

Aspiration raising at the University of Bristol's School of Chemistry

By Tim Harrison, Bristol ChemLabS School Teacher fellow

What could be a better way of aspiration raising than, as a young secondary school-aged student, being able to work alongside some of the UK's brightest postgraduate chemists in some of the best undergraduate teaching laboratories available? Students from six schools in the southwest of England had these opportunities early in 2008 and will again during late 2008 and early 2009.

The mixed-age students came from six schools drawn from the 480+ members of CHeMneT. CHeMneT, in existence for nine years, is Bristol University's School of Chemistry's network of mainly chemistry teachers, their schools and other interested individuals in the south of England and south Wales. It is designed to support all areas of chemistry teaching for state and independent secondary school teachers.

Through this network the School of Chemistry's Outreach Director makes available the resources of a world-class chemistry department. The support offered includes master classes, summer schools,

conferences and workshops for secondary-aged students. Additionally CPD courses are available for teachers in leading-edge chemistry. The network has its own dedicated web site at www.chemlabs.bris.ac.uk/outreach

The link with Bristol came through the triple science networks desire for 'organising CPD visits for teachers and taster days for pupils to high-performing HE institutions', and also aspects for 'innovative practice in teaching and learning, such as trialling innovative practical work and designing activities that will inspire young people to study science'.



Outline of an aspiration-raising day

The 60–70 students arrived at the university at about 10 am. After a safety briefing there was a practical session of around 150 minutes with groups of 10–12 students each supervised by a PhD chemist. The extraction of caffeine from tea leaves was chosen for one session as a suitable exercise as it involved equipment, facilities and chemicals that are not usually found in a school. These included fume-hood space, electric hotplate stirrers, separating funnels, Buchner filtration (using vacuum lines) and rotary evaporation for each pair of students. Students who finished in sufficient time were shown how to use diamond infra-red spectrometers and melting-point apparatus. After a break for lunch, the students enjoyed a session



in the lecture theatres, thus completing the experience of an undergraduate chemistry student!

A 30-minute talk on 'What is it like to be a 'generic' university student at Bristol?' was given by a member of the University's Widening Participation Office. This was followed by a well-considered talk by one of the postgraduate chemists who had been in the lab in the morning.

After a short break for refreshments the lecture session concluded with a lecture demonstration on atmospheric chemistry, which included lots of experiments, including minor explosions, liquid nitrogen and dry ice – and all linked to KS3 and GCSE level Chemistry. A short plenary and evaluation session completed the visit.

What were the outcomes?

A questionnaire was used to obtain feedback on general opinions of the day – whether the day was judged to have raised aspirations, what were the views on both the practical work and lectures and was there a willingness to continue with such visits in the future.

In addition to the aspiration-raising days for CHeMneT, the School of Chemistry provided an aspiration-raising day for the Trowbridge & West Wiltshire LSN Network. Feedback from these students saw a raising of aspiration for university rising from 63 to 90% and a more than doubling of the awareness of chemistry from 23% to 52% as judged by replies to a questionnaire.

Continuance during the academic year 2008/9

During the current academic year, Bristol will be running four aspiration-raising days for CHeMneT

members and two teacher CPD afternoons or evening sessions for teachers of science. A number of different experiments will be chosen for two of the student sessions. The two CPD afternoons will be in atmospheric chemistry and nanochemistry. The latter will involve both diamond synthesis and electron microscopy. Both build on the expertise available at Bristol. Any unbooked places on these two courses will be made available to members of other networks.

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Feedback from one participating school

Feedback from the group was overwhelmingly positive. They relished the opportunity to experience an undergraduate's 'morning'. Pupils were overwhelmed by the sheer size of the state-of-the-art labs. They enjoyed talking with the postgraduates about life at university. Some of them expressed an interest in spending longer (two days) at the University with visits to other university sites, e.g. halls of residence. Pupils are apprehensive about living away from home and a visit to halls of residence could allay some fears. In talking with parents I am aware that the experience has helped raise aspirations about firstly going to university, and secondly studying chemistry.

Such days are invaluable in showing our pupils what they can aspire to and what is involved in studying science at university. We would love another opportunity to work with the department with more pupils.