

DT Unit Overview Year 9

Product Design lessons are taught once per week, usually in a dedicated workshop. However, in light of the ongoing situation caused by the Coronavirus pandemic, practical elements of the project will unfortunately be delayed until it is safe to do so. Students will focus on all other stages of the design process up to the practical element. We will investigate the properties of different materials and manufacturing techniques. We will explore different design strategies in order to generate design ideas with an emphasis on the iterative design process; an essential approach to developing a product. In order to check understanding we will be creating quizzes, using plenaries as well as obtaining feedback from students to ensure effective learning is taking place. For our Year 9 students who have missed out on the bulk of their sweet dispenser project at the end of last year, we will begin with our Y9 lighting project. We will spend additional time with students at each of the stages of the design process reviewing material from last year. The year 9 project will now focus on timbers and boards so students will have the opportunity to plug a Year 8 knowledge gap. We will teach them the theory aspect and students can work with this material area. Design strategies are revisited and developed each year to promote creativity, and we will be looking at using biomimicry, as a new design strategy, for this project.

Product Design – Unit 1 Lighting Project Autumn 1

What are we learning?	What knowledge, understanding and skills will we gain?	What does mastery look like?	How does this build on prior learning?	What additional resources are available?
Designing-Understanding contexts, users and purposes	<p>Knowledge: Exploring context, consideration of social, moral, cultural issues of intended users, design brief, design specification.</p> <p>Understanding: Students work confidently with the given context in order to reformulate and develop their design brief and specification. Students understand the needs of the user through the research they conduct.</p> <p>Skills: Writing a design brief and specification. Communication, comprehension, time management.</p>	<p>Detailed research that fully comprehend the design context. Social, moral and cultural issues are identified as well as the health and well being.</p> <p>Detailed design brief with clear intention</p> <p>Detailed specification that reflects the research undertaken.</p>	<p>In Y7 and 8 students work with given design brief. They then learn how to structure their own.</p>	Exemplar work

<p>Evaluating: Existing Products</p>	<p>Knowledge: Existing product analysis. WAGOLL. Product disassembly Understanding: Products are analysed to determine how they are constructed and function. How products are developed. Skills: Communicating findings clearly. Communication and written skills. Review on how to analyse products.</p>	<p>Detailed EPA which suggest materials and manufacturing methods used along with suggested improvements.</p>	<p>Some EPA completed in Y7 and Y8. Students focus on the advantages and disadvantages of the products rather than how they are assembled.</p>	<p>Exemplar work</p>
<p>Design: Generating, developing, modelling and communicating ideas Evaluating: Key Individuals Evaluating: Own Ideas</p>	<p>Knowledge: Using specifications to inform design. Iterative Design process. Biomimicry. Modelling. CAD CAM 2D Design Review on CAD and use of 2D Design Software Understanding: Students can develop design work using an iterative cycle to avoid fixation. Students look at biomimicry as a design strategy to support this. Students understand the iterative process; producing 3D models in a range of materials to further develop and communicate their ideas. Students use CAD to model and validate their designs in advance of manufacture. Students can recall other examples of biomimicry. Ideas are evaluated against the specification. Skills: Develop sketching skills. Using biomimicry as a design strategy. Communicating design ideas. Review on previous design strategies and introduction to new strategy; biomimicry to generate ideas.</p>	<p>Reflecting influence from the work of others in learners own design work. Neatly presented design ideas with biomimicry influence Concept modelling from paper to MDF Clear development showing the iterative process Excellent communication of design thinking</p>	<p>Iterative design process is introduced in Y8. Students design and model ideas from the KS2 curriculum.</p>	<p>Resource kits: shells, cones, stencils, books, inspiration boards</p>

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What are we learning?	What knowledge, understanding and skills will we gain?	What does mastery look like?	How does this build on prior learning?	What additional resources are available?
Planning	<p>Knowledge: Planning for manufacturing. Why planning is important. Planning tools</p> <p>Understanding: Students make simple use of planning tools, for instance Gant charts to communicate their plans clearly. They match and select suitable materials considering their fitness for purpose.</p> <p>Skills: Time management, organisation recalling names of tools, techniques, specialist terminology.</p>	<p>Students select appropriately from a wide range of materials and equipment and machinery.</p> <p>Plan or Gannt chart is communicated clearly so that others could implement them.</p> <p>Students work from their own plan during practical lessons demonstrating independence and adhering to H+S.</p>	<p>Students are used to planning for manufacture. AS students progress into KS4 it becomes more significant.</p>	Exemplar
<p>Technical Knowledge: Classifying timbers</p>	<p>Knowledge: Hardwoods, Softwoods and Manmade boards</p> <p>Material area will be introduced here instead of Y8 due to Covid 19.</p> <p>Understanding: Students are able to classify and explain the properties and physical properties of timbers and boards. Students can discuss the most appropriate types for their project.</p> <p>Skills: Identifying types of timber and boards for their design.</p>	<p>Students are able to justify selection of timber and board type.</p> <p>Students are able to explain the advantages and disadvantages of timbers and boards</p>	<p>Y8 Sweet Dispenser</p> <p>Students would have been introduced to timbers in Y8. Due to Covid 19, this year we have moved this topic to Year 9.</p>	Rosenshine Quiz