GCSE Product Design Curriculum Unit Overview Year 10

Intent:

Intent of D&T is to be a thriving, inspirational and practical subject which produces students who explore their creativity, embrace challenge and achieve their best whilst considering the needs, wants and values of others and the wider world. Students acquire a broad range of subject knowledge and draw on disciplines such as mathematics, science, engineering, computing and art. They learn how to take risks, becoming resourceful, innovative, enterprising and capable citizens. Through the evaluation of past and present design and technology, they develop a critical understanding of its impact on daily life and the wider world.

- Develop their 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.
- Provide suitable problems or themes to work from.
- Develop understanding and skills how sources, experiments and investigations can be used to inform ideas.
- Develop skills to use specialist materials, tools, techniques and machinery safely.
- Develop understanding of the importance of selecting sources, methods and techniques suitable to intentions.
- Develop their skills and understanding of technological developments such as CAD and CAM.
- Build an understanding how the subject plays a vital part of STEM by developing skills to think ad intervene creatively to improve quality of life.

Implementation:

Students from all year groups are given the opportunity to extend their current D&T experience by exploring and experimenting with a wider range of techniques and equipment in a safe and relaxing environment. Attendance to extra curriculum club has increased steadily in numbers, especially attendance by the younger students in the school.

Work produced during these lunchtime clubs are often used and displayed within the school to celebrate success and inspire others.

Impact:

Students in Y10 and 11 follow the AQA GCSE Design and Technology course. The exam boards 3 assessment objectives (Identify, investigate & outline design possibilities; Design & make prototypes that are fit for purpose; Analyse & evaluate) and taxonomy for assessment are used to assess students and measure progress.

From Y7 students Schemes of works are planned to develop students' knowledge and skills by having appropriate coverage of content for the year group which are structured and sequenced to build the knowledge of topics and skills in layers.

By the time students reach Y10 they will have experienced a broad enough D&T curriculum to work with some confidence and independence. Students will have evaluated their progress and knowledge, they will be able to select their favourite methods, materials and approaches.

We encourage all students in KS4 to consider DT/Engineering futures. We offer specific careers information through displays and discussion. SOL have been developed in GCSE DT and Construction that focus on post 16 options.

Students in KS4 are actively encouraged to consider further study at BSF – A level DT -Product Design. At KS5 students deepen their knowledge gained at KS4 and have the opportunity to become creative, independent learners. KS5 classes are a visible asset to the department. They are our key role models for younger years. Many past students have successfully completed the A level course and progressed to STEM careers or higher education

Product Design - Year 10 Autumn Clock (Mini 3 page NEA)				
Specification Content What are we learning?	**Our intention-what knowledge, understanding and skills will we gain?**	Evaluation and assessment methods	**Implementation**	**What additional resources are available?**
3.1.3 Developments in new materials 3.1.6 Material and their working properties 3.2.3 Ecological and social footprint 3.2.5 Using and working with polymers 3.2.6 Stock Forms 3.2.8 Commercial processes	• The classification of smart and modern materials. • The classification and properties of polymers. • Environmental impact of polymers in the design and manufacture of products. • Using and working with polymers using CAD CAM. • Know and understand the different stock forms polymers are available in. • Understand the different commercial processes involved	• Full understanding shown in half term assessment. • Accuracy of final outcome. • Development of prototype demonstrating the iterative design process. • Mini NEA folio	Links to KS3: • Polymers • Use of tools and equipment • Revisit CAD software • Design movement: Art Deco • Design strategies used in KS3	• Mini NEA checklist and mark scheme. • Exampro Exam Qs • AQA Product Design Textbook • Use of our own design library, and school library. • Access to IT room for research. • "How its made" video clips polymer products

3.3.1 Investigation, primary and secondary data 3.3.3 The work of others. 3.3.4 Design strategies 3.3.5 Communication of design ideas 3.3.6 Prototype development	in the manufacture of a range of polymer products. • How to undertake research and analyse to produce a design brief and specification. • Investigate, analyse and evaluate Art Deco as a design movement. • Use of design strategies to generate range of creative ideas • Communicate design ideas using freehand sketching and annotated drawings. • Design and develop a functioning prototype for their clock.			

GCSE Product Design - Year 10 Spring Bottle Opener				
Specification Content What are we learning?	**Our intention-what knowledge, understanding and skills will we gain?**	Evaluation and assessment methods	**Implementation**	**What additional resources are available?**
3.1.5 Mechanical devices 3.1.6 Material and their working properties 3.2.8 The use of production aids and implementing QC checks 3.3.1 Investigating primary and secondary daa 3.3.3 The work of others. 3.3.4 Design Strategies 3.3.5 Communication of design ideas 3.3.6 Prototype Development 3.3.8 Tolerances	• The function of mechanical devices to produce different movements. • The effect of levers on force. • The classification and properties of metals. • How to use a template or jig when making the bottle opener and apply QC checks when testing. • How ergonomics and anthropometric data are used and applied in design. • Investigate, analyse and evaluate the work of Ettore Sottsass and Alessi. • Generate imaginative and creative designs for a bottle opener using a range of different design strategies. • Design and develop a functioning prototype for their bottle opener. • Work accurately in manufacture using tolerances.	• Full understanding shown in half term assessment. • Identification of the motion that different products exhibit and the classification of levers. • Accuracy and evaluation of final outcome. • Reflecting influence from the work of others and use of design strategies in students own design work. • Mini NEA folio	Links to KS3: • Metals and polymers • Use of jigs, templates or patterns • Investigating design movements • Idea generation • Design development Prior learning: • Polymers • Idea generation • Mini NEA	• Mini NEA checklist and mark scheme. • Exampro Exam Qs • AQA Product Design Textbook • Use of our own design library, and school library. • Access to IT room for research.

Product Design - Year 10 Summer 1 Trinket Box (Mini 3 page NEA)				
Specification Content What are we learning?	**Our intention-what knowledge, understanding and skills will we gain?**	Evaluation and assessment methods	**Implementation**	**What additional resources are available?**
3.1.6 Material and their working properties 3.2.3 Ecological and social footprint 3.2.4 Sources and origins 3.2.5 Using and working with timber 3.2.8 Commercial processes 3.3.2 Environmental, social and economic challenge 3.3.5 Communication of design ideas	• The classification and properties of timber. • The 6 R's • Know and understand the sources and origin of timber. • Using and working with timber using a range of tools and equipment. • Using commercial processes (bag press) to create laminated effect to timber boxes. • How deforestation impacts the process of designing and making. • Isometric and third angle orthographic drawing.	• Full understanding shown in half term assessment. • Accuracy of final outcome. • Student completion of presentation drawings. • Mini NEA folio	Links to KS3: • Timbers • Use of tools and equipment • Orthographic drawing of money box Prior learning: • Mini NEA	• Mini NEA checklist and mark scheme. • Exampro Exam Qs • AQA Product Design Textbook • Use of our own design library, and school library. • Access to IT room for research. • "How its made" video clips timber products

Product Design - Year 10 Summer 2 NEA Intro				
AO1 Identifying & investigating design possibilities	Analysis and research into the exam board contextual challenge by: • Identify design possibilities • Identify a user/client • Look at the work of others and investigate how they are influenced. • Demonstrate a full understanding of the impacts on society.	• Successfully submit section A • Students show a clearly progressive folio where they continually analyse and evaluate their work.	Prior learning: • Mini NEA • Investigating, primary and secondary data	• NEA checklist and mark scheme. • NEA Exemplar • Use of TEAMs for file management • Use of our own design library. • Access to IT room for research.