Longcroft School departmental curriculum overview

Design and Technology - Textiles

Key subject skills

AO1	AO2	AO3	AO4
Identify, investigate and outline design possibilities to address needs and wants.	Design and make prototypes that are fit for purpose.	Analyse and evaluate: • design decisions and outcomes, including for prototypes made by themselves and others • wider issues in design and technology.	Demonstrate and apply knowledge and understanding of: • technical principles • designing and making principles.

Building on prior learning - What can students do by the end of KS2?

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, such as 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, such as gears, pulleys, cams, levers and linkages
- understand and use electrical systems in their products, such as series circuits incorporating switches, bulbs, buzzers and motors
- apply their understanding of computing to programme, monitor and control their products.

What are the skills gaps?

There will be numerous gaps across all areas of the National Curriculum and Assessment Objectives due to the differences and application of technology teaching time in primary schools.

Baseline expectations

- Ability to use different media to research
- Communicate designs using a range of techniques
- Have an understanding of basic tools and equipment and how to use them safely
- Use basic literacy skills to discuss existing products

- Show knowledge of existing materials

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Year 7

Students can:

Design

• use research and exploration, such as the study of different cultures, to identify and understand user needs

• develop and communicate design ideas using annotated sketches, detailed plans, 3-D and mathematical modelling, oral and digital presentations and computer-based tools

Make

• select from and use specialist tools, techniques, processes, equipment and machinery precisely, including computer-aided manufacture

• select from and use a wider, more complex range of materials, components and ingredients, taking into account their properties

Evaluate

• analyse the work of past and present professionals and others to develop and broaden their understanding

Year 8

Students can:

Design

• identify and solve their own design problems and understand how to reformulate problems given to them

• develop and communicate design ideas using annotated sketches, detailed plans, 3-D and mathematical modelling, oral and digital presentations and computer-based tools

Make

• select from and use specialist tools, techniques, processes, equipment and machinery precisely, including computer-aided manufacture

• select from and use a wider, more complex range of materials, components and ingredients, taking into account their properties

Evaluate

• test, evaluate and refine their ideas and products against a specification, taking into account the views of intended users and other interested groups

Year 9

Students can:

Design

• develop specifications to inform the design of innovative, functional, appealing products that respond to needs in a variety of situations use a variety of approaches [for example, biomimicry and user-centred design], to generate creative ideas and avoid stereotypical responses

• develop and communicate design ideas using annotated sketches, detailed plans, 3-D and mathematical modelling, oral and digital presentations and computer-based tools

Make

• select from and use specialist tools, techniques, processes, equipment and machinery precisely, including computer-aided manufacture

• select from and use a wider, more complex range of materials, components and ingredients, taking into account their properties

Evaluate

• investigate new and emerging technologies

• understand developments in design and technology, its impact on individuals, society and the environment, and the responsibilities of designers, engineers and technologists

Year 10

Students can:

Understand

• the impact of new and emerging technologies on industry, enterprise, sustainability, people, culture, society and the environment, production techniques and systems

• how energy is generated and stored in order to choose and use appropriate sources to make products and to power systems

• developments in modern and smart materials, composite materials and technical textiles

• the categorisation of the types and properties of materials

• the sources, origins, physical and working properties of the material categories or the components and systems, and their ecological and social footprint

• specialist techniques and processes that can be used to shape, fabricate, construct and assemble a high quality prototype

• appropriate surface treatments and finishes that can be applied for functional and aesthetic purposes

Year 11

Students can:

Understand

• how the critical evaluation of new and emerging technologies informs design decisions; considering contemporary and potential future scenarios from different perspectives, such as ethics and the environment

• how electronic systems provide functionality to products and processes, including sensors and control devices to respond to a variety of inputs, and devices to produce a range of outputs

• the use of programmable components to embed functionality into products in order to enhance and customise their operation

• the functions of mechanical devices, to produce different sorts of movement, changing the magnitude and direction of forces

• the way in which the selection of materials or components is influenced by a range of factors, such as functional, aesthetic, environmental, availability, cost, social, cultural and ethical

• the impact of forces and stresses on materials and objects and the ways in which materials can be reinforced and stiffened

• stock forms, types and sizes in order to calculate and determine the quantity of materials or components required

• alternative processes that can be used to manufacture products to different scales of production

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KS3 Technical knowledge – developed over the three-year course

- understand and use the properties of materials and the performance of structural elements to achieve functioning solutions
- understand how more advanced mechanical systems used in their products enable changes in movement and force
- understand how more advanced electrical and electronic systems can be powered and used in their products [for example, circuits with heat, light, sound and movement as inputs and outputs]
- apply computing and use electronics to embed intelligence in products that respond to inputs [for example, sensors], and control outputs [for example, actuators], using programmable components [for example, microcontrollers]

Designing and making principles – developed over the two-year course

- understand that all design and technological practice takes place within contexts which inform outcomes
- identify and understand client and user needs through the collection of primary and secondary data
- demonstrate an ability to write a design brief and specifications from their own and others' considerations of human needs, wants and interests
- investigate factors, such as environmental, social and economic challenges, in order to identify opportunities and constraints that influence the processes of designing and making
- explore and develop their ideas, testing, critically analysing and evaluating their work in order to inform and refine their design decisions thus achieving improved outcomes.
- investigate and analyse the work of past and present professionals and companies in the area of design and technology in order to help inform their own ideas
- use different design strategies, such as collaboration, user-centred design and systems thinking, to generate initial ideas and avoid design fixation
- develop, communicate, record and justify design ideas, applying suitable techniques, for example: formal and informal 2D and 3D drawing; system and schematic diagrams; annotated sketches; exploded diagrams; models; presentations; written notes; working drawings; schedules; audio and visual recordings; mathematical modelling; computer-based tools
- design and develop at least one prototype that responds to needs and/or wants and is fit for purpose, demonstrating functionality, aesthetics, marketability and consideration of innovation
- make informed and reasoned decisions, respond to feedback about their own prototypes (and existing products and systems) to identify the potential for further development and suggest how modifications could be made

In relation to at least one of the material categories, students are required to develop and apply in-depth knowledge by:

- selecting and working with appropriate materials and components in order to produce a prototype
- using appropriate and accurate marking out methods including: measuring and use of reference points, lines and surfaces; use templates, jigs and/or patterns; work within tolerances; understand efficient cutting and how to minimise waste
- using specialist tools and equipment, appropriate to the materials or components used (including hand tools, machinery, digital design and manufacture), to create a specific outcome
- using specialist techniques and processes to shape, fabricate, construct and assemble a high-quality prototype, including techniques such as wastage, addition, deforming and reforming, as appropriate to the materials and/or components being used
- using appropriate surface treatments and finishes for functional and aesthetic purposes

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Year	Autumn				Spring				Summer			
	Topic	Assessment	Skills tested	Links	Topic	Assessment	Skills tested	Links	Topic	Assessment	Skills tested	Links
7	Day of the Dead **Theory** : Sources and Origins of fibres, Textile decorations and fastenings, design ideas, Product Evaluations. **Making** : Marking, Securing, Cutting, Removing Material, Surface Finishes.	Completed practical piece. Work Booklet End of Unit Assessment	AO1 AO2 AO3 AO4	**Links to prior learning** Baseline Expectations **How does this prepare students for future learning?** Students can independently research and solve a problem. They can communicate their ideas. Use basic tools and equipment safely to make their product.	Day of the Dead **Theory** : Sources and Origins of fibres, Textile decorations and fastenings, design ideas, Product Evaluations. **Making** : Marking, Securing, Cutting, Removing Material, Surface Finishes.	Completed practical piece. Work Booklet End of Unit Assessment	AO1 AO2 AO3 AO4	**Links to prior learning** NC – Design NC – Make NC – Evaluate NC – Technical Knowledge **How does this prepare students for future learning?** Students can independently research and solve a problem. They can communicate their ideas. Use basic tools and equipment safely to make their product.	Day of the Dead **Theory** : Sources and Origins of fibres, Textile decorations and fastenings, design ideas, Product Evaluations. **Making** : Marking, Securing, Cutting, Removing Material, Surface Finishes.	Completed practical piece. Work Booklet End of Unit Assessment	AO1 AO2 AO3 AO4	**Links to prior learning** NC – Design NC – Make NC – Evaluate NC – Technical Knowledge **How does this prepare students for future learning?** Students can independently research and solve a problem. They can communicate their ideas. Use basic tools and equipment safely to make their product.
8	Pod Pillows **Theory** : Sources and Origins of fibres, Textile decorations and fastenings, design ideas, Product Evaluations.	Completed practical piece. Work Booklet End of Unit Assessment	AO1 AO2 AO3 AO4	**Links to prior learning** Baseline Expectations **How does this prepare students**	Pod Pillows **Theory** : Sources and Origins of fibres, Textile decorations and fastenings, design ideas, Product Evaluations.	Completed practical piece. Work Booklet End of Unit Assessment	AO1 AO2 AO3 AO4	**Links to prior learning** NC – Design NC – Make NC – Evaluate NC – Technical Knowledge **How does this prepare students**	Pod Pillows **Theory** : Sources and Origins of fibres, Textile decorations and fastenings, design ideas, Product Evaluations.	Completed practical piece. Work Booklet End of Unit Assessment	AO1 AO2 AO3 AO4	**Links to prior learning** NC – Design NC – Make NC – Evaluate NC – Technical Knowledge **How does this prepare**

	Making : Marking, Securing, Cutting, Removing Material, Surface Finishes.			**for future learning?** Students can independently research and solve a problem. They can communicate their ideas. Use basic tools and equipment safely to make their product.	**Making** : Marking, Securing, Cutting, Removing Material, Surface Finishes			**for future learning?** Students can independently research and solve a problem. They can communicate their ideas. Use basic tools and equipment safely to make their product.	**Making** : Marking, Securing, Cutting, Removing Material, Surface Finishes			**students for future learning?** Students can independently research and solve a problem. They can communicate their ideas. Use basic tools and equipment safely to make their product.
9	Pod Pillows **Theory** : Sources and Origins of fibres, Textile decorations and fastenings, design ideas, Product Evaluations. **Making** : Marking, Securing, Cutting, Removing Material, Surface Finishes	Completed practical piece. Work Booklet End of Unit Assessment	AO1 AO2 AO3 AO4	**Links to prior learning** NC – Design NC – Make NC – Evaluate NC – Technical Knowledge **How does this prepare students for future learning?** Students can develop their own solutions to meet given specifications. They can communicate using a range of design media. They can select complex tools, equipment and processes suitable for their product. Students can evaluate the success of their	Pod Pillows **Theory** : Sources and Origins of fibres, Textile decorations and fastenings, design ideas, Product Evaluations. **Making** : Marking, Securing, Cutting, Removing Material, Surface Finishes	Completed practical piece. Work Booklet End of Unit Assessment	AO1 AO2 AO3 AO4	**Links to prior learning** NC – Design NC – Make NC – Evaluate NC – Technical Knowledge **How does this prepare students for future learning?** Students can develop their own solutions to meet given specifications. They can communicate using a range of design media. They can select complex tools, equipment and processes suitable for their product. Students can evaluate the success of their	Pod Pillows **Theory** : Sources and Origins of fibres, Textile decorations and fastenings, design ideas, Product Evaluations. **Making** : Marking, Securing, Cutting, Removing Material, Surface Finishes	Completed practical piece. Work Booklet End of Unit Assessment	AO1 AO2 AO3 AO4	**Links to prior learning** NC – Design NC – Make NC – Evaluate NC – Technical Knowledge **How does this prepare students for future learning?** Students can develop their own solutions to meet given specifications. They can communicate using a range of design media. They can select complex tools, equipment and processes suitable for their product. Students can evaluate the success of their

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				project against the given criteria.				project against the given criteria.				project against the given criteria.
10	Practical - Foot Stool Theory – Unit 3 Materials Theory – Unit 1 New & Emerging Technologies	Completed practical piece. Work Booklet Work Booklet Homework Booklet Final Assessment Work Booklet Homework Booklet Final Assessment	AO1 AO2 AO3	**Links to prior learning** NC – Design & Make NC - Technical Knowledge	Practical - Cabinet Practical - Table Theory – Unit 2 Energy, Materials, Systems & Devices Theory – Unit 5B Timbers	Completed practical piece. Work Booklet Completed practical piece. Work Booklet Work Booklet Homework Booklet Final Assessment Work Booklet Homework Booklet Final Assessment	AO1 AO2 AO3	**Links to prior learning** NC – Make & Evaluate NC - Technical Knowledge	Practical - NEA Theory – Section A Mock Exam (20) Theory – Unit 6 Designing Principles	Section A (10) Mock Examination Work Booklet Homework Booklet Final Assessment	AO1 AO2 AO3	**Links to prior learning** NC - Design NC - Technical Knowledge
			AO4	**How does this prepare students for future learning?** Practical tasks prepare students for the rigors of NEA and the Theory Units will provide essential practice for exam success.			AO4	**How does this prepare students for future learning?** Practical tasks prepare students for the rigors of NEA and the Theory Units will provide essential practice for exam success.			AO4	**How does this prepare students for future learning?** Theory Units will provide essential practice for exam success. Mock exam provides real-time exam experience.
11	Practical - NEA Theory – Year 10 Mock exam reflection and practice Theory – Section C Mock Exam (50) Unit 4 – Common Specialist Technical Principles	Section B (10) Section C (20) Section D (20) Work Booklet Homework Booklet Final Assessment Mock Examination Work Booklet Homework Booklet Final Assessment	AO1 AO2 AO3	**Links to prior learning** NC - Making NC - Technical Knowledge	Practical - NEA Theory – Unit 5E Textiles Theory – Section B Mock Exam (30)	Section E (20) Section F (20) Work Booklet Homework Booklet Final Assessment Mock Examination	AO1 AO2 AO3	**Links to prior learning** NC - Evaluating NC - Technical Knowledge				
			AO4	**How does this prepare students for future learning?** Theory Units will provide essential practice for exam success. Mock exam provides real-time exam experience.			AO4	**How does this prepare students for future learning?** Theory Units will provide essential practice for exam success. Mock exam provides real-time exam experience.				