



1. The Science Council

- a) The Science Council was established in 2003. It is an umbrella organisation for learned societies and professional bodies in science and currently has 40 member organisations drawn from across science and its applications: a list of members is attached. In addition to providing a mechanism for the sector to work collectively, the Science Council develops and leads collaborative projects working with member bodies and the wider scientific community: examples include the Future Morph website¹ designed to provide young people with information about careers opportunities, and LMI analysis of the UK Science Workforce.²
- b) The Science Council works to advance the professional practice of science and since 2004 has awarded the professional qualification of Chartered Scientist (CSci) with 15,000 individuals currently registered. In 2012 it launched two additional registers of Registered Scientist and Registered Science Technician.
- c) Collectively Science Council member bodies represent more than 400,000 individual members, including scientists, teachers and senior executives in industry, academia and the public sector.
- d) The Science Council has a keen interest in enhancing the level and quality of science education, knowledge and skills in the UK and welcomes the opportunity to comment on the proposed reforms for vocational qualifications for 16-19 year olds.

2. Introduction

There is evidence of both shortages and gaps in science technician skills in the UK. The Science Council welcomes the focus of the current Government on skills and in particular that the Department for Education recognises that it has a key role to play in addressing the issues.

There is an increasing demand for technical skills at all levels, from technician to research director: as part of the strategy to address the demand for skills the Science Council has introduced two new registers, Registered Science Technician (RSciTech) and Registered Scientist (RSci), alongside the Chartered Scientist award, creating an overall framework of professional standards. The standards have been developed working with the Technician Council and map to registration standards for other technical professions as well as with employers, skills and education specialists to ensure that they meet sector needs. Registration provides individuals with recognition of skills and knowledge that are transferrable to other employers or sectors: for example, analytical chemistry skills can be used within quality control or regulation roles across many sectors such as food, health or agriculture. The framework of professional standards can also provide a ladder for progression.

The table below describes the registers that are held by the Science Council and the corresponding Engineering Council registers.

¹ www.futuremorph.org

² *The current and future UK science workforce* TBR, Sept. 2011 <http://www.sciencecouncil.org/content/science-workforce>

Science Council professional titles	Engineering Council professional titles	Typical qualification routes
Registered Science Technician (RSciTech)	Engineering Technician (EngTech)	Advanced Apprenticeship, A-levels, BTEC National
Registered Scientist (RSci)	Incorporated Engineer (IEng)	Higher Apprenticeship, HNC/HND
Chartered Scientist, Chartered Science Teacher (CSci, CSciTeach)	Chartered Engineer (CEng)	Masters' Degree

The qualifications that underpin progression to professional recognition are a crucial aspect of the system and as part of the development of the new levels of registration the licensed bodies offering Registered Science Technician and Registered Scientist are mapping the relevant qualifications landscape. The exercise will also assist the identification of gaps in the provision of vocational qualifications and will aid employers' understanding of qualifications. At the moment vocational qualifications only account for approximately 10% of Level 3 science provision in stark contrast to engineering where vocational routes dominate.³

In addition, there is evidence from some sectors (specifically within bioscience and schools) where there has been a growing tendency for employers to recruit graduates to technician roles despite the disparity with skill requirements and the high probability that graduates will be unsatisfied in the roles and may move on quickly. Our research⁴ indicates that this behaviour is driven by a familiarity with the attributes of graduates and confidence and understanding of the qualifications. Employers accept that the skills match may not be appropriate but believe graduates can easily be trained. Another key motivation for targeting graduates is confidence that they will be able to attract sufficient applicants. At present neither aspect, familiarity with the outcomes of study and availability of individuals, holds true for vocational qualifications. It is therefore not surprising that employers seek graduates. A healthy labour market should not be reliant on a single training stream and instead should include a strong role for vocational qualifications both to support training and to widen the cohort of individuals gaining science skills.

3. Classification of vocational qualifications

The Science Council welcomes the proposal to provide clarity through categorising qualifications as Academic Qualifications, Applied General Qualifications or Occupational Qualifications and believes this will be helpful for both employers and learners in identifying the appropriate qualification routes for them: previously there has been potential for qualifications that focus on practical or applied learning to be confused with those that are designed to lead directly to an occupation

The UK must significantly increase the study of STEM post-16 in order to meet the anticipated skills demand. Hitherto the focus in education policy has prioritised progression to HE but it is important for the continued development of the knowledge and science based sectors that the UK's non-graduate technician workforce is also significantly expanded. The Science Council considers that developing a greater range of qualifications in order to provide progression and to attract a broader cohort through applied learning must be part of the Government's

³ FE STEM Data Project, Royal Academy of Engineering July 2011

⁴ Science Technicians in the workforce CFE, 2011 <http://www.sciencecouncil.org/content/research>

strategy.

The Science Council supports the proposed requirement for Applied General Qualifications and Occupational Qualifications to be endorsed for progression and employability respectively. As part of the charitable activities to further education, many of the Science Council's member bodies have significant experience in working with universities, awarding organisations and employers to accredit qualifications and training. They have a well-established track record for providing a link to professional standards and thus an assurance of quality and content for both undergraduate and postgraduate degrees and other qualifications; as such they are ideally positioned to play a role in assessing Applied General and Occupational Qualifications and act as a conduit for wider employer and higher education institution input. However, while engineering institutions have been accrediting vocational qualifications for some time, this is a relatively new process in science and may take some time to embed across the breadth of science-based vocational and applied qualifications. Our member bodies are currently exploring the most appropriate way forward to ensure that they can quickly recognise or approve the occupational and applied qualifications that will contribute towards meeting the requirements for professional registration.

We recommend that with regard to quality assurance measures, the Department for Education works with the science professional bodies to utilise their experience and wider networks to ensure that the standards for vocational qualifications are coherent with the standards for professional registration.

4. Proven Track Record

The Science Council agrees that a proliferation of qualifications should be avoided and welcomes the proposed reforms that are intended to reduce fragmentation. We welcome the requirement that new qualifications should be piloted and to establish a benchmark for the take up of Applied General Qualifications in their first year. However, we have some concerns with regard to the proposed benchmark of at least 100 young people in at least five centres during the first year and how well this will sit with the demands of meeting the needs of employers.

5. Conclusion

The most common route into science careers is currently a degree with a smaller percentage of science workers being non-graduates. Other routes into science have become much less common in recent years, with vocational pathways overlooked and skills policies focused on graduate and higher level skills. However many professional bodies have experience of providing support and recognition for non-traditional routes into science and the Science Council's work on technician skills has renewed this interest and recognition of the wider skills needed in science especially in relation to vocational pathways.

The Registered Science Technician scheme has been in place for a little over one year and the community remains at an early stage in bringing all the necessary strands of work together. However, the Government's proposed changes to 16-19 vocational education come at excellent moment in the development of non-graduate STEM skills, and the Science Council is very keen to support the implementation of the proposed developments.

Diana Garnham Chief Executive

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Member Bodies of the Science Council March 2013

1. Association for Clinical Biochemistry*
2. Association of Neurophysiological Scientists*
3. Association for Science Education**/ ***
4. British Academy of Audiology
5. British Association of Sport and Exercise Sciences *
6. BCS, The Chartered Institute for IT*
7. British Psychological Society*
8. British Society of Soil Scientists*
9. Chartered Institution of Water and Environmental Management*
10. College of Podiatry
11. Energy Institute*
12. Geological Society of London*
13. Institute of Biomedical Science*/ **
14. Institute of Brewing and Distilling*
15. Institute of Clinical Research*
16. Institute of Corrosion*
17. Institute of Food Science and Technology*/ **
18. Institute of Marine Engineering, Science and Technology*
19. Institute of Materials, Minerals and Mining*
20. Institute of Mathematics and its Applications*
21. Institute of Measurement and Control
22. Institute of Physics and Engineering in Medicine*/ **
23. Institute of Physics
24. Institute of Science and Technology**
25. Institute of Water (IWater)
26. Institution of Chemical Engineers*/ **
27. Institution of Environmental Sciences*
28. London Mathematical Society
29. Mineralogical Society*
30. Nuclear Institute*
31. Oil and Colour Chemists' Association
32. Physiological Society
33. Royal Astronomical Society
34. Royal Meteorological Society
35. Royal Society of Chemistry*/ **
36. Royal Statistical Society*
37. Society for Cardiological Science and Technology
38. Society for General Microbiology
39. Society of Biology*/ **
40. Society of Dyers and Colourists

* Licensed to award Chartered Scientist (CSci)

** Licensed to award Registered Scientist (RSci) and Registered Science Technician (RSciTech)

*** Licensed to award Chartered Science Teacher (CSciTeach)