

## Society of Biology response to House of Lords Science and Technology committee enquiry on higher education in STEM subjects

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Trained scientists are of enormous value to the population in a range of research and non-research careers, and many employers welcome applicants with a scientific background to non-research based roles due to the transferable skills common to many STEM graduates including problem solving, critical thinking, analytical skills.

We need more 16–18 year olds studying the appropriate combinations of sciences and mathematics at A level to ensure we produce enough STEM undergraduates to provide the UK's science base. Any cuts to funding for 16-19 education and subsequent increasing class sizes or decreasing resources available will have negative implications on practical teaching in sciences, when universities already report new undergraduates to lack these skills. Mathematical ability is widely quoted as insufficient in new STEM undergraduates.

The STEM graduate career pipeline is not simply a route to an academic research position, and as such, graduates need to gain a range of transferable skills during their course in order to equip them for a range of potential roles. Reports from employers highlight that graduates are lacking generic transferable skills and research skills and experience, particularly basic mathematical and statistical capability, ability to apply scientific and mathematical knowledge, and practical and analytical skills. 43% of employers report a problem recruiting staff with the right STEM skills and increasingly employers tend to recruit candidates with at least Masters level qualification to ensure they have more of the desired skills.

In order to ensure that sufficient numbers of graduates with the appropriate levels of skills are generated, employers need to play a key role in promoting study of STEM subjects and careers at all levels through training funds, bursaries, academic prizes and CASE studentships. Increasing the number of student placements offered and integration of these opportunities into degree programmes will highlight the potential vocational nature of STEM subject degrees.

Research informed teaching is crucial in order to produce STEM graduates with the high level skills required for employment. The current focus of the Research Excellence Framework does not incentivise or recognise teaching and will lead to the emergence of further divisions between academics who focus on research and those with teaching responsibility. The decrease in HEFCE teaching funding will create a serious funding shortfall for laboratory subjects which are costly to teach such as the biosciences. The new level of HEFCE funding is wholly inadequate and some HEIs may decide that science programmes are unaffordable under the new funding regime.

Until the system of fees and funding for Masters courses is developed, it is difficult to know how this will affect the uptake of Masters courses, and subsequent supply of PhD students. An increasing trend for HEIs and employers to accept only applicants who have a Masters qualification means that this will become increasingly important. Financial constraints will become an increasing factor in some able students choosing to continue studying beyond a three year undergraduate degrees.

There is some concern that the training that UK postgraduate students receive does not compare favourably with research training abroad, where postgraduate training takes longer. Anecdotal evidence suggests that postgraduate students from the UK lose out on postdoctoral research positions to overseas applicants due to their decreased research training.