



KESTEVEN AND SLEAFORD HIGH SCHOOL

Design and Technology Scheme of Learning

Year 11 – Term 3-5/Section 1 - Core Technical Principles/Section 2 – Specialist Technical Principles/Section 3 – Designing and making Principles

Intent Rationale: Specification AQA Design and Technology 8552

Core Technical Principles (CTP): Taught through theory and practical application. Including: material categories; sources and origins of materials; properties of materials; modern and smart materials; new and emerging technologies; mechanical devices; electronic systems; energy storage and generation.

Specialist Technical Principles (STP): Taught through Textiles theory and practical lessons. Including: Users needs and contexts; past and present designers; environmental and social issues; design and communication; selection of materials; stock forms; surface treatments and finishes; prototypes; working with materials.

Designing and Making Principles (DMP): Taught through practical application and folder work.

1. Designing Principles: Investigation – primary and secondary data; The work of others; Design Strategies; Communication of design ideas and prototype development

2. Making Principles: Selection of materials and components; Tolerances and Allowances; Material management and marking out; Specialist Tools, equipment, techniques and processes; Surface Treatments and Finishes

Sequencing – what prior learning does this topic build upon?	Sequencing – what subsequent learning does this topic feed into?
<ul style="list-style-type: none"> • Y11 Terms 1-2 • Y10 Terms 5-6 • Y10 Terms 3-4 • Y10 Terms 1-2 • Y9 Skirt Project • Y8 Topic Textiles - Pyjama Project • Y8 Topic RM – Clocks – Design Movements • Y7 Wall organiser project 	<ul style="list-style-type: none"> • A Level Design and Technology Fashion and Textiles
What are the links with other subjects in the curriculum?	What are the links to SMSC, British Values and Careers?
<ul style="list-style-type: none"> • History – study of different historical eras • Business Studies – manufacture marketing and pricing • Art – Presentation, illustration and design, design movements • Geography – Fair Trade; sustainability; environmental issues; sustainable energy production. • Physics – mechanical devices, energy generation and storage • Chemistry – polymers • Mathematics – GCSE maths skills – area; geometry; trigonometry; volume etc. 	<ul style="list-style-type: none"> • Problem solving; independence; resilience; encouraging creativity; communication skills; confidence; organisation (GB4) • Links with social/cultural understanding –. (BV4) (BV5) (C1) (C2) (SP1) (SP2) (SP3) • Moral, social and Environmental topics covered on sustainability and cloth wastage. (C2) (M1) (SO1)
What are the opportunities for developing literacy skills and developing learner confidence and enjoyment in reading?	What are the opportunities for developing mathematical skills?
<ul style="list-style-type: none"> • Independent research • Written instructions • Subject specific vocabulary 	<ul style="list-style-type: none"> • Measuring skills using a ruler and tape measure • Seam allowance of 15mm in construction • Average measurements • Mathematical problem solving • Geometric understanding



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Intent – Concepts

What knowledge will students gain and what skills will they develop as a consequence of this topic?	
<p>Know</p> <ul style="list-style-type: none"> • How to use research and exploration to identify and understand user needs • How to identify and solve their own design problems and understand how to reformulate problems given to them • How to develop specifications to inform the design of innovative, functional, appealing products that respond to needs in a variety of situations • Develop an understanding of developments in new materials, systems approach to designing and mechanical devices <p>Apply</p> <ul style="list-style-type: none"> • use a variety of approaches to generate creative ideas and avoid stereotypical responses • User needs and user centred design • select from and use specialist tools, techniques, processes, equipment and machinery precisely, including computer-aided manufacture when appropriate • select from and use a wider, more complex range of materials and components, considering their properties • analyse the work of past and present professionals and others to develop and broaden their understanding • Make detailed plans in order to construct the desired product. <p>Extend</p> <ul style="list-style-type: none"> • test, evaluate and refine their ideas and products against a specification, considering the views of intended users and other interested groups • understand and use the properties of materials and the performance of structural elements to achieve functioning solutions 	
What subject specific language will be used and developed in this topic?	What opportunities are available for assessing the progress of students?
<ul style="list-style-type: none"> • Modelling – 3D modelling on the stand using bin bags, unbleached cotton (Calico) or paper • Toile – an early version of the product you are making to trial fit and design features • Prototypes – are used to test and modify design ideas • Tolerances – the acceptable range of size a product or part can be shown as +/- a dimension (+/- 5mm) • Lay plan – pattern pieces are laid out on the fabric in the most economic manner, minimising waste • Datum points – in woven textiles – the fabric selvedge must always be parallel to the straight of grain line on the pattern pices. • Lockstitch – straight stitch on the sewing machine • Overlocker – a three or four thread machine with a blade that is used to trim excess fabric and neaten the frayed edges of the fabric. Used to sew seams on jersey fabrics. • Coverstitch machine – a three thread machine with a twin needle used to hem edges on jersey fabrics • Ball point sewing machine needles are used to sew jersey fabrics <p>Revision of key vocabulary from previous topics as part of revision programme.</p>	<p>Outcomes & Key work for assessment: GCSE NEA Project AO2 D Developing design ideas AO2 E Realising Design ideas AO3 Evaluate and Analyse Final NEA grade</p> <p>Further Year 11 GCSE Mock Examinations</p> <p>Regular marking of class and homework.</p> <p>Tracking points.</p>



Intent – Concepts

Lesson title	Learning challenge	Higher level challenge	Suggested activities and resources
NEA 26 Realising design ideas - Making	The correct tools, materials and equipment (including CAM where appropriate) have been used or operated safely with an adequate level of skill. Some quality control is evident through measurement and testing. Prototype shows an adequate level of making/finishing skills that are mostly appropriate to the desired outcome. A prototype of sufficient quality has been produced that may have potential to be commercially viable, although further developments would be required, and only partially meets the needs of the client/user.	The correct tools, materials and equipment (including CAM where appropriate) have been consistently used or operated safely with an exceptionally high level of skill. A high level of quality control is evident to ensure the prototype is accurate by consistently applying very close tolerances. Prototype shows an exceptionally high level of making/finishing skills that are fully consistent and appropriate to the desired outcome. An exceptionally high-quality prototype that has the potential to be commercially viable has been produced and fully meets the wants and needs of the client/user.	Independent development of prototype. Progress is documented and modifications noted. Development of the iterative design process. H/W Diary of Manufacture – to include method, modifications, risk assessment, industrial methods, Quality Control and photographs.
NEA 27 Realising design ideas - Making			
NEA 28 Realising design ideas - Making			
NEA 29 Realising design ideas - Making			
NEA 30 Realising design ideas – Making			
NEA 31 Realising design ideas – Making			
NEA 26 Realising design ideas – Making			
NEA 32 Realising design ideas – Making			
NEA 33 Realising design ideas – Making	Good evidence that various iterations are as a result of considerations linked to testing, analysis and evaluation of the prototype, including some consideration of feedback from third parties. Good testing of most aspects of the final prototype against the design brief and specification. Detailed reference is made to any modifications either proposed or undertaken. Good analysis and evaluation at most stages of the project that influences the design brief and the design and manufacturing specifications.	Extensive evidence that various iterations are as a direct result of considerations linked to testing, analysis and evaluation of the prototype, including well considered feedback from third parties. Comprehensive testing of all aspects of the final prototype against the design brief and specification. Fully detailed and justified reference is made to any modifications both proposed and undertaken. Excellent ongoing analysis and evaluation evident throughout the project that clearly influences the design brief and the design and manufacturing specifications.	Independent evaluation of finished prototype. Photography and testing carried out. Students evaluate prototype against specification, design brief etc. developing an understanding of how to be critical and constructive in how their prototype could be improved.
NEA 34 Realising design ideas – Evaluation			
NEA 35 Realising design ideas – Evaluation	NEA proof read checked and completed ready to hand in. Catch up for students who have been absent.		AQA CRF form completed with information regarding websites, books etc used in NEA. NEA printed out, front cover laminated, treasury tagged and submitted for marking. Extra time students (25% on written element) have until the end of T4 W1 to submit their work
NEA catch up/ CRF form to be completed			
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End of Term 3			
Coursework handed in for marking NEA printed out, front and back sheets laminated NEA CRF form to be completed NEA completion for extra time students.	NEA proof read checked and completed ready to hand in. Catch up for students who have been absent.	Independent revision identifying topics of further focus. Revision cards Revision books Text books	AQA CRF form completed with information regarding websites, books etc used in NEA. NEA printed out, front cover laminated, treasury tagged and submitted for marking. Extra time students (25% on written element) have until the end of T4 W1 to submit their work H/W REVISION
NEA CRF form to be completed NEA completion for extra time students.			
Revision of Core Technical Principles Core Materials	Students gain an understanding of the exam paper and content.		Same but different Techdoodle Core materials – origins, properties. H/W REVISION
Revision of Core Technical Principles Core Materials			Material properties woven/ knitted Core materials Textiles DVD 30mins



Revision of Core Technical Principles Fabric construction Isometric drawing		Starter – manmade or natural techdoodle Fabric construction revision Isometric/ orthographic drawing revision
Revision of Core Technical Principles Smart and modern Materials		Isometric drawing question A3 materials sheets H/W REVISION
Revision of Core Technical Principles Composite and Technical Materials		#thinkDo Smart and Modern A3 materials sheets
Mock GCSE Examination week		
Revision of Core Technical Principles Product Analysis	Students gain an understanding of the exam paper and content.	What is product analysis Techdoodle ACCESSFM Trunki H/W REVISION
Revision of Core Technical Principles		Reinforcing and stiffening techdoodle Mechanisms and Linkages
Revision of Core Technical Principles Maths Questions		Maths H/W REVISION
Further D&T Mock exam paper 1hrs		
Further D&T Mock exam paper 1hrs		
END OF TERM 4		
Go over Mock paper		
Go over mock paper		
Revision Specialist Technical Principles	Students gain an understanding of the exam paper and content.	Students identify key areas of revision based on examination performance and topics that require further clarification. H/W REVISION
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Y11 STUDY LEAVE		