Supply of teachers

A response to an Education Select Committee consultation on behalf of the Association for Science Education, Institute of Physics, Royal Society of Biology, Royal Society of Chemistry and The Royal Society

18 November 2015

Supply of Teachers Inquiry - Education Select Committee

Introduction

1. The Association for Science Education, Institute of Physics, Royal Society, Royal Society of Biology and Royal Society of Chemistry work in partnership to ensure that policy supports and promotes high-quality science education in schools. We use our combined expertise and united voice to advocate evidence-based and informed science education policy. This response is submitted on behalf of all five organisations.

2. Cutting edge science is a central component of a growing and resilient UK economy. Our children deserve the best science education we can provide in order to secure their economic futures and furnish them with the skills, knowledge and vision to meet global challenges. We need to sow the seeds of curiosity in and appreciation of science in primary schools and beyond, through the subject-specialist teaching of biology, chemistry and physics.

3. It should be noted that the definition of subject-specialist is broader than a graduate in that subject[i]. While much of our response relates to teachers of science in secondary schools, many of the principles and concerns discussed are applicable to other subjects at secondary, and in primary schools.

What further action should be taken by the government to tackle teacher shortages?

We recommend that:

4. The government should develop long term plans (3 years minimum) for recruitment and retention incentives, supported by improved data on teacher supply, including existing shortages, retention and local/regional/national need[ii].

5. Recruitment to teacher training and retention incentives should be based on local, regional and national needs, and the expectation that all students from KS4 onwards should be taught by subject specialists.

6. The government should improve the coordination, collection, accessibility and monitoring of data relevant to the teaching workforce, including the mobility, background and professional development of teachers; local, regional and national trends; subject knowledge enhancement (SKE) course uptake; and vacancies and retention rates by subject, region and initial teacher training (ITT) route.

7. The government should evaluate the impact, effectiveness and value for money of current and proposed incentive packages and ITT programmes available in England and in other jurisdictions[iii]. The financial impact and the retention rates of those teachers within the workforce, as well as the drivers of any differences in retention rates, should also be evaluated.

8. Future recruitment, training and retention initiatives should be evidence-based and developed in consultation/collaboration with relevant organisations including subject associations, professional bodies and service providers.

9. The government should ensure access to SKE courses for those without a relevant degree and those returning to the subject/profession.

10. All teachers should be supported and empowered to engage in subject-specific professional development, promoting a culture of continued professional development and ultimately improving retention. Adoption of the Standard for Teachers' Professional Development that is currently being developed[iv] could help address this, and should be encouraged by the government.

11. The government should support schools to establish subject-level mentor programmes, perhaps with external support, to enable teachers of science to develop their skills and share best practice throughout their career.

12. The government should continue to take action to promote teaching at both secondary and primary as a challenging and valuable career for STEM graduates.

13. Guidance for potential trainee teachers should be clear, helping them to navigate the many different routes to teaching, incentives available and the financial considerations.

Is there a 'crisis' in the recruitment and retention of teachers, including at senior levels of the profession, at a regional level, and by subject, and how the situation may develop during the 2015 Parliament?

14. There is a severe shortage of specialist physics teachers, a shortage of chemistry teachers and an under-recruitment of biology teachers, a situation which is widely acknowledged, including by the government. The shortage of physics teachers has been at a significant level since at least the mid-90s.

15. The importance of subject specialist teachers is recognised by the Department for Education (DfE), which stated in 2010 that "research [in the UK] strongly suggests that subject knowledge as well as overall attainment [of teachers] is a key determinant of success, especially in the sciences and mathematics"[v]. The DfE also stressed that specialist science secondary teachers were "essential to high quality teaching of these subjects"[vi]. Yet five years later, approximately one third of teachers who teach a science subject do not have a degree or higher in a relevant subject[vii]. These data indicate that there is a "crisis" in the current stock of science teachers with appropriate subject-specialist knowledge.

16. National pupil projections indicate that the number of secondary school pupils will increase by 17% by 2023, and the number of primary students will increase by 9%[viii]. Increasing recruitment and retention of teachers will be vital in order to ensure a sufficiently large teaching workforce to meet the needs of these pupils.

17. In 2014 the DfE data[ix] shows that the vacancies rate for the sciences (1.4%) is higher than the average for all subjects (1.1%). In 2010 the vacancy rate was 0.4% for science and for all subjects[x]. Considering that these data are collected in the Autumn Term when vacancies are normally at their lowest, this disparity is of serious concern. There is also a time-lag between collection and publication of this data. Our networks and live vacancy services, e.g. TeachVac[xi],

also report significant challenges in filling teaching vacancies in the sciences. An increasing reliance on recruiting from overseas has also been reported[xii] – this is likely to be a short-term fix, and it is not clear how it will improve long-term retention statistics. We often hear that head teachers do not want to commit resources to advertise or re-advertise vacancies that they know will not be filled, thus masking the true vacancy rate even further.

18. There have been many recent reports on low teacher satisfaction and retention[xiii, xiv, xv]. Common reasons for dissatisfaction include high workload, accountability and inspection arrangements, lack of control over course content, poor management and low pay. In a recent survey teachers of science were most likely to have considered leaving the profession in the last 6 months, with 67% considering leaving compared to 59% of the whole sample of teachers[xvi]. Without retention data available at the subject level it is hard to monitor the attrition rates effectively[xvii].

19. There is regional variation in teacher supply needs and also in the subject specialism of teachers[xviii, xix]. Currently the government approach to teacher recruitment is planned on a national level and regional and local needs are not considered. This is despite recruitment increasingly being handled at the local level by individual schools or alliances.

What are the root causes of the current situation with regard to the supply of teachers?

<u>Factors affecting the current teaching workforce</u>

20. For more than twenty years from the late 1980s unequal numbers of biology, chemistry and physics specialist teachers were recruited, resulting in a major imbalance in the workforce. For example, in 2006 physics specialists made up 19% of science teachers (with a shortage of ~4500), and 25% were chemistry specialists, (with a shortage of ~2300)[xx]. There is no more recent data available, which in itself is a concern.

21. We commend the previous and current government in their intention and efforts at addressing this imbalance. The introduction of separate targets for each science subject in 2011 had a beneficial effect (see figure 1) and financial incentives and marketing campaigns have helped to improve the imbalance to some extent over the years, but an imbalance still exists. To address the long-term imbalance, teacher recruitment will need to do more than maintain the status quo.

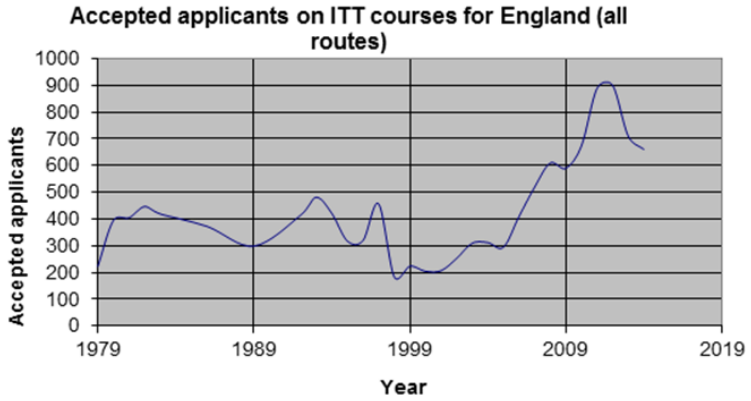

Figure 1: Specialist physics teachers recruited per year since 1979. There was a twenty five year average of around 350 new physics teachers a year from the late 1980s. This was well below the level needed to break even (allowing for retirement and attrition). The separate recruitment target for physics was set at 925 in 2011.

Factors affecting recruitment of new teachers

22. We welcome that the government is dedicating resource to try to increase the numbers of teachers of science, as well as to efforts to address retention concerns e.g. the Workload Challenge[xxi]. At the same time there is increasing diversification of training routes. In this complex landscape it is particularly important to have a good understanding of the effectiveness, in recruitment, retention and quality of training, of all these routes and initiatives. As yet, comprehensive data collection and evaluation programmes are not in place so schools and the government do not have the evidence they need to respond to local and national needs.

23. This complex landscape can also be confusing and off-putting for potential trainees.

24. There are indications that school-led routes introduced in 2013 (see figure 1) have a smaller conversion ratio (from applicant to trainee). It is likely that this arises from schools being very selective, but it may also be the case that because schools are being more selective, the retention rate (particularly during training) is higher. Considering the rapid growth in these routes, the lack of supporting impact evidence is of concern.

25. The current recruitment incentive programmes, targets and allocations for training are also planned on a year-by-year basis – normally within the year. This makes it harder for continuity, long term planning, or developing relationships with potential trainees over time. Consequently many activities are rushed and we are concerned that potential applicants may be lost.

26. STEM graduates are in high demand – the case for teaching as a career needs to be compelling. Our organisations are committed to promoting teaching to our communities, and recognising and valuing teachers within our communities. However, teaching is not always recognised as a challenging and rewarding career for high achieving graduates.

27. Accumulation of debt, and the relatively low starting and continuing salaries compared with some other jobs in STEM, could be strong disincentives to starting teacher training. The financial impact on career changers is potentially even greater, yet this group will be vital if recruitment targets are to be met. This is an even greater issue in a recovering economy as salaries and employment in other sectors increase. The generous training bursaries and scholarships have gone some way in addressing this and have been shown to particularly help career changers[xxii]. However, greater analysis of the financial impact of training to be a teacher is necessary.

28. It is vital that graduates of other disciplines (for example engineers), career changers and returners are attracted to teaching the sciences if we want to recruit enough teachers of science[xxiii]. These groups may need additional support, e.g. through the provision of SKE courses either pre- or post- initial training. However, the provision of and funding for these courses has been eroded in recent years.

Factors affecting retention of teachers

29. Supporting the professional development of the teaching workforce is a crucial factor in improving not only their knowledge and practice, but also their job satisfaction/retention[xxiv]. It also improves outcomes for their students. However, there are many barriers to engaging with professional development, including misconceptions, budgetary pressures and lack of appropriate cover[xxv], which will likely be contributing in part to the teacher dissatisfaction reported[xxvi].

30. The awareness of and the amount and type of CPD teachers engage in should act as a health check for the workforce. We support the work of the Teachers' Professional Development Expert Group and the new College of Teaching[xxvii].

31. Mentoring is another valuable way of improving the retention of all teachers from their initial training and throughout their careers[xxviii].

32. We will continue to support the professional development of teachers through our networks, activities, courses and resources[xxix].

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[i] To be considered a Subject Specialist for the purpose of data collection, the teacher will have gained at least one of the following: a relevant degree as identified by subject grouping in the JACS; demonstrated sufficient experience in the subject through employment; or a qualification from a 24-week Subject Knowledge Enhancement (SKE) course. The teacher must then gain a teaching qualification in the specialist subject (see http://www.score-education.org/media/7987/spec-teach.pdf).

[ii] Principles for routes into teaching the sciences at secondary level, (SCORE, 2015): http://www.score-education.org/media/16294/final%20score%20ite%20position%20paper%20-%20designed.pdf

[iii] We recognise that research is currently being conducted by the National Audit Office and is due to be published this year - Training New Teachers (https://www.nao.org.uk/work-in-progress/training-new-teachers-2/)

[iv] For further details see our recent response to the Teachers' professional development standard (2015) http://www.rsc.org/globalassets/04-campaigning-outreach/policy/education-policy/ase--iop-rsb-rsc-rs-cpd-response.pdf

[v] The Case for Change (DfE, 2010) https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/180852/DFE-00564-2010.pdf Original references for this point: (Smithers and Robinson, 2005; Goldhaber and Brewer, 1997 and 2000; and Wilson et al, 2001.)

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

[vii] School Workforce census England: November 2014 (DfE, 2015) https://www.gov.uk/government/statistics/school-workforce-in-england-november-2014

[viii] Statistical First Release: National Pupil Projections: Future Trends in Pupil Numbers (DfE, 2014) https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/330261/SFR23_2014_Main_Text.pdf

[ix] See reference vii

[x] School workforce in England November 2010 (provisional) (2011) https://www.gov.uk/government/statistics/school-workforce-in-england-november-2010-provisional

[xi] http://teachvac.co.uk/

[xii] Annual Report and Accounts 2014-15 (NCTL, 2015, pp14) https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/446611/nctl-annual-report-and-accounts-2014-to-2015.pdf

[xiii] Poll (YouGov/NUT, 2015) http://d25d2506sfb94s.cloudfront.net/cumulus_uploads/document/qnvcv0jpkw/Results-for-NUT-Teachers-150706.pdf

[xiv] Five top reasons people become teachers – and why they quit (The Guardian, 2015) http://www.theguardian.com/teacher-network/2015/jan/27/five-top-reasons-teachers-join-and-quit
[xv] Why Teach (2015) http://whyteach.lkmco.org/
[xvi] See reference xiv
[xvii] See answer to written question: retention rate for secondary school teachers of each subject area (2014) http://www.parliament.uk/business/publications/written-questions-answers-statements/written-question/Commons/2014-11-28/216419/
[xviii] Proportions of secondary school chemistry, physics and maths teachers holding degrees or higher in the relevant subjects which they teach, English regions (2014) http://www.parliament.uk/business/publications/written-questions-answers-statements/written-question/Commons/2014-11-28/216418/
[xix] The TeachVac Review (TeachVac, 2015) http://www.researchgate.net/publication/280577031_TeachVac_Review_Teacher_recruitment
[xx] Mathematics and science in secondary schools: The deployment of teachers and support staff to deliver the curriculum (NFER/DfES, 2006) http://www.nfer.ac.uk/publications/DMS01/DMS01.pdf
[xxi] Reducing teachers' workload (DfE, 2015) https://www.gov.uk/government/publications/reducing-teachers-workload/reducing-teachers-workload
[xxii] The role scholarships play in graduate recruitment for Initial Teacher Training (NCTL, 2014) https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/365794/the-role-scholarships-play-in-graduate-recruitment-for-itt.pdf
[xxiii] The Shortage of Physics Teachers (Gatsby, 2015) http://www.gatsby.org.uk/education/latest/the-shortage-of-physics-teachers-infographic
[xxiv] Wolstenholme, C., Coldwell, M. and Stevens, A. (2012). The Impact of Science Learning Centre continuing professional development on teachers' retention and careers: final report. [Sheffield: CEIR]: https://www.sciencelearningcentres.org.uk/media/filer_public/7a/e1/7ae12f3e- 030b-4e5f-b27a-41b04cddeb46/shu_retention_full_report.pdf
[xxv] See reference iv
[xxvi] See reference iv
[xxvii] See reference iv
[xxviii] The Nature, impact and potential of external mentoring for teachers of physics and other subjects in England (Gatsby, 2012) http://www.gatsby.org.uk/uploads/education/reports/pdf/gatsby-impact-of-mentoring.pdf
[xxix] See appendix from reference iv