

## DT Unit Overview Year 7

### 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 and 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

| <b>Product Design - Year 7 Unit 1 Pen Project</b> |  |   |  |  |
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| <b>What are we learning?</b>                      | <b>Our intention - What knowledge, understanding and skills will we gain?</b>  | <b>Evaluation and assessment methods</b>  | <b>Implementation</b>  | <b>What additional resources are available?</b>                                    |
| Research to inform designs                        | <p><b>Knowledge</b> - Research existing products. Properties of plastics.</p> <p><b>Understanding</b> - Analyse products, knowing how/ why they are made and the wider impact on design choice. Additional focus on how to analyse products.</p> <p><b>Skills</b> - Using understanding to implement design strategies (squiggle sketch, mood board) to inform creative design ideas. Additional focus on design strategies to generate ideas.</p> | <p>Students are able to analyse a range of existing products through our handling collection.</p> <p>Students are able to produce accurate sketches that show creativity having been introduced to two design strategies.</p> | <p>At KS2 students investigate and analyse a range of existing products. They use these criteria to inform creating designs that are functional and appealing aimed at individuals or groups.</p> <p>They generate, and communicate their ideas through discussion, annotated sketches, cross sectional and exploded diagrams.</p> | <p>Teacher demo.</p> <p>Existing examples of sketches</p> <p>Existing products</p> |

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| Developing, modelling and communicating ideas | <p><b>Knowledge</b> - Units of measure. Scale, proportion. Anthropometric data</p> <p><b>Understanding</b> - Importance of modelling, testing and development of prototype. Design for human use.</p> <p><b>Skills</b> - Modelling using card and paper, Measuring and marking out of material.</p> <p>Additional focus on testing and refining ideas</p>   | Creative models developed from drawings. Accurate in size and colour. Students test their models, acting on feedback to improve. | They generate, develop and model and their ideas through discussion and prototypes.  | Peer reviews<br>Creative critique.   |
| Health and safety for manufacture.            | <p><b>Knowledge</b> – Introduce tech room H&amp;S. H&amp;S of hand tools and solvents.</p> <p><b>Understanding</b> - Safe use of acrylic solvent. Safe use of a coping saw to cut acrylic. Clear demonstrations provided and H+S requirements.</p> <p><b>Skills</b> - Assembling acrylic and safe use of acrylic solvent. Filing and finishing of acrylic using different grades of abrasive papers and polish. Identifying what information is included on packaged products. Safe use of vacuum former and line bender. Assume minimal workshop experience and teach at introductory level.</p> | Students follow procedures for H+S and understand associated risks   | Some use of different materials and equipment depending on school. Not always available at primary so teach all at introductory level. | H&S Ppts.<br>Markings around the room<br>Signage and poster warnings.<br>technician assistance where needed. |

| <b>Product Design - Year 7 Unit 2 Alarm Project</b> |   |  |                       |   |
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| <b>What are we learning?</b>                        | <b>Our intention - What knowledge, understanding and skills will we gain?</b> | <b>Evaluation and assessment methods</b> | <b>Implementation</b> | <b>What additional resources are available?</b> |
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| <p>Research to inform electronic products.</p> | <p><b>Knowledge</b> - Discuss existing products - Electronic products.</p> <p><b>Understanding</b> – Printed circuit boards. How they are used in electronic products.</p> <p>Using instructions to create electronic products.<br/>Students to use a context based approach to chose the direction of their project.</p> <ol style="list-style-type: none"> <li>1. Create a device to protect a valuable item stored in a drawer.</li> <li>2. Create a device that alerts you that someone has entered the room.</li> <li>3. Create a device that lets an elderly person know if it's too cold.</li> </ol> | <p>Students analyse the contexts given and chose a project to develop.</p>                   | <p>At KS2 students understand the basics of electronics. This is covered in KS2 Science.</p> <p>Series and parallel circuits.</p> | <p>Teacher demo.<br/>Existing examples of sketches</p> <p>Existing products</p> |
| <p>Manufacturing electronic products.</p>      | <p><b>Knowledge</b> - Units of measure – Electronics: Ohms, Amps, Volts</p> <p><b>Understanding</b> – How to solder safely. The importance of high quality solder joints. What common electronic components do.</p>   | <p>High quality soldering. Correctly placed components using a given design/instruction.</p> | <p>Practical demonstration of electronic principals learnt in Science.</p>  | <p>Peer reviews/critique.</p>   |
| <p>Evaluating products.</p>                    | <p><b>Knowledge</b> – How to effectively evaluate a completed product.</p> <p><b>Understanding</b> – Using success criteria to evaluate their own work and the work of peers.</p>   | <p>High quality feedback given to peers.</p>   |   | <p>Peer/self review.</p>  |