

## **CURRICULUM INTENT: D&T Textiles**

At **KS3**, and beyond, the intent of the Design & Technology department is to nurture pupils to develop the skills and knowledge that allow them to become independent learners and discerning consumers. Through the design process pupils develop their creativity, thinking skills, practical abilities and a sense of pride in their own work, in an iterative way. They grow in confidence, working individually and as members of a team, being able to appreciate the technological advancements that have contributed to the way of life they experience today in modern Britain, studying designers, both current and in the past. They also gain an insight into the classification and properties of materials and the sustainability issues that are faced by the planet, our use of the resources we harvest from it and the social, moral, cultural and ethical issues associated with designing and manufacturing for a range of users in a contemporary society

At **KS4**, pupils build upon their basic knowledge of materials and gain a deeper insight into the manufacturing processes involved in the journey from raw material to finished product. They study a common core of technical principles that include sustainability and the ecological and social footprint associated with responsible design. Finite and non-finite resources are researched as well as the technological advances that are being continually developed and incorporated into the products of which we, as consumers, take advantage. Pupils gain awareness and learn from wider influences including historical, social, cultural, environmental and economic factors. Pupils have the opportunity to work creatively when designing and making and apply technical and practical expertise. Pupils experience the use of advanced software packages and CAD/CAM and understand that the equipment they use is a school-based version of industrial manufacturing techniques. In Yr11, pupils demonstrate their knowledge of the design process by carrying out a Non-Exam Assessment within their chosen material area and produce a concise portfolio and working prototype within a contextual challenge set by AQA.

## CURRICULUM MAP: **D&T Textiles**

Year	Knowledge (Topics / contexts) What pupils will 'know'.	Skills acquired What pupils will be able to 'do'.	Concepts developed What pupils will 'understand'.	Assessments (KPI's)
7		What pupils will be able to 'do'.  ➤ Safe practice using textiles equipment and processes	What pupils will 'understand'.	Yr. 7  KPI 1: Identifying and understanding how to classify fibres. (class task)  KPI 2: Create annotated designs to communicate design ideas. (design application)  KPI 3: Understanding the construction and properties of fabrics (fabric choice) & manipulation.  KPI 4: Follow procedures for safety and understand the process of risk assessment. (Health and safety conduct)
	and functional cushion using the practical techniques studied this year			

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8	Design and make a simple commercially viable product for a target audience that could be made in small quantities to sell in an independent gift shop.  Know how making one product is different from making a number of identical ones  Design Process  Research possible customers and products and choose appropriate equipment, techniques and materials for their product. They will devise production plans while manufacturing their product.  Know that fabric properties are crucial to maximise performance	<ul> <li>Further advanced use of the sewing machine including trouble shooting</li> <li>Safe and effective use of textiles equipment and processes</li> <li>Relevant testing and choosing of techniques for prototypes</li> <li>Working with accuracy and precision to a tolerance</li> <li>Following written instructions and interpreting diagrams accurately</li> <li>Practical use of a wider range of fabrics</li> <li>Apply 'new' concepts to their own products</li> <li>Product analysis and reformulation of existing products</li> </ul>	<ul> <li>Understand the importance of market research when designing a new product</li> <li>Generation and development of design ideas for a very simple product</li> <li>Understand the need for planning before practical work begins</li> <li>How to visually merchandise a product to promote sales</li> <li>Creating a corporate image</li> <li>The relevance of branding related to quality assurance, costing and target market</li> <li>The importance of ergonomics and anthropometrics when designing</li> </ul>	Yr. 8 KPI 1: Quality of Design work, research, showing depth, diversity and creativity (design tasks) KPI 2: Select & skilfully use a range of textile processes machinery and equipment. (H&S/accuracy/precision) KPI 3: Application of key terms & use of literacy in the subject e.g. Design spec & evaluation KPI 4: Quality of functional prototype. (prototype) & aesthetics

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9 Module 1	Impact of culture capital on merchandise - Monsters			
	<ul> <li>Concept of designing with the environment in mind, using examples from a range of familiar products, re-thought in keeping with the Six Rs principles</li> <li>Exploring a product's "life cycle"</li> <li>Practical skills building</li> <li>How to work a range of textile techniques and skills</li> <li>Follow instructions to create accurate samples of techniques</li> <li>How to go beyond the instructions and combine and add to the basics</li> <li>Technology in society -</li> <li>Fashion</li> <li>How technology has influenced fashion throughout history leading to current trends</li> <li>Making activity</li> <li>How to combine the skills learned and the knowledge to complete an independent making activity</li> </ul>	<ul> <li>Pupils will design and make a new, individual product prototype reusing waste items.</li> <li>Develop advanced hand and machine stitching techniques, printing and dyeing</li> <li>Advanced manipulation of fabric &gt;use of a wider range of equipment including the embellisher and the needle punch</li> <li>Investigating different sources of information and assimilating the key points into a presentation to share with others</li> <li>Applying skills learnt throughout to planning a design and make project</li> <li>Selecting tools and equipment appropriately to manufacture a successful prototype</li> <li>Evaluating and testing product and suggesting improvements in relation to developed criteria</li> <li>To be adaptable and open to new ideas when designing</li> <li>Choose correct fabrics and textile processes to make their product</li> <li>Product analysis and reformulation of existing products</li> </ul>	<ul> <li>Culture Capital – Ugly Dolls film and soundtrack – tackling whole school ethos and culture capital, empathy and resilience and emotional intelligence</li> <li>Examine our throw-away mentality within the textiles industry</li> <li>Increase awareness of branding, consumerism and culture capital and how it impacts designing. The environmental issues that have resulted</li> <li>The importance of exploring alternative solutions</li> <li>How to follow written instructions in a variety of forms</li> <li>Selecting tools, materials and equipment appropriately</li> <li>Aim for high quality work</li> <li>Use of hand stitching</li> <li>How developing technologies are transferred to the fashion world to benefit the performance and appearance</li> <li>The development of a brief and planning of a project</li> <li>How to adapt designs to make within a given time and within resource constraints</li> <li>Evaluate prototypes and suggest modifications</li> </ul>	Yr. 9 KPI 1: Consider the range of lifestyle factors of different target groups when designing your prototype. (research) & mind maps KPI 2: Creativity of designs to show the development of your ideas. (designing) KPI 3: Research & apply information to the designs of your Monsters (suitable for chosen target group) KPI 4: Select materials that are suitable for your prototype (Appropriate fabric choice)

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	<ul> <li>Mainly Designing</li> <li>➤ The points to consider when designing for an inclusive market</li> <li>➤ Know that fabric properties are crucial to maximise product performance</li> </ul>		<ul> <li>Research the health and wellbeing, cultural, religious, well being and socio-economic contexts of their intended users</li> <li>The advantage of taking creative risks when making design decisions</li> <li>The importance of ergonomics and anthropometrics when designing</li> </ul>	
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10 Term 1a	Approaches to designing:  Design strategies:  Different design strategies and iterative deign  User-centred approach to design  Systems thinking  Electronic systems:  System structures  Systems block diagrams  Electronic system components  The work of others:  Designers  Design movements	Theory:  Approaches to designing:  Recognise different design strategies and be able to use the most appropriate approach.  Explain the key features of different design movements  Understand each of the 6Rs and be able to give examples of how each can be applied  Mock NEA1:  Apply the philosophies/ethos' of design companies in their own designing	Theory:  Approaches to designing:  The main features of iterative design, user-centred design and a systems-based approach to design  The advantages and disadvantages of using each design strategy  The main stages that make up an electronic system  The selection and use of appropriate input, process and output devices in products  How to analyse and evaluate the work of at least two different designers  How to use the work of past and present designers to aid in their won designing  How to apply the philosophies/ethos' of design companies in their own designing	<ul> <li>KPI 10.1: Approaches to design</li> <li>Know, understand and explain different approaches to designing and making: Strategies, the work of others and environmental, ecological and social considerations</li> </ul>

Year	Knowledge (Topics / contexts) What pupils will 'know'.	Skills acquired What pupils will be able to 'do'.	Concepts developed What pupils will 'understand'.	Assessments (KPI's)
	Ecological, environmental and social issues:  Ecological issues in the design and manufacture of products  The 6Rs  Social issues in the design and manufacture of products  Fair Trade	<ul> <li>Design for a specific target audience, considering their needs and wants</li> <li>Carry out a variety of research and investigation tasks</li> <li>Use 2D Design to a level that will allow them to create finger jointed pieces</li> <li>Use Tinkercad to create 3 dimensional drawings suitable to be 3D printed</li> <li>Understand the concept of working to tolerance</li> <li>Test and evaluate their prototype product, suggesting how improvements can be made</li> </ul>	<ul> <li>How to apply the principles of different design movements into their own designing</li> <li>How to explain how designing and making is affected by ecological, environmental and social issues</li> <li>How to discuss the benefits of fair trade for producers and consumers</li> </ul>	
10Term 1b	Designing products:	Theory:	Theory:	KPI 10.2: Designing products
	Research and investigation:  Conducting research and investigation Gathering data Ergonomics and anthropometrics  Briefs and specifications: Design briefs and specifications Manufacturing specifications  Manufacturing specifications  Exploring and developing designs: Using an iterative process Sketching and modelling Testing and evaluation  Communication of ideas: Sketching, 3D sketching Exploded drawings Annotation	Designing products:  Demonstrate how to describe the main methods of conducting research and investigation  Classify primary and secondary research techniques  Demonstrate and understanding of ergonomics and anthropometrics and be able to give definitions of both  Understand how to use the ACCESS FM and 5WH acronyms to write design briefs and specifications  Identify different drawing styles  Demonstrate the use of different drawing styles to communicate different pieces of information  Demonstrate proficient use of CAD using 2D and 3D drawing packages to convey ideas  Categorise renewable and non-renewable energy sources	Designing products:  How to modify a design brief as a result of user feedback  How to produce a manufacturing specification for a product or system  How to describe the main stages of developing design ideas  How to use and produce working drawings  How to describe mathematical modelling and computer-based tools are used to communicate design ideas  How to explain how ideas can be physically modelled  How to explain the effects and benefits of computer-based tools when communicating ideas  How to describe how computer-based tools can be used to share and present ideas and technical information	Know, understand and explain that when designing products, research, investigations, design briefs, specifications, idea development and communication methods all need to be considered  KPI 10.3 Energy and mechanisms:  Know, understand and explain energy storage and mechanisms, mechanical systems

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	<ul> <li>Working drawings</li> <li>Systema and schematic drawings</li> <li>Mathematical modelling</li> <li>Computer-based tools</li> <li>Physical modelling</li> <li>Other ways of communicating ideas</li> </ul>	<ul> <li>Understand and explain types of motion and how mechanisms change the direction of motion</li> <li>Understand how linkages and CAMS function and be able to give examples of each</li> </ul>	<ul> <li>How to explain why designers produce prototypes</li> <li>How to explain the considerations that need to be taken into account of when designing prototypes</li> <li>How to describe and explain how a prototype of a product or system can be evaluated</li> </ul>	
	Computer based tools:  Fiffects of computer-based tools on communication  Meeting with clients and other stakeholders  Presenting ideas to clients  Use of CAD/CAM  Use of spreadsheet software  Prototype development:  Prototypes  Evaluating prototypes	Mock NEA 2:  Investigate the demographic of a given target audience and the surrounding issues  Demonstrate the importance of researching the work of designers  Carry out secondary research into the problem to be solved  Explain how ecological, environmental and social issues need to be considered in the designing of products.  Write a comprehensive design brief using 5WH  Write a comprehensive specification using ACCESS FM	Energy and mechanisms:  Energy generation and storage:  How to describe how energy is generated and stored  How to explain the advantages and disadvantages of using renewable energy sources to power products and systems  Mechanical systems:  How to describe the four types of motion  How to describe the basic principles of a lever  How to explain the different classes of lever	
	Energy and mechanisms:  Energy generation and storage:  Non-renewable energy sources  Renewable energy sources Storing energy Types of motion Principles of levers Mechanical devices Linkages & CAMs Gears & pulleys	using ACCESS FIVI	<ul> <li>How to describe how linkages, cams, gears and pulleys transfer motion</li> <li>How to explain how these mechanical devices are used to change the magnitude and direction of forces</li> </ul>	

Year	Knowledge (Topics / contexts) What pupils will 'know'.	Skills acquired What pupils will be able to 'do'.	Concepts developed What pupils will 'understand'.	Assessments (KPI's)
10 Term 2a	Materials and their properties:  Properties of materials:	Theory:  Materials and their properties:  Explain the different categorisation of materials within the material classification  Investigate the working and physical properties of materials  Be able to explain why materials are available in stock forms and the names of standard components  Mock NEA 2:  Produce sketches using perspective and isometric projection  Work in an iterative way, avoiding design fixation and being open to altering initial ideas  Produce an exploded drawing  How to annotate a drawing effectively to explain features of a design  Use modelling as well as sketching to assist in the development of a prototype product  Use card models, toiles and breadboards  Use CAD/CAM to develop a prototype product  Record the benefits of using CAD/CAM software to design accurate products  Write a detailed manufacturing schedule	Materials and their properties:  Properties of materials:  How to explain the meanings and properties of materials How to explain the difference between hardwood, softwood timbers and manufactured timbers, characteristic properties, how timber is converted into usable material, its common uses and the stock forms they are available in How to explain the difference between ferrous and non-ferrous metals, characteristic properties, how metal is converted into usable material and the stock forms they are available in How to explain what happens to polymers at the end of their usable life How to explain how fabric is constructed from fibres, the difference between natural, synthetic and blended fibres How to explain the characteristic properties and common uses of a variety of variety of textiles	KPI 10.4: Materials and their properties: Properties of materials, new materials, standard components and finishes
10 Term 2b	New materials:  > Modern materials > Metal foams	Theory:	New materials:	<ul> <li>KPI 10.4: Materials and their properties: Properties of materials, new</li> </ul>

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	<ul> <li>➢ Graphene</li> <li>➢ Nanomaterials</li> <li>➢ Smart materials</li> <li>➢ Composites</li> <li>➢ Technical textiles</li> <li>Standard components:</li> <li>➢ Stock forms</li> <li>➢ Reasons for using standard components</li> <li>➢ Types of standard components</li> <li>➢ Types of finishing</li> <li>➢ Metal-based materials</li> <li>➢ Polymers</li> <li>➢ Timber-based materials</li> <li>➢ Papers and boards</li> <li>➢ Electronic and mechanical systems</li> </ul>	<ul> <li>Understand the importance of material investigation and developments in material technology</li> <li>Be able to explain why materials are available in stock forms and the names of standard components</li> <li>Understand the use of finishes for different materials and how they are used to enhance functionality and aesthetics</li> </ul> Mock NEA 2: <ul> <li>Produce a functioning prototype and storyboard the progress of the making</li> </ul>	<ul> <li>How to describe the characteristics of a variety of new materials, and what is meant by a smart material and a composite material</li> <li>List specific technical textiles, and modern, smart and composite materials and their typical uses</li> <li>Standard components:         <ul> <li>How to explain why standard components are used</li> <li>How to list standard components used with a variety of different materials</li> </ul> </li> <li>Finishing materials:         <ul> <li>How to explain the purpose of surface treating and finishing materials</li> <li>How to describe how surface treatments and finishing techniques are applied to a range of materials</li> </ul> </li> </ul>	materials, standard components and finishes
10 Term 3a	Selection of materials:  Functionality and choice of materials  Factors affecting material selection  Properties required for commercial products  Working with materials:  Meeting the needs needed by a product  Examples of how material properties can be modified  Reinforcing the design to enhance performance  Methods of reinforcement	Theory:  Explain why certain materials are used for certain functions based on their working and physical properties  Categorise products into correct scales of production  Study the manufacturing processes of at least one material (polymers covered at KS3) into products/components for products  Identify production aids used in the manufacture of products to ease time and ensure consistency  Explain the importance of accuracy and how tolerance is key in manufacture  Demonstrate, through the mini NEA, how quality control and quality	Selection of materials:  How to describe a wide range of factors that can influence the choice of material for a product How to explain the important properties required by commercial products  Working with materials:  How to explain why reinforcement is used in products How to describe how the properties of a material can be enhanced How to describe a range of examples of how product design can be modified to improve the performance of a product	<ul> <li>KPI 10.5: Tools, equipment and processes: Scales of production, manufacturing processes, production aids and ensuring accuracy</li> </ul>

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pr So	ools, equipment and rocesses:  cales of manufacture:  Scales of manufacture Influence of quality on selection of materials Material management  anufacturing processes:  Papers and boards Timber-based materials Metals and alloys Polymers Textiles and electronic systems  leasurement and production dds:  Measurement and reference points The importance of production aids Jigs Templates Patterns  msuring accuracy:  The difference between accuracy and precision Why accuracy is important Tools to improve accuracy Tolerance Quality control and quality assurance	assurance are an essential part of manufacture  Mock NEA 2:  Evaluate final prototype against the design brief and specification  Carry out consumer testing and suggest improvements based on findings  Evaluate their prototype in relation to scales of manufacture and modifications that would need to be made	Tools, equipment and processes:  Scales of production:  How to describe the characteristics and give examples of different scales of manufacture How to explain why the equipment used changes with the scale of manufacture  Manufacturing processes:  How to describe what is meant by wasting, addition and deforming and reforming How to identify the processes and equipment used to manufacture products from different materials How to select the appropriate tools to carry out processes on different materials and justify choice How to identify the processes and equipment used to manufacture electronic systems  Measurement and production aids:  How to explain the meaning and importance of reference points used in measurements How to explain the reasons why production aids are used How to describe how jigs, templates and patterns are used in product manufacture  Ensuring accuracy:  How to explain the reasons why accuracy is important when manufacturing products and prototypes	

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			<ul> <li>How to explain the meaning and importance of quality control and quality assurance</li> <li>How to explain the importance of tolerance when manufacturing products</li> </ul>	
10 Term 3b	New and emerging technologies:  Impact on industry:  Impact on industry Impact on enterprise Impact on employment  Impact on production:  CAD/CAM Improving manufacturing efficiency Technology push and market pull  Impact on society and the environment:  Impact on sustainability and the environment Impact on culture Impact on society  NEA information:  The requirements for their NEA projects.  Deadlines in relation to the completion of each NEA section.	Theory:  New and emerging technologies:  Explain the impact on industry, enterprise and employment  Explain how the increasingly complex use of CAD/CAM has improved manufacturing, and efficiency  Write a case study, giving specific examples, of how technology push and market pull have influenced product development and demand  Describe how companies utilising advances in technology and science have had to consider sustainability and the environment  Describe how designers of products have had to consider culture when designing products so that they do not offend different cultures, faiths and beliefs  Describe how companies need to consider the effects of introducing/removing a manufacturing setting from an urban setting  Approaches to designing and making: Strategies, the work of others and considerations revisit  NEA:  Select a contextual challenge as given by AQA.	New and emerging technologies:  Impact on industry:  How to explain the impact of new and emerging technologies on industry and enterprise How to discuss the potential effects of new and emerging technologies on employment  Impact on production:  How to explain the impact of CAD and CAM on production How to explain how production techniques and systems improve manufacturing efficiency.  Impact on society and the environment:  How to explain the impact of new and emerging technologies on sustainability and the environment How to discuss the potential effects of new designs on culture and society	KPI 10.6: New and emerging technologies: Impact on industry, production, society & the environment
		<ul><li>given by AQA.</li><li>Select a client and identify a need for a new or improved product.</li></ul>		

		<ul> <li>Carry out investigations, primary and secondary data to understand client/user needs.</li> <li>Study the work of past and present</li> </ul>	
		designers to inform their own designing.  Study the environmental and social impacts of designing and manufacturing new products	
11 Term 1	products.	Theory:  Approaches to designing and making: Strategies, the work of others and considerations revisit  Designing products: Research, and investigations revisit  Energy and mechanisms: Energy storage and mechanisms, mechanical systems revisit  NEA:  Produce and design brief and specification for a prototype product for a specific client, addressing their needs and wants  Theory:  Materials and their properties: Properties of materials revisit  Tools, equipment and processes: Scales of production, manufacturing processes, production aids and ensuring accuracy revisit  NEA:	<ul> <li>KPI 11.1: Know, explain and demonstrate the making principles of material management, health and safety and manufacturing processes.</li> <li>KPI 11.2: Section A: Identifying &amp; investigating design possibilities</li> <li>KPI 11.3: Section B: Producing a design brief &amp; specification</li> <li>KPI 11.4: Section C: Generating design ideas</li> <li>KPI 11.5: Section D: Developing design ideas</li> </ul>

Year	Knowledge (Topics / contexts) What pupils will 'know'.	Skills acquired What pupils will be able to 'do'.	Concepts developed What pupils will 'understand'.	Assessments (KPI's)
		<ul> <li>Use a range of design strategies to generate imaginative and creative designs.</li> <li>Develop the use of a range of appropriate techniques to communicate design ideas including 2D and 3D drawings and computer modelling.</li> <li>Work to specific tolerances, cutting, shaping and forming materials.</li> <li>Material management and the economical use of material.</li> </ul>		
11 Term 2	<ul> <li>How to document, with written and photographic evidence, how the making/manufacture of the prototype product took place</li> <li>How to evaluate final prototypes fully using client feedback and testing to suggest improvements.</li> </ul>	<ul> <li>Select materials and components appropriate to the task considering cost, functionality and availability.</li> <li>Work with specialist tools and equipment with precision.</li> <li>Use specialist techniques and processes.</li> <li>Design and develop prototypes in response to client needs and wants.</li> <li>Evaluate final prototype against design brief and specification</li> <li>Conduct consumer testing and evaluate results</li> <li>Suggest improvements in the light of consumer testing and evaluation against the design brief and specification</li> </ul>	<ul> <li>The importance of considering the needs and wants of a client when designing for them.</li> <li>The need to develop a specification that gives details of the constraints on a design project.</li> <li>The need to consider a wide range of design ideas and possibilities, avoiding design fixation.</li> <li>The need to research materials, components, joining and finishing methods before finalising design ideas.</li> <li>The need for accuracy in manufacture in order to produce a functioning and high-quality prototype.</li> <li>The need to carry out market research on a finished prototype to gauge opinions on suitability.</li> <li>The need to test a prototype fully with the client and others.</li> <li>The need to evaluate a prototype and suggest improvements.</li> </ul>	<ul> <li>KPI 11.6: Section E:         Realising design ideas</li> <li>KPI 11.7: Section F:         Analysing &amp; evaluating</li> </ul>
11 Term 3	The internally moderated mark for their NEA.	Theory:  New and emerging technologies: Impact on industry, production, society & the environment revisit	The requirements for answering exam questions in relation to multiple choice, short answers, mid-length answers and extended answers	

Year	·	Concepts developed What pupils will 'understand'.	Assessments (KPI's)
	<ul> <li>Answer exam questions with confidence using correct subject terminology</li> <li>Answer exam questions with the correct amount of detail to be awarded highest marks available</li> </ul>		