

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).

N/A

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).

N/A

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).

- Lack of funding for teacher development in STEM that addresses the equal opportunities in all career paths of their pupils.
- Lack of understanding between what pupils choose to study (option choices) and what they are allowing to take as exam subjects – unconscious bias towards subjects within a more restrictive column selection approach.
- Opportunities for pupils to engage with professionals within STEM to help them inform opinions of their future career paths.

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).

1. Scottish Government should: take the lead in committing itself to a national strategy for Scotland – an Action Plan – aimed at retaining and promoting women in STEM and led by a Cabinet Secretary; reaffirm its commitment to close the gender pay gap; and expect university STEM departments to achieve the minimum standards for an Athena SWAN Silver award, or equivalent. Initiatives should be monitored and evaluated.
2. Businesses and industry should: address the issue of job design and introduce quality part-time employment at all levels for men and women; national STEM Industry Advisory Boards should develop gender equity strategies.
3. Academies and learned and professional bodies should: set standards that help to change the culture; lead by example, ensuring that appropriate data is being collected, analysed and reported regularly, and trends examined.

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).

1. Earlier interventions to build 'science capital' (Archer, 2013) in girls and boys
2. CPD STEM development of practitioners in Early Years, Primary and Secondary aligned with gender bias training
3. All STEM activities should be offered on the basis of 50% gender split of participants. The prioritising of female only activities could become divisive.

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.

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?

- Flexible working e.g. shared maternity and paternity, part-time working at every professional level, mentoring for women to get into senior leadership positions

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?

- There are lots of 'new' initiatives popping up all over the place, but very few have been around long enough to have their impact measured / proper evaluation. And, in fact, the short-term funding of these projects means that long-term evaluation rarely happens or is expected. An independent report commissioned by The Royal Academy of Engineering found that project-based learning through Primary Engineer 1) improved attainment across the curriculum including mathematics, literacy, science and technology and 2) having STEM professionals engage with pupils boosted career aspirations of all pupils.
- There is an emphasis on 'girls into STEM' but less focus on 'keeping women in STEM'.
- The support being offered girls into STEM could create barriers as the boys may well grow to resent the support girls received in favour of them.

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?

1. Earlier interventions to build 'science capital' (Archer, 2013) in girls and boys
2. Whole-class delivery
3. STEM professionals using projects to engage with pupils to increase their understanding of careers
4. STEM development of practitioners in Early Years, Primary and Secondary and gender training
5. High quality engagements rather than simply number of engagements (E- engineering, provides a framework for interaction) and multiple so that girls and young women see the vast array of STEM jobs and career paths
6. The way option choices are managed in schools is a main contributor to the 'choices' girls are advised to take by teachers – an understanding of the numbers choosing to take physics for instance compared to those that do would be an interesting comparison. To understand better the interests in subject areas.

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?

- The Scottish Engineering Leaders Award has demonstrated an engagement that demonstrates the creativity in engineering at all levels in schools but by partnering with the University of Strathclyde (to date) the students building the children's ideas are able to create an outreach programme around the build bringing the length of education together on one project.

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

- By using the university outreach approach created by Primary Engineer
- Building unconscious bias training into Initial Teacher Training
- Equate to deliver Unconscious Bias training with current practitioners.

Cultural Change

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

- Have more evidence of gender diversity at events, both social and work related.

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?

- Demonstration of the importance / business case to market of including females / returning females in industry
- Quotas on female senior leadership
- Quotas of females on Boards

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

- Primary Engineer is completing the development of the Institution of Primary and Secondary and Tertiary Engineers – open to schools, colleges and universities from September 2018. Running underneath, the platform will be an anonymised longitudinal study able to look at perception change in the long and short term.
- Subject choices recorded against choices taken at S2 and, importantly, schools recording whether pupils had a 'free choice' of subjects or whether they had to choose from a series of columns that could have restricted choice.
- Number of females applying for apprenticeships in STEM careers compared to those who are successfully accepted on the course and ultimately the pass rate and positive destination.
- Number of females applying for graduate STEM careers compared to those who are successfully accepted on the course and ultimately the pass rate and length of time in the role.
- Retention of females in STEM roles