GRANT PROJECT

The reality of university science

The Royal Society’s Partnership Grants scheme offers up to £3000 to support teachers, scientists and engineers in working together to inspire young people. One such recent project (March–May 2007) was ‘The Science of Colour’. This was aimed at high-ability 14-year-old students and was a partnership between Malmesbury and Ridgeway Schools and the School of Chemistry at the University of Bristol, all in the UK.

One aim of the project was to get 80 students to spend a day in the role of a young undergraduate scientist. The students spent two and a half hours working with postgraduate demonstrators in undergraduate teaching laboratories and an hour and a half in a lecture. Both the practical work and the lectures were designed by teachers working with academic staff. The aim was to engage, excite, enthuse and educate tomorrow’s potential scientists as well as cover examination content of the GCSE Gateway (B) specification.

The day at Bristol ChemLabS, a HEFCE centre for excellence in teaching and learning in chemistry, started with an introduction to the labs and a health and safety talk. The students, in six mixed-school groupings, then put on lab coats and safety glasses and started their practical work. The small groups each worked on one of three 40-minute experiments with a young postgraduate taking on the teaching role.

The lab programme included several physical science experiments. The chemistry included extraction of natural dyes from tea, onion leaves, blueberries and cranberries, complete with the dying of cotton strips, and investigating whether you can measure the concentration of sodium chlorate in bleaches by a chemiluminescent reaction with alkaline luminol. The applied physics experiments included using UV-VIS spectroscopy to measure the concentration of coloured solutions, the investigation of the transition temperature of thermochromic pigments, and the use of phosphorescent dyes in bank notes, credit cards and passports. Two of the experiments were deliberately designed to suggest follow-up practicals back at school.

The day was completed by two short talks in a lecture theatre given by University of Bristol lecturers. The first, by Tim Harison (the school teacher fellow), covered the colour sections of the examination specification and related it to the work undertaken in the teaching labs. The second, a lecture demonstration by Prof. Julian Eastoe aided by postgraduates, looked at aspects of nanotechnology. At the end of the day, all students were given careers guidance literature on science, engineering and technology.

Rebecca Stepek (from Malmesbury School in Wiltshire and Key Stage 4 (14–16 year-olds) curriculum leader in science) said: ‘We chose practical exercises to allow the students to develop their measuring, fair-testing and analytical skills. It was also important to give the students the chance to use equipment and chemicals not commonly available in schools such as the spectrometers and UV boxes. It was also important that the students had a bit of fun and that the day spent at the School of Chemistry provided an opportunity for youngsters to work with younger practising scientists.’

Tim Harrison was ‘pleased to be able to link students’ experience of an area of a subject specification to everyday situations and commercial applications.’

Dudley Shallcross, ChemLabS outreach director, said: ‘We are delighted that so many young, capable students have been given the opportunity to see some of the applications of the newer materials such as thermochromic paints and to work within a university laboratory. Unless school students can experience science in a university laboratory at some point in their schooling how can they make informed choices as to whether they wish to go to university to read a science subject? Events such as these can only be a good thing.’

As an extension to the university day, Malmesbury students will spend time following up suggestions of additional practical work and will make presentations to parents at a specially organized evening event at the school.

Royal Society Partnership Grants information can be found at www.royalsoc.ac.uk/page.asp?id=1948.

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