

## ***Twenty First Century Science* encourages more students to continue the study of science**

In 2006, new General Certificate of Secondary Education (GCSE) science specifications were introduced throughout England and Wales. One of them was *Twenty First Century Science*, which had been piloted during the three previous school years, from 2003-6. In 2006, as today, science was high on the policy agenda. Influential reports in the UK and in Europe had highlighted concerns about the numbers of students continuing with science once it became an option – some attributing this in part to the way science is taught in the earlier years of secondary school. The 2006 science GCSEs, however, were not universally welcomed. There was some adverse media comment, questioning the rigour of their content and critical of the fact that they included opportunities for students to discuss current issues with a science dimension, such as climate change, and GM. Critics clearly doubted that the changes would draw more students into science beyond GCSE.

Now, three years on, a survey by the University of York of centres using *Twenty First Century Science* has found a striking increase in the numbers of students choosing to continue the study of science at AS-level in schools and colleges using the *Twenty First Century Science* suite. A large sample of centres was asked if the number of students starting AS-level courses in Biology, Chemistry and Physics had increased, decreased, or stayed much the same – and to indicate whether any changes were large or small. They were then asked to provide AS student numbers for each science subject for the two years preceding the 2006 curriculum changes and for the first year after. For all three subjects, numbers had increased in more than 50% of centres, and to an extent that was seen as large in over 20%. And they had decreased in fewer than 10% of centres. There was no correlation between the change reported and the overall academic performance of the centre, as measured by the proportion of its students gaining 5 A\*-C GCSE passes. In other words, similar percentage increases in AS student numbers were reported across the spectrum of low and high performing schools. The numerical data indicated an average increase in uptake in 2008 of 37% for AS Biology, 25% for AS Chemistry, and 34% for AS Physics in centres using *Twenty First Century Science*.

This is clearly very good news for everyone concerned about student participation in science in the sixth form and beyond. To put it in context, the provisional data just released in August 2009 by the Joint Council for Qualifications show national

increases in AS numbers of 10% in Biology, 8% in Chemistry and 9.5% in Physics, over the previous year. So the survey data show a very significant *Twenty First Century Science* ‘course effect’ – producing increases of over three times the national trend in all three main sciences. This suggests that course design is important, indeed crucial, to attracting students to science and meeting government targets for A-level sciences. The way to increase student participation is not to return to ‘traditional’ ways of teaching science, but rather to provide stimulating and engaging courses which recognise the diversity of students, are aware of the ‘hooks’ that can create interest in science and convey a better sense of its value, and which then capitalise on that interest to develop understanding of the key ideas in science, and about science, that are the foundation for further study and for active and informed citizenship. With yet another review of GCSE Science currently in progress, these are timely messages.

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