The Biosciences Federation’s first ever event took place on October 6 2003, following its launch earlier in the autumn. The event was a 1-day colloquium aimed at addressing the factors affecting the changing face of the biosciences undergraduate and the issues associated with links between schools and universities. This colloquium provided a much-needed forum for communication between the sectors, and headway was made in exchanging ideas and perspectives through topical presentations and lively debate.

There is little doubt, according to Save British Science (SBS)’s survey of Deans of Science, that “they don’t make ‘em like they used to!” when it comes to today’s science undergraduate. But is it just a case of looking back with rose tinted spectacles to the golden days of yesteryear? The Biosciences Federation was keen to establish just exactly what the problems are according to the people who actually teach these students as well as looking at how imminent changes in school science might affect the knowledge and skills base of future university intakes. Representatives from schools, the Government, universities, careers services and learned societies gathered at the National Union of Teachers headquarters in London to find some answers.

Rebecca Edwards, of the Qualification and Curriculum Authority (QCA), began the day’s presentations with an overview of the imminent changes to the school science curriculum for pupils aged 14 and over. One thing that was made abundantly clear was that the constant and unrelenting changes that teachers have become so disillusioned with over the last 15 years are set to continue for the foreseeable future. This announcement was met with audible groans from the teacher contingent. It was also announced that, from September 2006, 14-year-olds may be given the choice of whether they would like to study the more vocational side of science or a course with a more academic leaning (designed for those who intend to go on to do post-16 science and higher education). The revelation that pupils would be given the option of dropping a substantial portion of science to study a course containing only a very small core (that would not lead to a GCSE qualification) also created some unrest among delegates. In response, Ms Edwards drew attention to the Government’s White Paper, which sets out the requirement for choice and diversity for 14–19-year-olds, although many of the university academics in the audience remained unconvinced. Sceptics felt that pupils would not know their own minds at the age of 14 and that there would be substantial peer pressure to take the easy option. Teachers were less discouraged, however, taking the view that more 14-year-olds will be able to enjoy their science lessons if the few disinclined (and potentially disruptive) students are not forced to attend. Some parties were reassured by the suggestion that 14-year-olds would be given sufficient careers advice to make informed decisions about the amount of science that they should take and that opportunities for pupils to study additional science later in their schooling would be made available.

Peter Cotgreave (Director of SBS) began his presentation with a summary of SBS’s survey that found that the Deans of Science from a range of different universities think that substantial proportions of students have worse maths skills, practical skills and elementary subject-knowledge than those of 10 years ago. The overall picture that emerged from the survey showed a general lack of confidence among the Deans in the ability of some of our current school-leavers to undertake a science course at degree level. Dr Cotgreave gently stirred up the audience by apportioning the blame to both schools (which are failing to teach science appropriately) and universities (which are failing to adapt).

In the discussion that followed, it transpired from the lecturers among the delegates that several problems have arisen over recent years regarding the ability of a student to answer extended-writing-style questions and to apply knowledge across modules (which is deemed essential for the interdisciplinary nature of most biological science courses). It was felt by some, that the exam boards might also be
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partly to blame in tending towards more bite-sized questioning techniques in school examinations. Teachers seemed to be in agreement that there are difficulties in matching what universities want with what they are required to deliver by the government and the Qualifications and Curriculum Authority, and that more dialogue between all parties should be established.

There then followed a panel discussion on ‘New challenges faced by first-year undergraduates’ in which Jane Calvert (Newcastle upon Tyne) and Keith Elliott (Manchester) highlighted the difficulties that students have in adapting to new teaching and assessment methods, as well as the huge lifestyle changes that many students face in moving away from the family home. The culture shock when a student arrives at university is often underestimated; a study at the University of Newcastle upon Tyne showed that ‘softer skills’, such as dealing with lifestyle changes, were actually rated as more problematic by students than dealing with academic difficulties, and it is perhaps in these areas that universities need to concentrate more effort. It was interesting to note that, at the University of Manchester, the greatest predictor of failure in biological science undergraduates at the end of the first year seems to be the lack of post-16 chemistry. The Newcastle study echoed the importance of chemistry by showing that only one in five students arriving without A-level chemistry felt that their chemistry knowledge was sufficient for the course. Once again, universities are gradually adapting to the change by providing remedial courses, but these tend to be on a reactive rather than proactive basis.

On the subject of teaching methods, it was noted that the majority of university courses are still taught in large lecture theatres, which some learners have difficulty with, and although some universities are moving towards smaller groupings, these generally tend to be in medical schools where there is more funding available. Laura McRobb (a student at the University of Westminster) commented that in some of the bigger lecture theatres, it can become difficult to concentrate owing to a number of noisy students who talk throughout lectures. Although this phenomenon may vary greatly between institutions, it could be speculated that the situation may well worsen with the growing number of students and the range of abilities of students that enter higher education. Some universities now provide training in study skills and give support and guidance for students struggling to adapt to the university style of learning, with varying degrees of success.

Following the lively lunchtime discussions, two more panels of experts amassed to discuss various interrelated topics, including the provision of careers advice, widening participation and some strategies for smoothing the transition between school and university. Angela Lowi (Connexions) pointed out the difficulties that Connexions (the Government organization responsible for delivering careers advice in schools) has in providing a quality careers-advisory-service when it is also covering a wide range of social services. It seemed that there was a consensus among delegates and speakers that the careers advice provision for the vast majority of young people is currently very poor (and even “appalling” according to Peter Cotgreave, who has recently undertaken a survey of secondary schools asking pupils “what can one do with a science degree?”). This was supported by a MORI poll that found that 44% of 16–30-year-olds from working class backgrounds had never received any information regarding higher-education courses.

Pauline Lowrie, Head of Biology at Sir John Deane’s Sixth Form College, suggested that children frequently have little idea what scientists do beyond what they see on TV. Furthermore, Ms Lowrie responded to complaints from university lecturers that were made earlier in the day regarding the trend for school leavers having poor practical skills. She suggested that the tedious practicals necessary for pupils to jump through the assessment hoops imposed by the A-level coursework insisted on by exam boards have led to a stagnant situation.

The need for universities and schools to communicate more effectively with each other was a continuing theme throughout the day and was seen as essential in addressing the problem of students’ transition into university science. As an example of good practice, Peter Robinson spoke about Biology4all.com, a website aimed at linking school and university teachers via an online discussion list and speaker database. The site, which is private and free, has successfully enabled school teachers to swap information, learn from each other and set up school talks quickly and easily. It is hoped that such a format might enable more cross phase links in the future.

The official report of this education colloquium can be found at www.bsf.ac.uk/edu/