

# A Broader Spectrum: Supporting 21<sup>st</sup> Century Science Education

Ian Hunter

As a science student, 'dull' and 'boring' is far from how I would describe science. However, recent studies have revealed that an increasing number of schoolchildren do see the subject as inherently 'dull', 'boring' and 'hard' (1). The science curriculum, particularly at GCSE level, has been criticised for being aimed too specifically at students who intend to pursue a scientific discipline at university. Critics say that this alienates those who are generally interested in science, but do not wish to learn the intricacies of nuclear fission or organic mechanisms (2). The loss of interest in studying science after it is compulsory has had a dramatic effect on the number of science graduates emerging from British universities into scientific careers (3), an effect perhaps most notable in the current shortage of science teachers (4).

The 21<sup>st</sup> Century Science GCSE, officially launched across the UK in September 2006 and adopted by the OCR examination board (5), was introduced as a means of rectifying this problem. It aims to teach science in a more 'relevant' way, focusing on current affairs and prominent cultural issues (6). The general Science GCSE introduced by AQA has similar intentions (7). These new specifications should restore enthusiasm towards science in disillusioned pupils by making it more applicable to their everyday lives. There has been much criticism from traditionalists, who lament the demise of their beloved subjects, but should we not be welcoming a more inclusive approach to science education?

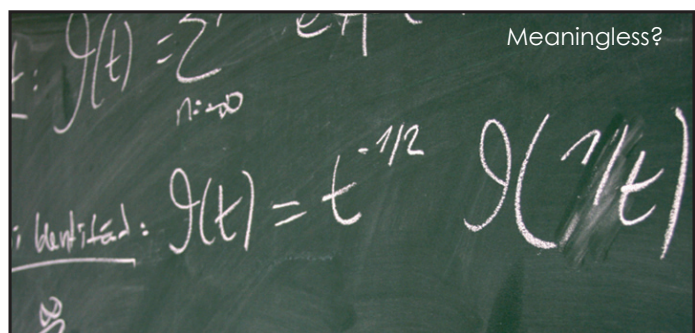
The new qualifications focus primarily on the impact of science-related issues such as the environmental impact of metal extraction and the burning of hydrocarbons, or the benefits and drawbacks of nuclear power (6). Academics in these fields have dismissed this approach as 'dumbed-down' science, devoid of the mathematical rigour that is required to continue the subjects into higher education (10). It is true that the new GCSEs do not involve as much calculation as their predecessors, but as their advocates point out, mathematical analysis is not strictly necessary for students who are 'generally interested' (2).

If the next generation of school leavers enter the adult world able to understand the relevant science behind debates on important topics, the outcome can only be positive. And it is science's relevance that is key; being aware of interdisciplinary applications of science can help those who enter jobs in agriculture, healthcare and retail, without the need for the underlying mathematics and fundamental principles.

That is not to say that we should forget about these fundamental principles. It is vital that a significant proportion of young people pursue science subjects into further and

higher education and this must be actively encouraged. But the 21<sup>st</sup> Century Science GCSE, and others like it, will not be to the detriment of traditional science; in fact, they will probably complement it. By demonstrating how scientific principles can be used to address 'real-life' problems, it is conceivable that the new syllabi will revive enthusiasm in the individual subjects, and increase their post-GCSE uptake.

At present, the major exam boards offer both the new and old GCSEs, as well as an intermediate qualification, 'Additional Science', which introduces more challenging



concepts and some mathematics (8,9). The final responsibility lies with schools, which must incorporate the new GCSEs into their existing courses and clearly explain the benefits of each qualification to students.

Fears are rife that by introducing 'dumbed-down' versions, science as we know it will follow Latin, becoming an exclusive, minority subject. This fear is not unfounded, but, with correct regulation, these introductions, far from killing science, will cause it to thrive.

Ian Hunter is a 2<sup>nd</sup> year at Downing College reading Physical Natural Sciences, specialising in Chemistry and Materials Science. His last article entitled 'Full-body CT Scanning' was featured in *The Science and Society Review* worldwide. He is currently an Associate Editor for *The Triple Helix*, Cambridge.

## References:

- Jenkins, E.W. *Studies Sci Ed.* **2006.** 42, 49-88.
- BBC News, Q&A: Science GCSE controversy, news.bbc.co.uk/1/hi/education/6039950.stm
- Confederation of British Industry, News Release, **2007**
- DfES, *Mathematics and Science in Secondary Schools*, **2006** www.dfes.gov.uk/research/data/uploadfiles/RR708.pdf
- OCR, GCSE Sciences, www.ocr.org.uk/qualifications/subject/science/gcscscience/index.html
- OCR, 21<sup>st</sup> Century Science Suite – Specification, **2005** www.ocr.org.uk/Data/publications/key\_documents/GCSE\_TFC\_Science\_A\_Specification.pdf
- AQA, GCSE Science – 2009 Specification, **2007** www.aqa.org.uk/qual/pdf/AQA-4461-W-SP-09.PDF.
- OCR, Science qualifications www.ocr.org.uk/qualifications/subject/science
- AQA, GCSEs www.aqa.org.uk/qual/gcse.php
- Telegraph.co.uk., New Science A-Levels are dumbed down, www.telegraph.co.uk/news/main.jhtml?xml=/news/2007/04/15/nalevels15.xml

