

GRANVILLE ACADEMY



Curriculum Guide for Design Technology

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The de Ferrers Trust



1. Curriculum Rationale

2. What students will learn in Design Technology



The de Ferrers Trust

1. INTENT

Our aim is to make learning exciting and enjoyable. We have a very experienced team, and a visually stimulating purpose built environment to work in.

Students are encouraged to develop into creative problem solvers. To become critical analysts of both past and present products and systems which surround them in the ever changing and developing world. Students are given the opportunities to combine practical manufacturing and manipulating skills with an understanding of aesthetic requirements, social as well as increasingly important environmental issues. Students explore industrial practices and are given opportunities to develop their problem solving skills through the identification of the needs of users. To be able analysis existing products, recognise design trends and use this knowledge to develop their own innovative design solutions.

For students to have a technical knowledge of materials, processes and techniques that will enable them to design functional products.

To be able to select materials tools and equipment including CAD/CAM safely and independently. Students will display a higher level of technical skill with a broad range of tools and think of innovative ways to use this knowledge to enhance the outcome of their item. When evaluating their work they will be more analytical and work independently to assess and improve their project.

The Design and Technology programme offered at Granville Academy aims to offer the students an opportunity to: -

- Develop new practical skills.
- Develop awareness/ need for Health and Safety.
- Develop an understanding of food hygiene issues.
- Develop problem solving/ thinking skills.
- Develop communication skills.
- Develop social skills (independent and co-operative).
- Extend existing/ new practical skills.
- Learn and use appropriate technological vocabulary.
- To be aware of technology in its wider contexts.
- Develop skills to compliment other curriculum areas (Numeracy, Literacy, etc).
- Develop self worth/ esteem.
- Produce quality outcomes.
- ***To realise learning can be fun!***
- ***To see what they can achieve!***

2. IMPLEMENTATION

Across all key stages students are taught to develop their analytical, designing, making and evaluative skills. These skills are delivered through 12 week units of work.

The curriculum has been mapped in order to ensure that students are exposed to a wide range of materials, allowing them to build on knowledge and skills throughout Key Stage 3.

Each project has been designed to introduce students to new skills and these skills are then developed as they progress through KS3

Emerging: Showing some understanding of skills, concepts and knowledge in a unit of work/topic.

Developing: Showing a broader understanding and some application of skills, concepts and knowledge in a unit of work/topic.

Secure: Has consistent understanding and application of skills, concepts and knowledge in a unit of work/topic.

Mastered: Has demonstrated application and understanding of skills, concepts and knowledge in

Formal assessment will take place 3 times a year. These grades will be reported to parents through the schools reporting system. It will consist at KS3 with 6 pieces of assessed work covering the key principles of Design Technology; Evaluating, Designing, Making Skills and Technical Knowledge.

KS4:

At Key Stage 4 students follow the AQA specification, with assessment tasks based on Core Technical Principles, and a portfolio and practical based NEA (Non Exam assessment).

GCSE Design and Technology will prepare students to participate confidently and successfully in an increasingly technological world. Students will gain awareness and learn from wider influences on Design and Technology including historical, social, cultural, environmental and economic factors. Students will get the opportunity to work creatively when designing and making and apply technical and practical expertise.

Project	Year 7	Year 8	Year 9
1	Flexi Fish and Baseline Introduction to workshop health and safety, materials and equipment <i>Assessed work: Make final product</i>	Two Point Perspective/ Cityscape Introduction to drawing equipment Skills Development Nets/Geometric Shapes <i>Assessed work: Technical Knowledge</i>	Isometric /Orthographic <i>Skills</i> Developing the use of drawing equipment, 3D drawing <i>Assessed: Technical Knowledge</i>
	BUG HUT <i>Assessed Work: Technical Knowledge</i>	Calendar <i>Assessed work: Make final product</i>	Mood Light <i>Analysis /Research</i> <i>Prototyping</i> CAD/CAM <i>Assessed work: Make final product</i>
3	Sublimation Mug <i>Assessed work: Design ideas</i>	Pewter Casting <i>Assessed work: Make final product</i>	Music Packaging/Pop Up Book <i>Design ideas</i> <i>Assessed work Designing</i>
	Food Introduction to workshop health and safety, materials and equipment <i>Assessed work Evaluation</i>	Food <i>Skills</i> <i>Assessed work: Make final product</i>	Food <i>Skills</i> <i>Assessed work Make</i>
5	Textiles Ugly Doll Introduction to workshop health and safety, materials and equipment <i>Assessed Work: Make Final Product</i>	Textiles Culture Cushion <i>Assessed work Evaluation</i>	Textiles Sustainable design <i>Assessed work: final product</i>
	Torch CAD/CAM <i>Assessed work: Technical Knowledge</i>	Enterprise/Packaging <i>UGLY DOLL</i> <i>Assessed work: Design ideas</i>	Metal Work/candle stick <i>Assessed work: Make final product</i>
<p>Each project is 12 weeks in length. Two lessons per week. Two projects running simultaneously with subject specialist. All projects have an evaluation which enable students to reflect upon the skills in which they have acquired and developed.</p>			

4. Curriculum Map

Year 10					
Design Technology					
Exam board: AQA			Specification code: 8552		
Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
<p>3.1 Core technical principles</p> <p>In order to make effective design choices students will need a breadth of core technical knowledge and understanding that consists of:</p> <ul style="list-style-type: none"> • new and emerging technologies • energy generation and storage • developments in new materials • systems approach to designing • mechanical devices • materials and their working properties 		<p>3.2 Specialist technical principles</p> <p>In addition to the core technical principles, all students should develop an in-depth knowledge and understanding of the following specialist technical principles:</p> <ul style="list-style-type: none"> • selection of materials or components • forces and stresses • ecological and social footprint • sources and origins • using and working with materials • stock forms, types and sizes • scales of production <ul style="list-style-type: none"> • specialist techniques and processes • surface treatments and finishes. Each specialist technical principle should be delivered through at least one material category or system. <p>Not all of the principles outlined above relate to every material category or system, but all must be taught. The categories through which the principles can be delivered are:</p> <ul style="list-style-type: none"> • papers and boards • timber based materials • metal based materials • polymers • textile based materials • electronic and mechanical systems 		<p>3.3 Designing and making principles</p> <p>Students should know and understand that all design and technology activities take place within a wide range of contexts. They should also understand how the prototypes they develop must satisfy wants or needs and be fit for their intended use. For example, the home, school, work or leisure.</p> <p>They will need to demonstrate and apply knowledge and understanding of designing and making principles in relation to the following areas:</p> <ul style="list-style-type: none"> • investigation, primary and secondary data • environmental, social and economic challenge • the work of others • design strategies • communication of design ideas • prototype development • selection of materials and components • tolerances • material management • specialist tools and equipment • specialist techniques and processes 	

Year 11			
Design Technology			
Exam board: AQA		Specification code: 8552	
Term 1	Term 2	Term 3	Term 4
Term 5	Term 6		
<u>Coursework Component 2 NEA</u> Development of design ideas. Identifying improvements. CAD CAD Modelling. Final design	<u>Coursework Component 2 NEA</u> Development of design ideas. Identifying improvements. CAD Making Final product Mock Exam Revision	<u>Coursework Component 2 NEA</u> Development of final design Identifying improvements. Making final product Evaluation	<u>Coursework</u> Revision
		<u>Theory Revision</u> Exam preparation.	



5. Assessment Plan



KS3

Key Stage 3 students will be assessed formally each half term using a cross-Trust standardised assessment. These assessments are timetabled across the Trust, with the relevant dates referenced on the Curriculum Map. The assessments will then be moderated either internally or cross-Trust, and directly influence students' progress rank.

Alongside the formal assessments, Whole Class Marking tasks will be completed to embed the necessary skills and knowledge covered in the formal assessments. Students will reflect on tasks responding to Next Step targets in designated RICE time sessions. Formative assessment will take place to ensure students are acquiring and developing the skills required.

KS4

KS4 students will complete one formal cross-Trust key assessment task per unit of their GCSE course. These tasks are drawn from previous examination papers and therefore will be marked according to the GCSE mark schemes.

Formative Whole Class/Live marking assessments will take place alongside key assessments in order to embed, develop and consolidate the skills and knowledge required for GCSE success.

The Design Technology department will utilise Live Marking within lessons across both key stages to ensure students are given regular feedback, to which they can respond and make progress. Students will be expected to record any Live Next Step targets in red pen in their books, before acting upon the advice given. Often Live Marking will be in the form of verbal feedback so misconceptions are addressed at the point of learning.



6. Specialist Vocabulary



	Yr 7	Yr8	Yr9	Yr10	Yr11
1	Design	Perspective	Isometric	Adhesive	Photo Chromic
2	Specification	Vanishing Point	Orthographic	Aesthetics	Nanotechnology
3	Annotation	Vertical	Project	Alloy	Polymorph
4	Evaluate	Diagonal	Dimensions	Analyse	Thermochromic
5	Computer Aided Design	Presentation	Elevation	Ergonomics	Reduce
6	Computer Aided Manufacture	Softwoods	Finishes	Innovate	Rethink
7	Analysis	Pewter	Quality	Lithography	Refuse
10	Acrylic	Casting	Tolerance	Manufacture	Life Cycle Analysis
11	Medium Density Fibreboard	Malleable	Soldering	Sustainability	Planned Obsolescence
12	Tenon saw	Finish	Joint	Finite	Specification
13	Coping Saw	Malleable	Pine	Infinite	Evaluation
14	Steel ruler	Waste Side of the line	Sustainability	Anthropometrics	
15	Try Square		Recycle	Just In Time (JIT)	

Key Words are emphasised at the start of the lesson.

Understanding of keys words is reinforced by recaps of previous learning.

Students are encouraged to use the words in the annotation of their work and evaluations

It is the ambition of the faculty to use social media to share key words and concepts. The faculty Instagram has been well received by students. Opportunity for digital leaders/most able in Year 9 and 10 to produce content on the iPads using Clips/Movie maker.



7. Cultural Capital



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Cultural Capital is embedded in the Design Technology Curriculum at both KS3 and KS4. The issue of Sustainability is a key principle at the core of the curriculum. The potential impact that products have on the environment and the design principles that are considered in the manufacture of a products and materials is thoroughly explored. The needs and requirements of the users also means that different cultures and environments are explored throughout the curriculum.

The school has developed many links with outside providers that enable us the opportunity to offer students the opportunities to visit Universities, or have enrichment days provided by companies such as Rolls Royce.



8. Homework and independent learning



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Homework and the regularity there of at KS3 is dependent on the topic, but often it will consist of students gathering sources of information in order to further the design process, or exploring the world of design by analysing the work of others or existing trends.

By getting the students to invest in their learning outside of school enable them to have a more developed understanding of the projects

In food technology often Homework is ensuring that ingredients are purchased and correctly measured and weighed.

Recommended websites

<http://www.technologystudent.com/>

<https://www.bbc.com/bitesize/subjects/zvg4d2p>

<http://www.mr-dt.com/>

Afterschool sessions of lunchtime catch ups are always available

There are many opportunities for students to extend their experiences by attending regular extra-curricular activities.

STEM Club

CAD Club

Beyond the Classroom

How Parents Can Help

Each year at KS3 a voluntary contribution is requested to pay for materials and some of the consumables. A letter detailing this is issued at the start of each academic year.

Students are expected to provide some materials themselves in order to make quality products from their own designs. Parents can provide important support by encouraging students to select and obtain materials promptly to avoid any unnecessary delay.

Spare materials are welcomed by the various departments. Items such as wood, paper, fabric, threads, recipe books, etc. would be gratefully received.

Liaison with parents is valued. Please contact subject staff by telephone, e-mail or a note in the pupil planner to discuss any issues which may arise.

Securing Success

Students are offered guidance and practical help within the classroom. They are both supported and challenged to extend their performance. A combination of individual, pair, small groups and whole class arrangements are planned and the learning opportunities are varied: practical's; demonstrations; discussions; written tasks, video clips. It is important that students develop confidence and independence in their approach over time.