]
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Taught weekly	B	Ongoing: <ul style="list-style-type: none"> • Design with the user in mind, motivated by the service a product will offer (rather than simply for profit). • Make products through stages of prototypes, making continual refinements. • Ensure products have a high quality finish, using art skills where appropriate. • Use prototypes, cross-sectional diagrams and computer aided designs to represent designs. • Combine elements of design from a range of inspirational designers throughout history, giving reasons for choices. • Create innovative designs that improve upon existing products. • Evaluate the design of products so as to suggest improvements to the user experience 	Key Vocabulary for the Year: Rotary motion, linear, cams, innovative, combination, electronics, mechanics, design, prototype, evaluate, design brief, specification. Use the correct vocabulary to name tools and component parts (eg. Screwdriver, bradawl, pulley etc)