

## Supporting Scottish Science Education - CPD news



**Figure 1** - Practical session at the Biotechnology Summer School - Plant Biodiversity through DNA fingerprinting

### Introduction

As reported previous Bulletin articles [1] & CPD News [2 & 3], SSERC is engaged in a number of Scottish Executive funded projects that involve Continuing Professional Development for school science educators in Scotland. Here, we provide an update on a range of CPD activities provided through the partners in the 'Supporting Scottish Science Education through CPD' and 'CPD for School Science and Technology Support Staff' initiatives.

### Leadership course for new and aspiring Heads of Faculty

Thirty Heads of Faculty and Principal Teachers Curriculum took part in this five-day residential course on 'Improving Achievement in Science'. The course offered opportunities for participants to develop their skills, knowledge and understanding of how to lead others as well as how to strategically manage their faculty or department. This was always done with a view to the creation of an ethos where the main goal was the inspirational teaching of science. A major, successful feature of the course was an action research project carried out by the delegates, either individually or in groups, between the initial, demanding 3 day session of the course held in November, 2005 and the 2 intensive recall days held in May, 2006. During a 'show and tell' session, delegates had opportunity to exchange their ideas and experiences.

All of the projects were impressive and many delegates commented on how valuable they had found this and other aspects of the course, a typical comment being :-

**"An enjoyable, informative and beneficial course over five days."**

The course was supported by the National Science Learning Centre (NSLC) [4] at York as part of its support for provision of CPD for Scottish science teachers.

### Residential school for trainee postgraduate science teachers in Scotland

On June 6<sup>th</sup> and 7<sup>th</sup>, 2006, one hundred and eighty Post Graduate Diploma

in Education (PGDE) students came together and worked and played hard at an action-packed, two-day, residential, professional development conference held at the University of Edinburgh's Pollock Halls. These Biology, Chemistry and Physics students, who came from the six Initial Teacher Education Institutes across Scotland, will start teaching in August 2006. As teachers, these students will be key to the successful implementation of the Science 3-18 Review and *A Curriculum for Excellence (ACfE)* [5]. The theme of 'Sustainable Development', which ran throughout the conference, afforded an excellent channel for students to explore learning and teaching methodologies including cross-disciplinary collaborative-working that support the implementation of *ACfE* within the context of science education. This unique conference also provided these new entrants to the profession with their first taste of high quality Continuing Professional Development (CPD) and encouraged them to establish networks with other teachers of science on a Scotland-wide basis. Feedback from participants was very positive with comments e.g.:-

**"Great introduction to CPD" and "This event should continue and grow each year."**

The conference was organised by university tutors and supported by SSERC and its partners in the *Support for Science Education through CPD* initiative. The conference was underwritten by SSERC with contribution from ITEIs and the students themselves.

### Summer schools

The last week in June has become a recognised date in the calendar for the Biotechnology and Biosciences, Chemistry and Physics summer schools. This year, around seventy-five teachers, from schools across Scotland, attended with many sacrificing part of their summer holiday to be there. In addition to the established offering of opportunities for participants to raise levels of knowledge and confidence in the teaching of their subject, the 2006 summer schools



**Figure 2** - Dr. Tony Miller of the Royal Botanic Garden, Edinburgh talked to the Biotechnology Summer School about biodiversity and the remote island of Soqotra in the Indian Ocean.

let delegates explore activities and pedagogy that support the purposes and principles of *A Curriculum for Excellence*. The programmes for each of the three summer schools comprised an interactive approach that incorporated a mix of practical activities, group tasks, discussions, lectures and visits.

### Biotechnology and Biosciences Summer School

Visits to the Roslin Institute (RI), the Scottish Agricultural Science Agency (SASA) and the Royal Botanic Garden, Edinburgh (RBGE) provided some of the highlights. The Summer School was held at the University of Edinburgh and organised by Science and Plants for Schools (SAPS) and SSERC. Participants visited either the Roslin Institute or SASA, both of whom were wonderful hosts. Each organisation treated delegates to an inside view of their work and demonstrated superbly science at the frontiers of both research and application. Scientists from RI and SASA departed from their normal day jobs to work closely with small groups of participants to produce a PowerPoint presentation, on an aspect of the work of the organisation relevant to the curriculum, which can be used in the classroom. Another visit, on a glorious day, to RBGE provided a wealth of information and ideas in a day entitled, 'Biodiversity – why should we bother?'

### Chemistry Summer School

Delegates enjoyed a wide range of activities designed to compliment and enhance their classroom teaching. These included lectures on 'The Elements of Life and Medicines: a Web of Health?' and presentations by the exuberant Paul Murray on 'Chemistry of the Stars' and 'Colourful Chemistry'. Laboratory work included spectroscopic sample preparation & analysis and a chance to preview some new Forensics and Investigations teaching materials for use in S1/S2.

A visit to the National Museum of Scotland's minerals section in Granton proved a great success with delegates gaining valuable insight into the formation of gemstones and they themselves chemically removing impurities from mineral samples. The Chemistry Summer School was organised by the Development to Update School Chemistry (DUSC), SSERC and the University of Edinburgh where the event took place.

### Physics Summer School

This was supported by the Institute of Physics, SSERC, University of Edinburgh and the University of Glasgow, where the Summer School was held.



**Figure 3** - Practical session at the Physics Summer School  
- Spark Counter experiments & Radioactivity

Lectures included an eclectic mix of subject matter that ranged from nanotechnology, through the 'Physics of Music', to 'Irn Bru from the Stars'. There was even a visit from two astronauts. Throughout the week, attendees worked together in small groups to produce an excellent CD that they will be able to use a resource in the classroom to support the learning and teaching of a variety of topics that include: Electric circuits – thinking and modelling; Momentum and impulse – banging and crashing explained; Radioactivity - what Joe Public makes of it; and Light, waves and polarisation – understanding and explaining.

### CPD & related activities for school support staff - progress

This project, managed through SSERC and the Scottish Technicians' Advisory Group (STAG), was reported on in some

detail in Bulletin 215 [6]. Plans are underway to publish the *National Survey 2005 Interim Report*. This baseline survey report describes the current national position and the variety of extant support arrangements within Local Authorities. Good progress is being made in developing a suitable Scottish qualifications and CPD framework for science and technology support staff. It is hoped that four units will be credit rated and levelled through the SQA's Scottish Credit and Qualifications Framework (SCQF) within the timescale of the project. Two of these learning programmes have been successfully trialled: Safety in Microbiology for Schools and Safe Use of Fixed Workshop Machinery. Following the success of last year's event, the Technicians' Consultative Conference 2006 will be held from 1<sup>st</sup> – 3<sup>rd</sup> November in Crieff Hydro. Brian Richmond, Project Manager has written to all Local Authorities seeking nominations for delegates to attend.

### References & addresses

For further information on any of these activities contact [kath.crawford@sserc.org.uk](mailto:kath.crawford@sserc.org.uk)

- [1] [www.sserc.org.uk/members/SafetyNet/bulls/214/editorial.htm](http://www.sserc.org.uk/members/SafetyNet/bulls/214/editorial.htm)
- [2] [www.sserc.org.uk/members/SafetyNet/bulls/215/CPDNews1\\_OnScreen\[1\].pdf](http://www.sserc.org.uk/members/SafetyNet/bulls/215/CPDNews1_OnScreen[1].pdf)
- [3] [www.ise5-14.org.uk/prim3/CPD\\_Project\\_News/On%20screenISE5-14%20News%20e.pdf](http://www.ise5-14.org.uk/prim3/CPD_Project_News/On%20screenISE5-14%20News%20e.pdf)
- [4] [www.sciencelearningcentres.org.uk/WebPortal.aspx?page=1](http://www.sciencelearningcentres.org.uk/WebPortal.aspx?page=1)
- [5] [www.acurriculumforexcellence.scotland.gov.uk/about/index.asp](http://www.acurriculumforexcellence.scotland.gov.uk/about/index.asp)
- [6] [www.sserc.org.uk/members/SafetyNet/bulls/215/newscomment\\_4.htm](http://www.sserc.org.uk/members/SafetyNet/bulls/215/newscomment_4.htm)



**Figure 4** - Lecture session at the Physics Summer School  
- *Irn Bru from the Stars* by Dr. Lyndsay Fletcher of the University of Glasgow