



## Our curriculum in Design and Technology

What is the purpose of Design and Technology?	Department information
<p>Every subject in the Art &amp; DT Faculty equips students with strong technical skills, the ability to generate innovative ideas, solve problems and think creatively.</p> <p>Teachers facilitate increasingly independent projects where students develop resilience, are encouraged to take risks, and become inquisitive, critical, skilled practitioners. Using a vulnerable first approach, staff teach to the top and identify how to support all students to make progress.</p>	<p>Core Leader: Matt Kinsella Subject Leader: Matt Kinsella</p> <p>In KS3 students have 2 lessons a fortnight. In KS4 they have 5 lessons a fortnight and in KS5, 10 lessons a fortnight.</p> <p>Exam board: AQA GCSE Design and Technology A Level Design and Technology: Product Design</p>
How do we develop Arthur Terry Learners?	
<p>We develop Arthur Terry Learners by ensuring our curriculum and lessons give time and opportunity to reference and develop the foundations of the Arthur Terry Learner skills.</p> <p>We help support students in building resilience, values, and metacognition as they utilise an iterative approach to their problem solving and learning. We help to develop student preparation both inside and outside of the classroom by using a variety of resources including knowledge organisers and PLANNER's. Finally, we allow time for students to develop and apply their new learning skills and to 'upgrade' their work after reflection.</p>	

	Topics/Units	Summary of key content
7	<p>The projects undertaken in year 7 are:</p> <ul style="list-style-type: none"> <li>• Candle holder (Combining materials &amp; QC)</li> <li>• Laser cut rings (CAD CAM)</li> <li>• Ugly doll (Designing and textile)</li> <li>• Egg holder (designing influenced by design movement/designer)</li> </ul>	<p>Each project is mapped against the national curriculum through the students' Key Stage 3 journey and focuses in on technical knowledge and 2 or 3 of the below components of the design process:</p> <ul style="list-style-type: none"> <li>• Identify and investigate</li> <li>• Design brief &amp; specification</li> <li>• Generating design ideas</li> <li>• Developing design ideas</li> <li>• Realising design ideas</li> <li>• Analysing and evaluation</li> </ul> <p>The projects allow the students develop their competence across key stage 3 – the students revisit each component to allow progression with a spaced, sequenced approach. Feedback is given ongoing throughout and assessments are undertaken through each project. The students self-assess</p>



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		<p>their progress as they learn and have opportunities to apply the knowledge they accrue, and 'upgrade' based on feedback and their experience.</p>
8	<p>The projects undertaken in year 8 are:</p> <ul style="list-style-type: none"> <li>• Portable Speaker (electronics &amp; QC)</li> <li>• Packaging (Photoshop)</li> <li>• Tote bag (textiles &amp; specialist equipment)</li> <li>• Skateboard (moulded laminated deck with 3d printed trucks and laser cut wheels, assembly of a product from manufactured parts)</li> </ul>	<p>Each project is mapped against the national curriculum through the students' Key Stage 3 journey and focuses in on technical knowledge and 2 or 3 of the below components of the design process:</p> <ul style="list-style-type: none"> <li>• Identify and investigate</li> <li>• Design brief &amp; specification</li> <li>• Generating design ideas</li> <li>• Developing design ideas</li> <li>• Realising design ideas</li> <li>• Analysing and evaluation</li> </ul> <p>The projects allow the students develop their competence across key stage 3 – the students revisit each component to allow progression with a spaced, sequenced approach. Feedback is given ongoing throughout and assessments are undertaken through each project. The students self-assess their progress as they learn and have opportunities to apply the knowledge they accrue, and 'upgrade' based on feedback and their experience.</p>
9	<p>The projects undertaken in year 9 are:</p> <ul style="list-style-type: none"> <li>• Snowboard (hand wasting processes with design and application of cut vinyl graphics)</li> <li>• Pencil case (screen printing fabric and manufacture into a working textile product)</li> <li>• Lamp project (repurposed USB lead powered lamp combining materials)</li> <li>• Packaging (Photoshop graphics, next year will be replaced by Hydroponics microcontroller project)</li> </ul>	<p>Each project is mapped against the national curriculum through the students' Key Stage 3 journey and focuses in on technical knowledge and 2 or 3 of the below components of the design process:</p> <ul style="list-style-type: none"> <li>• Identify and investigate</li> <li>• Design brief &amp; specification</li> <li>• Generating design ideas</li> <li>• Developing design ideas</li> <li>• Realizing design ideas</li> <li>• Analysing and evaluation</li> </ul> <p>The projects allow the students develop their competence across key stage 3 – the students revisit each component to allow progression with a spaced, sequenced approach. Feedback is given ongoing throughout and assessments are undertaken through each project. The students self-assess their progress as they learn and have opportunities to apply the knowledge they accrue, and 'upgrade' based on feedback and their experience.</p> <p>NB: The current year 9 students undertook the KS3 Hydroponics microcontroller project in year 8, the project will be reinstated in the 2023 cohort for year 9, to allow them to access this important component of our curriculum.</p>



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10	<ul style="list-style-type: none"> <li>• Technical principles</li> <li>• Specialist technical principles (Polymers or Textiles pathway)</li> <li>• Sketching</li> <li>• Mini NEA style projects</li> </ul>	<ul style="list-style-type: none"> <li>• Exam course focusing on the technical principles and specialist technical principles components of the GCSE exam, delivered where possible through experiential learning. (Specialism focus on pathway).</li> <li>• 2 x Trial exams</li> <li>• Assessed mini projects/courses in modelling/sketching</li> <li>• Focussed CAD CAM course developing student competence and the practical application through projects such as the Glasses and USB lamp projects which integrate Fusion 360 CAD design with laser cut and 3D printed outcomes.</li> <li>• Specialist technical experience based on subject pathway e.g., polymers pathway making includes, injection moulding, vacuum forming, 3d printing, laser cutting, line bending etc.</li> <li>• Feedback is given ongoing throughout and assessments are undertaken through each project with opportunities to 'upgrade' through the learning process.</li> <li>• Microcontroller course using the 'Systems approach' to understand how intelligence is embedded into products and to provide a contextual experience through the development of a working microcontroller circuit. This course is intended to promote innovation and creativity during the development of the students' NEA project in their final GCSE year.</li> </ul>
11	<ul style="list-style-type: none"> <li>• Delivery of the NEA (Non-Exam Assessment)</li> <li>• Exam - Specialist technical principles (Polymers or Textiles pathway)</li> <li>• Exam - Designing and making principles</li> </ul>	<ul style="list-style-type: none"> <li>• NEA (Non examined assessment) the development of a working solution to a problem or opportunity, researched and selected from the exam board themes by the student through the application of the design process.</li> <li>• 2 x Trial exams.</li> <li>• Design and making principles contextualised through case studies and the NEA delivery.</li> </ul>
12	<ul style="list-style-type: none"> <li>• Structured CAD CAM course to build key competencies • Sketching, modelling and designing fundamentals course • Making processes experience • Technical principles</li> <li>• Sketching course</li> </ul>	<ul style="list-style-type: none"> <li>• 2 x Trial exams focusing on the technical principles and designing and making principles exam papers.</li> <li>• Range of assessed mini projects and samples produced to promote experiential learning with the aim of the students being able to design from the perspective of concrete experience where possible. Examples of this includes the destructive testing of materials and the production of material and manufacturing samples such as the centre lathe turned demonstrator.</li> <li>• Focussed CAD CAM course developing student competence and the practical application through projects such as the Glasses and USB lamp projects which integrate Fusion 360 CAD design with laser</li> </ul>



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	<ul style="list-style-type: none"> <li>• Designing and making principles</li> <li>• D&amp;T maths fundamentals and exam technique</li> </ul>	<p>cut and 3D printed outcomes.</p> <ul style="list-style-type: none"> <li>• Soldering extractor project integrating the skills of designing through sketching and CAD CAM (Fusion 360 sheet metal modelling, laser cutting and 3D printing), the development of a working microcontroller circuit (using the 'Systems approach' to embed control and intelligence into a product). This project is intended to promote innovation and creativity during the development of the students' NEA project in their final A Level year.</li> <li>• CAD development of circuit boards using Fusion 360 to enable the students to design, make and solder their own Printed Circuit Boards (PCB's) using our 'in-house developed CAD CAM PCB design and make workflow using our laser cutter and etch tank.</li> </ul>
<p>13</p>	<ul style="list-style-type: none"> <li>• Technical Principles</li> <li>• Designing and making principles through NEA D&amp;T maths fundamentals and exam technique</li> </ul>	<ul style="list-style-type: none"> <li>• NEA (Non examined assessment) the development of a working solution to a problem or opportunity, researched and selected by the student through the application of the design process.</li> <li>• Development of technical principles knowledge, designing and making principles and exam preparation.</li> <li>• 2 x Trial exam series (4 papers).</li> </ul>