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Year 10 – Chairs Autumn Term Design Technology Faculty				
Rationale and Context of Unit:	**Core curriculum content:**	**Tier 2 & Tier 3 vocabulary explicitly taught:**		
Students over the course of KS3 have manipulated all three main material groups timbers, polymers and metals. This is the first project-based learning activity where students will incorporate these main material groups by following the iterative design process. Iterative design is a design methodology based on a constant process of prototyping, testing, analysing and refining of their product. Although students in this scheme of learning don't make multiple final products, that in turn get better, they instead get taught the pillar stones to making a good designer. These pillar stones are: • Research: Primary & Secondary • Design Specification: • Generating Ideas: Hand drawn and CAD • Developing Ideas: Hand drawing, CAD and CAM • Analysis and Evaluating: ACCESS FM and 6 R's KS3 curriculum content is brought through to KS4 as students continue to develop their skills whilst applying to a more complex final outcome. The chair is a very good project that encompasses two of the three main material types as the frame of the chair is timber with polymers being incorporated into the backrest.	**Year 10: Chair** Timber chair frame with CAD/CAM seat and backrest **Research: Primary & Secondary** Students create a moodboard based on the theme they would like their project to take. Students are asked to make the chair for a 'client' and seek primary research to make informed designer choices. **Design Specification:** Students create a detailed design specification that their final outcome will be assessed on. **Generating Ideas: Hand drawn and CAD** Students are introduced to a range of hand drawing techniques to develop communication skills further. Students are introduced to specialist CAD-CAM facilities to enable a higher standard of final outcome. **Developing Ideas: Modelling, CAD and CAM** Students are taught that 3D modelling is an essential tool to enable designers to locate faults or improvements. **Analysis and Evaluating: ACCESS FM and 6 R's** Students analyse previous products to make informed decisions. Students analyse and evaluated their final outcome to the original design specification created.	**Production Systems** CAD - CAM Addition Subtraction Axis	**Sustainability** Sustainable Carbon footprint Obsolete Life Cycle	**Powering Systems** Finite Non-Finite
Challenge and Support:	**Worldwide learning / links to 21st century:**	**Cultural capital/ Industry/ Enrichment:**		
This project offers students of all abilities to design make and take home a fantastic product. Students relate easily with the final outcome as they come into contact with chairs in everyday life and often make them for younger siblings.	The UK engineering manufacturing and creative industries sectors are worth 500 billion which equations to 29% of the UK's economy. For young people and their parents thinking about future careers be aware that the creative industries grew three times more than the wider UK economy.	The skills used in both practical and computer based work have direct links to current jobs available in the jobs market. These jobs are discussed and shown to students so that they can make clear purposeful links between what is being asked of them. The practical skills developed throughout KS4 improve students		

As the project is teacher lead the preferred route for students is always to make final outcomes for 'clients', these clients could take the form of a younger sibling however for more complex work students are asked to find a suitable client such as a primary school or primary school teacher. This preferred route adds further complexity to all elements of the iterative design process. Single lessons are structured solely around exam theory where students are asked to group read exam board approved material. Once this material has been covered students sit a test based on the literacy covered. Students are given a score which informs any further reading that might be required by the student. If students require or request reading material this is all readily available to them on Google Classroom. A unit of work is covered typically per term.	Since the introduction of Design and Technology into the National Curriculum there has been a clear correlation in the number of students taking Design Technology going onto further and higher education and going onto engineering and other subjects linked to Design Technology.	abilities to problem solve and apply knowledge learnt which is a key skills employers look for. To further enrich our student's leanring links have been made with the following companies to further develop the learning experience of students at Acle Academy. **Worldwide:** BMW mini plant tour JCB plant tour New Designers **Local:** Maverick Engineering Ltd: Acle Milltech: Norwich U C P Zeller Ssaf Window Films Ltd Ellis Timbers Stratton Strawless A & W Cushions
Historical, Social, Moral, Spiritual, Cultural context:	**Cross curricular links/ literacy/numeracy:**	**Common misconceptions:**
Theory based learning from Unit 1 covers a range of complex issues such as globalisation, cultures, religions to powering systems. Students prior understanding can be varied however after covering content student become more aware as UK citizens and the impact they have on the world. Market push-pull raises students to the power that companies have over students through advertising. Active discussions take place regarding mobile phones and costs attached to these devises. Awareness of different cultures and religions is essential if students are going to understand that products are designed for large diverse target markets. Students are living within a digital age and it is important that they fully understand how these devices operate and more importantly powered. Norfolk is a renewable energy rich area through its offshore windfarms which is renewable however finite energy sources are covered including the impacts such global warming.	**Gatsby Benchmark:** https://www.bbc.co.uk/bitesize/articles/zbccvk7 https://www.bbc.co.uk/bitesize/articles/znxkpg8 https://www.bbc.co.uk/bitesize/articles/zk3gmfr **STEAM Ambassadors:** Students at KS4 would have been identified through their hard work at KS3. These students that have opted to take a STEAM subject will be identified and given a STEAM ambassador badge. **Cross Curricular links:** The department has linked all KS3 schemes of learning with Maths: Units, diameter and radius Science: Thermoplastics and Thermosetting plastics Powering Systems.	Students often mistake the subject as a none academic subject. Detailed documentation of the design process is key to fully understanding students thought processes in making a final outcome. Typically, the subject is deemed as a male focused subject however these assumptions are dated and wrong. Design Technology encompasses a host of individual subjects like Textiles, Electronics and Graphics under its umbrella so the enrolment of female students should be promoted.

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Assessment timeline:

There are two areas where students are assessed throughout this scheme of learning. Students create an A3 design portfolio which is assessed on the GCSE specification criteria. Design and make activities are marked out of 100 marks in line with the GSCE specification. Exam theory is assessed through subject specific literacy which is tested on a formative and summative basis. These summative test scores inform parents of their child progress through data entry. Assessment data is and can be used to inform seating plans and teamwork activities.

Design and make activities last a term however alongside this design and make there is a unit of theory-based learning. This theory-based learning has on average 7 formative tests as well as summative. These tests are assessed and marked through Google Forms and offer individual feedback direct to students regarding their score. Design and make activities are marked routinely to ensure students have a full understanding of how to become GCSE ready.

A key drive for students is seeing past students practical and theory-based work. WAGOLL examples are stored within an exemplar folder that students can make reference to at any point. Teaching PowerPoints also make reference to these exemplars to ensure common misconceptions are covered.

Identifying and investigating design possibilities **10 marks**	**Producing a design specification** **10 marks**	**Generating design ideas** **20 marks**
Developing design ideas **20 marks**	**Realising design ideas** **20 marks**	**Analysing and evaluating** **20 marks**

Home learning

Design and make activities are what enthuse the students to the subject so long as it is relevant to them. Work that is incomplete is regularly taken home not to finish but to continue with. If the iterative design process is fully understood by students then a design portfolio is never finished. Feedback is documented in the same front sheet format as above; any work incomplete is clearly documented and can be seen by an incoherent iterative design process.

Exam theory work is covered in detail within the classroom setting. Home learning is monitored through SENECA an online learning platform. This monitoring clearly identifies students that have been completing elements of weakness in preparation to their summative end of unit test.

All approved exam board material is readily available to student either through physical or digitally format.

Feedback

Design Technology uses subject specific front sheets to inform students of their learning journey. The format of these front sheets are built around the GCSE specification delivered so that students familiarise themselves with the assessment process. The assessment elements are built in to give students a better understanding of the iterative design process and how the subject is not just for practical making activities. Within a practical environment verbal feedback is always present to ensure that students are focused and achieving their full potential. Demonstrations are always interactive with the teaching using student's knowledge to set the benchmark of discussion. During practical lessons WWW and EBI are used to maintain student engagement and raise aspiration.

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