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In association with



**NETWORK
GENDER
& STEM**
educational and
occupational pathways
and participation

Evolution of the Network Gender & STEM

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ABSTRACT

The Network Gender & STEM co-Convenors, Professors Helen Watt and Rebecca Lazarides, outline the Network's evolution and key dissemination activities.

KEYWORDS

Network Gender & STEM; biennial conferences; journal special issues

BACKGROUND AND OVERVIEW

From the late 1970s, the underrepresentation of girls and women in STEM fields in many countries has been considered to be problematic, and the subject of research, policies and intervention programs (see OECD, 2006). Unfortunately, it is still the case that fewer girls and women are retained in particular STEM pathways through high school and university, and into professions and working life. Gender differences in STEM participation and associated factors have continued to occupy researchers who are concerned about gender equity. Several researchers, including those represented in this Special Issue, have argued that girls restrict their possible education and career options by opting out of certain STEM pathways in high school or soon after. Opting out of STEM careers has an impact on income potential and social mobility of women and their families. In addition to the impact on gender equity, societies are losing needed STEM workforce talent.

The international Network "[Gender & STEM: Educational and Occupational Pathways and Participation](#)" was formalised in 2010, and since then it has gained approximately 400 members (including researchers, scientists, policyworkers and education practitioners), set up a [website](#) and a dedicated [Facebook group](#),

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published regular newsletters and organised six biennial conferences. There is an urgent need to integrate complementary perspectives that address the question of how pathways into STEM can be facilitated at various points along the course of students' and young adults' educational and occupational development. Additionally, it is important to move beyond results that highlight only single aspects.

The collection of papers in this Special Issue reflects selected presentations given at our fifth Network Conference, 29–30 July 2021 at the University of Sydney [online], deferred a year due to the advent of the COVID-29 global health pandemic. Conference co-Convenors Professor Helen Watt and Honorary Associate Professor Judy Anderson featured the theme "*STEM Education for the New Work Order: Policy, Practice and Partnerships*". Their conference report forms part of the present journal Special Issue.

The Conferences and Special Issues are an initiative of the "Network Gender & STEM: Educational and occupational pathways and participation". Members of the Network share the objectives of:

- (i) gaining more insight into the various connected aspects of career choices and professional careers of girls/women (and boys/men) in the direction of STEM; and
- (ii) detecting new approaches to actually improve the underrepresentation of girls/women in STEM.

PRECEDING CONFERENCES AND RESULTANT JOURNAL SPECIAL ISSUES OF THE NETWORK GENDER & STEM

Our first biennial conference was hosted by the VHTO – Dutch expert centre for gender diversity in STEM – in Haarlem 5–6 September 2012, opened by patron Professor Jacquelynne Eccles, with the theme "*Gendered pathways towards (and away from) STEM fields*". Keynote addresses were also by Professors Jens Möller, Angela Ittel, Lydia Krabbendam and Maartje Raijmakers. This conference marked the beginning of a more coherent way of exchanging information. Collectively we tried to find new ways to implement research findings in policy and activities. The conference resulted in a preceding Special Issue of the *International Journal of Gender Science and Technology* ([Vol. 5, No. 3](#)) in 2013 (available at:

<http://genderandset.open.ac.uk/index.php/genderandset/issue/view/16>), with Guest Editors Helen M. G. Watt, Noortje Jansen and Gertje Joukes.

The second conference was held 3–5 July 2014, in Berlin, Germany, hosted by Professors Rebecca Lazarides and Angela Ittel, entitled: "[Gender and STEM: What schools, families, and workplaces can do?](#)". Keynote addresses were from Professors Jacquelynne Eccles, Lynn Liben, Sheri Berenbaum, Janet Hyde and Petra Stanat. That conference highlighted the roles of schools, families, and workplaces for supporting or constraining girls/women and boys/men in choosing and persisting in STEM, as opposed to other pathways, published across two interrelated Special Issues of the *International Journal of Gender, Science and Technology*, with Guest Editors Rebecca Lazarides and Angela Ittel:

- Part 1: [Vol 7, No. 2 \(2015\)](#)
<http://genderandset.open.ac.uk/index.php/genderandset/issue/view/21>
- Part 2: [Vol 8, No. 1 \(2016\)](#)
<http://genderandset.open.ac.uk/index.php/genderandset/issue/view/23>

The third conference held July 21-23, 2016, was hosted by Professor Pooran Wynarczyk at the Newcastle University Business School, Newcastle upon Tyne, England. The theme was "*Promoting girls' and women's participation in STEM advancement and innovation: Connecting research with global policy and practice*". Keynote speakers were Professors Sue V. Rosser, Patricia Fara and Birgit Spinath; its Special Issue was published with Guest Editors Penelope Watson, Audrey Cooke and John Thornby in the *International Journal of Gender Science and Technology* (Vol. 10, No. 2) in 2018 (available at: <https://genderandset.open.ac.uk/index.php/genderandset/issue/view/30>).

Our fourth Network conference hosted by Professor Jenefer Husman was held July 31 - August 2, 2018 at the University of Oregon, Eugene, OR USA (<https://stem2018.uoregon.edu/>) under the theme, "*Reimagining who does STEM and why through research, education and action*". Empirical research and instructional practice explored how the STEM identities of educators, practitioners and students are formed or constrained by existing structures, and the ways that instruction and educational policy can broaden conceptions of who can and could do STEM research and practice. Keynotes included Professors Helen Watt, Kimberly Scott, Alice Pawley and Kathryn Scantlebury together with a featured symposium, "The social contexts of girls' and women's developing sense of belonging in STEM" organised by Professor Campbell Leaper with contributors Professors Sandi Simpkins, Catherine Riegler-Crumb, Amanda Diekman and Allison Master. This conference Special Issue was published across two interrelated Special Issues of the *International Journal of Gender, Science and Technology*, Guest Edited by Lara Perez-Felkner and Sylvia Beyer:

- Part 1: Vol 11, No. 3 (2019)
<https://genderandset.open.ac.uk/index.php/genderandset/issue/view/34>
- Part 2: Vol 12, No. 1 (2020)
<https://genderandset.open.ac.uk/index.php/genderandset/issue/view/35>

LATEST AND UPCOMING NETWORK CONFERENCES AND FUTURE DIRECTIONS

The latest (sixth) Network conference was recently held in Munich hosted by [Prof. Dr. Bernhard Ertl](#), July 21-23, 2022 at the Universität der Bundeswehr München, Germany and online in hybrid format. The specific theme of "*Sticking with STEM: Who comes, who stays, who goes and why?*" pointed to individual and organisational factors and their interaction in the career development process of the STEM workforce. Individuals' own attraction to STEM contributes to this career development together with organisations such as schools and companies that are the nourishing ground for STEM motivations. Core questions targeted: what characterises individuals coming into STEM, who persists and who leaves STEM, which organisational aspects contribute, and how can diversity at the workplace motivate pursuit and persistence in a STEM career. The stimulating program included Keynotes from Professors Jacquelynne Eccles (Network Patron, UC-Irvine, USA), Ingrid Schoon (UCL, UK), Gail Jones (NC State University, USA) and Ursula Kessels (Free University Berlin, Germany), as well as several distinguished invited addresses. Selected papers are currently in development for a slated next journal special issue from the 2022 conference.

The Network will hold its seventh biennial conference on July 18-20, 2024 at [Heidelberg University](#) in Germany, hosted by [Prof. Dr. Birgit Spinath](#). Further details will be posted as they are developed on the Network website. The

inclusion and integration of cutting-edge research from diverse disciplines where there is relevant scientific and scholarly expertise, alongside input from STEM professionals, policymakers and educators, will collectively break new ground and stimulate fresh lines of study concerning the persistent problem of gender and STEM participation, which will enable us to better understand the current state of knowledge and chart directions for future research.

For further details please refer to the Network website:

www.genderandSTEM.com. We look forward to our ongoing collaboration in this shared endeavour.

REFERENCES

Organisation for Economic Co-operation and Development (2006). *Evolution of student interest in science and technology studies: Policy report*. Paris: OECD Global Science Forum.

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