

# Product Design – Y8 Challenges

## Aims:

- \* To enable students to further develop their skills of project planning, innovative design, problem solving and self-evaluation.
- \* To engage students in working with others in a paired activity.
- \* To allow students to bring creativity to a practical problem.

## Topics Covered:

The students can work on three main challenges.

- \* The ToyMaker challenge allows students to explore and discover how wooden toys can be made and have an opportunity to experiment with mechanisms during the manufacture of a mechanical wooden toy.
- \* The 'Mipod' challenge introduces students to complex electronic circuits and product analysis through the manufacture of a mini amplifier. This allows students to study engineering disciplines such as CAD/CAM & Printed circuit board population as well as exploring new technologies.
- \* The 'Coatfanger' challenge allows the students to combine their electronics knowledge with the skills that they have developed working with wood, metal or plastic. The outcome is down to the individual's creativity and flair but should aim to use electronics to create a novelty coat hanger/peg.

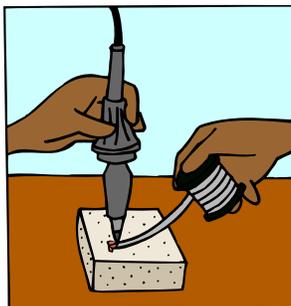
Other subjects/ topics embedded within the projects include:

- \* Development of Graphic skills
- \* Practical hand skills and use of tools
- \* Sketching and drawing as a problem solving tool
- \* Computer Aided Design & Computer Aided Manufacture



## Teaching Groups:

For Health and Safety reasons, the maximum group size that we have in a workshop is 23 students. Groups are all mixed ability, as Design & Technology is an area in which all students should be able to achieve.



## Assessment:

Students' levels are assessed through the use of project booklets and on completion of their practical outcome. Students regularly participate in assessing their own work and that of their peers and are actively encouraged to discuss their work in front of other classmates.

## How Parents and Carers can help:

- \* Students with long hair will be required to tie it up during Design and Technology lessons due to strict health and safety regulations.
- \* Students will be required to complete small home tasks to help with product research.

# Y9 Pre GCSE Engineering

## Aims:

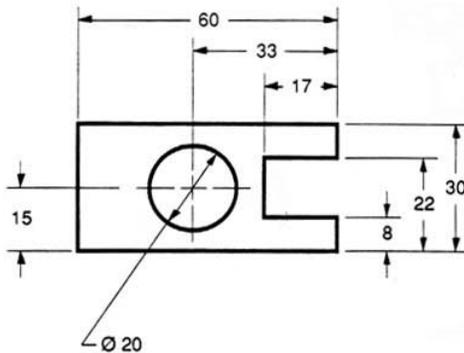
Enables students to develop their skills in the following areas:-

- \* Health and safety awareness in engineering
- \* Analysing & disassembling products
- \* Creating orthographic drawings of products that they produce
- \* Developing designs using Computer Aided Design software
- \* Developing specifications & understanding criteria
- \* Identifying and understanding material properties and material selection
- \* Identifying & understanding manufacturing processes
- \* Quality control & Quality Assurance

## Topics Covered:

Students work on a variety of areas including:

- \* The 3 piece puzzle
- \* The Spinning top
- \* Designing using Autodesk Inventor
- \* Circuit design using circuit wizard



## Teaching Groups:

For health and safety reasons the maximum group size in the workshops at any one time is 20. The groups comprise of mixed ability boys and girls.

## Assessment:

Students are assessed through the outcomes of the products that they produce along with structured testing of the theoretical knowledge they have gained over the course of each area of study.

## How Parents and Carers can help:

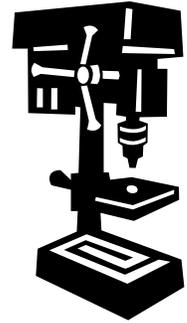
- \* If possible - downloading the free CAD software available to students to practice at home. (Autodesk Inventor/Google Sketchup)
- \* Try to encourage students to be curious about the design, engineering and the making of everyday products.
- \* Support students in encouraging them with research and homework tasks.

# Y7 Product Design

## Aims:

Enables students to develop a wide variety of skills including:-

- \* Health and safety awareness in the workshop
- \* Analysing the work of past & present professionals involved in D&T
- \* Research & exploration into different cultures, user needs & emerging technologies
- \* Identifying and solving problems
- \* Developing specifications
- \* Generating creative ideas, developing and communicating them
- \* Selection & proper use of material & tools
- \* The self-evaluation, testing & refining of products



The Year 7 course introduces students to the safe use of workshop equipment and provides the basic understanding of materials and processes required for future project work.

## Topics Covered:

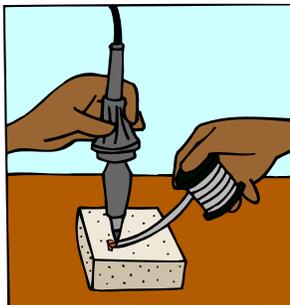
Students work on a variety of projects:

- \* The Note holder
- \* The Chocolate box (Graphic Packaging)
- \* The Alarm
- \* The Travel game
- \* The Money Box

These projects include elements of electronic design, graphical skills, health and safety and the use of various materials.

## Teaching Groups:

For Health and Safety reasons, the group sizes that we have in the workshops are smaller than in other subject areas. Groups are all mixed ability as Design & Technology is an area in which all students should be able to achieve.



## Assessment:

Students are assessed through the use of project booklets and on completion of their practical outcome. Students regularly participate in assessing their own work and that of their peers and are actively encouraged to discuss their work in front of their classmates.

## How Parents and Carers can help:

Long hair must be tied up in the workshop (a 'bobble' is suitable)

Finished practical work can be taken home and we usually ask for a small

contribution towards costs. A note will be sent home at the appropriate time for this.

# Y9 Pre GCSE Product Design

## Aims:

Enables students to continue to develop their skills in the following areas:-

- \* Health and safety awareness in the workshop
- \* Analysing the work of past & present professionals involved in D&T
- \* Researching into different cultures, user needs & emerging technologies
- \* Identifying and solving problems
- \* Developing specifications
- \* Generating creative ideas, developing and communicating them
- \* Selection & proper use of material & tools
- \* Self-evaluation, testing & the refining of products



## Topics Covered:

Students work on a variety of projects including:

- \* The Pencil box Project
- \* The Flat pack Challenge
- \* The Bathroom Caddy
- \* Designing for Sport



## Teaching Groups:

For health and safety reasons the maximum group size in the workshops at any one time is 20. The groups comprise of mixed ability boys and girls.

## Assessment:

Students are assessed through the outcomes of the products that they produce along with structured testing of the theoretical knowledge they have gained over the course of each project.

## How Parents and Carers can help:

- \* Encourage students to be proud of and bring home any items they produce.
- \* Try to encourage students to be curious about the design and making of everyday products.
- \* Support students in encouraging them with research and homework tasks.