



Australian Academy of Science

SUBMISSION ON THE

**WOMEN IN STEM
STRATEGY DISCUSSION PAPER**

ISSUED BY THE DEPARTMENT OF INDUSTRY, INNOVATION
AND SCIENCE

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Submission on the Women in STEM Strategy Discussion Paper

27 June, 2018

The Australian Academy of Science (the Academy) welcomes the opportunity to provide input to the Australian Government on the development of a national Women in STEM strategy. This submission has been developed in consultation with members of the Academy's Equity and Diversity Reference Group which advises the Council of the Academy on matters of diversity and inclusion, and with members of the Science in Australia Gender Equity (SAGE) team.

With support of the Australian Government, the Academy is also collaborating with the Australian Academy of Technology and Engineering (ATSE) to develop a Decadal Plan for Women in STEM. An Issues Paper including information on existing STEM-related gender initiatives is in development and will be provided to the Department of Industry, Innovation and Science in mid-August by way of supplementary submission to this consultation process. The Academy also looks forward to drawing on stakeholder responses to the Women in STEM Strategy Discussion Paper (the Discussion Paper) to inform further consultation and development of the Decadal Plan.

Overview

There are numerous barriers to effective engagement, promotion and retention of girls, women and individuals with other gender identities (including transgender, intersex and other non-binary genders) in STEM from school and tertiary education through to academic and professional careers. These barriers are different across organisations and jurisdictions, and they vary significantly across individuals, including in the intersections between gender and ethnicity, culture, physical ability, mental health, sexuality and socio-economic background.

The resulting gender disparity in STEM education and employment outcomes is both inherently inequitable and represents a significant cost to Australia's economic prosperity and national interests; the latter through a reduced pool of talented, STEM-trained women and individuals with other gender identities participating in, applying and creating STEM knowledge and enterprise.

The Academy firmly supports the principle, as outlined in the National Science Statement, that all Australians should be afforded equal opportunities to engage with, participate in and benefit from STEM education and employment.

Many of the changes that are required to realise this vision rest with businesses, educational institutions and with sector and community organisations. However, others fall within the remit of Australian Governments acting as both exemplars to individuals and organisations, and in their leadership, regulatory, policy-making and program delivery functions. At a national level, the Australian Government and sector organisations have invested significantly in recent years in programs and policies to promote engagement and participation of girls and women both in the general workforce, and specifically in STEM.

Among the many current programs and policies in place, highlights include:

- The Workplace Gender Equality Act 2012 and the Workplace Gender Equality Agency. While not specific to STEM, the Agency is internationally recognised and is one of only a small number of mandatory national reporting schemes of its kind.
- The SAGE pilot of the Athena SWAN Charter led by the Academy and ATSE with support of the Australian Government and the Equality Challenge Unit in the UK is attracting attention from countries around the world as an exemplar of best practice in the research sector.
- The Male Champions of Change in STEM program spearheaded by former Australian Sex Discrimination Commissioner Elizabeth Broderick AO is raising awareness about the importance of executive-level support for organisation-wide culture change.

However, the programs that exist in Australia today have in the main been developed independently and without a coordinated approach. As a result, they are widely variable in their delivery mechanisms and scale, and only a few programs have in place formal mechanisms for evaluating efficacy and impacts.

For this reason, the Academy warmly welcomes and supports the Australian Government's commitment to developing a national strategy to coordinate efforts to increase girls' and women's participation in STEM.

Responses to consultation questions

1. Do you think the identified issues affecting women and girls in STEM education and careers are correct? Are there other key issues that have not been identified?

The Discussion Paper provides a good high-level overview of issues affecting women and girls in STEM education and careers.

The Academy recommends further attention in the strategy be given to:

- Issues around gender bias in STEM selection processes (academic and industry) including definitions of merit, recognition of non-work commitments (child and other caring responsibilities, including after-school and holiday care) and recognition of gender differences on expectations of and engagement in community, committee and service responsibilities alongside standard work duties.
- Intersectionality, and the differential impacts of both barriers and supports for girls and women across gender, ethnicity, culture, physical ability, sexuality and socio-economic backgrounds.
- Gender differences in the impact of career uncertainty (short-term, grant-contingent contracts in academia are especially challenging for those with care responsibilities)
- The influence of language on gendered norms and expectations across different professional contexts.
- Cultural disincentives to engagement and involvement of women in STEM, for example, the "alpha-male" culture that exists in some academic and industry STEM contexts, and the competitive processes – particularly in academia – that support a culture of self-promotion.
- The impact of equity programs and initiatives on women already working in the STEM sector (i.e., the additional expectations of female role models and pioneers).
- Differences across STEM disciplines

2. What role can Government best play in addressing the issues of gender inequity in STEM fields?

The Academy supports the many initiatives undertaken by the Australian Government to address gender inequity in STEM.

Additional actions that could be taken by Government to address gender inequity in STEM include:

- Delivering a national campaign to encourage participation and engagement of girls and young women in STEM study. Such a campaign could be modelled on the successful *Girls Make Your Move* campaign led by the Commonwealth Department of Health and could feature and promote female STEM role models across a variety of platforms.
- Working with the Commonwealth Education Council and/or the Australian Education Senior Officials Committee to develop a national approach to improving engagement and involvement of girls in STEM study at school; potentially building on the National STEM School Education Strategy.
- Ensuring gender neutral/appropriately inclusive language where appropriate in all Australian government STEM policy and program documents and communications (for example, parental/carers leave as opposed to maternity leave).
- Introduce early- and mid-career re-entry Fellowships to the programs of the Australian Research Council or National Health and Medical Research Council to support researchers returning to academia from family care responsibilities or illnesses.
- Tying government support for STEM events and activities to a requirement for gender equity in speakers, participants or benefits, as appropriate (for example, a requirement that Government-sponsored STEM conferences adopt the Panel Pledge).
- Considering opportunities at an appropriate time to link other Australian Government STEM funding to demonstrated institutional commitment to gender equity. An international example that could be considered is the 2011 decision of the UK Chief Medical Officer to link future funding under certain schemes of the National Institute for Health Research to department-level Athena SWAN Charter accreditation at Silver level. Any such move in Australia would need careful consideration of costs and benefits, as well as ways in which to minimise regulatory burden and to mitigate unintended disadvantage or other negative consequences that might be experienced by female researchers.
- Seeking a ruling from the Australian Taxation Office to exempt employers from liability for Fringe Benefits Tax (FBT) on support for children or carers travelling with their employees on STEM-related professional activities, where their employee's involvement in the activity could not occur without the child or carer accompanying. Australian FBT law considers support for employees' family members to be a fringe benefit, and many employers pass the costs of such FBT components onto their employees, unless the benefit has been specifically agreed as part of a salary package. This leads to cases where parents – often mothers – who receive a bursary to take children with them to scientific conferences on grounds that they wouldn't otherwise be able to attend are required to pay hundreds of dollars of FBT on the value of the bursary.

3. What role should the science and research community, along with industry, play in addressing these issues?

The STEM community in both academia and industry has an important role to play addressing gender inequity, and the SAGE Initiative is an important pillar of the effort to address gender

inequity in academic STEM careers. The Academy will address these issues in more detail in the Decadal Plan for Women in STEM.

4. Are current initiatives focusing on the right areas? What existing initiatives do you think are particularly effective at encouraging greater participation of women and girls STEM education and careers (including those managed or funded by government, and those led by the science, education and industry sectors)?

The Academy is currently undertaking a mapping exercise of existing initiatives supporting participation of women and girls in STEM in Australia as a basis for the development of the Decadal Plan for Women in STEM. Greater detail will be provided within the Decadal Plan, however there are some preliminary findings relevant to this consultation.

- **There are relatively few programs focused on retaining women in STEM fields from mid-career on.** Desktop research by the Academy has identified far more initiatives aimed at encouraging girls and women to pursue STEM subjects and careers in school, university and at early career levels, with relatively few programs designed to assist women to stay in STEM careers once established. While some disciplinary areas still need to attract women at tertiary educational levels, others may not. The Academy will provide the results of its desktop research on Women in STEM programs as a supplementary submission.
- **Very few programs attempt the cultural change that is needed.** Initiatives such as Male Champions of Change and SAGE are excellent but isolated examples of programs aimed at changing entrenched and prevailing attitudes about women. The Academy suggests that there is a need for more and/or larger programs focused on achieving cultural change.
- **Government funding is an important contributor to equity initiatives.** The Women in STEM and Entrepreneurship grants provided through the National Innovation and Science Initiative have facilitated the creation of many new programs and initiatives involving a range of stakeholders. Many of the successful applicants, particularly in Round 2, were those who may not otherwise have been able to undertake their initiatives and has broadened the scope of participating groups especially beyond the education sector.

5. What gaps exist in current efforts that the Government could address?

The Academy considers that there are potentially significant opportunities to coordinate and align existing initiatives and programs and in doing so to fill major gaps in the sector. The nature of these opportunities will be explored in more detail in the development of the Decadal Plan. Two potential opportunities include:

- Establishing processes to ensure rigorous independent evaluation of Government supported STEM gender equity programs to ensure optimal outcomes and value for public investments. This is necessary to establish a clear understanding of which programs, initiatives and processes are effective. Many initiatives have not been running for long enough to generate any longitudinal data on impact, however there is the opportunity to establish frameworks to ensure such data is captured, which may in turn inform future efforts.
- Prioritising investment in scaling up a limited number of existing programs that are showing demonstrable progress in improving gender equity in key areas of STEM, while maintaining the capacity to support a broad range of initiatives and activities on a smaller scale.

6. Is there anything else the department should consider in developing the Strategy?

The Academy suggests that the Strategy should consider and prioritise specific strategies and interventions to promote engagement and involvement of Aboriginal and Torres Strait Islander girls, women and individuals with other gender identities.

Beyond this, the Department may wish to consider including within its scope individuals with other gender identities (including transgender, intersex and non-binary genders) along with cisgender girls and women.

The Department may also wish to consider intersectionality, and how the issues and potential interventions for girls, women and individuals with different gender identities vary with ethnicity, culture, physical ability, mental health, sexuality and socio-economic background.

To discuss any of the matters raised in this submission in more detail, please contact the Academy's Director, Science Policy Dr Chris Hatherly at chris.hatherly@science.org.au or 02 6201 9458.