Response from the Royal Society of Biology to the Department for Educations call for evidence on Post-18 education and funding

April 2018

Priorities

Q1. This review will look at how Government can ensure that the post-18 education system is joined up and supported by a funding system that works for students and taxpayers. The panel would like to understand your priorities. What, if any, are your principal concerns with the current post-18 education and funding system?

As highlighted in our responses to government on the inquiries into *Closing the STEM skills gap* and *The Economics of Higher Education, Further Education, and Vocational Training*, there is a fundamental need to raise the total number of skilled individuals in the STEM workforce and a number of skills gaps have been identified. There is well documented evidence that the UK is experiencing a shortage of skilled STEM workers to fulfil UK workforce requirements, and that those entering the sector do not always have the skills required by employers. It is estimated that 20% of the UK workforce require scientific knowledge and skills in order to do their current jobs.

The expected demand for STEM graduates could average 104,000 a year, and the number of school leavers with relevant STEM skills falls short of current and future business needs. In addition, we also face long-term shortages of people with technician-level skills and it is estimated that we will need 56,000 STEM technicians each year by 2020. Over 1.5 million technicians make up the UK STEM workforce, but we are not producing enough skilled individuals to fill these roles.

To begin to address the STEM skills gap we will need to increase the number of people continuing to study STEM subjects post-16 on both technical and academic pathways. Both of these routes should have parity of esteem if we are going to encourage more young people to ultimately enter the STEM workforce. The alternative technical pathways must be supported, promoted and valued alongside traditional academic routes.

RSB responses to the *Economics of Higher Education, Further Education and Vocational Training* and Education Select Committee inquiry to the *Quality of Apprenticeships and Training* suggests that accreditation of bioscience programmes within further education and training provider sector would help raise the standards of apprenticeships and skills training. The current provisions for apprenticeship and skills training in the biosciences are varied. Accreditation by the Royal Society of Biology recognises and supports the advancement of skills and education in the biosciences, throughout the UK and internationally. The RSB has accredited 45 university across the UK, which include Degree Accreditation (245 degree programmes at 33 universities), Advanced Degree Accreditation (213 degree programmes at 22 universities) and Master's Degree Accreditation (5 master's programmes at 1 university). Graduates from accredited degree programmes are equipped with well-rounded knowledge and skill sets, making them highly employable both within and beyond their chosen field. Technical and vocational routes at all levels would benefit from a similar external accreditation review. Whilst initial work is being done by the RSB in this area, the support of government funds for the accreditation of FE bioscience programmes would enable accreditation processes to launch on a greater scale and have a wider impact.

Excellence in teaching within the higher education sector is important, and the learning environment must be complimented by active research and training. Given the fast-evolving nature of the biosciences, it is extremely important that teaching is research-informed and that teaching and research co-exist in vibrant HE institutions. It is vital that appropriate funding mechanisms exist to accommodate and encourage research-informed teaching as well as progression for research-able students to doctorate level and beyond. These funding mechanisms are also important for the research output of the UK, as a whole, helping to build our science and innovation capacity.

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RSB response to Science and Technology Committee Closing the STEM skills gap Inquiry January 2017
http://data.parliament.uk/writtenevidence/committeeevidence.svc/evidencedocument/science-and-technology-committee/closing-the-stem-skills-ap/written/45123.pdf

RSB response to Economics Select Committee inquiry on the economics of higher education, further education and vocational training October 2017 http://data.parliament.uk/writtenevidence/committeeevidence.svc/evidencedocument/economic-affairs-committee/the-economics-of-higher-further-and-technical-education/written/69983.pdf

RSB response to Education Select Committee Quality of apprenticeships and skills training
January 2018
www.rsb.org.uk/images/RSB_Quality_of_apprenticeships_and_skills_training_response_5_Jan.pdf

Further references:
The Right Combination – CBI/Pearson Education and Skills Survey July 2016 http://www.cbi.org.uk/cbi-prod/assets/File/pdf/cbi-education-and-skills-survey2016.pdf?mc_cid=dce980549f&mc_eid=6be1e9feb5

IN THE BALANCE: The STEM human capital crunch - Nida Broughton/SMF March 2013 http://www.smf.co.uk/wp-content/uploads/2013/03/Publication-In-The-Balance-The-STEM-human-capital-crunch.pdf

Reviewing the requirement for high level STEM skills – UKCES July 2015
https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/444048/High_level_STEM_skills_requirements_in_the_UK_labour_market_FINAL.pdf

A picture of the UK scientific workforce – Royal Society April 2014
https://royalsociety.org/~/media/Royal_Society_Content/policy/projects/leading-way-diversity/picture-uk-scientific-workforce/070314-diversity-report-executive-summary.pdf?la=en-GB

Our Work Supporting Technicians – Gatsby Foundation January 2016 http://www.gatsby.org.uk/uploads/education/links-6838-gatsby-a5-technicians-brochure-2016-digital-aw-1.pdf

How much is too much? Cross subsidies from teaching to research in British universities – Higher Education Policy Institute November 2017
http://www.hepi.ac.uk/wp-content/uploads/2017/11/HEPI-How-much-is-too-much-Report-100-FINAL.pdf

Part 1: Choice and competition across a joined-up post-18 education and training sector

2. How do people make choices about what to study after 18? What information do they use and how do they choose one route over another: for instance, between academic, technical and vocational routes?

The Royal Society of Biology's responses to the Science and Technology Committee inquiry *Closing the STEM skills gap* highlights the link between secondary student choice, discipline-specific teachers (in biology, chemistry, physics, technology, engineering, maths), promoting student uptake in STEM subjects and showcasing the variety of careers available to students within the STEM sector. The high demand for STEM graduates requires a compelling case for teaching to be made, as referred to in in a joint learned society response to Education Select Committee inquiry into the *Supply of Teachers*.

The Royal Society of Biology has identified priorities for biology education 2017 – 2022, including a need for excellent and consistent careers provision from primary through to tertiary education and beyond to ensure there is an appropriately qualified bioscience workforce in the UK. This must include: support for schools and colleges to implement the recommendations in Gatsby's Good Career Guidance report, stronger relationships between schools, colleges and the National Careers Service, relationships built between schools, universities and industry to demonstrate the range of bioscience careers available and high quality initial teacher education and CPD for teacher in providing careers support.

RSB response to Science and Technology Committee Closing the STEM skills gap Inquiry January 2017
http://data.parliament.uk/writtenevidence/committeeevidence.svc/evidencedocument/science-and-technology-committee/closing-the-stem-skills-ap/written/45123.pdf

ASE, IOP, RS RSB and RSC joint response to Education Select Committee inquiry into the Supply of Teachers November 2015
https://www.rsb.org.uk/images/ASE_IOP_RSB_RSC_RS_Teacher_Supply_Response.pdf

RSB Education priorities 2017 - 2022
https://www.rsb.org.uk/images/RSB_Education_Priorities_2017_20.06.pdf

Further references:
The Case for Change (DfE, 2010)
https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/180852/DFE-00564-2010.pdf

Training our next generation of outstanding teachers: Implementation Plan. (DfE, 2011)
http://www.educationengland.org.uk/documents/pdfs/2011-teacher-training-plan.pdf

Good Career Guidance (The Gatsby Charitable Foundation, April 2014)
http://www.gatsby.org.uk/uploads/education/reports/pdf/gatsby-sir-john-holman-good-career-guidance-2014.pdf

3. How do people make choices later in life about what further study to undertake?

For many students a postgraduate degree is vital to allow them to enter specialised fields and capitalise on greater earning prospects. Data from the government shows that the average working age graduate earns more than the average non-graduate, while the average postgraduate earns more than graduates. Postgraduates have a greater employment rate in highly skilled sectors, with 77.8% of all working age postgraduates in highly skilled roles compared to 65.5% of working age graduates.

However, with a high proportion of self-funded Masters and PhD programmes available, it is paramount that the costs of these courses do not act as a barrier to students who would like to continue their studies. While we expect the introduction of Postgraduate Master's and Doctoral Loans to help mitigate this issue, it is important that perceived financial burden does not limit the uptake of students onto STEM postgraduate programmes. The uptake of postgraduates at Masters and Doctoral level in STEM subjects is crucially linked to the health and productivity of the research and innovation landscape in public and private institutions.

Graduate Labour Market Statistics 2017 - Department for Education April 2017
https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/701720/GLMS_2017.pdf

4. In recent years we have seen continued growth in three-year degrees for 18 year-olds. Does the system offer a comprehensive range of high quality alternative routes for young people who wish to pursue a different path at this age? How can Government encourage provision across a wider range of high quality pathways to advanced academic, technical and vocational qualifications?

As set out in our response to Q1 and in RSB responses to the *Economics of Higher Education, Further Education and Vocational Training, Closing the STEM skills gap* and *Quality of Apprenticeships and Training* - The Royal Society of Biology's degree accreditation programmes are raising the standards of bioscience education in higher education institutions, and enabling students to develop the skills needed by employers alongside strong academic knowledge and practical skills. Government support for the accreditation of Further Education bioscience programmes would help raise the standards of technical and profession education and training.

Higher level and degree apprenticeships have been welcomed as a route with the potential for producing highly skilled people to support STEM industries. However, for these technical routes to be successful, there should be parity across academic and vocational pathways, with degree apprenticeships seen as equivalent opportunities which do not limit future career opportunities. Employers must recognise technical qualifications as equal to those gained by taking the alternative academic route.

In our recent response to the Department for Education's consultation on the *Implementation of T level programmes,* the Society supports the principles of the Sainsbury Report, on which T level developments have been based, and acknowledges there is too much complexity in the current system of technical qualifications. Simplifying the system will make choices more obvious to learners, parents and advisers. T levels should be developed as qualifications that have comparative currency with A levels, and should allow students to transition between the two routes as appropriate. Appropriate guidance should be provided at the school level, as to which qualification is most suitable at 16, and as to what are the options for further study. This guidance should be provided for post-16 qualifications only,

as we support a single route through the sciences for all students up to the age of 16. All qualifications available to students should have a clear progression route.

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RSB response to Education Select Committee Quality of apprenticeships and skills training January 2018
www.rsb.org.uk/images/RSB_Quality_of_apprenticeships_and_skills_training_response_5_Jan.pdf

RSB response to DfE consultation Implementation of T level programmes February 2018
www.rsb.org.uk/images/RSB_T_level_consultation_response_6_February_2018.pdf

5. The majority of universities charge the maximum possible fees for most of their courses and three-year courses remain the norm. How can Government create a more dynamic market in price and provision between universities and across the post-18 education landscape?

6. What barriers do current and new education and training providers face in developing innovative or diversified provision?

The Royal Society of Biology's response to the Department for Business Innovation and Skills call for evidence on *Accelerated Courses and switching University or Degree* emphasised particular concerns with some forms of alternative provision, for example accelerated degrees within disciplines such as the biosciences. Bioscience training is very resource intensive to provide, requiring teaching staff, staff to support practical teaching as well as laboratory and research facilities. On bioscience courses direct contact time is already often high to account for the teaching of both theory and practical work. To compress the time in which these courses take place could lead to students having only a superficial level of understanding. In other countries, we see a trend towards courses being extended rather than condensed, to ensure depth of understanding. We need to be sure that accelerated courses have, and are perceived to have, the same high standards as other UK degrees or this will have a negative impact on student prospects and the reputation of the UK HE sector.

Timetabling of access to laboratories and the logistics of organising fieldwork is often difficult with large cohorts of students; with accelerated courses this problem could potentially be further exacerbated. Currently many institutions as part of their outreach and widening participation work will offer laboratory space for schools to use when not timetabled for student use. This offers young people a taste of what attending university is like and potentially encourages them to take a science subject at university. We would not want to see as an unintended consequence a reduction in opportunities for universities to support young people to engage with science.

RSB response to BIS call for evidence: Accelerated Courses and Switching University or Degree July 2016
https://www.rsb.org.uk/images/RSB_Accelerated_Courses_and_Switching_University_or_Degree_Call_for_Evidence__15.06.2016final.pdf

7. How can Government further encourage high-quality further education and higher education provision that is more flexible: for example, part-time, distance learning and commuter study options?

As suggested in our *Economics of Higher Education, Further Education and Vocational Training* response - STEM employers, in regions with a low concentration of higher and further education providers, should be encouraged to collaborate and consider flexibility around training processes, for example through distance learning modules. The

geographical proximity to the workplace could be a barrier to individuals located in these areas, who wish to pursue technical courses, retrain or upskill.

RSB response to Economics Select Committee inquiry on the economics of higher education, further education and vocational training October 2017 http://data.parliament.uk/writtenevidence/committeeevidence.svc/evidencedocument/economic-affairs-committee/the-economics-of-higher-further-and-technical-education/written/69983.pdf

8. To what extent do funding arrangements for higher education and further education and other post-18 education and training act as incentives or barriers to choice or provision: both at the individual and provider level? How does this impact on the choices made by prospective students and learners? What can Government do to improve incentives and reduce barriers?

UK Universities currently engage in a wide variety of initiatives with schools. Our responses to the Department for Education's consultation on *Schools that work for everyone* and the *Economics of Higher education, Further Education and Vocational Training inquiry* express the need for adequate funding to increase participation, widen access to students and properly fund such initiatives. Further to that, adequate funding must be available to support STEM subjects in further and higher education. These subjects incur higher costs compared to other subjects as they are resource intensive with their practical aspects, including laboratory and fieldwork, as well as high requirements for staff time. However, developing these practical skills is vital to ensure we have a highly skilled STEM workforce. Often 'cross subsidising' of the science subjects is necessary to fund these areas of practical work in colleges and universities. NAO's *Delivering STEM skills for the economy* emphasises that funding HEI teaching of high cost science subjects is a significant Government initiative. It is important that this continues in order to ensure high quality STEM graduates enter the workforce with a strong skills and knowledge base, and to ensure parity between graduates of different subjects.

RSB response to Economics Select Committee inquiry on the economics of higher education, further education and vocational training October 2017 http://data.parliament.uk/writtenevidence/committeeevidence.svc/evidencedocument/economic-affairs-committee/the-economics-of-higher-further-and-technical-education/written/69983.pdf

RSB response to DfE's consultation on Schools that work for everyone
November 2016
https://www.rsb.org.uk/images/Schools_that_work_for_everyone_RSB_consultation_response_12.12.pdf

Further references:
Delivering STEM skills for the economy (National Audit Office, 2018)
https://www.nao.org.uk/wp-content/uploads/2018/01/Delivering-STEM-Science-technology-engineering-and-mathematics-skills-for-the-economy.pdf

Part 2: A system that is accessible to all

9. What particular barriers (including financial barriers) do people from disadvantaged backgrounds face in progressing to and succeeding in post-18 education and training?

10. How should students and learners from disadvantaged backgrounds best receive maintenance support, both from Government and from universities and colleges?

Part 3: Delivering the skills the UK needs

11. What challenges do post-18 education and training providers face in understanding and responding to the skills needs of the economy: at national, regional and local levels? Which skills, in your view, are in shortest supply across the economy? And which, if any, are in oversupply?

Identifying skills needs, gaps and emerging areas of bioscience are a key part of the Royal Society of Biology's policy work and engagement with our member organisations, special interest groups and industry. The response that follows contains excerpts identifying skills gaps in the bioscience sector including the Society's responses to the Department for Business, Energy and Industry Strategy consultation on *Building our Industrial Strategy, Closing the STEM skills gap, Life Sciences and Industrial Strategy, Economics of Higher Education, Further Education and Vocational Training, Quality of apprenticeships and skills training,* and reports such as the SIP's Skills Strategy 2025 and Demand for Skills in the UK Science Economy, Biotechnology and Biological Sciences Research Council (BBSRC) and Medical Research Council (MRC) Review of Vulnerable Skills and Capabilities and a joint response to that consultation by member organisations Society for General Microbiology (now Microbiology Society) and Society for Applied Microbiology, and Bridging the skills gap in the biopharmaceutical industry report published by the Association of the British Pharmaceutical Industry (ABPI).

There are many areas within the biosciences, including physiology, pharmacology, drug discovery, microbiology, agriculture, forestry and food security, which face future shortages in skills and capability. Additional investment and expertise are required to support these vulnerable and vital areas of work.
ABPI's November report in 2015 identified major skills gaps in mathematical and computational areas with top priority areas in which immediate action was required including clinical pharmacology, bioinformatics, statistics, veterinary and toxological pathology, health informatics, health economics and outcomes and formulation. Over the next few months ABPI will be reviewing and updating their skills gap report, aiming to publish by the end of 2018.

It has been brought to our attention that several specific areas where skills shortages have been identified, such as in bioinformatics, are considered to be a direct result of students lacking confidence in core numeracy skills. This could be addressed initially by increasing the importance placed on students continuing to study and utilise their maths skills post-16 years of age. Smith's review of post-16 mathematics drew attention to particular concerns in biology. 32% of A level biology students who achieved A/A* GCSE in mathematics took neither mathematics nor further mathematics at A level at age 17 in 2015/16. However, quantitative demands of both STEM and non-STEM university courses are increasing, and more advanced mathematics skills are expected in technical fields of study and in the workforce. Furthermore, more than 40 per cent of English 19 year olds studying STEM subjects in UK universities do not have a mathematics qualification beyond GCSE. Smith recommends that *core mathematics* be used to plug this critical gap for students progressing into fields with a quantitative element, and that significant numbers of teachers, including specialists in other quantitative subjects, should be retrained to teach core maths, in order to deliver core maths across the nation.

The tendency to subsume specialist disciplines into other umbrella degrees can lead to skills vulnerabilities. Microbiology has increasingly been absorbed within bioscience degree programmes and there are currently a small number of microbiology degrees offered within the UK. Whilst it is acknowledged that employers value the transferable skills acquired from a bioscience degree, there is a risk that "we are failing to capitalise on the specialist knowledge and training gained within the UK" (Joint response from the Society for Microbiology and Society for Applied Microbiology to the BBSRC/MRC Vulnerable Skills Consultation).

Alongside broader skills gaps, we have concerns about the skills gaps in plant science, field studies and several 'niche' areas that require few individuals but have high strategic importance, such as plant breeding and entomology. These disciplines have seen a long-term decline in skills, with shortages worldwide, not just in the UK, and are facing a lack of succession planning when current professionals reach the end of their careers. A 2014 report by the UK Plant Science Federation (RSB) indicated that shortages of plant scientists and an inadequate skills base were the greatest barriers to meeting future challenges in UK plant science. Particular shortages of UK expertise in identification specialists, taxonomists, and plant pathologists, were identified. In our response to the call for evidence on the UK bioeconomy, we note that the land-based disciplines, such as farming and forestry, face difficulties in recruiting technical and professional personnel.

In medicine, gaps in knowledge and skills affect both the research base and clinical practice. For example, current understanding of personalised medicine and of the pharmacokinetics and pharmacodynamics of drugs in common usage remains sub-optimal. Vital expertise in areas of medical microbiology - such as mycology, the study of fungi - is at risk of disappearing. Concern has also been highlighted over the need for skilled researchers to address the high prevalence and cost of mental health and nervous system disorders in the UK. Microbiologists require a broad palette of skills: it is imperative that the introduction and use of new techniques, such as whole genome sequencing, are not seen as a replacement for fundamental skills; classical skills should be viewed as complementary.

Entrepreneurship training could be included in PhD training programmes, and delivered to post-doctoral researchers and early-career scientists. Several universities run enterprise summer schools for postgraduate researchers. Support for enterprise fellowships or other flexible schemes to follow on from this training would be helpful.

The future skills needs for scientific employers could be driven by key enabling technologies such as synthetic biology and biotechnology, advanced manufacturing, formulation technology and materials science, in addition to advances in the use and management of information and big data.

The life sciences sector is growing, and new jobs and job roles will be created to keep pace with rapidly developing scientific fields and technologies. It will be necessary to equip individuals coming through the current education system, and future cohorts, with the skills needed to keep pace with scientific advancement. To increase the pool of STEM talent and strengthen the British economy we must also increase diversity and attain a gender balance across the STEM sector by addressing barriers preventing groups from entering and remaining within it. In turn, this will help create appropriate role models who can inspire young people from all backgrounds to build a career in STEM.

RSB response to Science and Technology Committee Closing the STEM skills gap Inquiry January 2017
http://data.parliament.uk/writtenevidence/committeeevidence.svc/evidencedocument/science-and-technology-committee/closing-the-stem-skills-gap/written/45123.pdf

RSB response to BEIS consultation on Building our Industrial Strategy April 2017
https://www.rsb.org.uk/images/article/policy/RSB_response_to_BEIS_consultation_Building_our_Industrial_Strategy.pdf

RSB response to the Science and Technology committee inquiry into Life Sciences and the Industrial Strategy September 2017
https://www.rsb.org.uk/images/RSB_response_Life_Sciences_Industrial_Strategy_inquiry_submitted.pdf

RSB response to Economics Select Committee inquiry on the economics of higher education, further education and vocational training October 2017
http://data.parliament.uk/writtenevidence/committeeevidence.svc/evidencedocument/economic-affairs-committee/the-economics-of-higher-further-and-technical-education/written/69983.pdf

Further references:

UK Plant Science: Current status and future challenges (UK Plant Science Federation, January 2014)
https://www.rsb.org.uk/images/pdf/UK_Plant_Science-Current_status_and_future_challenges.pdf

Joint response from the Society for General Microbiology and the Society for Applied Microbiology to the BBSRC/MRC Vulnerable Skills Consultation - 2014 https://www.microbiologysociety.org/uploads/assets/uploaded/061b4696-7cac-4b5f-ab9408859842e2e5.pdf

Bridging the skills gap in the pharmaceutical industry (ABPI, November 2015)
https://www.abpi.org.uk/media/1365/skills_gap_industry.pdf

Skills Strategy 2025 (Science Industry Partnership, March 2016)
http://www.scienceindustrypartnership.com/media/1047/5202fd_sip_skills_strategy_2015_final_low.pdf

The Demand for Skills in the UK Science Economy (Science Industry Partnership, March 2016)
http://www.scienceindustrypartnership.com/media/1065/sip_science_industry_demand_for_skills_final.pdf

Review of vulnerable skills and capabilities – BBSRC and MRC 2015 (updated December 2017)
http://www.bbsrc.ac.uk/documents/1501-vulnerable-capabilties-report-pdf/

Report of Professor Sir Adrian Smith's review of post16 mathematics (DfE, July 2017)
https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/630488/AS_review_report.pdf

12. How far does the post-18 education system deliver the advanced technical skills the economy needs? How can Government ensure there is world-class provision of technical education across the country?

The Royal Society of Biology's responses to *Building our Industrial Strategy* and *Closing the STEM skills gap,* and *Economics of Higher Education, Further Education and Vocational Training,* assert that there is currently a skills mismatch with many technical level jobs being increasingly filled by graduates, many of whom are overqualified for the roles but need to build their practical experience after completing their studies. The implementation of the new technical routes outlined in the government's Post-16 Skills Plan, including apprenticeships and T-levels which require a high-level of technical knowledge and practical skills, may be able to alleviate this skills mismatch in the life science sector. Forecasts suggest that the number of apprenticeships will need to significantly increase to fill these roles and ensure recruitment is sustainable. To promote and encourage uptake of these roles, technicians must be recognised for the vital role they play in supporting research and education.

Within the bioscience sector, a wider range of apprenticeship standards need to be developed to enable both existing employees and new recruits to develop the skills required by employers. We are aware of the input of STEM employers, including STEM industry, into the apprenticeship standards through the Trailblazer schemes and hope to see this level of engagement continue with the development of technical routes.

Many students and researchers from outside the UK bring new capabilities and skills that are not always readily available, contributing to the knowledge economy and helping to alleviate skills shortages. Within academic staff in UK universities 17% of academics working in STEM are from the EU and 13% from outside the EU. It is vital that the Government ensure the freedom of movement of STEM students and researchers, to enable the UK to attract the best international talent and remain competitive. The Government must also ensure that protections are in place to facilitate the recruitment of UK trained EU students who want to work in STEM shortage sectors within the UK.

The RSB's response to the *Quality of apprenticeships and skills training* inquiry states that Trailblazers, such as the Life Sciences and Industrial Sciences trailblazer, are integral to the development of high quality standards, however there is a lack of consistency in the processes, review and engagement across the range of trailblazer groups. As the Institute of Apprenticeships and Technical Education establishes itself, the Institute should ensure the current trailblazer groups are reviewed, identifying areas of best practice and eradicating any dysfunctionality. Professional registration is a good marker for individual employees to point to their professional expertise and ongoing learning and development, where appropriate registers exist all future standards should be mapped to relevant competency levels.

RSB response to Science and Technology Committee Closing the STEM skills gap Inquiry January 2017
http://data.parliament.uk/writtenevidence/committeeevidence.svc/evidencedocument/science-and-technology-committee/closing-the-stem-skills-gap/written/45123.pdf

RSB response to BEIS consultation on Building our Industrial Strategy April 2017
https://www.rsb.org.uk/images/article/policy/RSB_response_to_BEIS_consultation_Building_our_Industrial_Strategy.pdf

RSB response to Economics Select Committee inquiry on the economics of higher education, further education and vocational training October 2017
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RSB response to Education Select Committee Quality of apprenticeships and skills training January 2018
www.rsb.org.uk/images/RSB_Quality_of_apprenticeships_and_skills_training_response_5_Jan.pdf

Further references:

Immigration: Keeping the UK at the heart of global science and engineering (CaSE, January 2016)
http://www.sciencecampaign.org.uk/asset/F50CF4C1%2D93C7%2D4F38%2D89E55D6BDBB70ED6/

Our Work Supporting Technicians (The Gatsby Charitable Foundation, January 2016)
http://www.gatsby.org.uk/uploads/education/links-6838-gatsby-a5-technicians-brochure-2016-digital-aw-1.pdf

Royal Society of Biology

Part 4: Value for money for graduates and taxpayers

13. How should students and graduates contribute to the cost of their studies, while maintaining the link that those who benefit from post-18 education contribute to its costs? What represents the right balance between students, graduates, employers and the taxpayer?

14. What are the most effective ways for the Government and institutions to communicate with students and graduates on the nature and terms of student support?

15. What are the best examples of educational and training providers ensuring efficiency in the method of course provision while maintaining quality? And what are the challenges in doing this?

16. What are the ways that Government can increase the value for money of post-18 education?

The RSB's response to the *Economics of Higher Education, Further Education and Vocational Training* refers to Sutton Trust data: University tuition fees have risen in recent years, and are increasingly becoming a key consideration for students choosing to pursue higher education. We do not want to see tuition fees and the costs of university being a barrier to students who would like to continue their studies.

RSB response to Economics Select Committee inquiry on the economics of higher education, further education and vocational training
October 2017
http://data.parliament.uk/writtenevidence/committeeevidence.svc/evidencedocument/economic-affairs-committee/the-economics-of-higher-further-and-technical-education/written/69983.pdf

Further references:

Growing fee fears among young people (The Sutton Trust, August 2017) https://www.suttontrust.com/newsarchive/growing-fee-fears/