

Cross Party Group on Science and Technology Meeting

Minute of AGM, 26 September 2017 at 1800

1. Attendance

MSPs: Clare Adamson, Maree Todd, Liam McArthur, Patrick Harvie, Murdo Fraser, Finlay Carson, and Christina McKelvie

Non MSPs: Fiona McNeill (Heriot-Watt University / RSE Young Academy), Polly Purvis (Scotland IS), Talat Yaqoob (Equate Scotland), Dr Stuart Fancey (Scottish Funding Council), Karen Petrie (BCS), William Hardie (RSE), Peter Donaldson (University of Glasgow), Rebecca MacLennan (Young Engineers & Science Clubs), Morna Simpson, Belinda Love (both Girl Geek Scotland), Judy Robertson (University of Edinburgh), Anna Hazel-Dunn (Nether Currie Primary School), Alison Freeman (Scottish Technology Teachers Association) and Jeremy Scott (George Heriot's School).

Apologies: Iain Gray MSP, Liz Smith MSP and Tavish Scott MSP.

2. Consideration of draft Annual Return

Members considered the draft annual return. The annual return was agreed in principle, and in liaison with the Convener, Bristow Muldoon (secretary) will finalise it for submission.

3. Appointment of Office Bearers

The following were proposed as office bearers.

Convener – Clare Adamson MSP

Deputy Convener – Iain Gray MSP

Secretary – Bristow Muldoon, RSE/RSC

It was agreed that these positions be filled as proposed. It was also agreed that the existing cohort of MSP members would remain members.

4. Topics for future meetings

It was agreed that the secretary will invite suggestions from members for future discussion topics, with a view to holding the next meeting of the CPG in December (date tbc).

5. Women & the Digital Economy

The following three speakers provided short presentations (slides attached) to stimulate discussion.

Fiona McNeill, Heriot-Watt University & RSE Young Academy, considered the proportion of female undergraduate computer scientists in Scotland, the UK and the US. It was noted that while there is a persistent challenge internationally to attract more women in to CS (women comprise 18% of undergraduate CS students in Scotland in 2017), Harvey-Mudd and Carnegie Mellon universities in

the US have proactively sought to address this, with women making up almost half of CS undergraduates at Carnegie Mellon in 2017. The increase in women enrolling in CS at Carnegie Mellon and Harvey-Mudd has resulted from a combination of factors, including cultural change: a strong commitment by leaders at the university, college and department levels; influential pipeline programmes for high school students; targeted recruitment; closer scrutiny of applications; support and mentorship programmes.

Polly Purvis, Scotland IS, provided a technological industry perspective, where it was noted that 65% of the jobs of the future are as yet unknown. It was suggested that key areas of future innovation in Scotland will be the life sciences and social care, including stratified medicine. However, to realise Scotland's technological ambitions there is a pressing need to address gender imbalance. This calls for better careers advice provision that showcases the new opportunities available now and in the future. There is also a requirement for increased investment in the teaching workforce, particularly in STEM subjects.

Talat Yaqoob, Equate Scotland, stated that while boys and girls start with an equal interest in STEM, gender stereotyping starts to develop from the very early years. She referred to the RSE's Tapping All Our Talents Report (2012) which highlighted that 73% of women graduates are lost from STEM. The need to address cultural issues and challenge unconscious bias within organisations was emphasised. Reference was made to the positive action supported by Equate Scotland, including women-only coaching, women's networks and industry visits for women. Exemplars, including Glasgow City College's women-only engineering courses, which are oversubscribed, demonstrate the role of positive discrimination in opening-up STEM career opportunities to women.

The following points were noted during the discussion session.

School-based STEM

Difficulty in recruiting new STEM teachers to replace those who are leaving the profession. This is particularly acute in Computing Science and Technology Education where teaching struggles to compete with other sectors and industries for graduates.

As well as the availability of STEM teachers, a related issue is the extent to which schools' curriculum structures at S4-S6 constrain (i.e. course choice and timetabling) or promote the uptake of STEM subjects. Reference was made to virtual learning provision in rural areas of Scotland, including Highlands, to help ensure all pupils can access STEM subjects. It was recognised that such initiatives should not be considered long-term solutions.

There is a continuing need to address gender imbalance in STEM subjects at school. SQA statistics show that in 2017 only 14.7% of Higher Computing Science candidates were female, and this reduces to 12% at Adv H level. It was suggested that there can be a lack of understanding, particularly at primary school level, about the career opportunities afforded to those with a grounding in computing science. This can be exacerbated by entrenched stereotyping and unconscious bias. Are there opportunities to enhance collaboration between teachers and industry professionals to share knowledge and experiences, which in turn would enhance careers guidance?

Primary teaching itself is a very gendered profession. In addition, curricula breadth and the extent to which primary schools are expected to embed an ever-increasing array of national initiatives poses significant capacity issues for them. While the ambition of the CfE Benchmarks in Computing Science is to be welcomed, primary school teachers will need significant support to implement them. There are examples of primary schools bringing in subject specialist from secondary schools to enhance

learning in the upper end of primary. The GTCS is also developing new routes in to the profession aimed at accrediting teachers who can work in both primary and secondary settings.

It was noted that under current GTCS registration requirements, primary school teachers are not required to have a science qualification. It was suggested that this a topic that would benefit from research to determine to what extent teachers' qualifications impact on learning.

Reference was made to the IoP's 3-year pilot project in Scotland that is looking to identify and tackle the challenges facing pupils due to gender stereotypes. It was recognised that funding and support needs to be provided on a strategic & sustainable basis. There was concern that too many initiatives operate on short life cycles, and are reliant on annualised funding. The need to influence parents and families was also stressed as a holistic approach is required to break-down gender stereotyping.

Career-long opportunities

While the importance of promoting digital & STEM careers at school level was recognised, there is a need to ensure that there are career-long opportunities, particularly given the extent to which people change careers (which will continue to increase). One of the key issues is the need to re-skill people currently in the workplace.

Cultural change

Reference was made to the Scottish Government's Bill on Gender Representation on Public Boards. The rationale of this Bill is to improve the representation of women at senior and decision-making levels to promote both equality and cultural change within organisations. It was questioned, however, whether forcing boards to set quotas will address the need to effect cultural change. In response, it was reported that organisations are unlikely to take voluntary action on boardroom inequality, and that proactive action is required to increase the proportion of women on boards, and to address unconscious bias.

A suggestion was made as to whether businesses could be given some form of recognition or accreditation in terms of incentivising action of equality, on a similar basis to the Athena Swan Charter that applies to higher education and research institutions. In response it was suggested that such approaches can result in 'box ticking', and that they might not achieve the organisational buy-in, and cultural change required.

Meeting close 2000