

House of Commons Education Sub-Committee on Education, Skills and the Economy
Apprenticeships
Science Council submission – March 2016

The Science Council

1. The Science Council is a membership organisation representing 40 learned societies and professional bodies drawn from across science and its applications. Collectively our members represent almost 500,000 individuals including scientists, teachers and senior executives in industry, academia and the public sector.
2. In addition to providing a mechanism for the sector to work collectively, the Science Council develops and leads collaborative projects working with member organisations and the wider scientific community: examples include LMI analysis of the UK Science Workforce and Diversity, Equality and Inclusion.¹
3. The Science Council's principal area of work is to advance the professional practice of science across the breadth of the science workforce, including non-graduate and technical roles in science. A key aspect of this is professional registration with the aim of raising the profile, aspirations and retention of scientists at all levels.²

Apprenticeship targets

4. We welcome the government's continued focus on apprenticeships. They can provide significant benefits to individuals, employers and the wider economy more generally. **However, the focus must be on quality as well as quantity.**
5. Demand for workers with high-level science qualifications is increasing,³ and science becomes more complex and interconnected, the roles undertaken by scientists in the future will often require high-level practical and technical skills.⁴ High-quality science apprenticeships can help meet this demand.
6. The government has consistently recognised that investment in science and innovation is crucial to increasing national productivity,⁵ and has set the goal of making the UK the best place in the world to do science. Raising productivity levels requires a skilled workforce at all levels. In science there is concern⁶ that the route to science technician is unclear and the technician workforce is not being supported and developed. This will exacerbate the existing shortfall in the number of science technicians in the UK workforce, which poses a serious threat to the UK's long-term innovative strength.
7. Better recognition, support and development is therefore needed for this sector of the science workforce. High-quality apprenticeships, linked to professional registers can make entry and progression routes clearer. Professional registration builds in the requirement for continuous professional development and supports improvement in the skills of the wider science workforce.

¹ <http://www.sciencecouncil.org/content/diversity-equality-and-inclusion>

² <http://www.sciencecouncil.org/professional>

³ <http://www.smf.co.uk/wp-content/uploads/2013/03/Publication-In-The-Balance-The-STEM-human-capital-crunch.pdf>

⁴ http://www.edge.co.uk/media/130721/the_skills_mismatch_march_2014_final.pdf

⁵ https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/443898/Productivity_Plan_web.pdf

⁶ <http://www.hrsmagazine.co.uk/article-details/technical-council-alarmed-at-lack-of-skilled-technicians-to-fill-450-000-jobs>

Ensuring apprenticeship quality and standards

8. To ensure that science apprenticeships provide high-quality training and career progression opportunities, **all science apprenticeships should link to standards for Registered Scientist and Registered Science Technician**. Professional registration provides a benchmark designed to embrace standards of excellence in the practice of science, and is informed by the needs of employers but is independent of any individual employer.⁷
9. Professional bodies should have a significant role in upholding apprenticeship standards and driving quality through the system. They are independent, trusted and are in a position to ensure apprenticeship standards in science remain are maintained within the sectors.
10. Professional bodies have a long-standing experience of providing high-quality accreditation services, particularly in degree courses. Their approval of training provision will also help employers identify quality. Their close links to employers will also help ensure that science qualifications remain relevant.
11. Current and prospective training providers must be subjected to continuous rigorous scrutiny, involving government, Ofsted, professional bodies and industry bodies. The proposed Institute for Apprenticeships (IfA) should work with these and other bodies to ensure that employers and apprentices have confidence in the product for which they are paying. To ensure that the public have confidence in the IfA to safeguard the apprenticeship brand, the **Science Council recommends that the IfA includes a wide range of representative bodies on its governance board, including professional bodies, employers and training providers**.

Take-up of apprenticeships amongst 16–19 year olds

12. To support young people's career progression, it is essential that apprenticeship standards directly link to professional registration requirements in sectors where they exist. This will overcome issues around qualification consistency and equivalence, which are potential barriers to transferability and mobility. It is essential that the quality of qualification standards are maintained and benchmarked across disciplines and employment sectors. Professional bodies are key to achieving this.
13. Science apprenticeships should be a method for developing new skills and knowledge, not as a means of formally accrediting an individual's already established skills. However a report by Ofsted found that many apprenticeships were being taken up by older apprentices already employed in jobs that were subsequently converted to apprenticeships.⁸
14. As the number of 16 to 18-year olds starting an apprenticeship is lower than that of other age groups,⁹ the government should consider reserving a significant proportion of apprenticeship starts to this age group.
15. There are very few science apprenticeships available. In our experience this can be attributed to concerns by employers and young people about the apprenticeship 'brand' and the historical lack of appropriate vocational and practical qualifications.¹⁰ This in turn fuels concerns about the validity and value of some science qualifications particularly for

⁷ <http://www.sciencecouncil.org/professional>

⁸ Ofsted. Apprenticeships: developing skills for future prosperity(2015)

⁹ <https://www.gov.uk/government/statistical-data-sets/fe-data-library-apprenticeships>

¹⁰ https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/373769/14.11.11_EPS_2014_-_Main_Report_full_V2.pdf

those who achieve lower grades in STEM and does not help to develop understanding of non-graduate routes to science careers. The perception that apprenticeship policy undergoes regular reform may also be a consideration.

16. School and colleges should be adequately funded and resourced to provide careers advice and guidance on the availability and career options from taking on an apprenticeship. While parents see an apprenticeship as a good route to employment, few would consider it the right route for their child.¹¹ The National Careers Service and the Careers and Enterprise Service should be given greater roles to engage young people and those that influence their career choices.
17. **The Science Council recommends that the marketing and promotion of apprenticeships is continually audited for gender bias to ensure the use of appropriate language and images that appeals to both sexes. Furthermore, unconscious bias training should be a compulsory requirement in teacher training and at regular intervals throughout teachers' careers.**
18. The science workforce is disproportionately male¹² with women more likely to assume junior positions. Apprenticeships offer the opportunity to bring more women into the discipline. However, evidence suggests that young women are often deterred from pursuing science careers by their learning experiences and the careers advice they receive.¹³
19. The percentage of female apprentices in early years (childcare) for example has been over 90% for the past 10 years. In engineering over the same period, this has been around 5%.¹⁴ Particular effort is therefore required by school and college leaders to ensure that gender stereotypes which place girls in passive and caring roles continue to be challenged.

The apprenticeship levy

20. In principle we are supportive of the apprenticeship levy. It should be the government's aim to enable all employers, even those that cannot currently afford to, to take on an apprentice. The design, development and implementation of all aspects of the levy must be undertaken with direct consultation with employers, with additional input from training providers and professional bodies; this includes designing and developing relevant education and training that delivers the high-level skills businesses and the economy needs.
21. Training providers must be ready to deliver immediately the high-quality training that employers will demand. Employers will also want assurances that there is no cross-subsidisation of non-apprenticeship expenditure.
22. The success of an apprentice will be greatly determined by the level of support they receive from their employer. It is important therefore that the levy can support employers that want to upskill their workforce to support apprentice mentoring activities. This will help smaller employers as many will not have the capacity or flexibility to enable their employees to assume mentoring activities. Employers should be able to use the levy to fund training for their employees to adequately support apprentices.

¹¹ <http://www.edge.co.uk/news/2014/november/practical-qualifications-better-for-employability>

¹² <http://sciencecouncil.org/policy-public-affairs/research-into-the-science-workforce/>

¹³ https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/302973/evidence-report-77-high-level-stem-skills_1_.pdf

¹⁴ <http://www.llakes.ac.uk/sites/llakes.ac.uk/files/44.%20Fuller%20and%20Unwin.pdf>

23. **The Science Council recommends that the government commits to annual public reporting** on the progress of how the levy is driving take-up of high-quality apprenticeships, and on the diversity characteristics of those taking on apprenticeships, in order to measure progress and assess the impact of ongoing national and local schemes and projects. Annual reporting should also include information on the income generated from the levy, the training that businesses have commissioned and from whom, and the costs that providers charge for training.

Progression routes to higher qualifications

24. While science A-levels and higher education courses continue to play a valuable role in educating and training a highly-skilled UK science workforce, it must be recognised that no single qualification route will adequately satisfy the needs of all stakeholders. We are very supportive of widening opportunities to progress from an apprenticeship to higher qualifications and beyond into the science workforce. Establishing greater numbers of Higher and Advanced Apprenticeships in science should therefore be an essential part of the government's programme to improve social mobility and confront the near total absence of science apprenticeships.¹⁵

25. Professional registration has an important role to play in ensuring an individual's successful progression from an apprenticeship through to higher qualifications and into meaningful employment. The Science Council has built progression and transferability into its professional registers to provide a clear route from technician level through to Chartered status.¹⁶ By linking apprenticeship standards directly to professional registration requirements, apprentices will continue develop new skills and knowledge throughout their education journey.

26. There is a widely held perception that in order to become a scientist, gaining a degree is the only possible option. In the past, other routes have also been valid and many senior practising scientists have progressed from apprenticeships and experience-based routes. However, this route is relatively rare in today's science industries where the practice of science is increasingly more complex and multi-disciplinary and the apprentice route hardly exists for entry to science careers.

Lessons from other countries

27. A key aspect of the German system making apprenticeships attractive to employers and aspirational for young people. In this system, apprenticeships lead to a clear and identifiable achievement at completion, going beyond a job with a particular employer to entry into a recognisable occupation or a profession. This provides status and mobility to the completing apprentice, and would be well worth emulating in the UK.

We would welcome the opportunity to discuss with the Committee any of the issue raised in our submission.

¹⁵ <https://www.gov.uk/government/statistical-data-sets/fe-data-library-apprenticeships>

¹⁶ <http://www.sciencecouncil.org/professional>

Member Organisations of the Science Council

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Association for Clinical Biochemistry and Laboratory Medicine
Association of Neurophysiological Scientists
Association for Science Education
British Academy of Audiology
British Association of Sport and Exercise Science
British Computer Society
British Psychological Society
British Society of Soil Scientists
Chartered Institution of Water and Environmental Management
College of Podiatry
Energy Institute
Geological Society of London
Institute of Animal Technology
Institute of Biomedical Science
Institute of Brewing and Distilling
Institute of Corrosion
Institute of Food Science and Technology
Institute of Marine Engineering, Science and Technology
Institute of Materials, Minerals and Mining
Institute of Mathematics and its Applications
Institute of Physics and Engineering in Medicine
Institute of Physics
Institute of Science and Technology
Institute of Water
Institution of Chemical Engineers
Institution of Environmental Sciences
London Mathematical Society
Mineralogical Society
Nuclear Institute
Oil and Colour Chemists' Association
Operational Research Society
Physiological Society
Royal Astronomical Society
Royal Meteorological Society
Royal Society of Chemistry
Royal Statistical Society
Society for Cardiological Science and Technology
Society of Biology
Society of Dyers & Colourists
The Organisation for Professionals in Regulatory Affairs