

Design and Technology

KS3 Curriculum Content

As a core subject, the first three years are designed as a foundation course to give the students a good, broad range of practical and graphical skills, an understanding and experience of technology, materials and processes, supported by relevant theory.

The variety of project work is used to introduce the *Design Process* as a means of taking the identification of an initial problem through to an evaluated outcome.

Year 7

The first project is a short, prescribed design that enables students to start an aspect of the making within 3 teaching periods – which is a very popular approach both with students and teaching staff! It introduces simple electrical circuits, component identification and soldering skills as well as vacuum forming and basic material processing.

The second project brief is currently a rubber band powered, ping-pong ball firing, *Target Machine* where students are encouraged to explore a range of concepts based on taught theory work and existing solutions leading to their chosen design idea. The detailed development is then planned – this includes an introduction to scale orthographic drawing, and parts list leading to the manufacturing, testing and evaluation of the solution.

Year 8

The main project is the ever popular *Speed Machine*. Given the same motor and switch the students explore various mechanisms and configurations in their design work. Graphically they produce a rendered, exploded isometric drawing of their final design that they then construct. Testing and further development is encouraged before the 'final timing' is carried out.

The summer term involves working in small 'manufacturing groups' on a prescribed electronics project – each student taking a different responsibility.

Year 9

For a number of years students have been involved in the Toyota Technology Solar Challenge for their first project. After initial, individual work is complete groups of 3 to 5 are formed into teams where they take on various roles producing a folder, presentation and manufactured solution. A winning team is selected from each form culminating in a QEGS representative team being selected and entered into the competition. If the folder is of an acceptable standard they are invited to compete at the regional final and ultimately the national final. Since 2006 we have participated at all the regional events and won the National Final in 2007 and 2009.

The second project is a focussed on product design involving either an FM radio or MP3 stereo amplifier and speakers. Students are encouraged to explore shape and form and a number of selected designs are then taken into manufacturing.

Theory work is related to the car, covering areas such as mechanisms, the internal combustion engine, materials - their physical and mechanical properties and ergonomics.

Assessment

Throughout the year regular homework is set and marked relating to theory work and aspects of the current design. The final project outcome in most cases is also assessed and there is an End of Year examination.