

Systemic changes within institutions are needed to promote greater gender equity in STEM



As part of a [new report](#) published today to coincide with Ada Lovelace Day, the annual celebration of the achievements of women working in science, technology, engineering, and maths (STEM), **Rhianna Goozee** considers why so many women drop out from science on their way up the academic ladder and what can be done to address the situation. Long-term, holistic change to the systems and culture within STEM fields is required, and initiatives such as the Athena SWAN charter, set up to encourage and recognise commitment to advancing the careers of women in STEM employment in higher education and research, offer universities an important opportunity to assess and reimagine the ways in which they work.

Growing up, we all look to those who have gone before us to inspire our academic, career, and even personal choices. While anyone can be a role model, it often helps when those preceding you have similar attributes or backgrounds to your own. Indeed, some research has suggested that this is particularly true for women, who [benefit more than men from same-sex role models](#).

Of course, this can be problematic. While girls may study GCSE science in almost equal numbers to boys in the UK (often gaining higher grades), the drop off in numbers already begins at A level, and by the time they choose a degree there are clear differences in the subjects taken by boys and girls. When it comes to employment, the majority of people working in what are classed as science, technology, engineering, maths, and medicine ([STEMM](#)) [subjects are men](#).

With this kind of dropout from science by women on the way up the academic and career ladder, it becomes less likely that younger girls and women will have female role models in the sciences that they can look up to and emulate. It is also a major waste of skills and talent. Science, engineering and technology are dynamic fields in which [diverse voices are required for innovation](#). Therefore, this lack of representation of women in STEMM can lead us to ask several questions. Why do so many women drop out on the ascent to the top? And, what can we do about it?

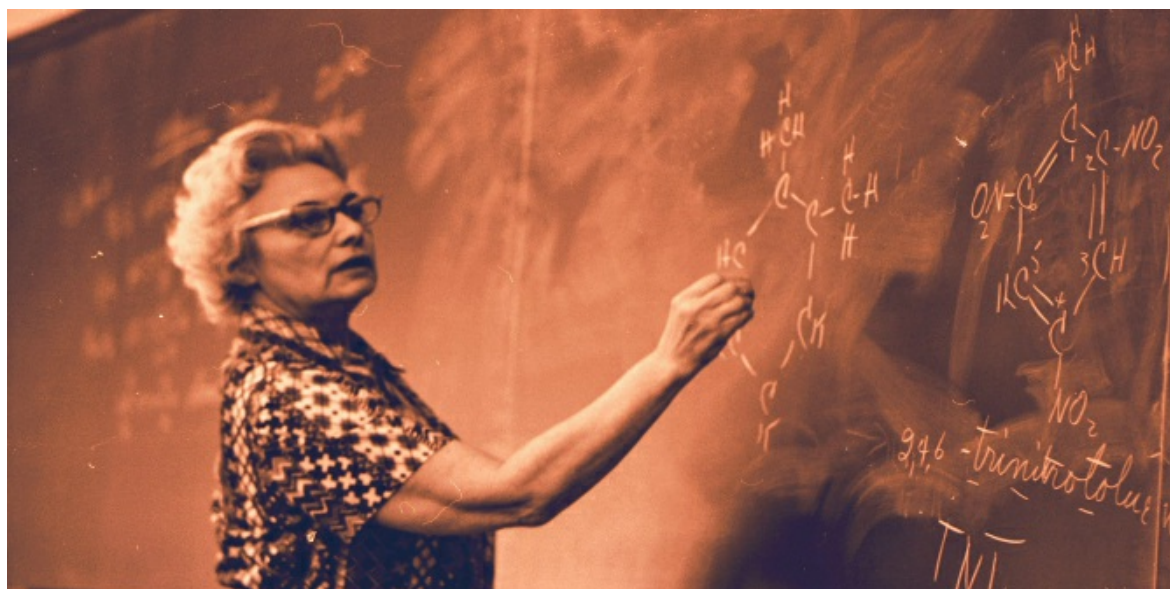


Image credit: [Teaching Chemistry](#) by starmanseries. This work is licensed under a [CC BY 2.0](#) license.

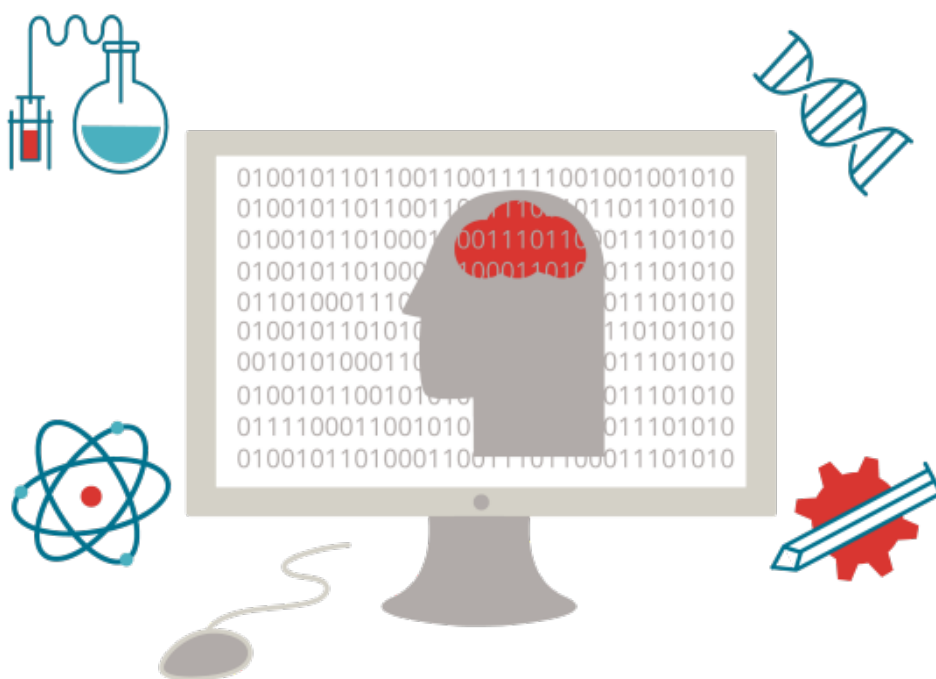
The reasons for these trends are complex and varied, and while some may be institutional affecting all women, others may be individual to a particular person. There are the usual culprits, such as childrearing and caring responsibilities, which are more likely to be undertaken by women who therefore take more career breaks or require more flexible working practices (which may not be available). Male dominated fields may also be uncomfortable places for women to work, faced by blatant or insidious sexism. In STEMM, this has been exemplified by several high profile incidents, including the [comments by Tim Hunt about female scientists in 2015](#) and regular examples of condescending attitudes from [peer reviewers towards papers by female researchers](#).

While direct action may be necessary in response to specific incidents of sexism, there needs to be systemic changes within institutions to promote greater gender equity. Reactive solutions are insufficient if we want to ensure that real change is enabled within our universities. What is needed is long-term, holistic change to the systems and culture within STEMM fields.

One organisation that has attempted to tackle gender inequality and the lack of representation of women in academic STEMM is the [Equality Challenge Unit](#) (ECU), which set up the [Athena SWAN charter](#) in 2005. This scheme aims to “encourage and recognise commitment to advancing the careers of women in STEMM employment in higher education and research”. Based on a Bronze, Silver, and Gold system, the charter awards universities, research institutes, or departments that commit to the principles of the charter and show progress in creating greater gender equality within their institution. Recognition begins with self-assessment of the state of gender equality in an institution and developing an action plan with measurable targets (Bronze). Further progression, with evidence of good practice and impact leads to Silver or Gold awards.

As the ECU told me, a Gold award recognises institutions that are “beacons of achievement in gender equality, and should champion and promote good practice in the wider community”. Currently, there are 669 award holders in the UK, only eight of which hold a Gold award. These have all been awarded to individual departments within a university, and there are no universities as a whole that currently hold a Gold award, although the ECU told me this is something they look forward to in the future.

The Athena SWAN charter attempts to go beyond short-term, single battles in the fight against inequality in STEMM. It offers universities a framework to tackle systemic inequality, informed by data, evidence, and consultation. The impact of the scheme is continuously monitored, through consultation and independent research. A research team at Loughborough University [evaluated the charter and found evidence of sustainable change](#), with reports of improved visibility, increased self-confidence, and better leadership skills among women in departments holding an award. Most interestingly, both male and female academic research staff reported greater career satisfaction and access to career development opportunities.



But what sort of difference can the charter make within an institution? To find out, I spoke to Sabina Khanom, Project Manager for Culture, Diversity and Inclusion at the Institute of Psychiatry, Psychology, and Neuroscience (IoPPN) at King's College London and Professor Ann McNeill and Dr Stephani Hatch, academic leads for Athena SWAN at the IoPPN. The IoPPN signed up to the charter in 2012 and currently holds a Silver award. During their self-assessment process, they realised that they were facing huge dropout of women in the journey from student to professor. For example, while 65 per cent of postdocs were women, this dropped to less than 32 per cent at professor level. They focused their efforts in a number of areas, including representation on committees, career development and support, HR policies and workplace flexibility (including making staff aware of how to access support), and diversity and inclusion training.

The IoPPN Athena SWAN team recognised the importance of visibility in providing role models for those early in their career. One project they implemented was to commission a series of Inspiring Women portraits of the successful female academics and researchers working at the IoPPN. These portraits are proudly displayed on the walls leading to a main lecture theatre, countering the often overwhelming dominance of portraits of men that usually grace the walls of our universities. Khanom and her colleagues told me: "working towards and gaining an Athena Swan Silver award has had substantial impact on the IoPPN culture and has helped to put gender inequities centre stage". Beyond this, there is now a requirement by some funding bodies, such as the National Institute for Health Research, that applicants hold an Athena SWAN Silver award to be eligible. This has provided further motivation for change and shows endorsement of the charter at multiple levels within research and academia.

I also asked the IoPPN team how they have ensured those not directly affected by inequities also contribute to equal practices within their institution (avoiding simply preaching to the choir or adding to the workload of women). They told me that their work increases transparency in committees and promotion, as well as supporting development and recognition of individuals in ways that benefit everyone. Most of their initiatives are not women-only, and it is their aim to create a culture of inclusion.

There's still work to do. The representatives from the IoPPN told me: "we need to stop thinking of women as a homogeneous group". Indeed, there is increasingly greater recognition of the need for intersectional approaches. With the realisation that it is not only women who are underrepresented in academic STEM, Athena SWAN has expanded their sights to other groups that may be underrepresented or face difficulties in STEMM careers. They now consider the intersections between ethnicity and gender, as well as supporting LGBTQ+ individuals.

Naturally, any attempt to change age-old systems, attitudes, and culture within an institution will likely encounter challenges and barriers to change, either from individuals or institution-wide. However, a charter such as Athena SWAN offers universities an important opportunity to assess and reimagine the ways in which they work, from student intake to the promotion and selection of their academic staff. As at the IoPPN, this can be to the benefit of all working within STEMM, allowing greater transparency, more flexible and responsive policies that fit around real lives, and hopefully a diverse workforce contributing to and enhancing the dynamic and cutting edge work conducted at UK universities.

This post is part of a Digital Science report published today to coincide with Ada Lovelace Day, the international celebration day of the achievements of women in science, technology, engineering and maths (STEM).

"[Championing The Success of Women in Science, Technology, Engineering, Maths, and Medicine](#)" is published under a [CC BY 4.0](#) license and can be found on [Figshare](#).

Note: This article gives the views of the author, and not the position of the LSE Impact Blog, nor of the London School of Economics. Please review our [comments policy](#) if you have any concerns on posting a comment below.

About the author

Rhianna Goozee studied Biological Natural Sciences at Cambridge as an undergraduate, and later completed a PhD in Psychosis Research at King's College London. Throughout her studies and research, she has always spent as much time as possible writing about science. Finally realising the obvious – that science communication rather than experimentation was more her bag – she left academia to become an editor and writer.