

Call For Evidence

● Higher Education in STEM Subjects

HOUSE OF LORDS SCIENCE AND TECHNOLOGY SUB-COMMITTEE 1 Call for Evidence: Higher Education in STEM Subjects

RESPONSE FROM the Royal Geographical Society (with IBG)

1. The Royal Geographical Society (with The Institute of British Geographers) welcomes this opportunity to comment on the inquiry into higher education in STEM subjects (science, technology, engineering and mathematics).
2. We would like to remind the Committee that there are a number of science subjects, in addition to the traditional core science-STEM disciplines of physics, chemistry and biology, that contribute soundly to STEM learning and research and to the STEM workforce. These include physical geography, environmental science, archaeological science and parts of psychology. Geography – the discipline that we represent - has been formally recognised by HEFCE as a part-STEM subject for both teaching and research in Higher Education. This recognition took into account investments of the Science Research Investment Fund (SRIF); the nature of the research submitted to RAE2008; the journals that the research is published in; and the research councils and charitable funding sources that support it. We urge the Select Committee to adopt a full understanding of STEM and the importance of part-STEM disciplines in providing the skills, knowledge and understanding required by many employers and society more generally.
3. **What is the definition of a STEM subject, and a STEM job?** The part-STEM recognition for Geography is based on the fact that the discipline is an intellectually challenging subject that requires understanding and application of scientific logic, principles, methods and laws that govern the natural environment; an ability to develop and test hypotheses and to integrate ideas; and analytical capabilities to collect/select, analyse, present and interpret primary and secondary datasets, especially spatial data, and to understand and visualise complex data. Geographers are routinely trained in field, bench-lab and computer-lab work; some receive training on computer-based modelling.
4. A STEM job is one that requires a combination of the knowledge **and** skills learned in a STEM training, whether at undergraduate or postgraduate levels, for the execution of the job.
5. **What do we understand demand for STEM graduates and how this could be used to influence supply?** The Royal Geographical Society (with IBG) can comment only from its perspective of demand for employment for geographers. We know that demand for geographers from employers is high as a whole and that they are relatively well paid compared with non-STEM graduates. This view is backed by several sources including an employer's survey by ESRI – UK published in 2010; first destination statistics; analysis of sample data from the Quarterly Labour Force survey; and the NERC Research Funders' Forum report (see below).
6. The environment sector is a varied, vibrant and vital part of the UK economy and society. It relies on highly skilled people who, through their knowledge, skills and innovation, ensure that the UK provides international leadership and solutions to the long-term challenges we face; continues to attract inward

investment of high-value business; and becomes a world leader in new areas of growth such as low carbon goods and services. The NERC/Environmental Research Funders' Forum report (2010) on professional skills needs in the environment sector, which draws on the perspectives of more than 140 employers, highlights 15 critical skills gaps. A training in geography contributes significantly to the development of between five and seven of those skills areas, depending on the specific geography programme studied.

7. **What effect, if any, will the English Baccalaureate have on the study of STEM subjects in higher education?** We particularly welcome the development of the English Baccalaureate, with its requirement for study in a core of academic subjects, including geography. The Department for Education's response (26 October 2011)ⁱ to the Education Select Committee's report into the English Baccalaureate states that recent independent research commissioned by the Department for Education with nearly 700 schools suggests that the EBacc is having an immediate impact with an expected increase in those studying geography GCSE at school.

"the survey indicated that 47 per cent of pupils taking GCSEs in 2013 will be doing a combination of subjects that could lead to an EBacc compared with just 22 per cent of GCSE-stage pupils entered for the EBacc in 2010. In particular, it suggests that the English Baccalaureate is reversing declines in entries to languages, history and geography, returning them to the levels of a decade ago ... Approximately 33 per cent of pupils have opted to take geography—up seven percentage points and back to the level of 2002 entries".

8. We wait to see if this increases the uptake of geography in higher education but in any case that intake is strong and has remained broadly unaffected in recent years by the declining numbers studying GCSE.

9. **What is being done and what ought to be done to increase the diversity of STEM graduates in terms of gender, ethnic origin and socio-economic background?** The Society actively promotes geography through its schools ambassadors programme, making particular efforts to reach inner city schools and those with a high proportion of disadvantaged pupils. The gender balance in geography is good; the uptake by ethnic minority groups is improving and perhaps our biggest challenge is among those from low socio-economic backgrounds.

10. **About the Royal Geographical Society (with IBG):** Formed in 1830, our Royal Charter is for 'the advancement of geographical science'. We are the UK's learned society and professional body for geography. As a professional body we offer the chartered accreditation (C. Geog) and work closely with employers. As the learned society we support the discipline of geography and its practitioners in research and higher education, school teaching and fieldwork, policy and wider public engagement. We work collaboratively with all Higher Education (HE) geography departments in the UK.



ⁱ Education Select Committee (2011)

<http://www.publications.parliament.uk/pa/cm201012/cmselect/cmeduc/1577/1577.pdf>

The Committee would also be interested to hear about any other issues not already covered by this call for evidence that are relevant to the scope of the inquiry.