

GCSE Product Design Curriculum Unit Overview Year 10

Students will design and develop a new product using polymers and metals. KS3 prior learning on materials (Y8 metals, Y9 polymers) will be reviewed in lesson using exit cards and low stakes Teams quizzes. Students should also be able draw on their Y9 CAD (computer aided design skills). Areas of weakness can be addressed through home learning with our remote access to our CAD software. Students will need to be able to effectively research design movements and draw influences from them. Weaknesses and gaps in this learning will be addressed by the students themselves throughout the year. The importance here is that learners develop their own critical eye (self-assessment) of prior work. This can be achieved by home learning with supported review of work in lessons.

During the catch-up period, we will revisit metals, alloys and ways of manipulating materials. We will do the same for types of polymers. The scheme of learning has been rewritten to address catch up throughout the year. Specific focus areas will include different approaches of idea generation, research skills and developing design briefs. Closing these gaps will enable students to avoid design fixation-a key requirement at GCSE.

GCSE Product Design - Year 10 Autumn 1 (1 of 2) Inspired Bottle Opener (Mini 3-page NEA) Radio				
Specification Content	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?
3.3.3 The work of other designers. The work of other design companies 3.1.6 Investigation, Primary and secondary data 3.5.1 Design strategies 3.1.5 Mechanical devices Composite Materials (developments in new materials) 3.1.3 Materials and their working properties	Knowledge: Types of research; Primary & secondary. Work of others: Alessi & Ettore Sottsass. and their relationship and influence of The Memphis Design Movement. Know several distinct Design Strategies. Iterative Design process. What is a lever? Different types of levers. Understanding: Learners can demonstrate and articulate the aesthetics of a designer or design movement they have researched. Learners can distinguish between primary and secondary research. Learners can identify different types/classes of lever. Skills: Distinguish types of Research: Primary and secondary. Can use design strategies to develop creative outcomes. Writing	<ul style="list-style-type: none"> • Distinguish primary and secondary data • Reflecting influence from the work of others in learners own design work. • Learners understand design style, philosophy and products of Alessi/Ettore Sottsass in the wider context of the Memphis design movement. • Planning for research. • Demonstrating effective research techniques. • Design decisions taken with research in mind. 	Revisit Y8 Pewter project: Art Deco jewellery Re-visit Y9 the lighting project (introduces the iterative design process which is developed further in this module). Y9 How to write a design brief Learners now build on this to evidence and communicate the interactive design process in a digital folio. Re-visit Y9 lamp project and lamp arm articulation (types of levers).	AQA Product Design Textbook 3-page mini NEA checklist and mark scheme. Use of our own design library. Use school library. Access to IT room for research. Handling collection available. This is all supplemented with a trip to V&A in London and supported by materials and resourced provided by V&A. Revision cards for both material areas.

	<p>a design brief. Develop sketching skills. Can evidence how design influences their own design work. Review on types of research completed at KS3. Give additional focus on the design strategies used at KS3.</p>	<ul style="list-style-type: none">• working collaboratively with others during museum trip• Non-verbal communication of design ideas and concepts• 1-page folio of design evidence completed for presentation		
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Product Design - Year 10 Autumn 1 (2 of 2) Inspired Bottle Opener (Mini 3 page NEA)

<p>Sustainability and the environment 3.3.5 Communication of design ideas (Sketching, Modelling, testing) 3.1.5 Mechanical devices 3.2.5 Using and working with materials 3.2.2 Forces and Stresses</p>	<p>Knowledge: Creative Design Strategies Why modelling is important. Materials: Types of polymers; types of metals: Ferrous/Non-Ferrous. New emerging technologies: CAD/CAM 2D design Laser cutter. Understanding: Learners distinguish the difference between CAD/CAM. Can explain the advantages and disadvantages of such technologies. Can work develop design work using an interactive cycle to avoid design fixation. Working properties of materials. Appropriate selection of combination of materials (metals, plastics etc) to get the correct working properties, Skills: Communication of Design Ideas in 2D and 3D. Can document design process in a workshop diary/folio. Use of laser cutter and other such new technologies independently. Review on CAD and use of 2D Design Software.</p>	<ul style="list-style-type: none"> Learners can discuss /evidence how the work of others has influenced on their designs. Identification of products being able to withstand/resist certain forces (bridges, car crumple zones). Learners can explain why they are making a composite handle and the materials used within it. Learners can test bottle opener to show it can withstand certain forces applied to it. Evaluation of outcomes identify successes and areas for development. All 3 pages folio of evidence including CAD/ CAM files completed for presentation 	<p>Metal work: revisit Y9 with the used of a jigs and ball pein hammer to make lighting bracket. These skills are developed in this project. Revisit Jigs used in Y8 sweet dispenser project. Types of metals: revisit Y8 Pewter project. Ferrous/non- ferrous metals. What is an alloy? Mechanisms: Re-visit Y8 Sweet dispenser project where linear rotary motions are introduced.</p>	<p>AQA Product Design Text Book 3-page mini NEA checklist and mark scheme. Use of laser cutter and 2D Design Exemplar MINI NEAs Exemplar Bottle opener designs (for product analysis and testing) Coogle.IT mind map software "How it works" videos Opportunities to visit math links (bought resource PG online) to calculate material costs</p>
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