



### **Intent for the Year 8 Design and Technology Curriculum 2021-2022**

'All children will experience a well-balanced and comprehensive curriculum that enhances informed, intellectual, developmental and moral character. As a result, this will improve life chances, inter-personal relationships, social mobility and preparedness for employment. Our curriculum will encourage everyone to have a positive impact on society.'

*Design and Technology is an inspiring, rigorous and practical subject. Using creativity and imagination, pupils design and make products that solve real and relevant problems within a variety of contexts, considering their own and others needs, wants and values. Design and Technology curriculum allows students to gain a greater understanding of the technological/creative world of design having greater understanding for how products work, prepared and made. Design and technology is one of the very few opportunities for pupils to partake in a technical, practical education. It plays an important role in providing young people with a hands-on creative experience and develops a practical identity and a capability for innovation. The subject provides opportunities for collaboration, team working and communication skills that are essential for future employment. We have recognised the need to reform the subject and align it with modern design thinking and industrial practices while maintaining strands of the National Curriculum*

*In Year 8 we encourage students to deepen their existing knowledge from year 7 and continue to make the links which were formed from the National curriculum and expand on knowledge. The aim of this year is to 'build' upon students learning experiences and bring them back inline with their predicted path which were set before the pandemic- this will be supported again through The department's 6 principles Tool box:*

- 1. Problem solving-the multidisciplinary approach*
- 2. User centred design*
- 3. Communication*
- 4. Application of skill*
- 5. Knowledge of materials / nutrients*
- 6. Industrial culture and careers*

*Character Education will be an additional tool in our Tool box and very much at the forefront of our delivery of the curriculum. Activities will strive to encourage students to be independent learners, by taking responsibility for their own actions. Students will be introduced to a range of tools, materials, working techniques and projects early on so they are equipped to deal with the challenges that Design and Technology pose and how these are related to the real world applications. The lessons are delivered through specific context - projects form small focussed tasks which require students to build on listening skills, communication, team work, reflection, and how to deal with mistakes. Much of what we have been covering in DT for many years now is Enquiry based learning providing a vehicle to developing a sense of the world and their responsibility within it.*

### **Implementation:**

*Design and technology is part of the Creative Faculty along with Art, Textiles, Drama and Music. Pupils will rotate on a carousel system spending approximately 10 weeks with each subject area. The length of time that students spend with each subject area differs however within design technology students will receive 2 hours a week in year 8. Within*



design and technology pupils will also rotate within our own carousel focusing on Food, Engineering, STEM/Skills and Textiles modules. Design and technology's intent is to combine practical and technological skills with creative thinking to design and make products and systems that meet human needs. We have integrated a key stage by key stage curriculum where students will have unrivaled opportunities to understand the relevance of, and apply mathematical, scientific, design and computing concepts to the made world(STEM). They learn to use current technologies and consider the impact of future technological developments. They learn to think creatively to improve quality of life, solving problems as individuals and members of a team. Students in Year 8 will carry out project based tasks using a range of strategies, Designing, making, evaluating and interleaving. Technical knowledge is either offered as part of a collective or taught as stand alone areas.

**Curriculum adaptations as a result of the pandemic:**

In relation to the pandemic students have missed out on all applications of skills, including CAD/CAM due to not being able to access the specialist workshops and food rooms. We have therefore focussed this year on the revival of skills associated with design, make, evaluate and technical knowledge. Longer module rotations throughout the year will allow more time to cover more areas and enable us to reduce the gap in the highlighted areas. All details of which can be identified below.

<b>Term</b>	<b>Enquiry/Topic/Unit:</b> What is going to be taught?	<b>Key Outcomes:</b> What will students have achieved by completing this scheme of learning?	<b>Character Education:</b> How does this topic link to a sense of Self, Others and the World, in terms of Character Education?	<b>Assessment:</b> Will there be formative and/or summative testing? What role will interleaving play? How will this be marked?	<b>Vocabulary:</b> What are the key words for this topic/unit that students must know?	<b>Home-Learning:</b> What homework will be set and why (e.g. consolidate/extend)? How will this be marked?
	<p><b>Year 8 – <u>STEM Skills challenge - Casting</u></b></p> <p><b>Designing DA</b> Understanding contexts, users and purposes DA2, DA9</p> <p><b>Designing DB</b> Generating, developing, modelling and communicating ideas DB2, DB4, DB5, DB7, DB9</p> <p><b>Making MA</b></p>	<ul style="list-style-type: none"> <li>use research including the study of different cultures, to identify and understand user need</li> <li>take creative risks when making design decisions</li> <li>produce models of their ideas using CAM to test out their ideas</li> <li>use CAD and related software packages to validate their designs in advance of manufacture</li> </ul>	<p>Enquiry based learning provides a vehicle to developing a sense of the world and their responsibility within it.</p> <p>We will be focussing on 6 character traits: <b>Resilient, Responsibility, Confident, Creative, Curious and Reflective</b></p> <p>At the end of each term students sit an Assessment-</p>	<p>Summative: <b>Mid &amp; End</b> of Topic Assessment.</p> <p>Formative: Carried out in line with feedback policy</p> <ul style="list-style-type: none"> <li>*verbal feedback</li> <li>*Whole class feedback</li> <li>*Peer/self-assessment</li> </ul> <p>At the start of all lessons staff will recap each lesson leading into the next to shape interleaving. Assessments occur twice in a term amid way check and</p>	<p><b>See SOW for key vocabulary - however below are just a selection of recurring DT words and Phrases students should know at the end of KS3</b></p> <p>Problem solving Measuring Techniques Safety with tools Processes casting CAD/CAM 2 D Design Cutting, drilling,</p>	<p><b>See separate Homework sheet for year 8</b></p> <p>Each term has a focus to extend learning and engagement with real world applications some of which are national competition based and will include inter-house competitions</p>



	<p>Planning MA4, MA5</p> <p><b>Making MB</b> Practical skills and techniques MB5, MB7, MB11</p> <p><b>Evaluating EB</b> Existing products</p> <p><b>Evaluating EB</b> Existing products how materials can be cast in moulds</p> <p>how to make adjustments to the settings of equipment and machinery such as sewing machines and drilling machines</p> <p>Evaluating EC Key events and individuals EB5</p> <p><b>Technical Knowledge</b> Making products work TK7, TK8</p>	<ul style="list-style-type: none"> <li>● use specifications to inform the design of innovative, functional, appealing products that respond to needs in a variety of situations</li> <li>● use a variety of approaches, for example biomimicry and user-centred design, to generate creative ideas and avoid stereotypical responses</li> <li>● develop and communicate design ideas using annotated sketches</li> <li>● make simple use of planning tools, for instance Gant charts</li> <li>● communicate their plans clearly so that others can implement the</li> <li>● adapt their methods of manufacture to changing circumstances</li> <li>● follow procedures for safety and understand the process of risk assessment</li> <li>● apply a range of finishing techniques, including those from art and design, to a broad range of materials, metals, polymers and woods</li> <li>● how products can be developed considering the concept of 'cradle to grave'</li> </ul>	<p>and the feedback policy is designed to develop a sense of reflection.</p> <p>At the end of the module students also reflect on the project to understand which areas of the 9 character traits they have used which has allowed them to complete/ assist in the challenge.</p>	<p>a formal one driven at the end of the rotation focusing on core knowledge for the specific module. They will sit a 25 minute assessment near the end of term</p>	<p>sanding, filing, joining, finishing Hacksaws (including junior hacksaws) Fret saw &amp; blades Files Abrasives paper &amp; Pillar drill, hand drill Two part epoxy resin. Hardness, elasticity, conductivity, toughness, ductility, tensile strength and malleability. Ferrous metals Non-ferrous metals Alloys</p>	
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<p><b>Year 8</b> – Engineering - Sweet Dispenser</p> <p><b>Designing DA</b> Understanding contexts, users and purposes DA7 ,DA8, DA10</p> <p><b>Making MA</b> Planning MA1, MA2, MA7, MA8</p> <p><b>Making MB</b> Practical skills and techniques MB1, MB7, MB8 MB9, MB11</p> <p><b>Evaluating EA</b> Own ideas and products EA1, EA2, EA5</p> <p><b>Technical Knowledge</b> Making products work TK8, TK7</p>	<ul style="list-style-type: none"> <li>● We are repeating this module with year 8's as they missed out in year 7 to develop detailed design specifications to guide their thinking</li> <li>● work confidently within a range of relevant domestic, local and industrial contexts, such as the home, health, leisure, culture, engineering, manufacturing, construction, food, energy, agriculture and fashion</li> <li>● consider the influence of a range of lifestyle factors and consumer choices when designing products</li> <li>● consider additional factors such as ergonomics, anthropometrics or dietary needs</li> <li>● produce ordered sequences and schedules for manufacturing products they design, detailing resources required</li> </ul>	<p>We will be focussing on 6 character traits:</p> <p><b>Resilient, Responsibility, Confident, Creative, Curious and Reflective</b></p> <p>At the end of each term students sit an Assessment- and the feedback policy is designed to develop a sense of reflection.</p> <p>At the end of the module students also reflect on the project to understand which areas of the 9 character traits they have used which has allowed them to complete/ assist in the challenge.</p>	<p>Summative: <b>Mid &amp; End</b> of Topic Assessment.</p> <p>Formative: Carried out in line with feedback policy</p> <ul style="list-style-type: none"> <li>*verbal feedback</li> <li>*Whole class feedback</li> <li>*Peer/self-assessment</li> </ul> <p>At the start of all lessons staff will recap each lesson leading into the next to shape interleaving. Assessments occur twice in a term amid way check and a formal one driven at the end of the rotation focusing on core knowledge for the specific module. They will sit a 25 minute assessment near the end of term</p>	<p>See SOW for key vocabulary</p> <p>Problem solving</p> <p>Measuring</p> <p>Techniques</p> <p>Safety with tools</p> <p>Processes -</p> <p>Cutting, drilling, sanding, filing, joining, finishing</p> <p>Ergonomics</p> <p>Assembling products</p> <p>Manipulating timber</p> <p>Finishing timber</p> <p>Softwood</p> <p>Hardwood</p> <p>MDF</p> <p>Plywood</p> <p>Acrylic sheet</p> <p>Dowel</p>	<p><b>See separate Homework sheet for year 8</b></p> <p>Each term has a focus to extend learning and engagement with real world applications some of which are national competition based and will include inter-house competitions</p>	



	<ul style="list-style-type: none"><li>● produce costings using spreadsheets for products they design and make</li><li>● select appropriately from specialist tools, techniques, processes, equipment and machinery, including computer-aided manufacture</li><li>● select appropriately from a wider, more complex range of materials, components and ingredients, taking into account their properties such as water resistance and stiffness</li><li>● make use of specialist equipment to mark out materials</li><li>● follow procedures for safety and hygiene and understand the process of risk assessment</li><li>● use a wider, more complex range of materials, components and ingredients, taking into account their properties</li><li>● use a broad range of manufacturing techniques including handcraft skills and machinery to manufacture products precisely</li></ul>			PVA Varnish/wax Stains	
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|  | <ul style="list-style-type: none"><li>● apply a range of finishing techniques, including those from art and design, to a broad range of materials, metals, polymers and woods</li><li>● evaluate their products against their original specification and identify ways of improving them</li><li>● actively involve others in the testing of their products</li><li>● test, evaluate and refine their ideas and products against a specification, taking into account the views of intended users and other interested groups</li><li>● how to classify materials by structure e.g. hard woods, soft woods, ferrous and non-ferrous, thermoplastic and thermosetting plastics</li><li>● about the physical properties of materials e.g. grain, brittleness, flexibility, elasticity, malleability and thermal</li><li>● how to make adjustments to the settings of equipment and machinery such as drilling machines</li></ul> |  |  |  |  |
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		<ul style="list-style-type: none"><li>● use learning from mathematics to help design and make products that work</li><li>● understand the performance of structural elements to achieve functioning solutions</li></ul>				
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**Impact:**

*At this stage before they embark on year 9 we want students to have built up a repertoire of practical skills for their 'Tool box' whilst understanding a greater range of material knowledge and technical vocab some of which are mentioned above. They will understand the importance of problem solving, making connections between skills acquired and the world of work and relate these to actual real life examples in the world. Through the use of the case studies students can make real world connections to life beyond the classroom. The Students are able to build on previous experience learnt in year 7&8 developing their confidence and curiosity. Students can further develop their confidence, and resilience having more freedom to extend their creativity in the modules. Through the diverse curriculum students learn about a wide range of issues relating to Design and Technology. By now student should begin to question those connections and delve deeper with real world applications and the positive and negative aspects that can arise through designing, planning and manufacturing products.*

*Students will have covered an initial understanding of how this Design and Technology fits into real world applications. In Year 8 at this stage we want students to build up a connection between skills acquired and world of work and relate these to actual real life. Through the use of the case studies/ modules and video links students can begin to make their own opinions about what the next steps they would need to take in the real world to get into a range of career opportunities. The Careers covered here hope to inspire the students through STEM lessons when considering options for next steps and their future careers and to make those all-important connections.*