

## RSE: Tapping All Our Talents Review 2018 (deadline 27 April 2018)

<https://www.rse.org.uk/inquiries/womeninstem-2018/>

### **Section 1: *In brief***

**Q1** Do you believe progress has been made towards achieving gender equality in the STEM workplace in Scotland since 2012? (Yes/No).

Yes, we believe the direction of travel towards achieving gender equality Scottish further and higher education as a STEM workplace, and as a trainer of future STEM workers and employers, is positive.

For example, in Scotland's Colleges the proportion of females studying Engineering/Technology has increased by 4.9% between 2011/12 - 2016/17. Furthermore, there was a notable decrease in the proportion of males enrolling in FE level STEM subjects between 2015-16 and 2016-17 where the proportion decreased to 71.6% after remaining above 75% for the previous four years.

In the same time period, the proportion of female STEM entrants at university has increased by 1.9% as a proportion of the total.

While the primary role of the Scottish Funding Council is the funding of further & higher education, our institutions are also major employers in their regions and we encourage them to lead by example.

SFC's gender action plan (GAP) was published in August 2016, in response to recommendation 29 of 'Developing Scotland's Young Workforce' that 'the Scottish Funding Council and colleges should develop an action plan to address gender disparities within college education'.

Every college and university now has a Gender Action Plan. This strategic focus has enhanced the position of gender equality in institutional thinking across Scotland.

**Q2** If yes, what action(s) do you believe have had the greatest impact on improving gender equality in STEM in Scotland? (List maximum of 3).

While at an institutional level there are numerous examples of good practice in reducing gender disparities within education, there are also several key drivers at a strategic level.

- The Ministerial focus on gender equality in STEM, expressed most recently through the publication of Scotland's STEM Strategy in 2017, has been critical to driving progress on gender equality, with the leadership shown on this theme preceding the Strategy.

- Within SFC, the Gender Action Plan sets out our overall ambition that by 2030 no college or university subject will have a gender imbalance of greater than 75% of one gender. This has led to the embedding of the 75:25 ambition in institutional Outcome Agreements, with a broader impact on institutional strategy.
- Furthermore, progress in levels for Athena Swan, which has higher rates of Scottish success compared to the UK average, has driven change.

**Q3** Where you do not believe progress has been made, or could be improved upon, what do you believe have been the key limiting factors? (List maximum of 3).

We are seeking to encourage progress in terms of HE/FE HR practices and enhancing career progression by establishing and publishing baseline data relating to the profile of staff at SFC funded institutions and supporting initiatives targeted at tackling specific issues.

Joined up working on educational pathways is needed between schools, colleges, universities and industry. SFC is encouraging school engagement by FE and HE institutions. We recognised limiting factors include STEM staffing in schools and challenges in matching capacity to demand, such as timetabling and the ability to share school resources.

Work placements for STEM students from Further and Higher Education provide opportunities to influence practice in other STEM workplaces. An action in the STEM Strategy commits SFC to improve the number and quality of work placements undertaken by students, and more progress can be made here to make placements and workplace experiences a process that helps to promote progression and equity beyond our sectors.

College workplace standards recognise the value of workplace experiences as well as placements, and it is essential that we build on the quantity and robustness of this data.

**Q4** Which of the recommendations made in the 2012 *Tapping All Our Talents* report do you believe should be prioritised going forward? (List maximum of 3).

Use of funding levers to encourage systemic change

Publishing success – sharing good practice

Business and industry – development of progressive policies and practices to promote culture change

**Q5** What further recommendations (if any) would you make to policy-makers, educators or employers to tackle gender inequality in STEM in Scotland? (List maximum of 3).

To seek co-ordinated work towards systemic change, particularly within academic careers and progression, with a view to STEM role models as well as equitable workplaces.

SFC promotes and supports career development programmes such as those provided by Advance HE. Also, as part of the Outcome Agreement process, institutions are required to outline strategies and aspirations to sustain a high-quality environment for research training and development and to enhance the development and diversity of their researchers (including ambitions for Athena SWAN and HR Excellence in Research charter mark).

With institutions intensifying progress towards ambitious targets, SFC will consider developing national measures for gender within Outcome Agreements to be included in the next 3 year round of agreements.

SFC would also like to encourage institutional championing of gender issues, particularly in curriculum development sessions with employers who are keen to be involved not only in the development of an equitable curriculum, but also on the provision and signposting of clear progression pathways from education to employment.

## **Section 2: In detail**

### ***Women in STEM in Scotland 2018***

**Q6** What lessons do you believe have been learned from initiatives undertaken since 2012 to tackle gender inequality in the STEM workforce across the public, academic and/or industry sectors? Examples of good practice would be useful.

A key lesson being applied by SFC through our approach to institutional Gender Action Plans has been to move from a project based approach to embedding practice around gender equality into institutional planning. This is not to detract at all from the value of individual projects, but to mainstream their impact across the sector.

An example of a project with strategic impact would be the Aurora programme. Since its launch in 2013, over 3477 women from 139 institutions have now participated, with 1029 women attending in 2016-2017 alone. This suggests that institutions want to address the underrepresentation of women in senior posts. [Case studies](#) indicate the constructive experiences of early leadership development intervention through Aurora since its inception.

**Q7** In 2018's economic, political and social context, what do you consider to be the key influencers (positive and negative) on gender equality in STEM in Scotland?

Ministerial intentions have been very clear, which has motivated concrete actions from key public agencies.

The role of parents is key in terms of pupil subject choices, and even institutional preference, and signposting to STEM career pathways. However, the attitudes of pupils' peers, Careers Guidance staff and teachers are also highly influential.

Other key influencers include industry and the choices they make. The preponderance of SMEs in Scotland presents a particular challenge given their relative lack of capacity to engage in national initiatives or in curriculum planning with institutions to the same extent as large employers.

Professional bodies and enterprise agencies are also key influencers of professional and commercial practice.

**Q8** To what extent do you believe that the issue of gender inequality in STEM is being recognised as a priority and to what extent do you believe that rhetoric is being met with action?

Gender equality in STEM is recognised as a priority, but rhetoric is often being addressed by actions that, while well-intentioned and successful, are not joined up with strategic priorities and planning.

The first aim of SFC's Gender Action Plan, for example, is 'To enhance strategic oversight of tackling gender imbalances at a national, regional and institutional level'. In the development of the GAP, we heard of the need for better connecting activities, for fewer one-off, short term initiatives, and for more consideration of gender within college and university strategic development. This aim is a key priority for us in the plan and our focus to date has been enhancing oversight of tackling gender, through our Outcome Agreement (OA) guidance, and the development of institutional GAPs.

We therefore intensified our expectations of institutions both on gender under-representation and on alignment with public sector equality duties. All institutions' OAs for AY2017-18 committed to tackling gender imbalances, though the ambition and outcomes varied considerably across colleges and universities.

We are cautiously optimistic that progress is being made towards institutional targets, but we are keen to see joined-up, strategic thinking on this topic, rather than a project based approach.

### **Education**

**Q9** What do you believe should be done to encourage more girls and young women to engage with STEM subjects in early years, primary and secondary education?

There is a need for joined up planning processes across schools, local authorities and FE/HE institutions. This is particularly necessary regarding schools engagement with FE/HE being built into better development of curriculum. Regarding pre-16 targets for success and retention, more work on how sectors' targets match up would be welcome.

At a national level, the Scottish Government has established a group to improve alignment across national agencies to tackle gender imbalances. SFC sits on the group, alongside representatives from Education Scotland, Skills Development Scotland, Scottish Qualifications Authority and the Institute of Physics. It has identified actions to improve gender balance in subject choices for the school senior phase.

There may be a case for STEM gender action plans at school or local authority level, combined with STEM-related CPD. There is also a role for official and professional bodies in supporting teachers and schools to address gender imbalances in STEM at schools.

It has been suggested that the shorthand term "STEM" is off-putting and that a greater emphasis on the ability these subjects and roles offer to solve problems might be more attractive.

**Q10** What innovative or impactful practice do you know of or believe should be taking place in universities and colleges to tackle issues of gender disparities in STEM subjects?

While there is no silver bullet to turn around gender disparities, there are several excellent examples of best practice. Many of these were included as case studies in the publication of Scottish Government's national STEM Strategy.

Examples include Engineering the Future for Girls, developed by Strathclyde University, which is designed to engage girls in a wide range of engineering challenges that will inspire them to become the next generation of engineers. It is open to all girls at Scottish schools who are studying at S3 level with any range of subject choices at National 5.

The programme comprises a week long summer school with a range of engineering-oriented challenges delivered by BP and BAM Nuttall employees and Researchers from the Faculty of Engineering at the University of Strathclyde. Each year there are 100 places, which are fully-funded, in 2017 by BP and BAM Nuttall. This is a non-residential summer school. Student costs, including travel and lunch, are covered.

This is an excellent example of industry and institutions working together to deliver progress on gender equality within STEM.

In respect to gender disparities within STEM staff, institutions need to recognise the extent of the disparities, understand the potential causes and implement effective policies and practices that can support greater equality. For example, the adoption of family friendly policies (flexible working options, encouraging uptake of paternity leave and shared parental leave) are critical to achieving gender parity. Other well-known initiatives include the provision of unconscious bias training and mentoring opportunities.

Just as there is potential for policy developments in other areas to support women in STEM, there is potential for work in this area to support other developments, such as work on rural economies and expansion of minority language education provision.

What do you think can be done to embed STEM gender equality thinking across universities and colleges?

Research that SFC commissioned to underpin the Gender Action Plan looked at how institutions were already tackling gender imbalances across Scotland. It suggested a provisional framework for tackling gender imbalances - based on the key underlying criteria for, and design features of, a successful and sustainable approach to tackling gender imbalances across an institution's activities.

The research mapped approaches to tackling gender imbalances across Scottish Colleges and Universities and the report outlines the different approaches in place as focusing on the following five broad themes of:

- Infrastructure
- Influencing the influencers
- Raising awareness and aspiration
- Encouraging applications
- Supporting success

The latter theme includes retention of students and ensuring successful outcomes for all. SFC aims to drive this change through the Outcome Agreement process and the development of institutional Gender Action Plans.

### ***Cultural Change***

**Q11** In what ways do you believe industry can lead by example to tackle inequality within workplace culture?

As SFC's role is the funding of Further and Higher Education, we don't claim a particular expertise on workplace culture. However, in the areas we can influence we would suggest more role models from underrepresented genders, as well as points made earlier in the document around issues of scale and engagement with professional bodies and between industry and institutions around joint curriculum planning.

**Q12** What do you believe are the most effective ways to challenge and change deep-rooted attitudes and institutional culture in order to improve gender equality in STEM?

- Schools
- Systemic institutional requirements
- Encouraging an understanding the individual's own roles – stages before and after *your* interaction
- Publication of baseline data (staffing). Highlight the disparities that exist by gender across institutions by level and subject area and monitor effectively.
- Unconscious bias training at all levels
- Institutions can have a role in influencing others' beliefs, including those held by industry leaders and businesses. They should be encouraged to roll-out their knowledge of equality and diversity issues/ good practice with industry as part of their industry engagement activities.

**Q13** How do you suggest culture change can be measured in a meaningful way?

While cultural change is inherently difficult to measure, SFC has started to formalise a reporting structure on our Gender Action Plans through the annually published GAP Technical Report. This publication gives an overview of the analysis underpinning SFC's Gender Action Plan and shows progress towards the targets set in the Plan. The first GAP Technical Report for academic year 2014-15 was published in August 2016 and provides an update of this data while introducing new areas of analysis.

Cultural change will ultimately be measured within our institutions by a

rebalancing of gender participation rates in subjects and demonstration of improved staffing figures, but useful progress markers include, for example, Athena Swan Accreditations, provision of evidence on inequities and the role of institutional challenge in driving progress.