



Real-life enterprise

Buxton Community School



Buxton Community School is a secondary school and sixth form located in the heart of Buxton, a Spa town on the edge of the Peak District. For the final 10 weeks of Year 9, students taking Product Design at GCSE are given the opportunity to participate in a unique designing project that we run with Chatsworth House (a local stately home). This is a real-life enterprise project, which involves market research, discussions with the buyers, several visits to the stately home, designing, prototyping, pitching to the buyers then the manufacture. This has resulted in over 3,000 items being sold at Chatsworth to date and much needed revenue for our department budget. This gives students an invaluable experience and a solid platform for starting GCSE.



Getting hands-on
Design and Engineering teacher Judith Birtles believes in giving students a strong foundation of hand skills in a wide range of materials and processes. The focus is on high quality, precision finishes from the outset; modelling and 'getting hands on' as soon as possible. Then students are introduced to a CAD/CAM project where they acquire the knowledge skills and understanding to be able to create prototypes quickly adapting and developing them into refined end products moving to a more open ended project where students are encouraged to explore and experiment with different materials. This approach has led to some unique and innovative projects.

In Year 12 they start by boiling eggs! In the first lesson students are taken into the school kitchens and boil eggs, testing out a variety of egg cups. They use photographs they have taken, apply dimensions, analyse in groups and complete their first product analysis. Then they are set the brief to design and make three eggs cups: in timber, metal and a polymer. The deadline for this first project is always tight and students need to move into the workshops in their free time to be able to complete it. The school tries to encourage

students to work together as a team, problem solve and experience some failure. This gives them a good working ethos, makes the workshops busy hubs of activity and creates a momentum for the rest of their A level.

The Flaski [Flaski images]
This year some students have opted to produce prototypes involving 3D printing. This interesting aspect opens up new areas of experimentation and has allowed projects to have greater complexity, demand and rigour. The challenge is to have balance and still incorporate hand skills into these projects. One student has designed and produced a self-boiling flask, the 'Flaski' using SolidWorks; the internal components are extremely sophisticated, and the prototypes have demonstrated amazing involvement. It is designed to save wasted water rather than boil too much in a kettle. The body, lid and internal components of the Flaski have been 3D printed and the base has been turned by hand in nylon. The student has made the packaging for the prototype by hand allowing them to demonstrate a wide range of skills. The work involved has been immense and the working prototype demonstrates their ability to design and make to the highest standard.



Smoothie in a cup [SMEG images]
Another student has made a smoothie maker designed to be used in a commercial setting; it reduces time taken to produce a fresh smoothie and reduces the amount of cups needed so that the smoothie is made in the cup it is sold in. This problem was identified in the students' part time employment. Students are advised to seek real customers at the beginning before identifying their need and design brief. This has resulted in a vast range of innovative projects. The smoothie maker was made as a working model and a prototype, with bases turned by hand, the top 3D printed, internal components laser cut and the student adapted a motor to suit.

Other projects produced in Year 13 include a guitar, an ash desk with an inlaid LED strip light, a guitar pedal board with three guitar sound effects pedals in oak, aluminium and acrylic, and speakers inlaid with copper powder mixed with resin.

Buxton students move on to a broad range of options after A Level Product Design, from degrees in Product Design, Architecture, Industrial Design, Electronic Engineering, Furniture design to apprenticeships with local companies such as Fibrocon and Tarmac.

