

Title: Science Council Consultation Response

Date January 2021

The Science Council represents 34 Professional Bodies and Learned Societies of Science representing over 350,000 individual members in the UK and globally. The Science Council as the organisation recognising pan-science quality in professional practice is also a community of multi-disciplinary science experts in their field.

Introduction

The Science Council, is reflecting the membership, those that we represent, and those we work with closely. It is through this lens that we are seeking to highlight the inherent inequalities that exist within the STEM workforce and evidence some of the challenges. We also share examples of the various initiatives that are seeking to break down barriers and demonstrate a willingness to progress this agenda to create a more inclusive and diverse culture within STEM for the benefit of society.

1. What are the demographics of STEM workers in your organisation or sector? Are there gaps in the quality of evidence, monitoring or reporting.

A number Science Council members will be submitting responses to this consultation as representatives of their own discipline of science. The Science Council response shares evidence from within our community within this document and also in the links to our members websites and or reports, projects or activity.

A core tenet across all disciplines of science is that there is a need to remedy the inherent inequalities that exist within the education system, starting at primary school, in order to materially affect the outcomes being delivered once young learners reach A-Level and T-Levels and beyond.

A number of initiatives are seeking to grow the body of evidence of the demographics of STEM workers across the science, engineering and technicians in Higher Education and Research Institute sectors. The

following two examples are initiatives in which the Science Council is engaged.

a Diversity and Inclusion Progression Framework

The Science Council and the Royal Academy of Engineering launched the Diversity & Inclusion (D&I) Progression Framework in 2016. The Framework is a unique tool that helps professional bodies track and plan progress on D&I across key areas of professional body activity. The framework can be used to structure conversations about performance and progress on D&I, identify strengths and areas for development, report on performance and plan next steps towards making progress. A key component of understanding the demographics of STEM workers is the ability to capture diversity data and make comparisons over time. In 2017 a benchmarking exercise took place with c50 organisations taking part. Overall reports were produced for both science and engineering sectors. Below you will find a link to the scientific bodies report. A key finding across both sectors is the need for more data. In response to this finding, the Science Council and Royal Academy of Engineering have been providing support and resources to professional bodies to assist them in developing the systems and processes needed to collect and manage this data sensitively and with confidence.

In 2020, the Framework and guidance were updated; the D&I Progression Framework 2.0 encourages professional bodies to seek a much broader range of data across its activities and a second benchmarking exercise will take place in spring 2021. Data provided as part of this exercise will allow further comparison and insight and will be key to understanding progress, gaps and action required in creating an inclusive and diverse stem workforce.

<https://sciencecouncil.org/web/wp-content/uploads/2018/02/Scientific-Bodies-Benchmarking-Report-2017-FINAL.pdf>

Further to the Progression Framework there is an increasing body of work within the professional body community, (some of which is captured within the progression framework and others in separate and distinct bodies of work pertaining to specific audiences.

Examples are included below;

- i) Institute of Physics (IOP), Diversity and Inclusion Report November 2020 outlining the demographics within the physical sciences.

<https://www.iop.org/sites/default/files/2020-11/IOP-Diversity-Inclusion-Report-AW-Nov.pdf>

- ii) LGBT+ STEM (hosted by IOP)

STEM subjects (Science, Technology, Engineering and Mathematics) have been traditionally thought of as heterosexual, masculine fields and the thought of this can be quite intimidating for those just starting out in the field who don't fit this mould.



This project showcases LGBTQ+ people in the STEM fields, showing the diversity of people that can be found in roles across the STEM disciplines and hopefully providing some role models for people who are either at an early stage in their careers, or who are only currently considering the possibility of transitioning into a STEM field.

<https://lgbtstem.wordpress.com/about/>

iii) Royal Society of Chemistry (RSC) – commitment to reducing bias in scientific publishing

‘We have started a rolling review and improvement process across the organisation, to make sure that we consider high quality data collection for every initiative and activity we run. For example, improved data collection is central to the joint commitment we created, which was co-signed by many international publishers, to reduce bias in scientific publishing.’

<https://www.rsc.org/globalassets/02-about-us/corporate-information/rsc-diversity-data-report-20202.pdf>

<https://www.rsc.org/news-events/articles/2020/12-december/improving-diversity-with-data-dual-announcement/>

iv) Within Healthcare very good progress is being made as it relates to gender equality which is higher than in other areas of STEM with inequalities only becoming more pronounced at increasingly senior levels.

An example is the membership demographic of the Institute of Physics and Engineering in Medicine (IPEM) whose overall membership has 38% women, 50% at Trainee level (compared to 27% women in STEM)

<https://www.ipem.ac.uk/Portals/0/APPG%20enquiry%20into%20equity%20of%20the%20STEM%20Final.pdf?ver=2021-01-25-121741-613>

b) STEMM Change EDI Report

STEMM-CHANGE is an EPSRC-funded Inclusion Matters project driving a positive change in culture and practices in EDI across Science, Technology, Engineering, Mathematics and Mathematics and Medicine (STEMM). The STEMMCHANGE programme has several linked projects that will enable a step change in approaches to promoting EDI in the workplace. It is led by a multi-disciplinary team at the University of Nottingham in collaboration with a diverse range of project partners, of which the Science Council is one. This report is seeking to understand the experience of EDI through the lens of the Technician within a Higher Education Institute setting.

Historically, initiatives to advance equality, diversity and inclusion in higher education have focused on the academic and research community. It is vital to appreciate that EDI challenges do not just apply to these staff groups. The expansion of the Athena Swan Charter to include professional



and support staff has ignited a greater interest in the equality, diversity and inclusion of non-academic staff groups. Indeed, it is arguable that

the issues are often more serious in these communities, which include technicians, where EDI practices are often not as advanced. For further information on the findings please see the link below.

<https://www.stemm-change.co.uk/wp-content/uploads/2019/11/Equality-Diversity-and-Inclusion-A-Technician-Lens-web.pdf>

2. Where is there inequity across the different protected characteristics and how are different communities impacted across different:

- **STEM disciplines or sector/subsectors**
- **types of organisation (e.g. private, public, non-profit)**
- **type of STEM activity (e.g. academic research, education, engagement, commercial, funding)**
- **job levels and/or qualification.**

Although some disciplines are better represented than others, there is a “leaky pipeline” throughout a career trajectory, in for example, but not limited to, Geology and Astronomy. Female representation diminishes as women begin to have families and take time to nurture the family with an over emphasis and or expectation in handling child rearing and domestic duties.

Physical disability in numerous instances is seen not to be able to be accommodated in a working environment. The following two examples have been provided anecdotally and anonymously from a Laboratory at the University of Manchester eg: “Someone became visibly impaired through the lifetime of working in a laboratory and it was not possible to accommodate this person.”

Another example, from Manchester University, is that of a person in mid-career with a physical and psychological disability and a fear of reprisal for saying anything about unmet needs and or challenges in the workplace.

The continuation of socio-economic inequalities and a lack of cultural awareness also plays their part in continuing the disparity between the protected characteristics.

It is recommended that consideration be given to the whole person and not a single characteristic as defined by the protected characteristics.

Institute of Physics LGBT Physical Sciences Network

“To create an environment where the best scientists can flourish and the best science can be done, everyone needs to feel comfortable in the workplace. Our recommendations, in three key areas, will not just greatly benefit LGBT+ colleagues, but will ensure all staff and colleagues feel welcome.”

<https://www.iop.org/about/iop-diversity-inclusion/LGBT-physical-sciences-network>

3. Where are there evidenced inclusive behaviours and policies within different organisations, subsectors, sectors and countries on:

- **Recruitment; and/or**
- **Retention**

1. A Daphne Jackson Fellowship provides a unique combination of mentoring, retraining and research. This provides Fellows with the confidence and skills they need to return successfully to a research career.

<https://daphnejackson.org/about-us/>

2. The recently launched EDI Resource Bank

The EDI Resource Bank has been developed as part of STEMM-CHANGE, a project at the University of Nottingham funded by EPSRC Inclusion Matters. The project team have been working on several linked projects which aim to drive positive change in culture and practice across STEMM.

<https://sciencecouncil.org/new-nationwide-tool-to-support-equality-in-higher-education/>

3. Institute of Physics Diversity Inclusion Report Oct 2020

“We will shortly launch a public influencing campaign to address the barriers which prevent young people from under-represented backgrounds choosing physics as a career. We want to change the way parents, schools, the media and social media influencers talk about physics, so it is no longer seen as ‘hard’ or ‘for boys’, and students from all backgrounds can see people like themselves making a success of physics”.

<https://www.iop.org/sites/default/files/2020-11/IOP-Diversity-Inclusion-Report-AW-Nov.pdf>



4. Are there policies or activities undertaken by the UK Government, or its agencies, that advance or inhibit equity and inclusive cultures within the STEM workforce?

- **Where could policy change or sector action lead to addressing the equity of opportunity within the UK's STEM workforce?**
- Athena Swann Charter – ending requirements to submit against the tenets of the scheme is thought to be a regressive step, however, it has been felt by some that the Athena Swann Charter has become a tick box exercise that people have become experts in submitting a response as opposed to meaningful application.
- We welcome the commitment made by UK Research and Innovation (UKRI) to improving equality, diversity and inclusion, as significant action by funders will be critical to driving change.
- The UK R&D Roadmap which outlined the government's commitment to ensuring a diverse, equal and inclusive workforce, is also welcomed. Including development of a new R&D People and Culture Strategy and a commitment to making R&D for everyone.

5. What are the impacts of COVID-19 on equity for STEM workers (including job and income security, contract type etc) in the short- and medium-term? Which communities, groups, organisations or sectors are being most impacted?

Submissions from female academics has seen a decline in a COVID environment as the domestic burden has been largely undertaken by women and therefore the ability to submit academic papers diminished.

<https://www.natureindex.com/news-blog/decline-women-scientist-research-publishing-production-coronavirus-pandemic>

The full impact of COVID as it relates to EDI will take many years to play out and therefore understand, in full, the impact.

Many families are overwhelmed with home schooling care giving, with a disproportional impact on women, affecting mid-career especially.

There will be a need for grant applications to factor in the COVID effect and an absence of published papers as a result.

The Science Council is concerned about the impact of the COVID-19 pandemic on early career researchers. The effects of immediate uncertainty (for example, due to the pausing of non-COVID-19 related research) are still unfolding, but it is certain to have a medium – and potentially long-term, effect on career progression and job security. The early career stage is known to be a critical point for loss of diversity in the sector, and the Science Council is concerned that the impact of the pandemicⁱ will have a compounding detrimental effect.

6. What are the implications and opportunities of new policies and employer action in the next 5-10 years following COVID-19 and Brexit? What will the future impacts be for communities, groups, organisations or sectors?

In considering the impact of Brexit on the STEM workforce it is anticipated that Brexit may impact the proportion of eu27 nationals coming into UK as they may feel unable to settle as they used to or they may only come in for a brief spell. Eg; Visa fees and NHS charges. Equally families in the UK may feel unable to relocate to the EU for similar reasons.

It is of interest to understand the impact of Brexit on the BAME community working in stem. Will the number of BAME people working in STEM go up and or down as a result of Brexit? Will less people coming into the country from the EU give people from China and or Asia greater access?

Colonialism, historic ties, and how will this effects immigration and impacts the workforce has yet to be realised as the global attitude to decolonisation grows.

Areas of potential fall-out from COVID include physical ailments that will adversely affect people, mental health, long COVID, and long term health conditions.

Education disadvantage – a lack of access to technology, live teaching, science capital in the family becomes important, being parent dependant. All of these considerations in the context of COVID-19 will change the ability of those from disadvantaged backgrounds to secure a future of parity and esteem otherwise enjoyed by those who have access to educational support.

Science Council Members

- Association for Clinical Biochemistry and Laboratory Medicine
- Association of Neurophysiological Scientists
- Association for Science Education
- British Association of Sport and Exercise Science
- British Psychological Society
- British Society of Soil Scientists
- Chartered Institution of Water and Environmental Management
- College of Podiatry
- Geological Society of London
- Institute of Biomedical Science
- Institute of Corrosion
- Institute of Food Science and Technology
- Institute of Marine Engineering, Science and Technology
- Institute of Materials, Minerals and Mining
- Institute of Mathematics and its Applications



- Institute of Measurement and Control
- Institute of Physics and Engineering in Medicine
- Institute of Physics
- Institute of Science and Technology
- Institute of Water
- Institution of Chemical Engineers
- Institution of Environmental Sciences
- London Mathematical Society
- Nuclear Institute
- Oil and Colour Chemists' Association
- Operational Research Society
- Physiological Society
- Royal Astronomical Society
- Royal Meteorological Society
- Royal Society of Chemistry
- Society of Biology
- Society of Dyers & Colourists
- The Organisation for Professionals in Regulatory Affairs

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ⁱ Gould, J. (2020) *The career costs of COVID-19: how postdocs and PhD students are paying the price*. Nature Careers Podcast. Nature. 25.11.20. <https://www.nature.com/articles/d41586-020-03108-4>. (Accessed 19 January 2021).

