

Design Technology

Vision – ‘all things are possible’

At Benedict Biscop we want our children to learn that all things are possible. We want our children to aspire and to achieve highly. We want our children to develop as **designers, developing DT knowledge and skills.**

Characteristics of Designers:

- The ability to carry out thorough research and ask questions to develop a detailed knowledge of users' needs.
- A knowledge of technological innovations in materials, products and systems
- A knowledge of which tools, equipment and materials to use to make their products.
- The ability to apply mathematical knowledge when designing and making.
- Levels of originality and the willingness to take creative risks to produce innovative ideas
- The ability to use time efficiently and work constructively and productively with others.
- The ability to act as responsible designers and makers, working ethically, using finite materials carefully and working safely.
- The ability to manage risks exceptionally well to manufacture products safely and hygienically.
- A passion for the subject

At Benedict Biscop, we actively encourage cross-curricular learning, to give pupils maximum opportunity to transfer skills and knowledge. Year groups are taught through predominately Historic themes, which inspire and motivate our pupils. Themes in KS2 are arranged in chronological order to further aid pupils understanding of chronology. In every year group, one theme is inspired by the United Nations Rights of a Child, pupils think about ‘What I believe?’ and learn about how events in History have helped to shape our lives today. Where possible, we link learning to our local context so that pupils gain an awareness of where they are from and how this links to their lives today enabling them to become active Global Citizens.

National Curriculum Aims

- develop the creative, technical and practical expertise needed to perform everyday tasks confidently and to participate successfully in an increasingly technological world

- build and apply a repertoire of knowledge, understanding and skills in order to design and make high-quality prototypes and products for a wide range of users
- critique, evaluate and test their ideas and products and the work of others
- understand and apply the principles of nutrition and learn how to cook.

Key Stage 1 DT coverage

Through a variety of creative and practical activities, pupils should be taught the knowledge, understanding and skills needed to engage in a process of designing and making. When designing and making, pupils should be taught to:

Design

- 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

Make

- 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

Evaluate

- explore and evaluate a range of existing products
- evaluate their ideas and products against design criteria

Technical knowledge

- 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

Key Stage 2 DT coverage

Through a variety of creative and practical activities, pupils should be taught the knowledge, understanding and skills needed to engage in an process of designing and making. When designing and making, pupils should be taught to:

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
- 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

To ensure a balance of curriculum coverage we have mapped medium to ensure a broad range is covered and revisited.

<u>Year</u>	<u>Autumn</u>	<u>Spring</u>	<u>Summer</u>
One	TEXTILES Christmas Trees	CONSTRUCTION Sunderland Landmark	COOKERY Seaside Picnic
Two	TEXTILES Weaving	COOKERY Vegetable Soup	MECHANISMS Toys
Three	TEXTILES Bag	CONSTRUCTION Shadoof	COOKERY Celebration Cake
Four	CONSTRUCTION Trojan Horse	TEXTILES Roman Banner	COOKERY Recipe (design and follow)
Five	TEXTILES Tapestry	COOKERY Tudor knots	ELECTRICAL & COMPUTING Alarm/ Security Device
Six	COOKERY War time recipe	CONSTRUCTION Coal cart	ELECTRICALS Car

PROGRESSION

To meet our curriculum aims, we have identified core strands of learning [generic learning objectives] which run throughout our curriculum. We have identified what this should look like at the end of key phases within the school [key skills demonstrated].

The curriculum is taught in a spiral design where learning is revisited and embedded – deepening learning and developing Mastery.

Key generic learning objectives	KS1 working at the EXPECTED STANDARD	KS1 working ABOVE the expected standard	Lower KS2 working at the EXPECTED STANDARD	Lower KS2 working ABOVE the expected standard	Upper KS2 working at the EXPECTED STANDARD	Lower KS2 working ABOVE the expected standard
To take inspiration from design throughout history	<ul style="list-style-type: none"> Explore objects and designs to identify likes and dislikes of the designs. Suggest improvements to existing designs. Explore how products have been created. 	<ul style="list-style-type: none"> Explore objects and designs to identify the views of others of the designs. To use my knowledge of other's designs to help me design lively products 	<ul style="list-style-type: none"> Identify some of the great designers in areas of study Disassemble products to understand how they work. to generate ideas for designs. Improve upon existing designs, giving reasons for choices. 	<ul style="list-style-type: none"> To use my understanding of the characteristics of familiar designs when developing my ideas 	<ul style="list-style-type: none"> Combine elements of design from a range of inspirational designers throughout history Create innovative designs that improve upon existing products. Evaluate the design of products so as to suggest improvements to the user experience. 	<ul style="list-style-type: none"> Combine elements of design from a range of inspirational designers throughout history, giving reasons for choices. Evaluate the design of products so as to suggest improvements to the intended user experience.
To master practical skills	<p>Food</p> <ul style="list-style-type: none"> Cut, peel or grate ingredients safely and hygienically. Measure or weigh using measuring cups or electronic scales. Assemble or cook ingredients. <p>Materials</p> <ul style="list-style-type: none"> Cut materials safely using tools provided. Measure and mark out to the nearest centimetre. Demonstrate a range of cutting and shaping techniques (such as tearing, cutting, folding and curling). Demonstrate a range of joining techniques (such as gluing, hinges or combining materials to strengthen). <p>Textiles</p> <ul style="list-style-type: none"> Shape textiles using templates. Join textiles using running stitch. Colour and decorate textiles using a number of techniques (such as dyeing, adding sequins or printing). <p>Computing</p> <ul style="list-style-type: none"> Model designs using software. <p>Construction</p> <ul style="list-style-type: none"> Use materials to practise drilling, screwing, gluing and nailing materials to make and strengthen products. <p>Mechanics</p> <ul style="list-style-type: none"> Create products using levers, wheels and winding mechanisms. 	<ul style="list-style-type: none"> To measure accurately using scales To cook ingredients using the correct timings. using scales To use electrical circuits and switches to good effect To use appropriate tools, equipment, materials, components and techniques. 	<p>Food</p> <ul style="list-style-type: none"> Prepare ingredients hygienically using appropriate utensils. Measure ingredients to the nearest gram accurately. Follow a recipe. Assemble or cook ingredients (controlling the temperature of the oven or hob, if cooking). <p>Materials</p> <ul style="list-style-type: none"> Cut materials accurately and safely by selecting appropriate tools. Measure and mark out to the nearest millimetre. Apply appropriate cutting and shaping techniques that include cuts within the perimeter of the material (such as slots or cut outs). Select appropriate joining techniques. <p>Textiles</p> <ul style="list-style-type: none"> Understand the need for a seam allowance. Join textiles with appropriate stitching. Select the most appropriate techniques to decorate textile <p>Electricals and electronics</p> <ul style="list-style-type: none"> Create series and parallel circuits <p>Computing</p> <ul style="list-style-type: none"> Control and monitor models using software designed for this purpose. <p>Construction</p> <ul style="list-style-type: none"> Choose suitable techniques to construct products or to repair items. Strengthen materials using 	<ul style="list-style-type: none"> To use my knowledge of proportion to mix ingredients To use my knowledge of measurement to calculate the materials needed for a project To select and work with a range of equipment and tools. To work out how to use belts and pulleys to make mechanisms work. 	<p>Food</p> <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. <p>Materials</p> <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). <p>Textiles</p> <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 	<ul style="list-style-type: none"> To use my knowledge of circumference of circles to experiment with changing speeds of rotation To investigate properties of materials and decide how best they can be used

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suitable techniques.
Mechanics
• Use scientific knowledge of the transference of forces to choose appropriate mechanisms for a product (such as levers, winding mechanisms, pulleys and gears).

tactile effects in the decoration of textiles (such as a soft decoration for comfort on a cushion).
Electricals and electronics
• Create circuits using electronics kits that employ a number of components (such as LEDs, resistors, transistors and chips).
Computing
• Write code to control and monitor models or products.
Construction
• Develop a range of practical skills to create products (such as cutting, drilling and screwing, nailing, gluing, filling and sanding).
Mechanics
• Convert rotary motion to linear using cams.
• Use innovative combinations of electronics (or computing) and mechanics in product designs.

To design, *make*, evaluate and improve

- Design products that have a clear purpose and an intended user.
- Make products, refining the design as work progresses.

- To use **words and labelled sketches** to communicate my designs.
- To make **realistic** plans.
- **describe how my product will be of use to the intended user.**

- Design with purpose by identifying opportunities to design.
- Begin to use software to design and represent product designs
- Make products by working efficiently (such as by carefully selecting materials).
- Refine work and techniques as work progresses, continually evaluating the product design..

- To present the **persuasive benefits** of my design
- To **summarise the views** of intended users
- **I can communicate alternative ideas**
- To **constantly evaluate** my design to say what needs to be improved

- Design with the user in mind, motivated by the service a product will offer (rather than simply for profit).
- Use prototypes and computer aided designs to represent designs.
- Make products through stages of prototypes, making continual refinements.
- Ensure products have a high quality finish, using art skills where appropriate.

- **To clarify my ideas through discussions.**
- **To communicate a range of designs with an awareness of the limits of some designs**
- To test my product with the **intended user** in mind.

YEAR 1

AUTUMN UNIT	Key generic learning objectives	Unit specific learning objectives	KS1 working at the EXPECTED STANDARD	KS1 working ABOVE the expected standard
Me, My family, My World	To take inspiration from design throughout history	<ul style="list-style-type: none"> To learn about Victorian Christmas tree decoration designs. 	<ul style="list-style-type: none"> Explore objects and designs to identify likes and dislikes of the designs. Suggest improvements to existing designs. Explore how products have been created. 	<ul style="list-style-type: none"> Explore objects and designs to identify the views of others of the designs. To use my knowledge of other's designs to help me design lively products
	To master practical skills	<ul style="list-style-type: none"> To use a range of equipment with safety and control e.g. Scissors/ Mark and cut material accurately. Use a simple stitch to join two pieces of material. 	<p>Materials</p> <ul style="list-style-type: none"> Cut materials safely using tools provided. Measure and mark out to the nearest centimetre. Demonstrate a range of cutting and shaping techniques (such as tearing, cutting, folding and curling). Demonstrate a range of joining techniques (such as gluing, hinges or combining materials to strengthen). <p>Textiles</p> <ul style="list-style-type: none"> Shape textiles using templates. Join textiles using running stitch. Colour and decorate textiles using a number of techniques (such as dyeing, adding sequins or printing). 	<ul style="list-style-type: none"> To measure accurately To use appropriate tools, equipment, materials, components and techniques.
	To design, <i>make</i> , evaluate and improve	<ul style="list-style-type: none"> To draw on their own experience to help generate ideas for a fabric tree decoration. To use the appropriate vocabulary for naming and describing the equipment, materials and components they use Choose material for a purpose e.g. felt as it is easy to stitch and cut. To evaluate their products as they are developed, identifying strengths and possible changes they might make 	<ul style="list-style-type: none"> Design products that have a clear purpose and an intended user. Make products, refining the design as work progresses. 	<ul style="list-style-type: none"> To use words and labelled sketches to communicate my designs. To make realistic plans. describe how my product will be of use to the intended user.

SPRING UNIT	Key generic learning objectives	Unit specific learning objectives	KS1 working at the EXPECTED STANDARD	KS1 working ABOVE the expected standard
Light and Dark: Living in Victorian Sunderland	To take inspiration from design throughout history	To know the names of different landmarks in Sunderland and the main features	<ul style="list-style-type: none"> • Explore objects and designs to identify likes and dislikes of the designs. • Suggest improvements to existing designs. • Explore how products have been created. 	<ul style="list-style-type: none"> • Explore objects and designs to identify the views of others of the designs. • To use my knowledge of other's designs to help me design lively products
	To master practical skills	<ul style="list-style-type: none"> • Cut materials safely using tools provided. • Demonstrate a range of joining techniques such as gluing, hinges or combining materials to strengthen. • Measure and mark out to the nearest centimetre. • Demonstrate a range of cutting and shaping techniques (such as tearing, cutting, folding and curling). 	<p>Construction</p> <ul style="list-style-type: none"> • Use materials to practise drilling, screwing, gluing and nailing materials to make and strengthen products. 	<ul style="list-style-type: none"> • To measure accurately using scales • To use appropriate tools, equipment, materials, components and techniques.
	To design, <i>make</i> , evaluate and improve	<ul style="list-style-type: none"> • To use their own experiences when developing ideas for a sculpture/landmark • To evaluate the sculpture they have made, commenting on the main features 	<ul style="list-style-type: none"> • Design products that have a clear purpose and an intended user. • Make products, refining the design as work progresses. 	<ul style="list-style-type: none"> • To use words and labelled sketches to communicate my designs. • To make realistic plans. • describe how my product will be of use to the intended user.

SUMMER UNIT	Key generic learning objectives	Unit specific learning objectives	KS1 working at the EXPECTED STANDARD	KS1 working ABOVE the expected standard
The Seaside: Sunderland's History	To take inspiration from design throughout history	<ul style="list-style-type: none"> • To find out foods which are historically taken on picnics by Victorians and their family and friends. • To find out how picnic items are made e.g. sandwiches. 	<ul style="list-style-type: none"> • Explore objects and designs to identify likes and dislikes of the designs. • Suggest improvements to existing designs. • Explore how products have been created. 	<ul style="list-style-type: none"> • Explore objects and designs to identify the views of others of the designs. • To use my knowledge of other's designs to help me design lively products
	To master practical skills	<ul style="list-style-type: none"> • To know that fruit and vegetables may require treatment before being eaten and know what the treatment is <i>eg washing, peeling</i> 	<p>Food</p> <ul style="list-style-type: none"> • Cut, peel or grate ingredients safely and hygienically. • Measure or weigh using measuring cups or electronic scales. 	<ul style="list-style-type: none"> • To measure accurately using scales • To cook ingredients using the correct timings using scales

		<ul style="list-style-type: none"> To use a variety of simple tools and equipment To select and use appropriate fruit and vegetables, processes and tools Cut, peel or grate ingredients safely and hygienically. Measure or weigh using measuring cups To follow recipes and instructions to make food items for a picnic. 	<ul style="list-style-type: none"> Assemble or cook ingredients. Computing Model designs using software. 	<ul style="list-style-type: none"> To use appropriate tools, equipment, materials, components and techniques.
To design, <i>make</i> , evaluate and improve	<ul style="list-style-type: none"> To identify a target group for what they intend to design and make [a picnic for a trip to the beach] To research what food items they should include in their picnic. To communicate what they intend to make in their picnic. To evaluate their product by asking questions about what they have made and how they have gone about it 	<ul style="list-style-type: none"> Design products that have a clear purpose and an intended user. Make products, refining the design as work progresses. 	<ul style="list-style-type: none"> To use words and labelled sketches to communicate my designs. To make realistic plans. describe how my product will be of use to the intended user. 	

YEAR 2

AUTUMN UNIT	Key generic learning objectives	Unit specific learning objectives	KS1 working at the EXPECTED STANDARD	KS1 working ABOVE the expected standard
Homes in Tudor times and the Great Fire of London	To take inspiration from design throughout history	<ul style="list-style-type: none"> To investigate how the Great fire changed landscapes. To think about what Samuel Pepys may have viewed from his window before, during and after the event. 	<ul style="list-style-type: none"> Explore objects and designs to identify likes and dislikes of the designs. Suggest improvements to existing designs. Explore how products have been created. 	<ul style="list-style-type: none"> Explore objects and designs to identify the views of others of the designs. To use my knowledge of other's designs to help me design lively products
	To master practical skills	<ul style="list-style-type: none"> To weave using scrap materials. To shape textiles using templates. To join textiles using running stitch. To colour and decorate textiles using a number of techniques (such as dyeing, adding sequins or printing). 	<p>Textiles</p> <ul style="list-style-type: none"> Shape textiles using templates. Join textiles using running stitch. Colour and decorate textiles using a number of techniques (such as dyeing, adding sequins or printing). 	<ul style="list-style-type: none"> To measure accurately using scales To cook ingredients using the correct timings. using scales To use electrical circuits and switches to good effect

				<ul style="list-style-type: none"> To use appropriate tools, equipment, materials, components and techniques.
	To design, <i>make</i> , evaluate and improve	<ul style="list-style-type: none"> To design a landscape of Tudor London before/during fire. To make a weaved landscape to display on the wall (textiles) 	<ul style="list-style-type: none"> Design products that have a clear purpose and an intended user. Make products, refining the design as work progresses. 	<ul style="list-style-type: none"> To use words and labelled sketches to communicate my designs. To make realistic plans. describe how my product will be of use to the intended user.

SPRING UNIT	Key generic learning objectives	Unit specific learning objectives	KS1 working at the EXPECTED STANDARD	KS1 working ABOVE the expected standard
What I Believe: I have the right to a safe place to live.	To take inspiration from design throughout history	<ul style="list-style-type: none"> To learn about how places such as soup kitchens help the homeless in Sunderland. To find out how to make vegetable soup. 	<ul style="list-style-type: none"> Explore objects and designs to identify likes and dislikes of the designs. Suggest improvements to existing designs. Explore how products have been created. 	<ul style="list-style-type: none"> Explore objects and designs to identify the views of others of the designs. To use my knowledge of other's designs to help me design lively products
	To master practical skills	<ul style="list-style-type: none"> Cut, peel or grate ingredients safely and hygienically. Measure or weigh using measuring cups or electronic scales. Assemble or cook ingredients. 	<p>Food</p> <ul style="list-style-type: none"> Cut, peel or grate ingredients safely and hygienically. Measure or weigh using measuring cups or electronic scales. Assemble or cook ingredients. 	<ul style="list-style-type: none"> To measure accurately using scales To cook ingredients using the correct timings, using scales To use electrical circuits and switches to good effect To use appropriate tools, equipment, materials, components and techniques.
	To design, <i>make</i> , evaluate and improve	<ul style="list-style-type: none"> To design a vegetable soup on the smallest possible budget. To make a batch of soup to send to the homeless. To evaluate how effective their design meets its intended purpose. 	<ul style="list-style-type: none"> Design products that have a clear purpose and an intended user. Make products, refining the design as work progresses. 	<ul style="list-style-type: none"> To use words and labelled sketches to communicate my designs. To make realistic plans. describe how my product will be of use to the intended user.

SUMMER UNIT	Key generic learning objectives	Unit specific learning objectives	KS1 working at the EXPECTED STANDARD	KS1 working ABOVE the expected standard
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Transport: Planes, trains and automobiles	To take inspiration from design throughout history	<ul style="list-style-type: none"> To investigate toys that fly and how they stay in the air. 	<ul style="list-style-type: none"> Explore objects and designs to identify likes and dislikes of the designs. Suggest improvements to existing designs. Explore how products have been created. 	<ul style="list-style-type: none"> Explore objects and designs to identify the views of others of the designs. To use my knowledge of other's designs to help me design lively products
	To master practical skills	<ul style="list-style-type: none"> Cut materials safely using tools provided. Measure and mark out to the nearest centimetre. Demonstrate a range of cutting and shaping techniques (such as tearing, cutting, folding and curling). Demonstrate a range of joining techniques (such as gluing, hinges or combining materials to strengthen). Create products using levers, wheels and winding mechanisms. 	<p>Materials</p> <ul style="list-style-type: none"> Cut materials safely using tools provided. Measure and mark out to the nearest centimetre. Demonstrate a range of cutting and shaping techniques (such as tearing, cutting, folding and curling). Demonstrate a range of joining techniques (such as gluing, hinges or combining materials to strengthen). Model designs using software. <p>Construction</p> <ul style="list-style-type: none"> Use materials to practise drilling, screwing, gluing and nailing materials to make and strengthen products. <p>Mechanics</p> <ul style="list-style-type: none"> Create products using levers, wheels and winding mechanisms. 	<ul style="list-style-type: none"> To measure accurately using scales To use appropriate tools, equipment, materials, components and techniques.
	To design, <i>make</i> , evaluate and improve	<ul style="list-style-type: none"> Model designs using software. To design a toy that can stay in the air for X seconds. To make a toy that fits a product brief. 	<ul style="list-style-type: none"> Design products that have a clear purpose and an intended user. Make products, refining the design as work progresses. 	<ul style="list-style-type: none"> To use words and labelled sketches to communicate my designs. To make realistic plans. describe how my product will be of use to the intended user.

YEAR 3

AUTUMN UNIT	Key generic learning objectives	Unit specific learning objectives	Lower KS2 working at the EXPECTED STANDARD	Lower KS2 working ABOVE the expected standard
Over 2000 years ago...	To take inspiration from design throughout history	<ul style="list-style-type: none"> Investigate artefacts that have been recovered from the time period, what problems to historians have restoring and protecting them. 	<ul style="list-style-type: none"> Identify some of the great designers in areas of study Disassemble products to understand how they work. to generate ideas for designs. Improve upon existing designs, giving reasons for choices. 	<ul style="list-style-type: none"> To use my understanding of the characteristics of familiar designs when developing my ideas

Stone, Bronze and Iron Age	To master practical skills	<ul style="list-style-type: none"> • Understand the need for a seam allowance. • Join textiles with appropriate stitching. • Select the most appropriate techniques to decorate textiles. 	<p>Textiles</p> <ul style="list-style-type: none"> • Understand the need for a seam allowance. • Join textiles with appropriate stitching. • Select the most appropriate techniques to decorate textile 	<ul style="list-style-type: none"> • To select and work with a range of equipment and tools. • To work out how to use belts and pulleys to make mechanisms work.
	To design, <i>make</i> , evaluate and improve	<ul style="list-style-type: none"> • Design and make a container/holder/bag to keep treasure/artefact safe. 	<ul style="list-style-type: none"> • Design with purpose by identifying opportunities to design. • Begin to use software to design and represent product designs • Make products by working efficiently (such as by carefully selecting materials). • Refine work and techniques as work progresses, continually evaluating the product design.. 	<ul style="list-style-type: none"> • To present the persuasive benefits of my design • To summarise the views of intended users • I can communicate alternative ideas • To constantly evaluate my design to say what needs to be improved

SPRING UNIT	Key generic learning objectives	Unit specific learning objectives	Lower KS2 working at the EXPECTED STANDARD	Lower KS2 working ABOVE the expected standard
Along the river	To take inspiration from design throughout history	<ul style="list-style-type: none"> • To investigate the history of Egyptian shadoofs. • To know why was it used and still used today in certain countries? • To investigate how it worked. 	<ul style="list-style-type: none"> • Identify some of the great designers in areas of study • Disassemble products to understand how they work. • to generate ideas for designs. • Improve upon existing designs, giving reasons for choices. 	<ul style="list-style-type: none"> • To use my understanding of the characteristics of familiar designs when developing my ideas
	To master practical skills	<ul style="list-style-type: none"> • Cut materials accurately and safely by selecting appropriate tools. • Measure and mark out to the nearest millimetre. • Apply appropriate cutting and shaping techniques that include cuts within the perimeter of the material (such as slots or cut outs). • Select appropriate joining techniques • Choose suitable techniques to construct products or to repair items. 	<p>Materials</p> <ul style="list-style-type: none"> • Cut materials accurately and safely by selecting appropriate tools. • Measure and mark out to the nearest millimetre. • Apply appropriate cutting and shaping techniques that include cuts within the perimeter of the material (such as slots or cut outs). • Select appropriate joining techniques. <p>Construction</p> <ul style="list-style-type: none"> • Choose suitable techniques to construct products or to repair items. • Strengthen materials using suitable techniques. <p>Mechanics</p> <ul style="list-style-type: none"> • Use scientific knowledge of the transference of forces to choose appropriate mechanisms for a product (such as levers, winding mechanisms, pulleys and gears). 	<ul style="list-style-type: none"> • To use my knowledge of measurement to calculate the materials needed for a project • To select and work with a range of equipment and tools. • To work out how to use belts and pulleys to make mechanisms work.

	To design, <i>make</i> , evaluate and improve	<ul style="list-style-type: none"> • To generate ideas to lift different amounts of water. • To design and create a prototype • To evaluate their designs efficiency 	<ul style="list-style-type: none"> • Design with purpose by identifying opportunities to design. • Begin to use software to design and represent product designs • Make products by working efficiently (such as by carefully selecting materials). • Refine work and techniques as work progresses, continually evaluating the product design.. 	<ul style="list-style-type: none"> • To present the persuasive benefits of my design • To summarise the views of intended users • I can communicate alternative ideas • To constantly evaluate my design to say what needs to be improved
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SUMMER UNIT	Key generic learning objectives	Unit specific learning objectives	Lower KS2 working at the EXPECTED STANDARD	Lower KS2 working ABOVE the expected standard
What I Believe: The right to choose religion and beliefs [exploring religion around the world]	To take inspiration from design throughout history	<ul style="list-style-type: none"> • To investigate celebrations in different religions around the world e.g. the food ate in different religions. Why are some foods not eaten? • To find recipes to make celebration food items e.g. cake 	<ul style="list-style-type: none"> • Identify some of the great designers in areas of study • Disassemble products to understand how they work. • to generate ideas for designs. • Improve upon existing designs, giving reasons for choices. 	<ul style="list-style-type: none"> • To use my understanding of the characteristics of familiar designs when developing my ideas
	To master practical skills	<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. 	<p>Food</p> <ul style="list-style-type: none"> • Prepare ingredients hygienically using appropriate utensils. • Measure ingredients to the nearest gram accurately. • Follow a recipe. • Assemble or cook ingredients (controlling the temperature of the oven or hob, if cooking). 	<ul style="list-style-type: none"> • To use my knowledge of proportion to mix ingredients • To use my knowledge of measurement to calculate the materials needed for a project • To select and work with a range of equipment and tools.
	To design, <i>make</i> , evaluate and improve	<ul style="list-style-type: none"> • To design a cake to mark a celebration. • To evaluate the quality of the cake. 	<ul style="list-style-type: none"> • Design with purpose by identifying opportunities to design. • Begin to use software to design and represent product designs • Make products by working efficiently (such as by carefully selecting materials). • Refine work and techniques as work progresses, continually evaluating the product design.. 	<ul style="list-style-type: none"> • To present the persuasive benefits of my design • To summarise the views of intended users • I can communicate alternative ideas • To constantly evaluate my design to say what needs to be improved

YEAR 4

AUTUMN UNIT	Key generic learning objectives	Unit specific learning objectives	Lower KS2 working at the EXPECTED STANDARD	Lower KS2 working ABOVE the expected standard
The Ancient Greeks	To take inspiration from design throughout history	<ul style="list-style-type: none"> To learn about the design of the trojan horse To investigate moving toy horses throughout history as inspiration for own design. 	<ul style="list-style-type: none"> Identify some of the great designers in areas of study Disassemble products to understand how they work. to generate ideas for designs. Improve upon existing designs, giving reasons for choices. 	<ul style="list-style-type: none"> To use my understanding of the characteristics of familiar designs when developing my ideas
	To master practical skills	<ul style="list-style-type: none"> Measure and mark out to the nearest millimetre. Select appropriate joining techniques Strengthen materials using suitable techniques. Use materials safely, showing an appropriate level of control. Use tools to shape and mark material with a purpose. 	<p>Materials</p> <ul style="list-style-type: none"> Cut materials accurately and safely by selecting appropriate tools. Measure and mark out to the nearest millimetre. Apply appropriate cutting and shaping techniques that include cuts within the perimeter of the material (such as slots or cut outs). Select appropriate joining techniques. software designed for this purpose. <p>Construction</p> <ul style="list-style-type: none"> Choose suitable techniques to construct products or to repair items. Strengthen materials using suitable techniques. , winding mechanisms, pulleys and gears). 	<ul style="list-style-type: none"> To use my knowledge of measurement to calculate the materials needed for a project To select and work with a range of equipment and tools.
	To design, <i>make</i> , evaluate and improve	<ul style="list-style-type: none"> To make labelled drawings from different views showing specific features To make a toy movable horse from boxes and containers. To evaluate their design against their intended purpose. 	<ul style="list-style-type: none"> Design with purpose by identifying opportunities to design. Begin to use software to design and represent product designs Make products by working efficiently (such as by carefully selecting materials). Refine work and techniques as work progresses, continually evaluating the product design.. 	<ul style="list-style-type: none"> To present the persuasive benefits of my design To summarise the views of intended users I can communicate alternative ideas To constantly evaluate my design to say what needs to be improved

SPRING UNIT	Key generic learning objectives	Unit specific learning objectives	Lower KS2 working at the EXPECTED STANDARD	Lower KS2 working ABOVE the expected standard
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What did the Roman's do for us?	To take inspiration from design throughout history	<ul style="list-style-type: none"> To know that fabrics have different properties and explore some of these. To appreciate the aesthetic qualities of a design [looking specially at banners/flags for Roman families/groups/armies] 	<ul style="list-style-type: none"> Identify some of the great designers in areas of study Disassemble products to understand how they work. to generate ideas for designs. Improve upon existing designs, giving reasons for choices. 	<ul style="list-style-type: none"> To use my understanding of the characteristics of familiar designs when developing my ideas
	To master practical skills	<ul style="list-style-type: none"> Understand the need for a seam allowance. Join textiles with appropriate stitching. Select the most appropriate techniques to decorate textiles. To know how to sew using a range of different stitches, and understand some of these suit a purpose more than others 	<p>Textiles</p> <ul style="list-style-type: none"> Understand the need for a seam allowance. Join textiles with appropriate stitching. Select the most appropriate techniques to decorate textile 	<ul style="list-style-type: none"> To use my knowledge of measurement to calculate the materials needed for a project To select and work with a range of equipment and tools.
	To design, <i>make</i> , evaluate and improve	<ul style="list-style-type: none"> To design a banner using textiles for a specific purpose To make a banner. To evaluate their design. 	<ul style="list-style-type: none"> Design with purpose by identifying opportunities to design. Begin to use software to design and represent product designs Make products by working efficiently (such as by carefully selecting materials). Refine work and techniques as work progresses, continually evaluating the product design.. 	<ul style="list-style-type: none"> To present the persuasive benefits of my design To summarise the views of intended users I can communicate alternative ideas To constantly evaluate my design to say what needs to be improved

SUMMER UNIT	Key generic learning objectives	Unit specific learning objectives	Lower KS2 working at the EXPECTED STANDARD	Lower KS2 working ABOVE the expected standard
What I believe: Everyone and everything has the right to be alive.	To take inspiration from design throughout history	<ul style="list-style-type: none"> To investigate food from the rainforest and how those who live there survive. To learn what foods can be scavenged closer to home. To think about how foods are different based on where they are grown e.g. due to climate 	<ul style="list-style-type: none"> Identify some of the great designers in areas of study Disassemble products to understand how they work. to generate ideas for designs. Improve upon existing designs, giving reasons for choices. 	<ul style="list-style-type: none"> To use my understanding of the characteristics of familiar designs when developing my ideas

Life in the rainforest.	To master practical skills	<ul style="list-style-type: none"> • Prepare ingredients hygienically using appropriate utensils. • Safely use a range of kitchen tools e.g. peeler, pairing knife. • Understand the need for safety measures in the kitchen. • Measure ingredients to the nearest gram accurately. • Follow a recipe to create a product. • Assemble or cook ingredients (controlling the temperature of the oven or hob, if cooking). 	Food <ul style="list-style-type: none"> • Prepare ingredients hygienically using appropriate utensils. • Measure ingredients to the nearest gram accurately. • Follow a recipe. • Assemble or cook ingredients (controlling the temperature of the oven or hob, if cooking). 	<ul style="list-style-type: none"> • To use my knowledge of proportion to mix ingredients • To use my knowledge of measurement to calculate the materials needed for a project • To select and work with a range of equipment and tools.
	To design, <i>make</i> , evaluate and improve	<ul style="list-style-type: none"> • To design a recipe from fruit/vegetables collected. • Create and evaluate own recipe, including measurements and cooking times. 	<ul style="list-style-type: none"> • Design with purpose by identifying opportunities to design. • Begin to use software to design and represent product designs • Make products by working efficiently (such as by carefully selecting materials). • Refine work and techniques as work progresses, continually evaluating the product design.. 	<ul style="list-style-type: none"> • To present the persuasive benefits of my design • To summarise the views of intended users • I can communicate alternative ideas • To constantly evaluate my design to say what needs to be improved

YEAR 5

AUTUMN UNIT	Key generic learning objectives	Unit specific learning objectives	Upper KS2 working at the EXPECTED STANDARD	Lower KS2 working ABOVE the expected standard
Settlers and Settlements Anglo-Saxon, Vikings and Scots	To take inspiration from design throughout history	<ul style="list-style-type: none"> • To investigate The Bayeux tapestry and its importance and significance. What does it do? Other tapestries e.g. those at the Vatican. • To investigate and evaluate textile products according to their characteristics • Understand that there is a wide variety of textile products from a variety of cultural traditions 	<ul style="list-style-type: none"> • Combine elements of design from a range of inspirational designers throughout history • Create innovative designs that improve upon existing products. • Evaluate the design of products so as to suggest improvements to the user experience. 	<ul style="list-style-type: none"> • Combine elements of design from a range of inspirational designers throughout history, giving reasons for choices. • Evaluate the design of products so as to suggest improvements to the intended user experience.

	To master practical skills	<ul style="list-style-type: none"> • 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). • to apply the rules of safe practices <i>eg hazards relating to equipment</i> 	<p>Materials</p> <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). <p>Textiles</p> <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). 	<ul style="list-style-type: none"> • To use my knowledge of circumference of circles to experiment with changing speeds of rotation • To investigate properties of materials and decide how best they can be used
	To design, <i>make</i> , evaluate and improve	<ul style="list-style-type: none"> • To use results of investigations when developing design ideas • to use an appropriate vocabulary to describe textile products • to evaluate a product against the original design specification 	<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). • Use prototypes and computer aided designs to represent designs. • Make products through stages of prototypes, making continual refinements. • Ensure products have a high quality finish, using art skills where appropriate. 	<ul style="list-style-type: none"> • To clarify my ideas through discussions. • To communicate a range of designs with an awareness of the limits of some designs • To test my product with the intended user in mind.

SPRING UNIT	Key generic learning objectives	Unit specific learning objectives	Upper KS2 working at the EXPECTED STANDARD	Lower KS2 working ABOVE the expected standard
What happened after 1066?	To take inspiration from design throughout history	<ul style="list-style-type: none"> • To investigate history of foods used in the given time period, and how it was prepared and eaten. Make comparisons between this and modern food preparation. 	<ul style="list-style-type: none"> • Combine elements of design from a range of inspirational designers throughout history • Create innovative designs that improve upon existing products. • Evaluate the design of products so as to suggest improvements to the user experience. 	<ul style="list-style-type: none"> • Combine elements of design from a range of inspirational designers throughout history, giving reasons for choices. • Evaluate the design of products so as to suggest improvements to the intended user experience.

Tudors and Stewarts	To master practical skills	<ul style="list-style-type: none"> To understand the importance of correct storage and handling of ingredients (using knowledge of micro-organisms). To measure accurately and calculate ratios of ingredients to scale up or down from a recipe. To use a range of kitchen tools safely and with control. To create and refine recipes, including ingredients, methods, cooking times and temperatures. To choose and decide on a quantity of own ingredients to create a recipe. 	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"> To use my knowledge of circumference of circles to experiment with changing speeds of rotation To investigate properties of materials and decide how best they can be used
	To design, <i>make</i> , evaluate and improve	<ul style="list-style-type: none"> To design Tudor foods to have for banquet after research To make different dishes for a Tudor banquet. 	<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). Use prototypes and computer aided designs to represent designs. Make products through stages of prototypes, making continual refinements. Ensure products have a high quality finish, using art skills where appropriate. 	<ul style="list-style-type: none"> To clarify my ideas through discussions. To communicate a range of designs with an awareness of the limits of some designs To test my product with the intended user in mind.

SUMMER UNIT	Key generic learning objectives	Unit specific learning objectives	Upper KS2 working at the EXPECTED STANDARD	Lower KS2 working ABOVE the expected standard
What I believe: No one is allowed to punish you in a cruel or harmful way. Exploring crime and punishment.	To take inspiration from design throughout history	<ul style="list-style-type: none"> Look at the gadgets they use and what they are used for. To investigate the role of police through history and today. 	<ul style="list-style-type: none"> Combine elements of design from a range of inspirational designers throughout history Create innovative designs that improve upon existing products. Evaluate the design of products so as to suggest improvements to the user experience. 	<ul style="list-style-type: none"> Combine elements of design from a range of inspirational designers throughout history, giving reasons for choices. Evaluate the design of products so as to suggest improvements to the intended user experience.
	To master practical skills	<ul style="list-style-type: none"> To develop a range of practical skills to create products (such as cutting, drilling and screwing, nailing, gluing, filling and sanding). 	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). 	<ul style="list-style-type: none"> To use my knowledge of circumference of circles to experiment with changing speeds of rotation

		<ul style="list-style-type: none"> To use innovative combinations of electronics (or computing) and mechanics in product designs. To select appropriate materials, tools and techniques 	<p>Computing</p> <ul style="list-style-type: none"> Write code to control and monitor models or products. <p>Construction</p> <ul style="list-style-type: none"> Develop a range of practical skills to create products (such as cutting, drilling and screwing, nailing, gluing, filling and sanding). <p>Mechanics</p> <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. 	<ul style="list-style-type: none"> To investigate properties of materials and decide how best they can be used
	To design, <i>make</i> , evaluate and improve	<ul style="list-style-type: none"> To design a new police gadget based on a specification (intended purpose). To use information sources, including ICT, to help in their designing To make a prototype gadget to assist the police. To evaluate their design ideas as these develop 	<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). Use prototypes and computer aided designs to represent designs. Make products through stages of prototypes, making continual refinements. Ensure products have a high quality finish, using art skills where appropriate. 	<ul style="list-style-type: none"> To clarify my ideas through discussions. To communicate a range of designs with an awareness of the limits of some designs To test my product with the intended user in mind.

YEAR 6

AUTUMN UNIT	Key generic learning objectives	Unit specific learning objectives	Upper KS2 working at the EXPECTED STANDARD	Lower KS2 working ABOVE the expected standard
Children in WWII in Sunderland	To take inspiration from design throughout history	<ul style="list-style-type: none"> To investigate rationing in WWII. Cooking processes, food changes, healthy foods. 	<ul style="list-style-type: none"> Combine elements of design from a range of inspirational designers throughout history Create innovative designs that improve upon existing products. Evaluate the design of products so as to suggest improvements to the user experience. 	<ul style="list-style-type: none"> Combine elements of design from a range of inspirational designers throughout history, giving reasons for choices. Evaluate the design of products so as to suggest improvements to the intended user experience.
	To master practical skills	<ul style="list-style-type: none"> To understand the importance of safety and hygiene in the kitchen. To measure accurately and calculate ratios of ingredients to scale up or down from a recipe. 	<p>Food</p> <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"> To use my knowledge of circumference of circles to experiment with changing speeds of rotation To investigate properties of materials and decide how best they can be used

		<ul style="list-style-type: none"> To convert amounts of ingredients into different units of measurement. To demonstrate a range of baking and cooking techniques. To use kitchen tools safely and accurately. 		
	To design, <i>make</i> , evaluate and improve	<ul style="list-style-type: none"> To design a recipe based on rationed food. To create recipes, including ingredients, methods, cooking times and temperatures. To make an example dish from one of the days on the plan To evaluate their work according to their design criteria and to suggest improvements. 	<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). Use prototypes and computer aided designs to represent designs. Make products through stages of prototypes, making continual refinements. Ensure products have a high quality finish, using art skills where appropriate. 	<ul style="list-style-type: none"> To clarify my ideas through discussions. To communicate a range of designs with an awareness of the limits of some designs To test my product with the intended user in mind.

SPRING UNIT	Key generic learning objectives	Unit specific learning objectives	Upper KS2 working at the EXPECTED STANDARD	Lower KS2 working ABOVE the expected standard
Sunderland's Heritage: Coalmining	To take inspiration from design throughout history	<ul style="list-style-type: none"> To investigate ships throughout history, their purpose and changing materials and design styles. 	<ul style="list-style-type: none"> Combine elements of design from a range of inspirational designers throughout history Create innovative designs that improve upon existing products. Evaluate the design of products so as to suggest improvements to the user experience. 	<ul style="list-style-type: none"> Combine elements of design from a range of inspirational designers throughout history, giving reasons for choices. Evaluate the design of products so as to suggest improvements to the intended user experience.
	To master practical skills	<ul style="list-style-type: none"> Cut materials with precision and refine the finish with appropriate tools. Develop a range of practical skills to create products (such as cutting, drilling and 	<p>Construction</p> <ul style="list-style-type: none"> Develop a range of practical skills to create products (such as cutting, drilling and screwing, nailing, gluing, filling and sanding). <p>Materials</p> <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). 	<ul style="list-style-type: none"> To use my knowledge of circumference of circles to experiment with changing speeds of rotation To investigate properties of materials and decide how best they can be used

		<p>screwing, nailing, gluing, filling and sanding).</p> <ul style="list-style-type: none"> To join and combine materials and components accurately in temporary and permanent ways. 	<ul style="list-style-type: none"> 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). 	
	To design, <i>make</i> , evaluate and improve	<ul style="list-style-type: none"> To design a ship to discover the best material and explore why. To develop a design specification (consider appearance, function, cost and safety when designing products) To evaluate products identifying strengths and areas for development and carrying out appropriate tests 	<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). Use prototypes and computer aided designs to represent designs. Make products through stages of prototypes, making continual refinements. Ensure products have a high quality finish, using art skills where appropriate. 	<ul style="list-style-type: none"> To clarify my ideas through discussions. To communicate a range of designs with an awareness of the limits of some designs To test my product with the intended user in mind.

SUMMER UNIT	Key generic learning objectives	Unit specific learning objectives	Upper KS2 working at the EXPECTED STANDARD	Lower KS2 working ABOVE the expected standard
<p>What I believe: I have the right to protection from any kind of exploitation.</p> <p>I have the right to give my opinion.</p>	To take inspiration from design throughout history	<ul style="list-style-type: none"> To investigate how industry in Sunderland has changed from coal mining and how the car industry in Sunderland (Nissan) is an important factor for the economy. To investigate how cars have changed through history and the problems cars have brought e.g. environment. 	<ul style="list-style-type: none"> Combine elements of design from a range of inspirational designers throughout history Create innovative designs that improve upon existing products. Evaluate the design of products so as to suggest improvements to the user experience. 	<ul style="list-style-type: none"> Combine elements of design from a range of inspirational designers throughout history, giving reasons for choices. Evaluate the design of products so as to suggest improvements to the intended user experience.
	To master practical skills	<ul style="list-style-type: none"> Cut materials with precision and refine the finish with appropriate tools. Develop a range of practical skills to create products (such as cutting, drilling and screwing, nailing, gluing, filling and sanding). 	<p>Electricals and electronics</p> <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>Computing</p> <ul style="list-style-type: none"> Write code to control and monitor models or products. <p>Construction</p> <ul style="list-style-type: none"> Develop a range of practical skills to create products (such as cutting, drilling and screwing, nailing, gluing, filling and sanding). <p>Mechanics</p>	<ul style="list-style-type: none"> To use my knowledge of circumference of circles to experiment with changing speeds of rotation To investigate properties of materials and decide how best they can be used

		<ul style="list-style-type: none"> To join and combine materials and components accurately in temporary and permanent ways. 	<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. 	
	To design, <i>make</i> , evaluate and improve	<ul style="list-style-type: none"> To design a prototype car to overcome the changes that cars have had. To make a model battery powered moving car. To record their evaluations using drawings with labels 	<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). Use prototypes and computer aided designs to represent designs. Make products through stages of prototypes, making continual refinements. Ensure products have a high quality finish, using art skills where appropriate. 	<ul style="list-style-type: none"> To clarify my ideas through discussions. To communicate a range of designs with an awareness of the limits of some designs To test my product with the intended user in mind.

