NETWORK
GENDER & STEM

BIENNIAL CONFERENCE

Conference Program

STEM Education for the New Work Order: Policy, Practice and Partnerships

The University of Sydney, 29–30 July 2021

GENDER & STEM BIENNIAL CONFERENCE

Welcome & Opening 2

Live Virtual Presentation Agenda 6

Invited Sessions & Keynotes 8

Concurrent Session Details 16

Online Discussion Agenda: For Pre-recorded Presentations (zoom) 21

About Network Gender & STEM 31

About VHTO 32

Network Gender & STEM Conference 2022: Munich 21–23 July 33

Welcome to our 5th Biennial Network Gender & STEM Conference!

Deferred one year due to the COVID-19 global pandemic, but finally possible using an online format, including 170 delgates from 20 countries! The aim of our international conference is to gain deeper insight into the various, closely connected aspects of career choices and professional careers of girls/women and boys/men in the broad field of STEM (Science, Technology, Engineering, and Mathematics) and connected specialisms. There is an urgent need to integrate complementary perspectives addressing the question of how pathways into STEM can be facilitated at various points along students' and young adults' educational and occupational development. Additionally it is important to move beyond results which highlight only single aspects. By drawing together international researchers from diverse disciplinary perspectives, alongside policymakers and practitioners, an important aim of this conference is to stimulate new research and findings to reshape future inquiry, by formulating advances in future research, policy and actions concerning the promotion of girls and women (and boys and men) in STEM fields through connecting theoretical, methodological, and empirical issues.

There is large surplus value to interrelate relevant research results to gain a coherent interdisciplinary account concerning gender and STEM from childhood to labor market. The inclusion of cutting-edge research from diverse disciplines where there is relevant scientific and scholarly expertise, their integration with each other, and also with inputs from STEM professionals, policy-makers and educators, will collectively break new ground and stimulate new lines of study on issues that have been largely unexplored concerning the persistent issue of gender and STEM participation, to understand the state of the knowledge and chart directions for future research.

By drawing together international researchers from diverse disciplinary perspectives, alongside policymakers and practitioners, an important aim of this conference is to stimulate new research and findings to reshape future inquiry

The 2021 Network conference brings together researchers, scientists, educators, policymakers, industry representatives and the public to interrogate person-in-context influences towards, or away from, diverse STEM pathways across stages and settings. What are the needs for a STEM workforce of 2030? New, interdisciplinary drivers are transforming work and education policy and practice in response to social and environmental challenges and technological advancement. What is the role of STEM for the new work order, and how can we engage and prepare all young people including girls and women? Included themes encompass:

- individual, family, teacher and peer processes which impact STEM engagement and participation;
- key factors and good practices to promote vs deter STEM engagement and learning within school, university and workplaces;
- positive action measures: STEM initiatives, schemes, networks and organisations;
- developments in STEM and preparing workers for the future;
- the role of higher education institutes, government, industry, public policy and career development policies to enhance women's and men's participation in STEM research, commercialisation and public impact.

The Gender & STEM Conference Organisation Team

Scientific Program Committee

Professor Helen Watt (Chair)
University of Sydney

Associate Professor Judy Anderson
University of Sydney

Professor Janette Bobis
University of Sydney

Professor Kathryn Holmes
Western Sydney University

Dr Tracy Durksen
University of New South Wales

Professor Rebecca Lazarides
University of Potsdam

The Gender & STEM Conference Organisation Team

Local Organising Committee

The University of Sydney
Associate Professor Judy Anderson (Chair)
Professor Helen Watt
Mr Liam Dacosta
Professor Janette Bobis
Dr Bronwyn Reid O'Connor
Ms Maggie Wing Yan Feng
Mr Jake Little (2020)
Dr Debbie Tully (2020)
Ms Lili Toh (2020)

University of New South Wales
Dr Tracy Durksen

Student poster award judges

University of New South Wales
Dr Tracy Durksen (Chair)

The University of Sydney
Dr Bronwyn Reid O'Connor

Monash University
Professor Paul W. Richardson

Student volunteers

The University of Sydney
Ms Yvonne Chow
Ms Maggie Wing Yan Feng
Mr Jake Little
Ms Lili Toh

Welcome to The University of Sydney

Professor Helen Watt
Co-convenor

Helen Watt is initiator of the Network Gender & STEM, Professor of Educational Psychology at The University of Sydney, and Australian Research Council Future Fellow. She previously served at Monash, Michigan, Western Sydney, Sydney, and Macquarie Universities. Helen is a motivation researcher whose projects address declining participation in advanced sciences and mathematics especially by girls/women (www.stepsstudy.org) and the engagement and wellbeing of beginning teachers (www.fitchoice.org), utilising long-term and large-scale survey data across comparative settings. She has published on these topics, edited books and special issues, won research awards and funding and held leadership roles in inter/national organisations.

Associate Professor Judy Anderson
Co-convenor

Judy Anderson recently retired from the University of Sydney after more than 18 years as Coordinator of the Secondary Mathematics program. She was Director of the STEM Teacher Enrichment Academy from 2015–2020, a member of the University Academic Board and held the position of Associate Dean Learning and Teaching for three years. Judy has conducted research into integrated STEM curriculum, STEM teachers' beliefs and practices, problem solving in the school curriculum, and middle years students' motivation and engagement in mathematics. She has worked with the NSW Curriculum Authority developing mathematics curriculum for school students, and held the position of President of the Australian Association of Mathematics Teachers when the first Australian national mathematics curriculum was developed.

Professor Renae Ryan
Academic Director SAGE

Renae Ryan is a Professor of Biochemical Pharmacology at the University of Sydney, Australia. She received her PhD from the University of Sydney in 2004 and completed postdoctoral work with Eric Gouaux at Columbia University and Joseph Mindell at the National Institutes of Health (NINDS). Renae returned to the University of Sydney in 2007 where she leads a research team that investigates the molecular mechanisms of neurotransmitter and amino acid transporters and their role in diseases such as episodic ataxia, chronic pain, and cancer. She has received several prestigious awards and fellowships including a NSW Tall Poppy Award and an NHMRC Career Development Fellowship. Renae is the Academic Director of the Science in Australia Gender Equity (SAGE) Program at the University of Sydney. The aim of this program is to increase the participation and retention of women and minorities in Science, Technology, Engineering, Mathematics and Medicine (STEMM). She is passionate about improving equity, diversity, and inclusion in STEMM to drive excellence in research and higher education.

Live Virtual Presentation Agenda

Thursday 29 July (AEST)

9:00am – 9:30am	**Welcome, Opening & Housekeeping: Judy Anderson, Helen Watt, Renae Ryan** https://uni-sydney.zoom.us/j/85009004256
9:30am – 10:20am	**Keynote: Sue Thomson** https://uni-sydney.zoom.us/j/85009004256
10:20am – 10:50am	**Morning tea break**
10:50am – 11:40am	**Concurrent paper sessions: A & B** **A:** https://uni-sydney.zoom.us/j/86454875018 **B:** https://uni-sydney.zoom.us/j/81008120541
11:45am – 12:35pm	**Keynote: Sarah Chapman** https://uni-sydney.zoom.us/j/85009004256
12:35pm – 1:30pm	**Lunch break**
1:30pm – 2:20pm	**Keynote: Mustafa F. Özbilgin** https://uni-sydney.zoom.us/j/85009004256
2:25pm – 3:15pm	**Concurrent paper sessions: C & D** **C:** https://uni-sydney.zoom.us/j/86454875018 **D:** https://uni-sydney.zoom.us/j/81008120541
3:25pm – 4:10pm	**Concurrent workshop sessions: W1 & W2** **W1:** https://uni-sydney.zoom.us/j/86454875018 **W2:**: https://uni-sydney.zoom.us/j/81008120541
4:10pm – 4:55pm	**Concurrent workshop sessions: W3 & W4** **W3**: https://uni-sydney.zoom.us/j/86454875018 **W4**: https://uni-sydney.zoom.us/j/81008120541

5:30pm – 5:50pm
Keynote Q&A - Mustafa Özbilgin
https://uni-sydney.zoom.us/j/85009004256

5:00pm–6:00pm
Poster Presentations
https://uni-sydney.zoom.us/j/86454875018

Friday 30 July (AEST)

9:00am–9:50am	**Keynote: Jacquelynne S. Eccles** https://uni-sydney.zoom.us/j/85009004256
9:50am–10:30am	**Morning tea break**
10:30am–11:45am	**Concurrent paper sessions: E & F** **E:** https://uni-sydney.zoom.us/j/86454875018 **F:** https://uni-sydney.zoom.us/j/81008120541
11:50am–12:35pm	**Feature panel: Superstars of STEM** https://us02web.zoom.us/j/81795060339
12:35pm–1:30pm	**Lunch break**
1:30pm–2:20pm	**Keynote: Ana Deletic** https://uni-sydney.zoom.us/j/85009004256
2:30pm–3:45pm	**Concurrent paper sessions: G & H** **G:** https://uni-sydney.zoom.us/j/86454875018 **H:** https://uni-sydney.zoom.us/j/81008120541
4:00pm–4:40pm	**Close, Student Poster Award, Conference 2022** https://uni-sydney.zoom.us/j/85009004256

Invited Sessions

9:30am – 10:20am

https://uni-sydney.zoom.us/j/85009004256

DAY 1: Keynote

Professor Sue Thomson

Australian Council for Educational Research (ACER)

STEM participation, achievement & beliefs

While the 20th century saw women stride ahead in their participation in education and the workforce, there are still gender differences apparent in some areas. In particular, females do not enrol in higher mathematics, science or ICT, or move into STEM-based careers to the same extent as males. For example, while the number of people employed as ICT specialists in the EU grew by 36% during the period from 2007 to 2017 (more than 10 times higher than the corresponding increase of 3.2% for total employment), the proportion of women employed in these fields has stagnated. This presentation will address three broad areas that may hold females back from participation in these subjects in school and in entering STEM careers: 1. whether men are better at maths, science, ICT than women; 2. perceived ability – self-confidence and self-efficacy; and 3. cultural beliefs.

Presenter biography: Dr Sue Thomson is the Deputy CEO (Research) for the Australian Council for Educational Research (ACER). Her research is in the area of analysis and reporting of large-scale and longitudinal data sets, with a focus on gender and socioeconomic equity. She provides senior leadership at ACER for about 80 research staff in a range of educational research areas from early childhood to adult education and all points in between. In her 21 years at ACER Sue has been involved in a wide variety of projects, including as co-investigator on the ARC funded Australian Child Wellbeing Project, and a Chief Investigator for the Science of Learning Research Centre, a Special Initiative of the Australian Research Council. Currently she is the National Project Manager for Australia for the OECD's Programme for International Student Assessment (PISA) and the National Research Coordinator for the IEA Trends in International Mathematics and Science Study (TIMSS) and the IEA Progress in International reading Literacy (PIRLS), and the International Project Manager for the OECD's Study on Social and Emotional Skills. She has published widely on findings from these studies, including translational pieces on the outcomes of education and equity issues in the provision of education in Australia.

Sue.Thomson@acer.org

11:45am – 12:35pm

https://uni-sydney.zoom.us/j/85009004256

DAY 1:
Keynote

Sarah Chapman

Townsville State High School, Australia

The power of partnerships to promote engagement of young people in STEM, international and local perspectives

Sarah Chapman was awarded a Barbara Cail STEM International Fellowship in 2016 to research and identify effective and innovative ways for promoting participation of young people, particularly girls, in STEM fields during their education and subsequent careers. In 2017, the report Engaging the Future of STEM, was published. The research included visits to schools, businesses, universities, government departments and communities all over the world, to find out what other OECD countries were doing that was having an impact on the rate of engagement in STEM education. This presentation will focus on best practice for engaging and sustaining young people in STEM, including:

- understanding an effective STEM ecosystem and the importance of each stakeholder
- embedding key strategies to engage girls in STEM
- exploring the key role partnerships play in empowering students in STEM

Presenter biography: Sarah Chapman is the Head of Department of Science at Townsville State High School and is in her sixteenth year of teaching. Sarah commits extensive portions of her own time lifting the profile of science education, by working with students, teachers and the broader community. She is the Founder of the Townsville STEM Hub. Sarah is an Executive Committee member of Women in Science Australia, and Director on the Board of Australian Girls ESTEAMME Collaborative, a subsidiary of Global Girls Collaborative, bringing together organisations that are committed to information and encouraging girls in Entrepreneurship, Science, Technology, Engineering, Arts, Mathematics and Maker Education.

chapmansar@hotmail.com

1:30pm – 2:20pm

https://uni-sydney.zoom.us/j/85009004256

DAY 1: Keynote

Professor Mustafa F. Özbilgin

Brunel Business School, UK

Do atypical leaders legitimise or delegitimise (STEM) workforce diversity?

Atypical leaders are those coming from disenfranchised, underrepresented, excluded, and nontraditional sociodemographic backgrounds (Samdanis & Özbilgin, 2019). Women, minority ethnic, working class, LGBTIQ+, young, and disabled leaders are mostly considered atypical in STEM leadership. Because of their often pioneering presence in leadership positions, atypical leaders, such as women leaders in STEM, are often heralded as signs of progress towards wider equality and fair representation. However, change in leadership demography does not automatically translate into leadership support for equality. I explore the curious role atypical leaders play to demonstrate how atypicality presents a dual structure in terms of leadership support for diversity and inclusion at work, and a gradual change in their politics of identity as they join the STEM elite of non-diverse and prototypical backgrounds.

Presenter biography: Mustafa F. Özbilgin is Professor of Organisational Behaviour at Brunel Business School, London. He is also Co-Chaire Management et Diversité at Université Paris Dauphine, as well as Visiting Professor of Management at Koç University in Istanbul. His research focuses on equality, diversity and inclusion at work from comparative and relational perspectives. His empirically grounded field studies in the UK and internationally are supported by international and national grants from the ESRC, EU, CIPD, ACE, ACCA, British Academy among others. His work has a focus on changing policy and practice in equality and diversity at work. He is an engaged scholar, driven by values of workplace democracy, equality for all, and humanisation of work. He is serving as the editor-in-chief of the European Management Review (EMR), the official journal of the European Academy of Management (EURAM) since 2014. He has authored and edited 18 books and published over 200 papers in academic journals such as the Academy of Management Review, Academy of Management Learning and Education, British Journal of Management, Journal of Vocational Behavior, Human Resource Management, Human Relations, Gender Work and Organization, and Social Science and Medicine among others. He has done research, consultancy and training at a large number of organisations including the House of Commons, Barclays Bank, The Bank West Australia, Halifax, the CIPD, the National Health Service, the NHS Employers, Tesco, the Probation Services, The UK Fire Service, the Economist Research Unit, the OECD, the WRVS, DTI, Rio Tinto, PwC, Linklaters and ACCA. He served as the editor-in-chief of the British Journal of Management, the official journal of the British Academy of Management, for four years from 2010 to 2014, and holds multiple editorial roles.

mustafa.ozbilgin@brunel.ac.uk

5:30pm – 5:50pm Q&A Session https://uni-sydney.zoom.us/j/85009004256

9:00am – 9:50am

https://uni-sydney.zoom.us/j/85009004256

DAY 2: Keynote

Professor Jacquelynne S. Eccles
University of California—Irvine, USA

So what have we learned!

Professor Eccles will recap the highlights of what she and her colleagues have learned about both the Eccles et al. Expectancy-Value Theory of Achievement-Related Choices, and Engagement and Gendered STEM Educational and Occupational Choices, over the last 40 years. She will:

1. Critique the continuing stereotypical research narratives about female versus male participation in "STEM", including what should be included in the category of STEM and the extent to which that very definition of STEM shapes the stereotypes we hold about how gendered STEM professions are.
2. Provide an overview of the shift from EEVT to SEVT (the Eccles et al. Expectancy-Value Theory, to the Situated Expectancy-Value Theory) as it relates to STEM in particular.
3. Suggest important next steps for both research and policy-making related to gender and STEM.

Presenter biography: Jacquelynne S. Eccles is Distinguished Professor of Education at UC-Irvine and formerly the McKeachie/Pintrich Distinguished University Professor of Psychology and Education at the University of Michigan, and Senior Research Scientist and Director of the Gender and Achievement Research Program at the Institute for Social Research at the University of Michigan. Over the past 30 years, Professor Eccles has conducted research on topics including gender-role socialisation, teacher expectancies, classroom influences on student motivation, and social development in the family and school context. One of the leading developmental scientists of her generation, she has made seminal contributions to the study of achievement-related decisions and development. Most notably, her expectancy-value theory of motivation and her concept of stage-environment have served as perhaps the most dominant models of achievement during the school years, contributing to extensive research and reform efforts to improve the nature of secondary school transitions. Professor Eccles also has been a major figure in the study of after-school activities, authoring a seminal National Research Council report that outlined the most effective ways for such activities to meet the developmental needs of adolescents.

jseccles@uci.edu

1:30pm – 2:20pm

https://uni-sydney.zoom.us/j/85009004256

DAY 2: Keynote

Professor Ana Deletic

Queensland University of Technology, Australia

Women in engineering in academia: Are we there yet?

The participation of women in engineering practice is one of the lowest of all the professions. This is mirrored by the low participation of women in undergraduate and postgraduate engineering studies, but it is particularly evident in the teaching and research staff of engineering faculties at universities across Australia. This talk will outline the key issues that result in low rates for women lecturers and researchers, discuss why we are still facing this problem, and propose some actions that can help us to overcome barriers to greater participation.

Presenter biography: Professor Ana Deletic is Executive Dean of the Faculty of Engineering at Queensland University of Technology, Brisbane Queensland (QUT). Until February 2021 Ana was the Pro Vice-Chancellor (Research) at the University of New South Wales, Sydney (UNSW). Prior to that, until mid-2017 Ana was Associate Dean of Research Engineering Faculty and the Founding Director of Monash Infrastructure research institute at Monash University. Ana is also an urban water researcher, focusing on stormwater management and socio-technical modelling. She led the development of a number of green nature-based water treatment systems which are now widely adopted in Australia and abroad. Ana is an Honorary Fellow of Engineers Australia, a Fellow of Australian Academy of Technological Sciences and Engineering (ATSE), and Editor of Water Research. In 2012, the Victorian State Government awarded Ana the Victoria Prize for Science and Innovation (Physical Sciences) for her lifelong achievements in stormwater research.

ana.deletic@qut.edu.au

11:50am – 12:35pm

https://us02web.zoom.us/j/81795060339

DAY 2: Feature Panel

Feature panel:

A beginner's guide to STEM Superstardom

What does it take to be a Superstar of STEM? Hear from some of Science & Technology Australia's Superstars of STEM as they explore the challenges, opportunities and triumphs of building a growing public profile as a woman in STEM. In a Q&A-style discussion moderated by the program's creator, the Superstars will talk about why deliberate visibility is important, and share advice for aspiring stars, employers and allies, on how to work meaningfully towards equal representation of women and men on the STEM stage.

Chair & Moderator

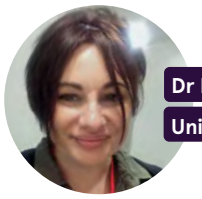
Ms Kylie Walker

CEO, Australian Academy of Technology & Engineering

Kylie is the Chief Executive Officer of the Australian Academy of Technology and Engineering, where she works with expert Fellows to lead crucial national conversations and strategy towards a thriving, healthy and connected Australia supported by technology. She specialises in connecting technologists, engineers and scientists with governments, business, media and society – skills built over many years in senior federal communication and advocacy roles in the science, technology and health sectors. As the immediate past CEO of Science & Technology Australia, Kylie led campaigns to increase investment in Australian research and development, and created the acclaimed Superstars of STEM program, championing Australian women in science, technology, engineering and mathematics. Kylie is also a visiting Fellow at the Australian National Centre for the Public Awareness of Science. She was Chair of the Australian National Commission for UNESCO and in 2019, she was named in the 100 Women of Influence list by the Australian Financial Review, for her work on improving equity, diversity and inclusion in STEM.

kylie.walker@atse.org.au | www.linkedin.com/in/kylieawalker | @Kylie_Walker1

Panelists



Dr Kalinda Griffiths
University of NSW

Kalinda is a Yawuru woman of Broome, born and living in Darwin, Australia. She is an early career Scientia Lecturer at the Centre for Big Data Research in Health at UNSW. Kalinda also holds honorary fellowships at Menzies School of Health Research as well as the University of Melbourne and is Deputy Editor of the Health Promotion Journal of Australia. As an epidemiologist, her work addresses complex health disparities in populations through the use of existing data. Kalinda's research focuses on Indigenous Data Governance and the measurement of health disparities with a particular interest in improving health services and disease outcomes for Aboriginal and Torres Strait Islander people, as well as building health research capabilities in regional and remote Australia. She is on the steering committee for the Indigenous Data Network in Australia and holds a number of national and international committee roles, including in the Cancer Council Australia Health Services Research Group and the International Group for Indigenous Health Measurement. Kalinda is the recipient of a number of awards. Notably, she was awarded the 'Northern Territory Young Australian of the Year' in 2011 and more recently, the 2019 Lowitja Institutes 'Emerging Researcher Award'. She was also a 2019-2021 Science and Technology Australia 'Superstar of STEM' and is currently the Australian Health Promotion Associations 'Thinker in Residence'.

kalinda.griffiths@unsw.edu.au | @Klick22

Dr Melanie Macgregor
University of South Australia

Dr Melanie Macgregor is an ARC Future Fellow at the University of South Australia's Future Industries Institute. She obtained a Master of Chemical Engineering in France before moving to Australia and completing a PhD in Minerals and Material Engineering in 2013. She works on industry-driven translational research in close partnership with end users, clinicians, industry and academics from complimentary disciplines. Her research focus is the interaction between (bio) materials and their environment, primarily to address challenges faced by the biomedical and energy industries. Melanie has, for instance, worked on developing medical devices for non-invasive cancer diagnostic. The quality of her research and innovation have been recognised through several awards, including the 2016 Engineers Australia John A. Brodie Medal for achievement in Chemical Engineering, the 2017 Winnovation awards in the Engineering category, and a 2018 SA Young Tall Poppy Science Award. In 2019, she joined the SuperStar of STEM program hosted by Science Technology Australia. As a mum of two, Melanie is eager to promote STEM careers to the younger generations and devoted to help reform workplaces to better support primary carers. Her community engagement extends through participation to public events such as Science Alive! or For the love of Science, media interview, and the organisation lab tour and on-site visits for schools.

Melanie.MacGregor@unisa.edu.au | @mumdoesscience

Dr Madeline Mitchell

RMIT

Dr Madeline Mitchell is a plant scientist interested in the economic, social and environmental sustainability of agriculture. She works at RMIT University and the Food Agility Cooperative Research Centre where she manages a research program to better understand the value of natural capital in farming systems. The program aims to support farmers to manage their natural capital (e.g. plants and animals, soil and water) for sustainability, profitability and climate resilience. Madeline has a PhD from the University of Cambridge where she contributed to an international collaboration to increase crop yields by reengineering photosynthesis. She joined CSIRO in 2015 as a postdoctoral fellow and helped develop novel vegetable oil crops, which are now in field trials. She then led a synthetic biology project to enhance cotton fibre properties to make renewable and biodegradable alternatives to artificial fibres. Madeline enjoys mentoring and connecting with the next generation of scientists. She has been a tutor and demonstrator in settings ranging from university practical classes and residential colleges to a homework club for disadvantaged students. She was part of the second cohort of Homeward Bound, a global leadership initiative for women in STEM, and in 2019 she received an ACT Young Tall Poppy Award.

madeline.mitchell@rmit.edu.au | @MaddiePlantSci
www.linkedin.com/in/dr-madeline-mitchell-6b326983
www.foodagility.com/projects/natural-capital-constellation-for-climate-resilient-farm-systems

Dr Katie Sizeland

ANSTO

Dr Katie Sizeland is a Strategic Projects Leader at the Australian Nuclear Science and Technology Organisation, ANSTO. She is passionate about science, technology, engineering and mathematics (STEM) focused on innovative solutions to industry problems and ensuring that STEM can have a real impact, creating a better future for everyone and the world we live in. Katie has a strong track record developing the interface between research and industry with 8 years' experience across science, innovation, and strategic program management roles with a focus on medical and agricultural industries. Katie holds a PhD in Engineering and a Bachelor of Chemical Engineering and Nanotechnology (Honours) both from Massey University in New Zealand. Katie is passionate about science communication and inspiring the next generation in STEM. She has coached and mentored secondary school students and undergraduate students through the Australian Science Innovations program 'Curious Minds' and the AINSE 'Women in STEM and Entrepreneurship (WISE)' program. Katie was a 2019-2020 Science and Technology Australia 'Superstar of STEM' and a 2020 NSW Young Tall Poppy. In 2019, Katie was selected for the fourth Homeward Bound cohort, a global leadership program for women in STEMM, and she received an Australian Academy of Science Lindau Nobel Laureate Meeting Fellowship (a Science and Industry Endowment Fund).

katheris@ansto.gov.au | www.ansto.gov.au | @katie_sizeland

Concurrent Session Details (AEST)

29 July
Details for concurrent paper sessions (AEST)

DAY 1: A + B

	https://uni-sydney.zoom.us/j/86454875018	https://uni-sydney.zoom.us/j/81008120541
	A: STEM expectancy and value influences on educational and career choices *Chair: Watt, H.*	**B:** Principals and middle leaders as STEM education leaders *Chair: Hunter, J.*
10:50am – 11:15am	*Guo, J.; Hu, X.; Pekrun, R.; Marsh, H.* Cross-cultural and gender differences in predicting career aspirations in different STEM-related fields: An expectancy-value perspective	*Beswick, K.; Dacosta, L.; Watt, H.; Fraser, S.; Geiger, V.* Principals' gendered STEM background, attitudes, self-efficacy for STEM leadership and prioritisation of STEM investment in their schools
11:15am – 11:40am	*Toh, L.; Watt, H. M. G.* Women's preparation for a mathematical STEM career: How do expectancies and values predict attainment of a math. STEM tertiary degree?	*Hunter, J. L.* Promoting female middle leaders: Primary schools as sites for education leadership in STEM education

DAY 1: C + D

	https://uni-sydney.zoom.us/j/86454875018	https://uni-sydney.zoom.us/j/81008120541
	C: Mentoring women's development through the career pipeline in diverse STEM fields *Chair: Wozniak, T.*	**D:** Outreach and development programs to influence teachers' and students' gendered STEM beliefs *Chair: Durksen, T.*
2:25pm – 2:50pm	*Bautista, L.; Cheng, E.* Lucy Mentoring Program: Redesign and impact evaluation	*Durksen, T. L.; Gajda, C.* A science museum-based study of teachers' professional development and beliefs
2:50pm – 3:15pm	*Wozniak, T.M.; Miller, E.; Williams, K.; Pickering, A.* Championing women working in health across regional and rural Australia – A new dual-mentorship model	*Giugni, A.; Angelini, M.* In-curriculum primary and high school STEM outreach

30 July
Details for concurrent paper sessions (AEST)

DAY 2:
E + F

	https://uni-sydney.zoom.us/j/86454875018	https://uni-sydney.zoom.us/j/81008120541
	E: Gendered STEM career trajectories in academia *Chair: Richardson, P.*	**F**: Antecedents and consequences of students' STEM motivations: Influences of teachers and teaching, and consequences for achievement *Chair: Holmes, K.*
10:30am – 10:55am	*Christian, K.; Johnstone, C.; Larkins, J.; Wright, W.; Doran, M.* Survey of Australian STEMM early career researchers raises concerns about research culture	*Little, J.* Connecting mathematics with science contexts in junior secondary school: Impact on expectancy-values, teaching and learning of mathematics
10:55am – 11:20am	*Richardson, P.W.; Heffernan, A.; Westcott, S.; Watt, H.M.G.* Hanging by a thread: Precarious futures for early career women academics in STEM	*Berger, N.; Mackenzie, E.; Holmes, K.* Positive attitudes towards mathematics and science are mutually beneficial for student achievement: Latent profile analysis of TIMSS 2015
11:20am – 11:45am	*Christian, K.; Johnstone, C.; Larkins, J.; Wright, W.; Doran, M.* Job satisfaction for ECRs in STEMM – is it different for men and women?	*Abraham, J.; Skillen, M.; Gough, L.* "Does gender matter when teaching STEM?": Australian primary teachers speak

30 July
Details for concurrent paper sessions (AEST)

DAY 2: G + H

	https://uni-sydney.zoom.us/j/86454875018	https://uni-sydney.zoom.us/j/81008120541
	G: Gender and mathematics interest: Its measurement, development, and influences *Chair: Watson, P.*	**H**: Gender and mathematics anxiety, stereotypes, beliefs and identity development *Chair: Holmes, K.*
2:30pm – 2:55pm	*Lee, K. J.* Measurement and stability of affective and cognitive interest components among Australian adolescent girls and boys	*Mackenzie, E.; Berger, N.; Holmes, K.* The Adolescent STEM Anxiety Scale: Construction, validation, and gender differences
2:55pm – 3:20pm	*Tuohilampi, L.* Accessing mathematics through interest: conceptualising mathematics tasks aligning with the four-phase model of interest development	*Scholes, L.; Stahl, G.; McDonald, S.* 'I'm good at science but I don't want to be a scientist': Australian primary school students' stereotypes of science and scientists
3:20pm – 3:45pm	*Watson, P.* Discussion - pre-recorded symposium: Interest as key variable for STEM career choices in formative final school years and tertiary education European paper presentations were pre-recorded: please listen beforehand at https://www.youtube.com/playlist?list=PLAkWe-yltlpxQJn4zCzH213sQRc_PBVsG (authors will join Q&A)	*Prieto, E.; Sincock, K.; Blackmore, K.; Berretta, R.; Wanless, E.; Johnson, S.; Giacomini, A.; Todd, J.* Experiences of STEM outreach: What shapes girls' identities?

29 July
Details for concurrent workshop sessions (AEST)

DAY 1: Work-shops

	https://uni-sydney.zoom.us/j/86454875018	https://uni-sydney.zoom.us/j/81008120541
3:25pm – 4:10pm	Workshop 1 *Gannon, S.; Scantlebury, K.; Herman, C.* Writing, reviewing and publishing in peer-reviewed journals	Workshop 2 *Beekhuyzen, J.; O'Brien, N.; Catchpole, H.; Cheng, E.* Designing engaging STEM programs and resources for primary school-aged girls
4:10pm – 4:55pm	Workshop 3 *Schedlich, S.* Engaging with the media for research impact	Workshop 4 *Carvalho, A.* What about the M in STEM?

29 July
Poster details (AEST)

Chair: Bronwyn Reid O'Connor

DAY 1: Posters

https://uni-sydney.zoom.us/j/86454875018

https://www.youtube.com/playlist?list=PLAkWe-yltlpxVxAj-uW5bK2P9xP2EWZeH

5:00pm – 6:00pm

In-person poster presenters

3. *Cheng, Bautista, Angelini, Giugni, Katuwandeniya:* COVID-19 resilience: Agility and adaptation of gender equity programs to broaden reach
4. *Chow, McMaster:* Conceptual change of same-sex dyads interviewed while predicting then measuring displacement by a sequence of different materials
5. *Katuwandeniya, Soleimanimatin, Hayati:* Connecting a community of postgraduate women in Engineering and IT
7. *Masri, Tytler, van Driel, Miller:* The role of careers advice in pursuing STEM by girls
8. Simone: A conceptualisation of women in STEM's employability during career break transitions

Pre-recorded poster presentations

1. *Booth, Mammes:* Germany's continuing problem of record low numbers of women working in STEM
2. *Brezynski, Long, Allen, Wood:* The BioCORE Scholars Program, a cohort model, improves academic attainment of female minority students in biology
6. *Lee, Eccles:* Leveraging YouTube to increase women's physics identity and motivation
9. *Spiteri:* Understanding young girls' STEM experiences, attitudes & aspirations
10. *Stephenson, Fleer, Fragkiadaki:* A cultural-historical perspective on increasing girls' STEM engagement in early childhood: Conditions created by the Conceptual PlayWorld model
11. *Barnard, R.P.; Watts, M.:* Are teachers' gender beliefs detectable in their students' attitudes to science/ scientists?

30 July
Poster details (AEST)

DAY 2: Posters

https://uni-sydney.zoom.us/j/86036595044

10:00am – 10:30am

Zoom Q&A discussion with Poster Presenters (please listen beforehand): https://www.youtube.com/playlist?list=PLAkWe-yltlpxVxAj-uW5bK2P9xP2EWZeH

Online Discussion Agenda

For pre-recorded presentations (zoom)

The Online Discussion Schedule enables questions and discussions with thematically grouped pre-recorded presentations with the authors. Not, for the presentation itself. Times are provided per session in each of AEST (e.g., Sydney), CEST (e.g., Berlin) and CDT (e.g., Iowa, Illinois).

A Timezone converter is available here for you to check other timezone conversions: https://www.timeanddate.com/worldclock/meeting.html

Because there are no times that accommodate AEST, CEST and CDT simultaneously, we have worked to pair major timezone overlaps.

Please listen to relevant pre-recorded presentations of interest, **BEFORE** attending these discussion zoom-rooms, to optimise the quality of discussions with authors.

All pre-recorded presentations are accessible at our private YouTube channel where recordings will be further updated to add 'live presentations' after the event.

Keynotes:
https://www.youtube.com/playlist?list=PLAkWe-yltlpyieV-09nUZHlZddFN6Yxgm

Symposia:
https://www.youtube.com/playlist?list=PLAkWe-yltlpxQJn4zCzH213sQRc_PBVsG

Papers:
https://www.youtube.com/playlist?list=PLAkWe-yltlpzvrb6tvmAJHMYG7arHn9xK

Posters:
https://www.youtube.com/playlist?list=PLAkWe-yltlpxVxAj-uW5bK2P9xP2EWZeH

Group, theme & Zoom link	Timezone & time			Authors & title (authors underlined will be in attendance)
Pre-conference online Networking Event: PhD & Early Career researchers **All welcome – to either or both time-options!**				All PhD and Early Career researchers are welcome to join this online networking event with colleagues from all over the world. Participants will join breakout rooms based on their shared interests (substantive or methodological) gathered in advance at this google doc: https://docs.google.com/document/d/1r5EOvE0M8UrjKm_kDwkPFezc64gDo5q6oAm2p0pu7Ts/edit?usp=sharing **Please complete the form by Tuesday 27 July (before 5pm AEST).** Outcomes will include this distributed document and potential planned conference symposia.
Time-option #1 https://uni-sydney.zoom.us/j/84930963096	**AEST Weds.** 5:00pm – 5:30pm	**CEST Weds.** 9:00am – 9:30am	**CDT Weds.** 3:00am – 3:30am	Hosted by Maggie Feng and Lili Toh (U Syd) Emails: mfen5873@uni.sydney.edu.au ; ltoh7188@uni.sydney.edu.au
Time-option #2 https://uni-potsdam.zoom.us/j/8459455233	**AEST Thurs.** 1:00am – 1:45am	**CEST Weds.** 5:00pm – 5:45pm	**CDT Weds.** 11:00am – 11:45am	Hosted by Wendy Symes (U Potsdam) and Max Skorodinsky (U Oregon) Emails: symes@uni-potsdam.de ; makseem@uoregon.edu

Group, theme & Zoom link	Timezone & time			Authors & title (authors underlined will be in attendance)
1) Symposium. Motivational processes in the STEM pipeline **https://uni-sydney.zoom.us/j/84380802326** *Chair: Judith Harackiewicz* jmharack@wisc.edu Followed by Guo et al.; Toh & Watt in-person presentations, 25 mins. each @ https://uni-sydney.zoom.us/j/86454875018	**AEST Thurs.** 10:20am – 10:50am	**CEST Thurs.** 2:20am – 2:50am	**CDT Weds.** 7:20pm – 7:50pm	**USA / Australia:** • *Berger, N.; Mackenzie, E.; Holmes, K.*: Positive attitudes towards mathematics and science are mutually beneficial for student achievement: A latent profile analysis of TIMSS 2015 (Australia) • *Guo, J.; Hu, X.; Pekrun, R.; Marsh, H.W.*: Cross-cultural and gender differences in predicting career aspirations in different STEM-related fields: An expectancy-value perspective (Australia) • *Harackiewicz, J.; Rosenzweig, E.*: Should I stay or should I go?: Studying changes in university students' biomedical career plans (USA) • *Zhang, S.; Graham, M.C.; Nguyen, H.; Martindale, K.; Bermudez, B.; Lampkins, S.; Husman, J.*: Gender differences in belonging in college physics (USA)
2) STEM careers & trajectories **https://uni-sydney.zoom.us/j/87200117358** *Chair: Peta White* peta.white@deakin.edu.au	**AEST Thurs.** 4:00pm – 4:30pm	**CEST Thurs.** 8:00am – 8:30am	**CDT Thurs.** 1:00am – 1:30am	**Australia / Japan:** • *Dockery, A.M.; Bawa, S.*: Career prospects for women in STEM • *Hatisaru, V.*: An investigation of school students' STEM career interest • *Hatisaru, V.*: A teacher of STEM knows: "A lot!". School principal perceptions of STEM capability for teachers • *Shinohara, S.; Fujimoto, T.*: Gender differences in work-family conflict and work-family enrichment for STEM researchers and engineers in Japan • *Tytler, R.; White, P.J.*: Disciplines and interdisciplinarity in a competence-based STEM curriculum • *White, P.J.; Tytler, R.*: 100 jobs of the future

Group, theme & Zoom link	Timezone & time			Authors & title (authors underlined will be in attendance)
3) STEM engagement & contexts **https://uni-sydney.zoom.us/j/87412179210** *Chair: Melissa Wolfe* melissa.wolfe@monash.ed	**AEST Thurs.** 4:30pm – 5:00pm	**CEST Thurs.** 8:30am – 9:00am	**CDT Thurs.** 1:30am – 2:00am	**Australia / Hong Kong:** • *Cooke, A.*: Increasing engagement with mathematics by seeing the mathematics in very young preverbal children's action • *McLure, F.I.; Fraser, B.J.; Koul, R.B.*: Gendered perceptions of classroom emotional climate and attitudes in integrated STEM classes in government and non-government schools • *Wolfe, M.J.*: Feeling-thinking-making gendered and raced school spaces (The Materials Engineering classroom and basketball court) • *Wong, M.; Chan, B.*: The impact of parents' education level, attitude and self-efficacy on young boys' and young girls' STEM learning (HK)
4) Influences on attitude in STEM **https://uni-sydney.zoom.us/j/84114754311** *Chair: Karen Skilling* karen.skilling@education.ox.ac.uk	**AEST Thurs.** 5:00pm – 5:30pm	**CEST Thurs.** 9:00am – 9:30am	**CDT Thurs.** 2:00am – 2:30am	**UK / Sweden / Germany / Belgium:** • *Giese, L.; Tellhed, U.; Björklund, F.*: Empirical evaluation of an educational STEM intervention for high-school students (Sweden) • *Lesperance, K.; Holzberger, D.*: Reducing gender differences in motivational-affective student factors through interventions: A meta-analysis (Germany) • *Skilling, K.*: Investigating the influence of secondary student STEM experiences on subject choices and HE pathways (UK) • *Veldman, J.; Van Laar, C.; Thoman, D.; Van Soom, C.*: Belonging comparisons between STEM domains help understand high school girls' variability in STEM interest (Belgium)
KEYNOTE. Mustafa Özbilgin **https://uni-sydney.zoom.us/j/85009004256** *Chair: Janette Bobis* janette.bobis@sydney.edu.au	**AEST Thurs.** 5:30pm – 5:50pm	**CEST Thurs.** 9:30am – 9:50am	**CDT Thurs.** 2:30am – 2:50am	**UK (Keynote prerecording at:** https://www.youtube.com/playlist?list=PLAkWe-yltlpyieV-09nUZHlZddFN6Yxgm) • *Özbilgin*: Do atypical leaders legitimise or delegitimise (STEM) workforce diversity?

Group, theme & Zoom link	Timezone & time			Authors & title (authors underlined will be in attendance)
5) STEM pathways & gender equity **https://uni-sydney.zoom.us/j/84894045699** *Chair: Rebecca Lazarides* rebecca.lazarides@uni-potsdam.de	**AEST Fri.** 1:00am – 1:30am	**CEST Thurs.** 5:00pm – 5:30pm	**CDT Thurs.** 10:00am – 10:30am	**Germany / Belgium / The Netherlands / Austria:** • *Höhne, E.; Zander, L.*: "Why I don't belong here…": Sources of male and female students' belonging uncertainty in the computer sciences (Germany) • *Kavatsyuk, O.; Ioannou, M.*; Avraamidou, L.: Gender inclusive education in the mathematics classroom (The Netherlands) • *Lazarides, R.; Dicke, A.-L.; Rubach, C.; Oppermann, E.; Eccles, J.S.*: Gendered motivational heterogeneity across domains: What role does it play for educational choices in early adulthood? (Germany) • *Niemann, T.; Zander, L.*: Facets of social and academic integration among male and female first year STEM students and prospective STEM teachers (Germany) • *Zauchner, S.A.*: Parents and their essential role as gatekeepers in STEM (Austria)
6) STEM careers & research **https://uni-sydney.zoom.us/j/86182731452** *Chair: Bernhard Ertl* bernhard.ertl@unibw.de	**AEST Fri,** 1:30am – 2:00am	**CEST Thurs.** 5:30pm – 6:00pm	**CDT Thurs.** 10:30am – 11:00am	**Germany / UK / Czech Republic:** • *Ertl, B.; Hartmann, F.G.; Wunderlich, A.:* Stability of vocational interests & aspirations during university study (Germany) • *Fárová, N.; Hladík, R.:* Gender composition of the publication output and funding awards by disciplines (Czech) • *Förtsch, S.M.*: "Studying, and then?" Recognize perspectives and plan career! A quantitative analysis of career plans and aspirations of computer scientists (Germany) • *Gagnon, J.; Reggiani, M.*: What does it mean to be seen?: Increasing visibility and addressing inequalities in STEM (UK) • *Gewinner, I.; Esser, M.*: Gender ideology and STEM career choices in higher education students (Germany)

Group, theme & Zoom link	Timezone & time			Authors & title (authors underlined will be in attendance)
7) Forming & supporting STEM identities **https://uni-sydney.zoom.us/j/85884693901** *Chair: Christine Starr* cstarr1@uci.edu	**AEST Fri.** 2:00am – 2:30am	**CEST Thurs.** 6:00pm – 6:30pm	**CDT Thurs.** 11:00am – 11:30am	**USA:** • *DeRosia, N.; Bousselot, T.; Kim, M.; Anderson, R.; Madison, E.; Husman, J.*: Pathways and intersections: STEM futures and identity based motivation (USA) • *Hodges, S.D.*: Perceptions of belonging, effort, and feedback: Gender differences in undergraduates considering graduate studies in STEM (USA) • *Johnson, S.; Ivey, A.; Snyder, J.; Skorodinsky, M.; Goode, J.*: Representation, reciprocity, and computer science education: Perspectives of women teachers of color in the United States (USA)w • *Skorodinsky, M.A.*: More than binary, more than normative, more than quantities: Diverse gender identities in computer science education research (USA) • *Starr, C.R.; Leaper, C.*: Double identity threat vs. double identity boost: How gender and race stereotypes relate to STEM identity among a diverse sample of undergraduates (USA)
8) Symposium: Helping or hindering girls' STEM motivational beliefs: Students' STEM achievement, gender stereotypes, and teacher support across five large U.S. datasets **https://uni-sydney.zoom.us/j/82512814777** *Chair: Christine Starr* cstarr1@uci.edu	**AEST Fri.** 2:30am – 3:00am	**CEST Thurs.** 6:30pm – 7:00pm	**CDT Thurs.** 11:30am – 12:00pm	**USA:** • *Dicke, A.L.; Rubach, C.; Lee, G.; Safavian, N.; Gao, Y.; Starr, C.R.; Eccles, J.S.; Simpkins, S.*: Perceived teacher support and its associations with math motivational beliefs: Exploring gender differences using three large U.S. datasets • *Rubach, C.; Gao, Y.; Starr, C.R.; Safavian, N.; Dicke, A.L.; Eccles, J.S.; Simpkins, S.*: High school students' math motivational beliefs: An examination of the associations and gender differences across five large U.S. datasets • *Starr, C.R.; Gao, Y.; Dicke, A.L.; Rubach, C.; Lee, G.; Safavian, N.; Eccles, J.S.; Simpkins, S.*: Parent and youth gender stereotypes about math: Findings from four U.S. datasets from 1984 to 2011 • *Safavian, N.; Dicke, A.L.; Gao, Y.; Starr, C.R.; Eccles, J.S.*: Hispanic, African American, and White youths' STEM-related career aspirations: Exploring gender differences using three large U.S. Datasets

Group, theme & Zoom link	Timezone & time			Authors & title (authors underlined will be in attendance)
9) Posters https://uni-sydney.zoom.us/j/86036595044 *Chair: Bronwyn Reid O'Connor*	**AEST Fri.** 10:00am – 10:30am	**CEST Fri.** 2:00am – 2:30am	**CDT Thu.** 7:00pm – 7:30pm	**Australia / USA:** Pre-recorded poster presenters: • *Brezynski, E.M.V.; Long, E.S.; Allen, M.J.; Wood, D.W.*: The BioCORE Scholars Program, a cohort model, improves academic attainment of female minority students in Biology (USA) • *Lee, H.; Eccles, J.S.*: Leveraging YouTube to increase women's physics identity and motivation (USA) • *Spiteri, T.*: Understanding young girls' STEM experiences, attitudes and aspirations (Australia) • *Stephenson, T.; Fleer, M.; Fragkiadaki, G.*: A cultural-historical perspective on increasing girls' STEM engagement in early childhood: Conditions created by the Conceptual PlayWorld model (Australia) Day 1 poster presenters: • *Cheng, E.; Bautista, L.; Angelini, M.; Giugni, A.; Katuwandeniya, K.*: COVID-19 resilience: Agility and adaptation of gender equity programs to broaden reach • *Chow, Y.; McMaster, H.*: Conceptual change of same-sex dyads interviewed while predicting then measuring displacement by a sequence of different materials • *Katuwandeniya, K.; Soleimanimatin, S.; Hayati, H.*: Connecting a community of postgraduate women in Engineering and IT • *Masri, A.; Tytler, R.; van Driel, J.; Miller, V.*: The role of careers advice in pursuing STEM by girls • *Simone, J.*: A conceptualisation of women in STEM's employability during career break transitions

Group, theme & Zoom link	Timezone & time			Authors & title (authors underlined will be in attendance)
10) Symposium. Interest as key variable for STEM career choices in formative final school years and tertiary education **https://uni-sydney.zoom.us/j/86454875018** (within live-virtual session G) *Chair: Manuela Paechter* manuela.paechter@uni-graz.at *Discussion Moderator: Penelope Watson* p.watson@auckland.ac.nz	**AEST Fri.** 3:20pm – 3:45pm	**CEST Fri.** 7:20am – 7:45am	**CDT Fri.** 12:20am – 12:45am	**Austria / Germany / NZ:** • *Bergmann, J.*: Interest as key variable for STEM career choices in formative final school years and tertiary education • *Ertl, B.; Hartmann, F.G.; Mouton, D.*: To what degree do STEM pre-service teachers' interests fit their teaching aspiration? • *Luttenberger, S.; Paechter, M.*: Interest, self-concept, and family support as key-variables for women's motivation in STEM fields with different proportions of women • *Malkoc, S.*: STEM aspirations among young women in secondary education: The relevance of vocational interests • *Watson, P.*: Discussant
11) Symposium. The power of women in STEM networks to create change **https://uni-sydney.zoom.us/j/86096962538** *Chair: Gail Mattson* gail.mattson@inwes.org	**AEST Fri.** 11:00pm – 11:30pm	**CEST Fri.** 3:00pm – 3:30pm	**CDT Fri.** 8:00am – 8:30am	**UK / South Korea / Mongolia:** • *Peers, S.M.C.*: The power of networks and collaborations for gender and STEM (UK) • *Baatar, B.*: The impact of women in STEM networks on education policy (Mongolia) • *Singh, S.*: Networking and collaboration to enhance women's participation in STEM education and employment (India) • *Park, H.Y.; Kim, J.S.*: Measuring perceptions of gender in science and engineering (South Korea) • *Kim, J.S.*: Discussant (South Korea)

Group, theme & Zoom link	Timezone & time			Authors & title (authors underlined will be in attendance)
12) Gender & STEM learning environments **https://uni-sydney.zoom.us/j/85736384346** *Chair: Juan C. Castro-Alonso* jccastro@ciae.uchile.cl	**AEST Sat.** 1:00am – 1:30am	**CEST Fri.** 5:00pm – 5:30pm	**CDT Fri.** 10:00am – 10:30am	**USA / Canada / Chile:** • *Castro-Alonso, J.C.; Adesope, O.O.; Wong, M.; Ayres, P.; Paas, F.*: Meta-analyses of gender imbalance in visualizations about STEM and non-STEM tasks (Chile) • *Goode, J.; Peterson, K.; Malyn-Smith, J.; Chapman, G.*: Gender inclusive instructional design strategies: How to engage and retain all genders in computer science professional development for teachers (USA) • *Shaukat, K.; Puvirajah, A.*: Examining the experiences of South Asian undergraduate women in STEM education (Canada) • *Sherwood, K.; Kelly, A.M.; Bugallo, M.*: Generative leadership development in a peer mentoring program for undergraduate women in STEM (USA) • *Villanueva, I.*: Using intersectionality-informed approaches to explore the experiences and perspectives of women graduate students and faculty in STEM (USA) • *Villanueva, I.*; Sellers, V.; Youmans, K.: Understanding gendered transformative and self-defeating resistance resulting from situational hidden curriculum in engineering (USA)
13) Engaging children & youth in STEM learning **https://uni-sydney.zoom.us/j/82521574537** *Chair: Tess Shirefley* thaifley@ucsc.edu	**AEST Sat.** 1:30am – 2:00am	**CEST Fri.** 5:30pm – 6:00pm	**CDT Fri.** 10:30am – 11:00am	**USA / Canada / UK:** • *Dickson, M.; McMinn, M.; Cairns, D.*: "Feeling like a scientist": Girls' and boys' rationale for selection of tools in the science classroom (UK) • *Koh, K.; Chapman, O.; Liu, S.M.*: Designing authentic assessments to promote girls' self-efficacy and interest in STEM subjects (Canada) • *Leammukda, F.; Boyd, B.; Roehrig, G.*: Fostering girls' STEM interest through STEM integration at a developing STEM middle school (USA) • *Shirefley, T.; Callanan, M.; Jipson, J.; Castaneda, C.*: Investigating gender variations in how European-American and Latinx parents talk about science with their preschool age children during a book-reading task (USA) • *Shirefley, T.; Leaper, C.; Blood, T.; Cornell-Rath, K.; Gohari, D.; Upton, R.*: Investigating gender differences in parent-child conversations about life and physical science topics (USA)

Group, theme & Zoom link	Timezone & time			Authors & title (authors underlined will be in attendance)
14) STEM education & applications **https://uni-sydney.zoom.us/j/84302613569** *Chair: Jolien DeMeester* jolien.demeester@kuleuven.be	**AEST Sat.** 2:00am – 2:30am	**CEST Fri.** 6:00pm – 6:30pm	**CDT Fri.** 11:00am – 11:30am	**Germany / Belgium / Norway:** • *De Meester, J.; Deprez, H.; Van Loon, K.*: Design and implementation of an online course for interdisciplinary STEM teacher learning (Belgium) • *Ladewig, A.*: Is co-education in science the reason for female underrepresentation in physics? (Germany) • *Schmitz, S.*: Gendering STEM digital. Potentials and challenges for promoting technoscientific literacy within STEM disciplines (Germany) • *Steffensen, L.*: Students discussing climate change (Norway)

NETWORK
GENDER
& STEM
educational and
occupational pathways
and participation

About Network Gender & STEM

The conferences and special issues are an initiative of the Network Gender & STEM: Educational and occupational pathways and participation. The Network conferences have marked the beginning of a more coherent way of exchanging information, as collectively we work to find new ways to implement research findings in both policy and practice.

Members of the Network share the objectives of:

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

Selected proceedings of previous conferences are published in themed special issues of the 'International Journal of Gender, Science and Technology' (open access):

2018 conference (Oregon):
'Re-imagining who does STEM'

Part 1: Vol. 11, No. 3 (2019)

Part 2: Vol. 12, No. 1 (2020)

2016 conference (Newcastle UK):
'Girls' and women's participation in STEM: Past lessons and possible futures'

Vol. 10, No. 2 (2018)

2014 conference (Berlin):
'Gender and STEM: What schools, families, and workplaces can do?'

Part 1: Vol. 7, No. 2 (2015)

Part 2: Vol. 8, No. 1 (2016)

2012 conference (Amsterdam):
'Gendered pathways towards (and away from) STEM fields'

Vol. 5, No. 3 (2013)

A special issue is similarly planned from the 2021 Conference, for paper presentations. If you would like to be considered, please send a 150–200 word abstract by **30 November 2021**, to: tracy.durksen@unsw.edu.au (lead guest Editor).

NATIONAL EXPERT ORGANISATION ON GIRLS/WOMEN AND SCIENCE/TECHNOLOGY

About VHTO

Since the early 1980s, VHTO, expert centre gender diversity in STEM, has been building up knowledge about the participation of girls and women in the world of Science, Technology, Engineering and Mathematics (STEM), and experience in deploying this knowledge in areas such as education.

Traditionally, the Netherlands has lagged far behind other countries in terms of the percentage of girls/women opting for STEM profiles, study programmes and professions. According to the Eurostat statistics, the average number of female students in higher STEM education and VET is around 20%. The underrepresentation of girls and women cannot be attributed to differences in performance in STEM related school subjects or skills: girls perform equally well as boys, and this is also the case in the Netherlands. In international research a number of factors leading to the under-representation of girls/women in STEM have been recognised, including girls' lower self-concepts, non-stimulating learning environments, lack of female role models, stereotyped associations in society about girls/women and STEM, and career & family preferences of girls and women.

Although research has made clear that girls are no less talented than boys in STEM, girls and women are still underrepresented in STEM fields in higher education and the labour market. This is a loss for girls/women as well as society. Girls/women have equal rights to boys/men to develop their STEM talents, and society would benefit from fully exploiting all available talent. Increasing opportunities for women in these fields is an important step towards realising greater economic success and equality for women across the board.

Therefore, VHTO aims to increase the participation of women and girls in STEM. With our projects and methodology, VHTO contributes to breaking (implicit) stereotypes concerning gender & STEM, and to increasing the growth mindset and self-confidence of girls and young women regarding STEM subjects. VHTO uses research-based interventions that have proven successful in previous years, and developed them into a strong combination of activities for girls and women throughout the entire chain of education (from primary to higher and vocational education), training programmes for teachers and career advisers, and consultations with school/education managers. At present, VHTO is the leading expert organisation on gender & STEM in the Netherlands.

Links:

www.vhto.nl/english

www.vhto.nl/english/research-facts-figures

www.vhto.nl/english/activities-and-projects

Staff members:

www.vhto.nl/over-vhto/medewerkers

Contact details:

Email: vhto@vhto.nl | www.vhto.nl

Network Gender & STEM Conference 2022

Sticking with STEM: Who comes, who stays, who goes, and why?

Thurs 21 July – Sat 23 July 2022: Universität der Bundeswehr München, Germany

Proposals Due: Friday 14 January 2022 | E: genderandstem@unibw.de | www.genderandstem2022.org

The 2022 Network conference will bring together researchers, educators, policy makers, industry representatives, and the public to interrogate personal and contextual influences towards, or away from, diverse STEM pathways across stages and settings. The specific theme of Sticking with STEM: Who comes, who stays, who goes, and why? points to individual and organizational factors as well as their interaction in the career development process of the STEM workforce. Both perspectives of the individual with a basic interest in STEM, and organizations such as schools and companies that are the nourishing ground for STEM motivations, contribute to the individual's career development. What characterizes individuals coming into STEM, who persists and who leaves STEM, and which organizational aspects contribute? How can diversity at the workplace motivate pursuit and persistence in a STEM career?

Themes will include

- individual, family, teacher and peer processes which impact STEM engagement and participation;
- key factors and good practices to promote vs. deter STEM engagement and learning within school, university and workplaces;
- positive action measures: STEM initiatives, schemes, networks and organizations;
- developments in STEM & preparing workers for the future;
- organizational structures facilitating diversity;
- best practices to provide a nourishing ground for diversity in organizations;
- the role of higher education institutes, government, industry, public policy and career development policies to enhance women's and men's participation in STEM research, commercialization and public impact.

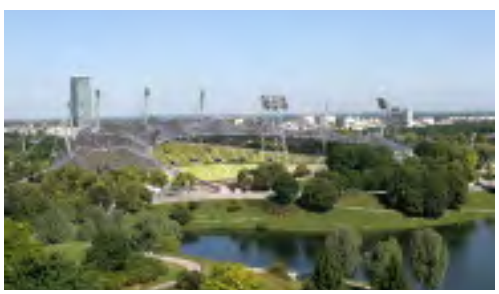
Keynotes

- Prof. Jacquelynne S. Eccles, University of California, Irvine, USA
- Prof. Gail Jones, NC State University, USA
- Prof. Dr. Ursula Kessels, FU Berlin, Germany
- Prof. Ingrid Schoon, University College London, UK

Host

- Prof. Dr. Bernhard Ertl, Universität der Bundeswehr München, Germany

ITIS



GENDER & STEM BIENNIAL CONFERENCE

NETWORK GENDER & STEM
educational and occupational pathways and participation

VhTo
NATIONAL EXPERT ORGANISATION ON GIRLS/WOMEN AND SCIENCE/TECHNOLOGY

THE UNIVERSITY OF SYDNEY