TEACHER WORKFORCE PLANNING FOR SCOTLAND'S SCHOOLS:

A RESPONSE FROM THE LEARNED SOCIETIES' GROUP ON STEM EDUCATION TO THE SCOTTISH PARLIAMENT'S EDUCATION AND SKILLS COMMITTEE

April 2017

The Learned Societies' Group on Scottish STEM Education (LSG)[1] brings together the learned societies and professional associations with a focus on the provision of STEM education at school. We are pleased that the Scottish Parliament's Education and Skills Committee is considering teacher recruitment and retention. Teacher workforce planning has been a prominent area of interest for the LSG, especially as it is clear that schools are experiencing significant challenges in the recruitment of specialist teachers in the sciences and in mathematics. In this response we provide an outline of the key issues relating to teacher workforce planning in the STEM areas. We should be pleased to discuss our response with the Education and Skills Committee.

Need for improved data to inform teacher workforce planning

While the Scottish Government publishes annually the Teacher Census, this does not provide a clear picture of teacher need either in subjects or in different localities. In 2010 the Scottish Government discontinued the annual report on vacancy statistics for teachers. The UK Government Migration Advisory Committee (MAC) has recently reported[2] on teacher shortages across the UK. It states that *'there is very limited data to draw on to assess the shortage of teachers by subject in Scotland'*. The LSG firmly believes that there is a need for improved data on teacher shortages and vacancies in Scotland in order to support accurate teacher workforce planning. Data should be collected on a regular basis and made publicly available.

Other sources have helped to shine a light on STEM teacher supply issues in Scotland:

- The Teacher Workforce Planning Advisory Group (TWPAG) Report (2013)[3] shows that Computing, Chemistry, Physics and Mathematics are among the subjects with the lowest teacher replenishment rates. The TWPAG group surveyed local authorities in 2012/13 in order to gather information on secondary vacancies, including looking at relative need across subjects. It is worth noting that the true vacancy rate will be masked by 'hidden vacancies' i.e. where schools do not advertise for a post because they know it will not be filled.

- Computing At School Scotland (CASS) collected data in 2016[4] showing that secondary schools are experiencing a severe shortfall in Computing Science (CS) teachers. There has been a 25% decline in the number of CS teachers in the past 10 years and CASS reported that 17% of secondary schools do not have a specialist CS teacher.

- The recently published Scottish Government and CoSLA joint submission[5] to the MAC provides local authorities' feedback on teacher recruitment challenges. This includes difficulties recruiting to remote and rural locations in Scotland. STEM teacher shortages feature prominently.

- It will be important to consider the availability of supply teachers given that they are crucial to providing necessary flex in the system. A survey[6] conducted by the Supply Teachers Review Group of the Scottish Negotiation Committee for Teachers (SNCT) found that all of the 28 respondent local authorities reported that obtaining sufficient supply cover for secondary school subject specialist teachers was either 'difficult' or 'very difficult'. The sciences, mathematics, computing and technical education were identified as areas of particular shortage.

1 More information about the LSG is available from: https://www.rse.org.uk/policy/standing-committees/learned-societies-group/
2 Partial Review of Teacher Shortages in the UK; Migration Advisory Committee; January 2017 https://www.gov.uk/government/publications/migration-advisory-committee-mac-report-teacher-shortages-in-the-uk
3 Report of the Teacher Workforce Planning Working Group; December 2013 http://www.gtcs.org.uk/web/FILES/about-gtcs/dual-reg-consultation-report-of-the-twpwg.pdf
4 Computing Science Teachers in Scotland 2016; Computing at School Scotland http://www.cas.scot/wp-content/uploads/2016/08/ComputingTeachersinScotland-CASSReport2016.pdf
5 Scottish Government and CoSLA joint response to the MAC; October 2016 http://www.gov.scot/Resource/0051/00516454.pdf
6 Supply Teachers Review Group Survey (2015): http://www.snct.org.uk/library/2162/Supply%20Teachers%20Review%20Group%20Recommendations.pdf

In order to try to better match supply with demand, particularly in subjects which have traditionally been under-recruited (including Chemistry, Computing, Mathematics and Physics), since 2014/15 Scotland's initial teacher education (ITE) providers have been set subject specific targets for student teacher recruitment. The annual teacher workforce planning exercise undertaken by Scottish Government and a range of partners leads to the setting of student teacher intake targets. The aim is to set intake targets for each individual secondary subject towards replenishing the teaching workforce at an equal rate across all subjects.

The table below sets out the target and actual intake figures for the sciences and mathematics for Secondary PGDE courses in 2015-16 and 2016-17.

It is positive to note that the intake exceeded the targets for Chemistry and Physics in 2016. However, this needs to be seen in the context of long-term shortfalls in the recruitment of STEM teachers, which may well have suppressed expectations and demand for the future. While this focuses on intake numbers, with a view to ensuring accurate workforce planning it will be important that data is collected on how many of the ITE entrants complete their courses and enter the teaching profession.

In its report, STEMEC [7] recommended that the Teacher Workforce Planning Advisory Group should publish a five-year rolling programme of intake target numbers in order to provide confidence to individuals and institutions in planning and implementation.

Subject	2015-16 Student Teacher Intake Target	2015-16 Student Teacher Actual Intake	Percentage Difference between 2015-16 target and actual intake	2016-17 Student Teacher Intake Target	2016-17 Student Teacher Actual Intake	Percentage Difference between 2016-17 target and actual intake
Biology	88	81	-8 %	91	86	-5 %
Chemistry	69	57	-17 %	75	81	+8 %
Computing	37	20	-46 %	52	41	-21 %
Maths	146	76	-48 %	179	128	-28 %
Physics	54	38	-30 %	60	61	+2 %
Technological Education	58	35	-40 %	86	47	-45 %

Key Factors affecting STEM teacher recruitment and retention in Scotland include:

> There is a shortage of STEM graduates across a wide range of sectors, including teaching. This places an emphasis on the need to support young people's (and their families) STEM aspirations from the earliest years in order to build the 'science capital' required [8].

> STEM graduates are in high demand from employers. The case for teaching as a career therefore needs to be compelling given the competition it faces. However, compared to many industry sectors, teaching does not have a high profile on university campuses. The Scottish Government is attempting to address this having recently launched *'Teaching Makes People'*, a campaign targeted at encouraging STEM undergraduates into teaching. The Government has also recently announced 11 new routes to get teachers into the classroom, including for priority STEM subjects. We recommend that the campaign and the new routes into teaching be evaluated so that their impact can be fully understood.

7   Recommendation 13; STEMEC Final Report; 2016 https://beta.gov.scot/publications/stemec-report-2016/

8   See the King's College London 'ASPIRES' research work: http://www.kcl.ac.uk/sspp/departments/education/research/ASPIRES/Index.aspx

> School structures, notably the move away from principal subject teachers in favour of faculty heads, are reducing opportunities for career progression. The OECD highlighted the need for a clear career structure that grows the teaching profession.

> The relatively low starting and continuing salaries compared with many other STEM careers could act as a strong disincentive to teaching. The financial impact on career changers is potentially even greater, yet this group will be vital if recruitment targets are to be met.

> Teachers of the sciences and mathematics have expressed concern that curriculum reform has been undertaken with little input from the teaching profession, thus impacting on morale and teachers' professional status[9]. Connected to this is the issue of retaining teachers at a time of increasing concern over workload. Research[10] has indicated that on average teachers in Scotland work 49 hours a week. Shortages also increase workload for those already in post. There is also the related challenge of promoting teaching as a career to potential recruits during a period of education change that has drawn adverse media and political coverage.

> In essence, raising teachers' professional status is key to addressing teacher shortages, with teacher professional status and supply being fundamentally linked. If the status of the profession was to be raised and teaching was to be well-marketed to undergraduates, this would undoubtedly attract a larger number of high quality, subject-specialist candidates, and improve retention. High-quality initial teacher education and career-long professional development, including that which is subject-specific, are key components.

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9 An Analysis prepared by TMP of the challenges facing the Scottish Government's initiatives to increase the recruitment of STEM based teachers (January 2015) https://blogs.glowscotland.org.uk/glowblogs/plnetwork/files/2015/03/1069159-Scottish-Government-A3-doc.pdf

10 Pay and Conditions of Scottish Teachers; David Bell; 2011 http://www.gov.scot/Resource/Doc/920/0120757.pdf

Additional Information

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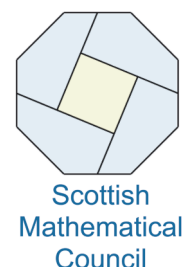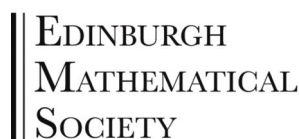
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