



The Save British Science Society

SUPPORTING SCIENCE & THE APPLICATIONS OF SCIENCE

29-30 Tavistock Square, London, WC1H 9EZ

Tel: (020) 7679 4995 • Fax: (020) 7916 8528 • E-mail: sbs@dial.pipex.com

SBS 02/13

Deckchairs on the Titanic

SBS response to the Green Paper on education for 14 to 19 year olds,
Extending Opportunities, Raising Standards

1. SBS is pleased to submit a response to the Green Paper on education between the ages of 14 and 19. SBS is a voluntary organisation campaigning for the health of science and technology throughout UK society, and is supported by 1,500 individual members, and some 70 institutional members, including universities, learned societies, venture capitalists, financiers, industrial companies and publishers.

2. There is much in the Green Paper that is admirable. For example, SBS has long argued that a broader, baccalaureate-style examination would be more suitable to the educational needs of today's youngsters than the narrow A-level syllabus that has long ceased to be suitable, either in terms of preparation for work or further study, or in terms of a liberal and intellectually stimulating education.

3. However, the Green Paper has completely ignored the single biggest problem facing many subjects, including the sciences, in today's education system. By far the greatest problem with science teaching in schools is that of recruiting and retaining high-quality, enthusiastic, motivated staff. A survey last year showed that 35% of mathematics teaching posts, 39% of technology posts and 26% of science posts remain unfilled.ⁱ

4. In physics, between 1993 and 1998, across the UK, there were 1,856 fewer graduates training as secondary school teachers than would have been needed to fill existing vacancies, and posts created by the death, retirement or other loss of physics teachers.ⁱⁱ Following the introduction of new training salaries and starting bonuses for physics teachers, the number of recruits increased in 1999, but in 2000, it had still fallen by 66% compared to 1993.ⁱⁱⁱ

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5. Moreover, of those who are training, many are poorly qualified. Some 38% of PCGE entrants in physics have a third class degree “or below,” with the corresponding figures being 37% in mathematics, 34% in chemistry and 15% in biology (compared to just 5% in history).^{iv}

6. One of the major effects of the failure to attract new and qualified teachers is that young people are being taught by people who are unqualified in the subjects for which they have responsibility. Some 29% of those teaching physics at Key Stage 4 do not even have an A-level in the subject, and 66% do not have a degree.^v Broadly similar figures apply in the other sciences.

7. Not surprisingly, many teachers do not feel confident in teaching scientific material. For example only just over one half of Key Stage 4 teachers say they have “a lot of confidence” in teaching the biological elements of the course.⁵

8. Young people notice. A group of university students told SBS they had seen “a significant problem in schools with teachers who were either unenthusiastic or, more usually, simply unqualified to teach the material for which they were responsible”.^{vi}

9. Teachers are not as badly paid as other professionals working in science education, such as university lecturers. But nobody can pretend that school teachers are well paid by comparison with what the same people could command in other occupations in the open market. It also seems likely that there are other significant barriers to the recruitment and retention of sufficient high quality teaching staff in the sciences.

12. As the Science Minister, Lord Sainsbury has said, “there are market forces pulling [good science graduates] in other directions”.^{vii} It is perfectly clear that part of the solution is to pay more realistic salaries. As a recent Treasury review concluded, “the Government should tackle such recruitment and retention problems through increasing the remuneration offered to teachers of these shortage subjects”.^{viii}

13. This is not a new problem and a body of work exists examining individual aspects of the issue. For example, it is some years since it was suggested that a major difficulty in recruiting mathematics and physics teachers was that the satisfactions provided by teaching were not those sought by specialists in the physical sciences, and that it was necessary to broaden the range of potential applicants.^{ix}

14. Nor is the problem unique to the UK. As early as 1986, France was training only 60% of its requirement for mathematics teachers, and in New Zealand 5% of schools had been unable to recruit qualified

and trained staff in physics. In parts of Australia, 21% of physics classes were taken by teachers “whose qualifications comprised minimal or no content studies, and no curriculum studies in the class subject”.^x

15. In 1989, the House of Commons Education Committee foresaw serious problems with the recruitment and retention of science teachers. The Committee believed that “the overall demand for teachers will be higher than that assumed by [the Government],” and that “the assumption that recruitment...in shortage subjects [specifically the sciences] will be 20% above current targets is distinctly optimistic” because “increased competition for school leavers...[will mean that] teaching will attract less than its present share”.^{xi}

16. SBS advocates that the Government should sponsor a detailed, quantitative study designed specifically to identify the factors that attract people into teaching, and those that discourage them to train or encourage them to leave the profession. No such large-scale research base currently exists to our knowledge, and an evidence base is essential to properly informed policy making.

17. Unless the issue of teacher shortages in key subjects is addressed and solved, the many admirable aspects of the current Green Paper will end up being no more significant than rearranging the deckchairs on the Titanic. However important they may be in the abstract, they are irrelevant if the workforce of teachers in schools is not in a position to implement them.

May, 2002

Notes and References

ⁱ *Times Education Supplement*, 31 August 2001.

ⁱⁱ *Physics teacher supply: Current issues facing secondary education*, Institute of Physics, 1999 [IoP Policy Paper 991].

ⁱⁱⁱ *Physics Today*, October 2000, p.13.

^{iv} *Science in Schools*, First Report of the House of Lords Select Committee on Science & Technology, Session 2000-2001 [HL 49]

^v *Science Teachers: A report on supporting and developing the profession of science teaching in primary and secondary schools*, Council for Science & Technology, 2000.

^{vi} *Issues concerning science students in UK Higher Education*, SBS, 2000 [SBS 00/09].

^{vii} BBC Breakfast News, 23 May 2002.

^{viii} *SET for Success: The supply of people with science, technology, engineering and mathematics skills*, H M Treasury, 2002.

^{ix} Smithers, A. and Hill, S. *Recruitment to physics and mathematics teaching: A personality problem?* Research Papers in Education, Volume 4, Number 1, pp.3-21.

^x *The shortage of mathematics and physics teachers*, Department of Education, University of Manchester, 1988.

^{xi} *The supply of teachers for the 1990s*, Second Report of the House of Commons Education, Science and Arts Committee, Session 1989-1990 [HC 208-I].