



Newport Girls' High School Curriculum Summary

Faculty: Mathematics and Technology	Subject: Design and Technology
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Our Vision

Faculty Vision

The Mathematics and Technology Faculty comprises of the subjects: mathematics, further mathematics, computing and design technology. Our aim is to work together to create and develop learners who are equipped to succeed in this modern technological world. Throughout their time here they will evolve their mathematical and logical understanding and appreciate the importance of accuracy and rigour. They will enhance their creativity to solve problems be it in a practical environment or in theory. We will help foster their love of STEM subjects by creating a learning environment where students feel appreciated and valued and are given opportunities to thrive.

Subject Vision

To foster curiosity, ingenuity and imagination through personal involvement of combining practical and technological skills with creative thinking to design and make products of increasing challenge that initiates independent thought, solves problems and enhances self-confidence.

Curriculum Intent

At KS3, students study a wide range of topics with the aim of providing a foundation of the key principals of Design and Technology. We feel that KS3 should be an enjoyable, yet challenging introduction to a range of techniques and approaches centring around the design process.

Programs of learning are always under review with a view to adapting the content to make them relevant to the modern world and therefore relevant to the lives of our students.

The enthusiasm and commitment of the departmental staff ensures students enjoy their lessons and make excellent progress throughout the key stage, whilst also developing a sound understanding of design principals which many take forward to develop in KS4.

At KS4, we study the AQA syllabus for Design and Technology. This 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, applying technical and practical expertise. Our GCSE allows students to study core technical, designing and making principles, including a broad range of design processes, materials techniques and equipment. Students will also have the opportunity to study specialist technical principles in greater depth. This course supports the seamless transition into KS5.

At KS5, students continue with a creative and thought-provoking qualification, giving students the practical skills, theoretical knowledge and confidence to succeed in a number of careers, especially those in the creative industries. Students investigate historical, social, cultural, environmental and economic influences on design and technology, whilst enjoying opportunities to put their learning in to practice by producing prototypes of their choice. Students will gain a real understanding of what it means to be a designer, alongside the knowledge and skills sought by higher education and employers.

Curriculum Sequencing Rationale & Implementation

The order in which projects are taught is designed to lay the foundations for further studies at all future key stages. Most importantly all projects are based around the design process, this being key through all levels of design education and of course in the world of work. Through relevant projects students will build an understanding of how this works and be introduced to increasing level of complexity of the process and its constituent parts. Students will explore design solutions to real life problems, ensuring ideas and thinking are clearly recorded and presented in folders. Students will also develop knowledge and understanding of materials, techniques and industrial systems. The curriculum is structured to allow students to seamlessly develop their understanding of the subject and progressively increase practical skills and knowledge of industrial processes.

KS3:

The topics in the curriculum focus on graphic and CAD/CAM. Due to a reduction in class sizes in y7 and y8 this is now being reviewed with a return of some more practical elements.

Our introduction to Y7 focuses upon graphics, nutrition and packaging. Through this, student are introduced to and able to develop understanding of key nutritional information and its relevance to them. They also learn about the presentation of ideas, drawing and modelling of concepts which they have arrived at through investigation and creativity. This allows students a broad experience which is relevant across the ability range, this also allows students with less prior experience of DT to augment their skills.

In Y8 students are introduced to CAD/CAM through the Bird Feeder project. They begin to use relevant software such as 2D Design Tools to help model and manufacture design outcomes from high tech materials.

KS4:

Having completed the full KS3 course by the end of Year 8, students commence GCSE courses in Year 9. This begins with the highly creative and enjoyable jewellery project. This builds upon prior learning relating to CAD/CAM and also introduces a number of key materials and techniques. In particular students will experience using a range of hard woods, metal casting and advanced laser cutting. A more concentrated focus on technology theory is necessary to prepare students for the GCSE exam. To this end students will participate in focused theory lessons.

During year 10, students begin examination preparation whilst increasing their independent and group work skills, knowledge and understanding of a broad range of material properties (physical and mechanical). Students learn about new and emerging technologies that directly impact on the solutions. Having the knowledge of specialist technical principles supports the student in problem solving and practically applying solutions to meet the client requirements.

Year 11 enables individuals to produce a portfolio building on their previously gained knowledge and skills. The evidence equates to 50% of their overall GCSE grade. The coursework element of the subject provides the student with the opportunity to show evidence of their knowledge, skills and understanding whilst demonstrating they can apply the design process effectively and meet the requirements of their chosen client. The coursework challenges the student as the context is set by the examination board AQA. During this time, students will complete tutorials with the teacher with an emphasis for the student to complete an independent, organised and time managed response. Key assessments are undertaken with timely delivered theoretical lessons to gauge individual understanding and to support the student so they are prepared for their final examination and Key Stage 5 Product Design. The opportunity to apply for an Arkwright Scholarship is introduced and if successful the student gains links with a company and has financial backing during their A Level studies. The companies often allow the students to expand on their practical work experience and work shadowing that is so valuable in forming professional relationships in industry.

KS5:

A summer investigation research project is set over the summer on the completion of year 11 to allow students entering year 12 to gain historical information about Design Movements and the work of past and present designers. Students interests are considered when setting projects in year 12 and the student begins to set their own challenging design and make briefs. These mini projects support UCAS applications and provide evidence of the quality of their A3 work, whilst having the opportunity to experiment with various materials and manufacturing processes. As the students produce evidence of their abilities, additional theoretical studies that build on previous knowledge

and understanding take place in and outside of school time. Detailed Case Studies and analysis of examination questions and techniques also run parallel to support the student in becoming proficient in the subject. As students enter year 13 they expand their experience and skills. The students select a context that they then produce a 45-page portfolio and a 3d outcome that is challenging, meets the need of a specific client and solves a focused problem that they individually set. Students are encouraged to complete practical investigations, engage with their client and produce innovative designs, prototypes and a final 3d outcome applying industrial practices to ensure the produce is vigorously tested. The student is now in the position to have the skillsets required to design and make marketable products using a broad range of materials, techniques and manufacturing processes.

For specific information relating to the content of the curriculum in each year group, opportunities for wider personal development and enrichment and ways for parents to support their daughter in her learning within this subject, please see the Learning Overviews on our website.