

Technische
Universität
Berlin



Conference Programme 3. – 5. July 2014



Gender and STEM Conference 2014
Technische Universität Berlin, Germany

2nd Gender & STEM Network Conference





What schools, families, and workplaces can do?

This conference aims to present empirical research and educational policies concerning the question how individual and social aspects impact individuals' motivation, attitudes, performance, educational and career choices and pathways into STEM fields. Complementary perspectives will address how individual choices and pathways can be facilitated and supported along male and female students' and young adults' educational and occupational development.

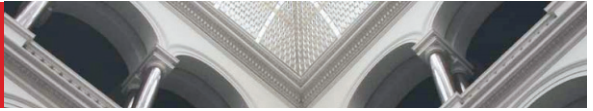
Another important aim of this conference is to further extend the interdisciplinary collaboration of educational and psychological researchers, to move beyond research and results that highlight single aspects in a complex model concerning the topic of gender and STEM.

We highlight the roles of schools, families and workplaces for supporting or constraining girls/women and boys/men choice for and persistence in STEM, careers versus other occupational pathways. Empirical, theoretical and policy research will be presented, concerning how socializes and institutions impact individuals' choices, attitudes and behaviors; implications for educational and vocational training and practice will be discussed.

The conference is organized in collaboration by Rebecca Lazarides and Angela Ittel (Department of Educational Psychology, Technische Universität Berlin, Germany) with Helen M. G. Watt (Monash University, Australia).

Selected proceedings of the first Gender & STEM Network Conference were published in a special issue of IJGST 2013 (<http://genderandset.open.ac.uk/index.php/genderandset/issue/view/16>), available for at-cost purchase of 10 Euros at this conference.

Gender and STEM Conference 2014 was funded by DFG (German Research Foundation). We thank also our conference partners Noortje Jansen and Gertje Joukes of VHTO (www.vhto.nl).



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

Jacquelynne Eccles is a Distinguished Professor of Education at the University of California Irvine School of Education, USA. She has served as chair of the Advisory Committee for the Social, Behavioral and Economic Directorate at the NSF and the MacArthur Foundation on Successful Pathways through Middle Childhood. She is past president of the Society for Research on Adolescence (SRA) and was a member of the MacArthur Foundation Network on Successful Adolescent Development. Until July 2013 she held a position as McKeachie-Pintrich Distinguished University

Professor of Psychology and Education at the University of Michigan. Professor Eccles is the patron of the Network Gender & STEM.

Title of Opening Speech: Gendered socialization of STEM interests in the family



Professor Lynn S. Liben, Pennsylvania State University, USA

Lynn S. Liben is Distinguished Professor of Psychology in the Department of Psychology at Pennsylvania State University, USA, where she also holds faculty appointments in Human Development and Education. Her work focuses on identifying and explaining developmental, individual, and gender differences in spatial skills and how these skills link to STEM learning in both formal and informal educational settings. A second research focus is on the development of gender and racial stereotypes, including ways in which such stereotypes may affect children's

educational and occupational choices. Dr. Liben currently serves as President of the Society for Research in Child Development.

Title of Keynote: Gender, spatial thinking, & STEM in formal & informal educational contexts



Professor Janet S. Hyde, University of Wisconsin-Madison, USA

Janet S. Hyde is Helen Thompson Woolley Professor of Psychology and Women's Studies at the University of Wisconsin, USA. She is perhaps best known for her meta-analyses of research on gender differences, including gender differences in mathematics performance (Science, 2008; Psychological Bulletin, 2010). Based on these and other meta-analyses, she proposed the Gender Similarities Hypothesis in 2005. Current work focuses on interventions to increase students' science course-taking.

Since 1990 she has been co-director of the Wisconsin Study of Families and Work, www.wsfw.us. As a fellow of the American Association for the Advancement of Science, she has won numerous awards, including the Heritage Award from the Society for the Psychology of Women for her career contributions to research on the psychology of gender.

Title of Keynote: Gender, math, and science participation: The role of parents



Professor Petra Stanat, Institute for Educational Quality Improvement, Germany

Prof. Dr. Petra Stanat is Director of the Institute for Educational Quality Improvement (Institut zur Qualitätsentwicklung im Bildungswesen, IQB) at Humboldt University Berlin, Germany. After her studies at the Free University Berlin, she obtained her doctorate from the University of Massachusetts at Amherst, USA. Petra Stanat received her habilitation from the Free University Berlin and accepted her first position as professor

at the University at Erlangen-Nürnberg in 2005. In 2007, she returned to the Free University Berlin as a professor of empirical educational sciences and moved on to her current position at the IQB in 2012. In her research she explores, among other things, the educational situation of children and adolescents from immigrant and low SES families.

Title of Keynote: The role of gender and migration background for school success: Evidence from large-scale assessment studies

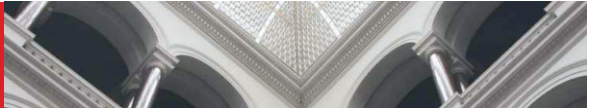


Professor Sheri A. Berenbaum, Pennsylvania State University, USA

Sheri Berenbaum is a Professor of Psychology and Pediatrics and a member of the Neuroscience Institute at the Pennsylvania State University. Her research focuses on the development of individual differences in cognition and social behavior from a neuroscience perspective. She is particularly interested in the effects of prenatal sex hormones on the development of sex-typed behaviors, and how these effects are mediated directly by the brain and indirectly through the social

environment. She applies her research to understanding sex differences in STEM, and to providing optimal treatment of children with disorders of sex development. Her work has been supported by the National Institutes of Health, and she has provided service to several scientific organizations.

Title of Keynote: Beyond pink & blue: How sex hormones shape gender development and what that means for STEM



3:30 – 4:30 pm

H 1036

Registration/Badge pick up

4:30 – 5:30 pm

Lichthof

Welcoming and reception

1. Christian Thomsen (President of Technische Universität Berlin, Germany)
2. Angela Ittel (Vice president for international affairs and teacher training, Technische Universität Berlin, Germany)
3. Helen M. G. Watt (Monash University, Australia)
4. Rebecca Lazarides (Technische Universität Berlin, Germany)

5:30 – 6:30 pm

Lichthof

Opening Talk

Jacquelynne S. Eccles (University of California, Irvine, USA)

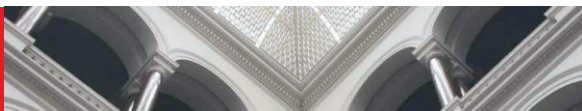
Gendered socialization of STEM interests in the family

Chair: Angela Ittel

6:30 pm

H 1036

Welcoming/snacks



9:00 – 10:00am

Make a Pitch and Workshops

MAKE A PITCH

H 2035

Chair: Helen M. G. Watt (Monash University, Australia)

- 1) Women in transition sciences for a new environmental and social sustainability
Alessandra Bonoli & Elena Luppi (both from University of Bologna, Italy)
- 2) Boys don't cry? Stereotyping and compartmentalization of learning experiences in childhood
Hannah Fitsch & Hanna Meißner; Comment: Susann Fegter (all from Technische Universität Berlin, Germany)
- 3) Gender Attitudes at German Technical Universities
Donna J. Drucker & Biljana Stefanovska (both from Technische Universität Darmstadt, Germany)
- 4) Demonstrating the relevance of science & math through abstract, integrated STEM: a new didactic approach Secondary School
Jolien De Meester (University of Leuven, Belgium), Jan Thielemans (Heilig Graf, Belgium), Mieke De Cock (University of Leuven, Belgium), Greet Langie (University of Leuven, Belgium), Wim Dehaene (University of Leuven, Belgium)

WORKSHOP 1

H 2036

Niedersachsen Technikum: Criteria for successful STEM projects – for young women with university entrance qualification

Judith Bräuer (Niedersachsen-Technikum, University of applied sciences Osnabrück, Germany)

Helen Koepke (Niedersachsen-Technikum, University of Osnabrück, Germany)

WORKSHOP 2

H 2037

Gender sensitive teaching and learning of mathematics

Anina Mischau (Freie Universität Berlin, Germany)

Katrin Bohnet (Freie Universität Berlin, Germany)

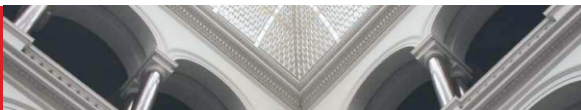
WORKSHOP 3

H 3005

Educational policies on STEM

Noortje Jansen (VHTO Dutch national expert organisation on girls/women and science/technology, Netherlands)

Gertje Joukes (VHTO Dutch national expert organisation on girls/women and science/technology, Netherlands)



10:00 – 10:20 am

H 1036

Morning Tea

10:20 – 11:20 am

Lichthof

Keynote 1: Lynn S. Liben (Pennsylvania State University, USA)

Gender, spatial thinking, & STEM in formal & informational educational contexts

Chair: Julia Dietrich

11:25 – 12:55 pm

Paper Sessions & Roundtables

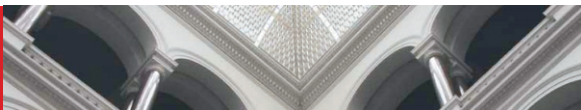
PAPER SESSION 1

H 2035

Society, teaching and gendered motivation and participation

Chair: Kathryn Scantlebury

- 1) Image on women engineers and scientists *Chia-Li Wu (Tamkang University, Taiwan)*
- 2) Female graduate students' perceptions of careers in STEM academia
Carlie D. Trott (Colorado State University, USA), Silvia Sara Canetto (Colorado State University, USA)
- 3) Brief social-belonging intervention reduces the gender achievement gap in science
Lauren J. Aguilar, Gregory M. Walton, Patricia Burchat & Chaya Nanavati (all from Stanford University, USA)
- 4) Teach the teachers: Gender competence in mathematics teacher training
Anina Mischau (Freie Universität Berlin, Germany)
- 5) Critiquing science, thinking gender in science teacher education
Kristina Andersson (Uppsala University, Sweden), Anita Hussénus (Uppsala University, Sweden), Kathryn Scantlebury (University of Delaware, USA), Annica Gullberg (University of Gävle, Sweden), Anna Danielsson (Uppsala University, Sweden)



PAPER SESSION 2

H 2036

Role of parents and peers for student's motivation and career aspiration

Chair: Silke Luttenberger

- 1) Impacts on the career choices of female STEM students *Bernhard Ertl (Universität der Bundeswehr, Munich, Germany), Silke Luttenberger (University of Graz, Austria)*
- 2) Parents' math-gender stereotypes and children's perception of math ability at the age of 6: the role of children's appraisal of parents' evaluations *Carlo Tomasetto (University of Bologna, Italy), Alberto Mirisola (University of Perugia, Italy), Silvia Galdi (University of Padova, Italy), Mara Cadinu (University of Padova, Italy)*
- 3) Pipped at the post: Knowledge gaps and expected low parental IT competence ratings affect young women's awakening interest in professional careers in information science *Angela Schorr (University of Siegen, Germany)*
- 4) Characterizing the STEM peer climate: Positives, negatives, and implications for self-expectancies *Rachael D. Robnett (University of Nevada, USA)*
- 5) Adolescents' profiles of congruence between actual career aspirations and vocational interests, peers' career aspirations, and parents' vocations
Silke Luttenberger (University of Graz, Austria), Manuela Paechter (University of Graz, Austria), Ia Aptarashvili (Tbilisi State University, Georgia)

ROUNDTABLE SESSION 1

H 2037

Vocational & study orientation

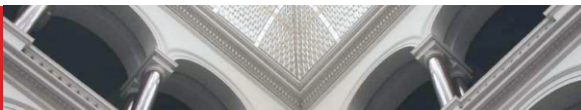
(45 mins each)

RT 1: "Go MINT" – Putting successful ideas into practice

Christina Haaf (Competence Centre for Technology-Diversity-Equal Chances, Bielefeld, Germany)

RT 2: Pro-STEM-arguments for girls: How efficient are career-related arguments?

Lore Funk (Competence Centre for Technology-Diversity-Equal Chances, Bielefeld, Germany), Wenka Wentzel (Competence Centre for Technology-Diversity-Equal Chances, Bielefeld, Germany)



PAPER SESSION 3

H 3005

Motivation and interest

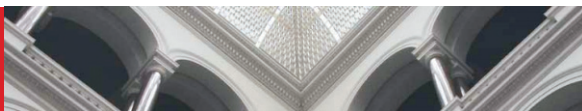
Chair: Hanna Gaspard

- 1) Do interests matter? Occupational interests and gender-specific choices of field of study
Dörthe Gatermann (Leibniz Universität Hannover, Germany), Anna Erika Häggglund (Leibniz Universität Hannover, Germany), Corinna Lautenbach (Humboldt-Universität Berlin, Germany)
- 2) Who chooses to teach science, ICT, and mathematics and why: An Australian study of future female and male teachers
Paul W. Richardson (Monash University, Australia), Helen M. G. Watt (Monash University, Australia), James Pietsch (St. Luke's Grammar School, Australia)
- 3) Cross-lagged associations between high school students' math-related career aspirations/ expectations, self-concept of ability and value, and long-term implications for having a math-related occupation
Fani Lauermann (University of Michigan, USA), Yi-Miau Tsai (University of Michigan, USA), Alanna Epstein (University of Michigan, USA), Jacquelynne S. Eccles (University of California, Irvine, USA)
- 4) Video as a means to assess gender specific activities and experiences while working on physics tasks
Kathrin Steckenmesser-Sander (Justus Liebig University Giessen, Germany), Claudia v. Aufschnaiter (Justus Liebig University Giessen, Germany)
- 5) Promoting girls' and boys' value beliefs for mathematics with a relevance intervention in the classroom
Hanna Gaspard, Anna-Lena Dicke, Barbara Flunger, Brigitte Schreier, Isabelle Häfner, Ulrich Trautwein, Benjamin Nagengast (all from University of Tübingen, Germany)

12:55 – 01:40 pm

H 1036

Lunch



01:40 – 03:10 pm

Symposia, Roundtables & Paper Sessions

SYMPOSIUM 1

H 2035

GenderDynamics – Ethnographic studies of different institutional settings in physics

Organizer: Petra Lucht (Technische Universität Berlin, Germany)

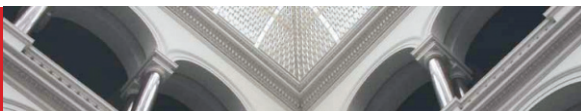
Chair: Sabine Hark (Technische Universität Berlin, Germany)

Discussant: Helene Götschel (Technische Universität Darmstadt, Germany)

- 1) Entanglements of gender cultures and workplace cultures in science as a key for gender equality: The case of the physical sciences *Martina Erlemann (Freie Universität Berlin, Germany)*
- 2) Factors influencing the careers of young scientists during the period of their PhD. An ethnographic case study *Grit Petschick (Technische Universität Berlin, Germany)*
- 3) Heterogeneous gendering. An ethnographic approach to gender & physics in times of the “knowledge economy” *Mike Laufenberg (Technische Universität Berlin, Germany)*
- 4) De-Gendering a physics laboratory *Petra Lucht (Technische Universität Berlin, Germany)*

In the past decades women’s participation in STEM-fields has increased, but the ‘glass ceiling’ still hinders the professional advancement of women in all scientific disciplines and professions. In this symposium we will present the ethnographic research project “genderDynamics” that aims to understand how women are both in- and excluded in respectively from physics in the face of current structural transformations of academia. We will present analyses of the three sub-projects of the investigation, each focusing on a different institutional setting. The analyses focus on gender dynamics with regard to interactions between professional cultures, different types of research organizations and policy-governed changes within science. Which patterns can be observed and to what extent do they affect gender relations? Approaches to implement equal opportunities in higher education and in scientific workplaces will be suggested.

The project “genderDynamics. Professional Cultures and Research Organizations in Physics” is a collaboration between the Freie Universität Berlin (Elvira Scheich, Department of Physics) and Technische Universität Berlin (Nina Baur, Institute of Sociology; Sabine Hark, Center for Interdisciplinary Women’s and Gender Studies). It is funded by the German Ministry for Education and Research (BMBF) and the European Social Fund (ESF) (No. 01FP1235-38).



ROUNDTABLE SESSION 2 H 2036

Practical experiences and assessment: Facilitating STEM careers in school

(45 mins. each)

RT 1: Re-Imagining assessment in schooling for STEM in the 21st century: The premises and challenges of technology enhanced assessment

Stefania Savva (University of Leicester, UK)

RT 2: School profiling in order to offer practical experience for girls and young women encouraging them in direction of substantiated STEM career choices

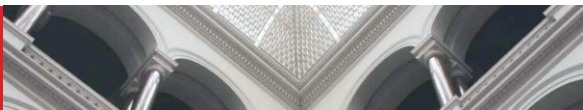
Klaudia Bergmann (Max-Eyth school, Kassel, Germany), Dorothea Kröll (Kassel, Germany)

PAPER SESSION 4 H 2037

University and STEM pipeline

Chair: Katharina Ebner

- 1) Motivation of women to choose the monoeducative computer science and business administration degree program *Stefanie Nordmann (University of Applied Sciences Berlin, Germany)*
- 2) Segregation reproduction in Dutch computer science education *Anne Bartilla (Dutch University of Applied Sciences, Utrecht, The Netherlands)*
- 3) Gender specific aspirations and determinants of career development in computer science *Anja Gärtig-Daugs (University of Bamberg, Germany), Silvia Förtsch (University of Bamberg, Germany), Ute Schmid (University of Bamberg, Germany)*
- 4) Academic self-concept and student achievement in STEM programs: gender and transition into higher education *Carolien Van Soom, Steven Marx, Greet Langie & Joos Vandewalle (all from University of Leuven, Belgium)*
- 5) “Why are you enrolled in a non degree-program?” Exploring personal variables of students in extra-curricular STEM-programs *Sara Muskatowitz (Technische Universität München, Germany), Katharina Ebner (Technische Universität Braunschweig, Germany)*



SYMPOSIUM 2

H 3005

Family and STEM careers

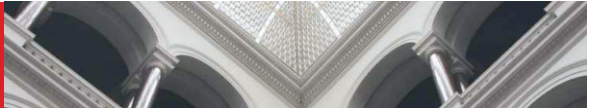
Organizer: Julia Dietrich (Friedrich Schiller University Jena, Germany)

Chair: Julia Dietrich (Friedrich Schiller University Jena, Germany)

Discussant: Bärbel Kracke (Friedrich Schiller University Jena, Germany)

- 1) Student-perceived parents' beliefs, girls' and boys' task-values and career aspirations in math and English *Rebecca Lazarides (Technische Universität Berlin, Germany), Helen Watt (Monash University, Australia)*
- 2) Role of family activities in science, parental occupations and parental values in adolescents' interest in science-related careers
Päivi Taskinen (Friedrich Schiller University Jena, Germany)
- 3) Adolescents' and parents' math-related motivational beliefs and adolescents' preferences for science careers *Julia Dietrich (Friedrich Schiller University Jena, Germany)*
- 4) Family-friendly science: The role of future family roles and women's mother's roles on positivity toward STEM careers *Erica S. Weisgram (University of Wisconsin-Stevens Point, Stevens Point, USA), Amanda Diekman (Miami University, USA)*

Our understanding is limited with regard to how parents can foster young people's interest in science and STEM careers. The aim of the symposium is to bring together researchers who address the role of family factors for adolescents' interest in science and stem-careers. In this way, we hope to stimulate the discussion about this topic. The session takes four perspectives. First, the results of a longitudinal, mixed-method study point out how family science capital interacts with students' aspirations for STEM careers. The second presentation uses the PISA-database to analyze how adolescents' plans to study science are affected by family factors. The third study focuses on parents' role in adolescents' preferences for science careers in the framework of expectancy-value models. The last presentation demonstrates the importance of family roles for young women's interest in STEM based experimental and correlational evidence.



03:15 – 04:15 pm

Lichthof

Keynote 2: Sheri A. Berenbaum (Pennsylvania State University, USA)

Beyond pink & blue: How sex hormones shape gender development and what that means for STEM

Chair: Sonja Mohr

04:25 – 05:05 pm

H 2036/H 2037

Titles, authors and abstracts see page 32–34

POSTER SESSION 1

1) University

Chair: Christin Laschke

2) Children and young adolescents' STEM learning and career aspirations

Chair: Julia Schorlemmer

3) Society

Chair: Kathinka Best

4) Intervention

Chair: Panagiota Rouni

05:10 – 06:40 pm

H 3005

DISTINGUISHED SYMPOSIUM 1

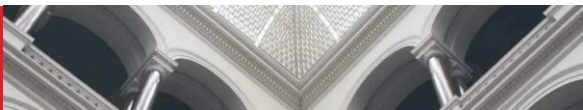
Longitudinal analyses on Gender and STEM

Kateriina Salmela-Aro (University of Jyväskylä, Finland)

Ingrid Schoon (University of London, UK)

Helen M. G. Watt (Monash University, Australia)

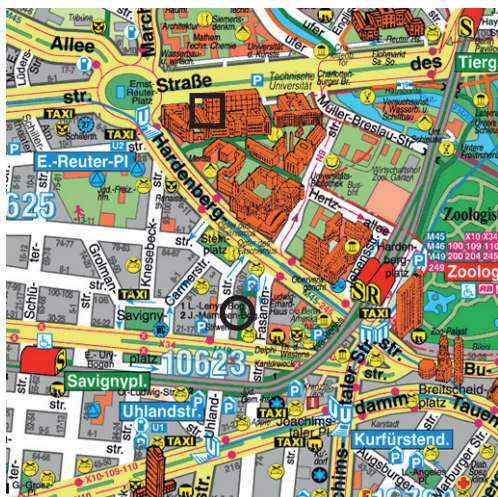
Chair: Rebecca Lazarides



07:30 pm

Conference Dinner

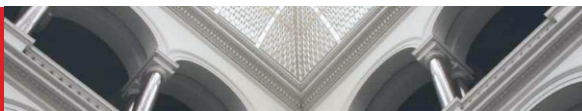
Restaurant „Weinrot“
at the Savoy Hotel Berlin
Fasanenstr. 9–10
10623 Berlin



Savoy Hotel



Technische Universität



09:00 – 10:00 am

Lichthof

Keynote 3: Petra Stanat (Institute for Educational Quality Improvement, Germany)

The role of gender and migration background for school success: Evidence from large-scale assessment studies

Chair: Angela Ittel

10:00 – 10:20 am

H 1036

Morning Tea

10:20 – 11:20 am

Workshops and Roundtable Session

WORKSHOP 4

H 2035

Using collaboration to increase STEM engagement for girls

Karen Peterson (National Girls Collaborative Project, USA)

Anita Krishnamurthi (Afterschool Alliance, USA)

ROUNDTABLE SESSION 3

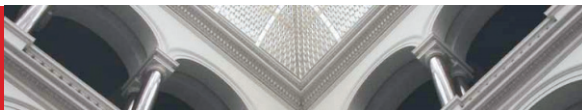
H 2036

Encouraging Latino/a students in science: Student attitudes and supportive teaching practices

Kathryn Scantlebury (University of Delaware, USA)

Beth Wassell (Rowan University, USA)

Sarah Braden (University of Utah, USA)



WORKSHOP 5

H 2037

Integrative STEM Education: How can we reach more women earlier in the STEM pipeline?

Patricia Simmons (North Carolina State University, USA)

WORKSHOP 6

H 1035

De-Gendering STEM education and research

Corinna Bath (Technische Universität Braunschweig, Germany)

Waltraud Ernst (Johannes Kepler University of Linz, Austria)

Helene Götschel (Technische Universität Darmstadt, Germany)

Petra Lucht (Technische Universität Berlin, Germany)

Bärbel Mauß (Technische Universität Berlin, Germany)

Kerstin Palm (Humboldt-Universität Berlin, Germany)

Sigrid Schmitz (University of Vienna, Austria)

Heike Wiesner (Berlin School of Economics and Law, Germany)

11:25am – 12:55 am

Paper Sessions, Roundtables & Symposia

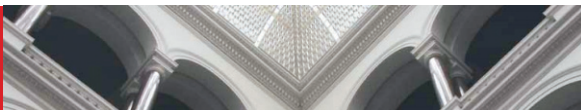
PAPER SESSION 5

H 2035

Career development in higher educational workplace

Chair: Angelika Trübswetter

- 1) Evaluation of a new concept for (leadership-)career coaching for women in STEM
Gwen Elprana, Sybille Stiehl, Magdalena Gatzka, Jörg Felfe (all from University of the Federal Armed Forces Hamburg, Germany)
- 2) “I don’t belong here” – Experiences and goals of female and male undergraduate students in STEM
Thekla Morgenroth (University of Exeter, UK), Kim Peters (University of Queensland, Australia), Michelle Ryan (University of Exeter, UK and University of Groningen, The Netherlands)
- 3) Gender and graduate students’ learning in engineering in Taiwan
Hsiao-Chin Hsieh (National Tsing Hua University, Taiwan), Chen Peiying (National Taiwan Normal University, Taiwan), Lin Tasen (FoGuang University, Taiwan)



- 4) Gender and STEM – in which workplaces do highly qualified engineering graduates want to work? *Angelika Trübswetter, Katharina Hochfeld, Karen Genz, Martina Schraudner (all from Fraunhofer, Berlin, Germany)*
- 5) Woman academic performance and leadership in Taiwan's universities
Peiying Chen (National Taiwan Normal University, Taiwan), Hsiao-Chin Hsieh (National Tsing Hua University, Taiwan)

ROUNDTABLE SESSION 4 H 2036

Crossing gender equality policy with feminist science studies – The case of the Berlin/Uppsala summer school for women physicists

Elvira Scheich, Martina Erlemann, Leli Schiestl (all from Freie Universität Berlin, Germany)

ROUNDTABLE SESSION 5 H 2037

Beyond school – Parents and extra-curricular teaching

(45 mins. each)

RT1: Parental behaviors contributing to engineering-related student outcomes: A qualitative longitudinal study using expectancy-value theory

Holly M. Matusovich (Virginia Tech, USA), Ruth Streveler (Purdue University, USA)

RT 2: Teaching research-based gender competencies to high school and university students.

The projects Techno-Club and GENDER PRO MINT at the Technische Universität Berlin

Inka Greusing, Petra Lucht, Bärbel Mauß (all from Technische Universität Berlin, Germany)

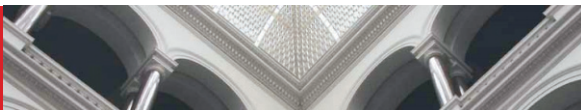
SYMPOSIUM 3 H 1035

Exploring the commercialisation of innovation and new technology through a gendered lens: The impact of workplace, government policies and networks

Organizer: Pooran Wynarczyk (Newcastle University Business School, UK), Marina Ranga (Stanford University, USA)

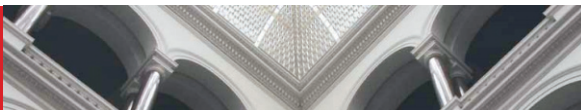
Chair: Pooran Wynarczyk

Discussant: Marina Ranga



- 1) Exploring the role of entrepreneurial networking in the commercialisation of women's scientific endeavours: A review of the literature *Colette Henry (Dundalk Institute of Technology, Republic of Ireland), Helen Lawton-Smith (University of London, UK), Lene Foss (The Arctic University of Norway), Pauric McGowan (University of Ulster, UK)*
- 2) Women in commercialisation: The case of university spin-offs in the UK
Pooran Wynnarczyk (Newcastle University Business School, UK)
- 3) Field-level influences on diversity in the STEM workforce: A gender perspective
Mine Karatas-Ozkan (University of Southampton, UK), Mustafa Ozbilgin (Brunel University, UK), Ahu Tatli (Brunel University, UK), Cagla Yavuz (University of Southampton, UK)

The symposium will bring together a number of internationally recognised scholars in order to collectively identify, share and exchange research and knowledge on the processes, conditions and factors that contribute to and facilitate the participation of women in technological advancement and commercialisation of research and ideas in the public and private sectors under different education systems, culture, environment and government policies. The symposium aims to address questions such as how technology commercialisation develops as an occupational field, how networks impact and influence the commercialisation process, what does a 'career' in this area means and what gender differences does it encompass, what best practices of gender equality exist in technology commercialisation organisations and how can they be widely disseminated to benefit the workplace and careers of women. The symposium consists of three papers and a chair within a panel discussion format. The symposium aims to raise awareness on the increasing importance of gender and technology commercialisation, broaden the current understanding of the dynamics and implications of the phenomenon, inspire new research projects in this and related areas, and disseminate good practice.



SYMPOSIUM 4

H 3005

Looking beyond teachers: The importance of parents and peers in youths' pursuit of STEM

Organizer: Sandra Simpkins (Arizona State University, USA)

Chair: Sandra Simpkins

Discussant: Jacquelynne S. Eccles (University of California, Irvine, USA)

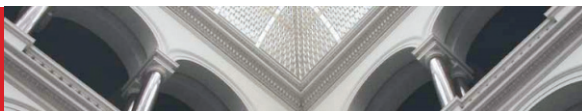
- 1) Parents influence on math course taking: Mapping the sequence of predictors from childhood to adolescence *Jacquelynne S. Eccles (University of California, Irvine, USA), Jennifer Fredricks (Connecticut College, USA), Sandra Simpkins (Arizona State University, USA)*
- 2) Parental support of adolescents' science motivational beliefs: Examining differences across science domains, ethnicity, and gender *Sandra Simpkins (Arizona State University, USA)*
- 3) Gender and adolescents' STEM achievement in the context of peer relationships *Campbell Leaper (University of California, USA)*
- 4) Single-sex classrooms and STEM: Does the absence of male classmates promote girls' interest and achievement? *Rebecca S. Bigler (University of Texas at Austin, USA)*

Many talented and capable young people, particularly women and ethnic minorities, are turning away from STEM careers. The road to these careers is composed of a series of choices and achievements that commence in childhood. Youths' pursuit of STEM depends, in part, on the beliefs and behaviors of individuals central in their lives. Parents, the first socializers in children's lives, and peers, socializers who gain importance from childhood through adolescence, have been shown to be instrumental in shaping youths' development in a variety of domains. Yet, the research on parents and peers in STEM remains limited. In an effort to address this empirical gap, this symposium includes two presentations on families, two presentations on peers, and a discussion lead by Jacquelynne Eccles. All presentations delve in the factors that promote motivation for youth and the extent to which these factors vary across youth gender and/or ethnicity.

12:55 – 01:40 pm

H 1036

Lunch



01:40 – 02:40 pm

Lichthof

Keynote 4: Janet S. Hyde (University of Wisconsin-Madison, USA)

Gender, math, and science participation: The role of parents

Chair: Jaana Viljaranta

02:45 – 04:15 pm

Symposia & Paper Sessions

SYMPOSIUM 5

H 2035

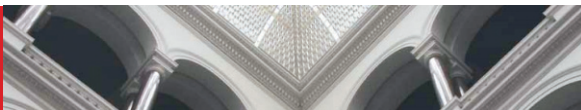
Mentoring programs as measures of promoting girls and young women in STEM: chances and limitations

Organizers: Martina Endepohls-Ulpe (University of Koblenz-Landau, Germany), Heidrun Stoeger (University of Regensburg, Germany)

Chair: Martina Endepohls-Ulpe

Discussant: Elisabeth Sander (University of Koblenz-Landau, Germany)

- 1) How does mentoring with female pupils work? – Results of multivariate analyses on effects of a German mentoring program in the STEM field *Claudia Quaiser-Pohl, Martina Endepohls-Ulpe (University of Koblenz-Landau, Germany), Catharina Meyer (University of Koblenz-Landau, Germany)*
- 2) Preconditions and barriers for an effective mentoring: the part of families and schools *Martina Endepohls-Ulpe & Claudia Quaiser-Pohl (all from University of Koblenz-Landau, Germany)*
- 3) CyberMentor, an e-mentoring program for promoting girls' interest in STEM: Which aspects of the program predict the self-assessed mentoring success? *Manuel Hopp (University of Erlangen-Nuremberg, Germany), Michael Heilemann (University of Regensburg, Germany), Heidrun Stoeger (University of Regensburg, Germany) & Albert Ziegler (University of Erlangen-Nuremberg, Germany)*



- 4) The importance of individual characteristics and e-mentoring for girls' choice of STEM subjects *Teresa Greindl (University of Regensburg, Germany), Sigrun Schirner (University of Regensburg, Germany), Heidrun Stoecker (University of Regensburg, Germany) & Albert Ziegler (University of Erlangen-Nuremberg, Germany)*

In spite of the fact that mentoring has become a popular measure to promote girls' and young women's interest in the field of STEM there are not many studies on its effectiveness. The objective of the session is to present data of evaluation studies on two big mentoring projects – the Ada-Lovelace-Project (situated at nearly all universities in Rhineland-Palatinate) and the CyberMentor-Program (a nationwide e-mentoring program) – which on the one hand reveal that mentoring can be effective, but on the other hand show that there are certain constraints which have to be taken into account for the advancement of mentoring programs and the development of alternative or supplementing measures.

There will be two presentations on each project. After each presentation (15 minutes) there will be time for a few questions and the session will be closed by a critical analysis of the studies and data presented (10 minutes) by a discussant and a final discussion.

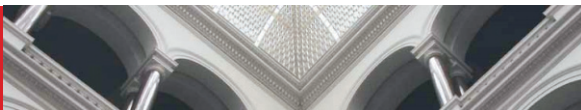
PAPER SESSION 6

H 2036

Adolescents' STEM achievement, motivation and career aspirations

Chair: Pooran Wynarczyk

- 1) Effects of students' gender and school track on achievement trajectories in languages and mathematics in Luxembourgish secondary school *Florian Klapproth (University of Luxembourg, Luxembourg), Paule Schaltz (University of Luxembourg, Luxembourg)*
- 2) The role of gender in secondary school physics underachievement *Sarah Hofer (ETH Zurich, Switzerland)*
- 3) Always different? Focusing on girls' and boys' affective, motivational and cognitive ICT characteristics *Gabriela Christoph, Frank Goldhammer, Johannes Zylka, Johannes Hartig (all from German Institute of International Educational Research, DIPF, Frankfurt, Germany)*
- 4) Tilted achievement profiles, gender differences and implications for STEM, capitalizing on the international PISA data sets *Werner W. Wittmann (University of Mannheim, Germany) & Esther Kaufmann (University of Zurich, Switzerland / University of Konstanz, Germany)*
- 5) Putting young girls on the right track in science, technology, engineering and mathematics (STEM) pipeline: The impact of informal STEM education in the UK *Pooran Wynarczyk (Newcastle University Business School, UK)*



PAPER SESSION 7

H 2037

Young boys and girls in STEM disciplines

Chair: Penelope Watson

- 1) Gender and ICT use – Differences between boys and girls in elementary school
Ramona Lorenz (TU Dortmund University, Germany), Birgit Eickelmann (University of Paderborn, Germany)
- 2) The interest of girls and boys in technology
Ingelore Mammes (University of Duisburg-Essen, Germany), Kristin Schäffer (University of Duisburg-Essen, Germany), Johannes Strobel (Texas A&M University, USA)
- 3) Steam-focused learning communities' effects on attitudes and outcomes: Are there gender differences?
Sandra Nichols (University of Alabama, USA), Adriane Sheffield (University of Alabama, USA)
- 4) Teacher gender and expectation of student mathematics achievement: A kink at the base of the New Zealand pipeline?
Penelope Watson, Christine Rubie-Davies, Elizabeth Peterson, Annaline Flint, Linda Garrett, Lyn McDonald (all from University of Auckland, New Zealand)

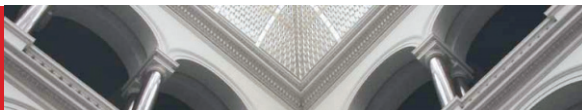
SYMPOSIUM 6

H 1035

Teachers' beliefs, attitudes and expectancies about teaching and learning STEM

Organizer and Chair: Sonja Mohr (Technische Universität Berlin, Germany)

- 1) Implicit gender stereotypes and essentialist beliefs predict teachers' tracking recommendations
Miriam Nürnberger (University of Education Freiburg, Germany), Josef Nerb (University of Education Freiburg, Germany), Florian Schmitz (University of Ulm, Germany), Stefan Sütterlin (Lillehammer University College, Norway)
- 2) Teachers' beliefs on the changeability of student skills and abilities in a gender perspective
Ulrike Stadler-Altmann (University of Koblenz-Landau, Germany), Valérie-D. Berner (University of Eichstätt-Ingolstadt, Germany)
- 3) Teachers' beliefs about teaching and learning mathematics: What role does gender play?
Sonja Mohr (Technische Universität Berlin, Germany), Rossella Santagata (University of California, USA)
- 4) Addressing gender in the education of teachers. Dramatising vs. dedramatising approaches.
Jürgen Budde, Nina Blasse (all from University of Flensburg, Germany)



In this session, results of quantitative as well as qualitative studies assessing (pre-service) teachers' attitudes and beliefs about teaching and learning are presented. Gender-related research questions are included in each presentation. Additionally, the gender encoding of different domains and the need for the development of teachers' gender competence are addressed. The aim of the session is to identify teachers' stereotypical behavior or attitudes that might contribute to biased actions and decisions related to gender.

Nürnberg et al. assess pre-service teachers' tracking recommendations for secondary schools as potentially influencing factors for women's participation in STEM fields. Stadler-Altman and Berner investigate teachers' implicit ability theories, self-efficacy and didactical orientations with regard to gender issues. Mohr and Santagata examine teachers' beliefs related to math teaching and learning, aiming on identifying gender-related beliefs. Lastly, Budde and Blasse focus on the presentation of strategies that promote the development of gender-competence in teacher education.

SYMPOSIUM 7

H 3005

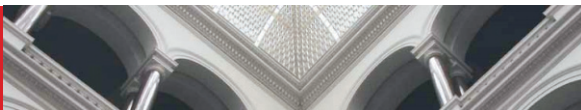
Transmitting gender in teaching and parenting

Organizer: Lysann Zander (Freie Universität Berlin, Germany), Burkhard Gniewosz (Ludwig-Maximilians-Universität München, Germany)

Chair person: Lysann Zander

Discussant: Helen M. G. Watt (Monash University, Australia)

- 1) Boys never listen: gendered patterns in the association of parental competence perceptions and adolescents' academic expectations of success in math *Burkhard Gniewosz (Ludwig-Maximilians-Universität München, Germany), Peter Noack (Friedrich Schiller University Jena, Germany)*
- 2) Still teaching the role? How preschool teachers' gender role attitudes shape childrens' role self-concept *Ilka Wolter, Lysann Zander (both from Freie Universität Berlin, Germany)*
- 3) Qualified for teaching physics? How prospective teachers perceive teachers with migration background – and how it's really about “him” or “her” *Lysann Zander (Freie Universität Berlin, Germany), Martin Latsch (Freie Universität Berlin, Germany), Kendall Eskine (Loyola University New Orleans, USA), Bettina Hannover (Freie Universität Berlin, Germany)*
- 4) Gender-specific vocabulary of elementary students in Germany – a comparison of children with and without German as family language *Wahiba El-Khechen, Nele McElvany (both from TU Dortmund University, Germany)*



Psychologists have studied the socialization of stereotypes relevant to allegedly male and female domains of competence from a wide range of theoretical perspectives. This symposium takes a fresh look at the subtle forms in which gendered connotations, transmitted by teachers and parents, continue to powerfully affect self- and other-perceptions in educational settings: How do parents (Gniewosz & Noack) and primary school teachers (Wolter & Zander) impact students' self-views and expectations of success in male- and female-connoted domains? And, at the intersection of gender and migration research: (c) Do prospective teachers perceive male and female teachers with migration background to be equally qualified for teaching physics (Zander & Latsch)? Finally, how is students' actual competence (i.e., vocabulary) shaped by gender-connoted teaching materials, and: does having a migration background matter (El-Khechen & McElvany)? We illuminate recent perspectives and raise novel research questions as well as discuss strategies for pedagogical practice (Helen Watt).

04:20 – 05:50 pm

H 3005

DISTINGUISHED SYMPOSIUM 2

Gendered career choices: Which social and individual factors are decisive?

Ruth Butler (Hebrew University of Jerusalem, Israel)

Ursula Kessels (Freie Universität Berlin, Germany)

Kathrin F. Leuze (Leibniz Universität Hannover, Germany)

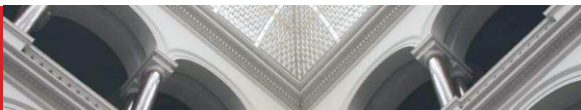
Chair: Päivi Taskinen

05:50 – 06:20 pm

Lichthof

NETWORK DIRECTIONS AND CLOSING

Chairs: Helen Watt, Noortje Jansen & Gertje Joukes



Abstracts of Individual Papers are on the conference website sorted by ID.

Individual Paper ID 101: Effect of students' gender and school track on achievement trajectories in languages and mathematics in Luxembourgish secondary school

Authors: Florian Klapproth (University of Luxembourg, Luxembourg), Paule Schaltz (University of Luxembourg, Luxembourg)

Individual Paper ID 102: Teacher gender and expectation of student mathematics achievement: A kink at the base of the New Zealand pipeline?

Authors: Penelope Watson, Christine Rubie-Davies, Elizabeth Peterson, Annaline Flint, Linda Garrett, Lyn McDonald (all from University of Auckland, New Zealand)

Individual Paper ID 103: Gender and graduate students' learning in engineering in Taiwan

Authors: Hsiao-Chin Hsieh (National Tsing Hua University, Taiwan), Peiyung Chen (National Taiwan Normal University, Taiwan), Taseen Lin (FoGuang University, Taiwan)

Individual Paper ID 104: Critiquing science, thinking gender in science teacher education

Authors: Kristina Andersson (Uppsala University, Sweden), Anita Hussénius (Uppsala University, Sweden), Kathryn Scantlebury (University of Delaware, USA), Annica Gullberg (University of Gävle, Sweden), Anna Danielsson (Uppsala University, Sweden)

Individual Paper ID 105: The interest of girls and boys in technology

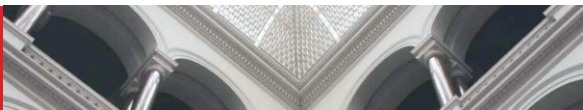
Authors: Ingelore Mammes (University of Duisburg-Essen, Germany), Kristin Schäffer (University of Duisburg-Essen, Germany), Johannes Strobel (Texas A&M University, USA)

Individual Paper ID 106: Gender and ICT use – Differences between boys and girls in elementary school

Authors: Ramona Lorenz (TU Dortmund University, Germany), Birgit Eickelmann (University of Paderborn, Germany)

Individual Paper ID 107: Women academic performance and leadership in Taiwan's universities

Authors: Peiyung Chen (National Taiwan Normal University, Taiwan), Hsiao-chin Hsieh (National Tsing Hua University, Taiwan)



Individual Paper ID 108: Putting young girls on the right track in science, technology, engineering and mathematics (STEM) pipeline: The impact of informal STEM education in the UK

Author: Pooran Wynarczyk (Newcastle University Business School, UK)

Individual Paper ID 109: Characterizing the STEM peer climate: Positives, negatives, and implications of self-expectancies

Author: Rachael D. Robnett (University of Nevada, USA)

Individual Paper ID 111: Pipped at the post: Knowledge gaps and expected low parental IT competence ratings affect young women's awakening interest in professional careers in information science

Author: Angela Schorr (University of Siegen, Germany)

Individual Paper ID 112: Academic self-concept and student achievement in STEM programs: gender and transition into higher education

Authors: Carolien Van Soom, Steven Marx, Greet Langie & Joos Vandewalle (all from University of Leuven, Belgium)

Individual Paper ID 113: Always different? Focusing on girls' and boys' affective, motivational and cognitive ICT characteristics

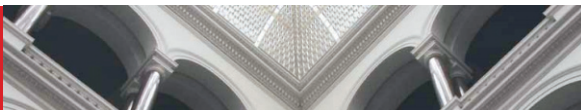
Authors: Gabriela Christoph, Frank Goldhammer, Johannes Zylka, Johannes Hartig (all from German Institute of International Educational Research, DIPF, Frankfurt, Germany)

Individual Paper ID 114: Promoting girls' and boys' value beliefs for mathematics with a relevance intervention in the classroom

Authors: Hanna Gaspard, Anna-Lena Dicke, Barbara Flunger, Brigitte Schreier, Isabelle Häfner, Ulrich Trautwein, Benjamin Nagengast (all from University of Tübingen, Germany)

Individual Paper ID 115: Impacts on the career choices of female STEM students

Authors: Bernhard Ertl (Universität der Bundeswehr, Munich, Germany), Silke Luttenberger (University of Graz, Austria)



Individual Paper ID 116: Adolescents' profiles of congruence between actual career aspirations and vocational interests, peers' career aspirations, and parents' vocations

Authors: Silke Luttenberger (University of Graz, Austria), Manuela Paechter (University of Graz, Austria), Ia Aptarashvili (Tbilisi State University, Georgia)

Individual Paper ID 117: The role of gender in secondary school physics underachievement

Author: Sarah Hofer (ETH Zurich, Switzerland)

Individual Paper ID 118: Steam-focused learning communities' effects on attitudes and outcomes: Are there gender differences?

Authors: Sandra Nichols (University of Alabama, USA), Adriane Sheffield (University of Alabama, USA)

Individual Paper ID 119: Gender and STEM – in which workplaces do highly qualified engineering graduates want to work?

Authors: Angelika Trübswetter, Katharina Hochfeld, Karen Genz, Martina Schraudner (all from Fraunhofer, Berlin, Germany)

Individual Paper ID 120: Who chooses to teach science, ICT, and mathematics and why: An Australian study of future female and male teachers

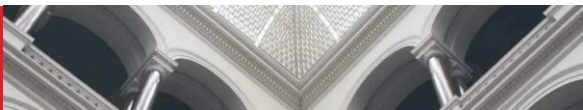
Authors: Paul W. Richardson (Monash University, Australia), Helen M. G. Watt (Monash University, Australia), James Pietsch (St. Luke's Grammar School, Australia)

Individual Paper ID 121: Video as a means to assess gender specific activities and experiences while working on physics tasks

Authors: Kathrin Steckenmesser-Sander (Justus Liebig University Giessen, Germany), Claudia v. Aufschnaiter (Justus Liebig University Giessen, Germany)

Individual Paper ID 122 “I don't belong here” – Experiences and goals of female and male undergraduate students in STEM

Authors: Thekla Morgenroth (University of Exeter, UK), Kim Peters (University of Queensland, Australia), Michelle Ryan (University of Exeter, UK and University of Groningen, The Netherlands)



Individual Paper ID 124: Image of women engineers and scientists

Author: Chia-Li Wu (Tamkang University, Taiwan)

Individual Paper ID 125: Gender-specific aspirations and determinants of career development in computer science

Authors: Anja Gärtig-Daug (University of Bamberg, Germany), Silvia Förtsch (University of Bamberg, Germany), Ute Schmid (University of Bamberg, Germany)

Individual Paper ID 126: Do interests matter? Occupational interests and gender-specific choices of field of study

Authors: Dörthe Gatermann (Leibniz Universität Hannover, Germany), Anna Erika Hägglund (Leibniz Universität Hannover, Germany), Corinna Lautenbach (Humboldt-Universität Berlin, Germany)

Individual Paper ID 127: Parents' math-gender stereotypes and children's perception of math ability at the age of 6: the role of children's appraisal of parents' evaluations

Authors: Carlo Tomasetto (University of Bologna, Italy), Alberto Mirisola (University of Perugia, Italy), Silvia Galdi (University of Padova, Italy), Mara Cadinu (University of Padova, Italy)

Individual Paper ID 128: "Why are you enrolled in a non degree-program?" Exploring personal variables of students in extra-curricular STEM-programs

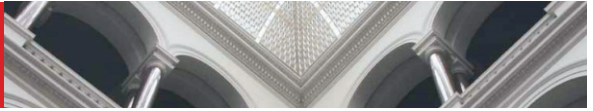
Authors: Katharina Ebner (Technische Universität Braunschweig, Germany), Sara Muskatowitz (Technische Universität München, Germany)

Individual Paper ID 129: Evaluation of a new concept for (leadership-)career coaching for women in STEM

Authors: Gwen Elprana, Sybille Stiehl, Magdalena Gatzka, Jörg Felfe (all from University of the Federal Armed Forces Hamburg, Germany)

Individual Paper ID 130: Teach the teachers: Gender competence in mathematics teacher training

Author: Anina Mischau (Freie Universität Berlin, Germany)



Individual Paper ID 131: Brief social-belonging intervention reduces the gender achievement gap in science

Authors: Lauren J. Aguilar, Gregory M. Walton, Patricia Burchat & Chaya Nanavati (all from Stanford University, USA)

Individual Paper ID 132: Female graduate students' perceptions of careers in STEM academia

Authors: Carlie D. Trott (Colorado State University, USA), Silvia Sara Canetto (Colorado State University, USA)

Individual Paper ID 133: Gender and STEM: What schools, families, and workplaces can do?

Author: Stefanie Nordmann (University of Applied Sciences Berlin, Germany)

Individual Paper ID 134: Segregation reproduction in Dutch computer science education

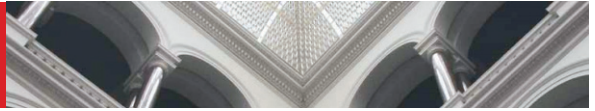
Author: Anne Bartilla (Dutch University of Applied Sciences, Utrecht, The Netherlands)

Individual Paper ID 135: Cross-lagged associations between high school students' math-related career aspirations-/expectations, self-concept of ability and value, and long-term implications for having a math-related occupation

Authors: Fani Lauermann (University of Michigan, USA), Yi-Miau Tsai (University of Michigan, USA), Alanna Epstein (University of Michigan, USA), Jacquelynne S. Eccles (University of California, Irvine, USA)

Individual Paper ID 136: Tilted achievement profiles, gender differences and implications for STEM, capitalizing on the international PISA data sets

Authors: Werner W. Wittmann (University of Mannheim, Germany), Esther Kaufmann (University of Zurich, Switzerland/ University of Konstanz, Germany)



Make a Pitch ID 304: Women in transition sciences for a new environmental and social sustainability

Authors: Alessandra Bonoli (University of Bologna, Italy), Elena Luppi (University of Bologna, Italy)

Abstract:

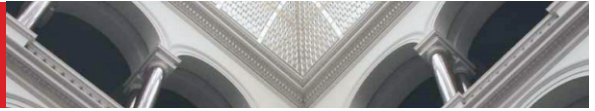
Sustainability and gender equality aspects are really closely related. The role of women in the environmental sciences and engineering is to address their efforts to several challenges involving the world's population in the near future, as a serious depletion of natural resources, primary of water, climate changes and global warming, the end of fossil fuels and the transition to a new post carbon period. During the last years the new movement of transition towns, born in UK in the 2000s and disseminated in other countries, and a new research field named "Transition Engineering", created and developing in the last months also at the University of Bologna, is providing solutions and promoting some answers. In that way, it could be interesting to promote a women multidisciplinary European network involving many disciplines related with environmental sciences and engineering, social sciences and economics, education, etc. in order to validate the idea of a close relationship between women and sustainability from the point of view of environmental, social and economic oriented to build a sustainable and better world for the humankind. Women contribution and their full participation at all levels of society seem to be the best way to steer the world towards a better future.

Make a Pitch ID 302: Boys don't cry? Stereotyping and compartmentalization of learning experiences in childhood

Authors: Hannah Fitsch (Technische Universität Berlin, Germany), Hanna Meißner (Technische Universität Berlin, Germany)

Abstract:

Within the current debates on the necessity to make STEM fields more attractive to prospective students, girls, specifically, have been identified as untapped resource of future scientists and engineers. In this context the ongoing 'pinkification' of girls, in particular by the toy industry, is deplored as a mayor factor discouraging them to make early learning experiences that would foster their interests and abilities in construction, science and technology. This reasoning is being picked up by the toy industry as a further market for specialized products: toys for girls that purportedly encourage construction and engineering experiences – but in 'female specific' ways. Our pitch focuses on this important question of early stereotyping and highly selective ('gender specific') learning experiences. Our point of departure is the assumption that the current emphasis on the (intrinsic) value of 'allowing' or 'encouraging' girls to make technology related learning experiences is problematic in several aspects: It implicitly affirms the hierarchy between



practices related to science, construction and technology and practices related to caring and nurturing (disqualified as 'girly', 'pinkish'). At the same time, it affirms the compartmentalization of these practices as pertaining to different social 'spheres' or fields. Attempts to conceive of female specific incentives to engage with technology thus not only risk introducing or reinforcing hierarchies within the field of technology (softer vs. harder sciences; design vs. construction etc.); they also reinforce the feminization of care giving, perceived as 'non-technological', less challenging, requiring natural predispositions rather than 'hard' qualifications. In a provocative inversion of the stereotypical 'female specific' incentives we want to point to the marked absence of any focus on the stereotyping impediments of the learning experiences of little boys. Isn't the 'rambofication' of boys (at least) as problematic as the 'pinkification' of girls? With regard to the problem of the attractiveness of STEM fields this opens up the question how this 'rambofication' might relate to approaches and practices in the STEM fields, to the shaping and disciplining of future scientists and engineers? Why should girls be 'encouraged' to be more STEM compatible? Shouldn't we work on making STEM fields less one-dimensional? It stands to reason that this could not only make STEM fields more attractive for more girls and boys but also open up avenues for innovative (interdisciplinary) de-compartmentalization.

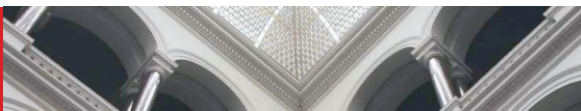
Make a Pitch ID 303: Gender attitudes at German technical universities

Author: Donna J. Drucker (Technische Universität Darmstadt, Germany), Biljana Stefanovska (Technische Universität Darmstadt, Germany)

Abstract:

At Technische Universität Darmstadt, the gender balance in the student body is rapidly becoming more equal between men and women yet remains uneven across different departments and divisions. In the Department of Civil and Environmental Engineering, the number of female undergraduate and graduate students has gone from 268 to 822 between winter semester 2007/08 and winter semester 2013/14, while the number of female undergraduate and graduate students in the Department of Architecture has gone from 673 to 773 in the same period. We are interested in finding out how the percentage of female students in a department affects the attitudes toward gender equality and basic feminist principles among the students, faculty and staff. We wonder if the presence of female students is proportionate or not to the acceptance of gender equality and feminism by individuals across the entire university.

We would like to collaborate with one or more other German technical universities who are interested in conducting a similar survey of their students, faculty, and staff. We anticipate coauthoring an article that will compare the results across technical universities and will suggest strategies for improving acceptance of feminism across disciplines.



Make a pitch ID 301: Demonstrating the relevance of science & math through abstract, integrated STEM: a new didactic approach

Authors: Jolien De Meester (University of Leuven, Belgium), Jan Thielemans (Heilig Graf, Belgium), Mieke De Cock (University of Leuven, Belgium), Greet Langie (University of Leuven, Belgium), Wim Dehaene (University of Leuven, Belgium)

Abstract:

In the current curriculum of STEM study options in the Flemish Secondary Education, no integration of math and science, or a connection to technology, can be found. This is the reason why youngsters don't see the relevance of science and mathematics, which might be the cause of their lack of motivation for STEM.

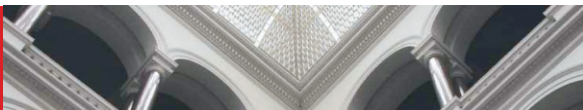
In order to increase youngster's overall interest in STEM-domains, a Flemish school, called Heilig Graf in Turnhout, Belgium, took the lead and started a brand-new initiative. The school set up a new study option besides the two existing options in their general first grade education. Since September 2013, children, graduated from elementary school, showing a high interest and potential for STEM can enter the STEM-class in their first year of secondary school. Besides the courses of the common curriculum, these children are offered a course called 'Integrated STEM' for five hours per week. Until now, 30 students are enrolled in the STEM-class: 24 boys and 6 girls. Five teachers with different education and teaching backgrounds, are giving the course, supported by a team of 20 colleagues.

The curriculum for this course is the result of the cooperation between the school's teachers and a STEM didactics research group at the University of Leuven, and contains three main well-considered guidelines in the first year: Mechanics, Programming and Design. Through research by design, an integrated-STEM-curriculum for the whole secondary school career has to be puzzled out. The aim is to raise the level of abstraction and the amount of integrated scientific study fields throughout the school career of the pupils.

By following a student-centered and problem-based approach, the content will remain close to the daily life and personal concerns of the pupils, which is particularly important to motivate girls, for example: making use of technology in function of people care.

In June 2014, the results in terms of enhanced STEM-literacy amongst the students and their attitude towards STEM and its professions, will be measured extensively in comparison with students at the same educational level who didn't join the STEM-class.

With this initiative, never seen before in the Flemish educational landscape, the hope raises to start a trend towards didactics that foster higher interest and skills in STEM-domains amongst pupils.



Roundtable Session 1: Vocational & study orientation

RT 1: “Go MINT” – Putting successful ideas into practice

Christina Haaf (Competence Centre for Technology-Diversity-Equal Chances, Bielefeld, Germany)

RT 2: Pro-STEM-arguments for girls: How efficient are career-related arguments?

*Lore Funk (Competence Centre for Technology-Diversity-Equal Chances, Bielefeld, Germany),
Wenka Wentzel (Competence Centre for Technology-Diversity-Equal Chances, Bielefeld, Germany)*

Roundtable Session 2: Practical experiences and assessment: Facilitating STEM careers in school

RT 1: Re-Imagining assessment in schooling for STEM in the 21st century: The premises and challenges of technology enhanced assessment

Stefania Savva (University of Leicester, UK)

RT 2: School profiling in order to offer practical experience for girls and young women encouraging them in direction of substantiated STEM career choices

Klaudia Bergmann (Max-Eyth school, Kassel, Germany), Dorothea Kröll (Kassel, Germany)

Roundtable Session 3: Encouraging Latino/a students in science: Student attitudes and supportive teaching practices

Kathryn Scantlebury (University of Delaware, USA), Beth Wassell (Rowan University, USA)

Sarah Braden (University of Utah, USA)

Roundtable Session 4: Crossing gender equality policy with feminist science studies – The case of the Berlin/Uppsala summer school for women physicists

Elvira Scheich, Martina Erlemann, Leli Schiestl (all from Freie Universität Berlin, Germany)

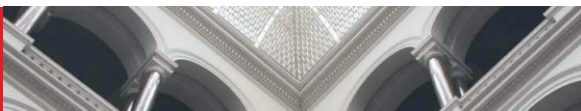
Roundtable Session 5: Beyond school - Parents and extra-curricular teaching

RT1: Parental behaviors contributing to engineering-related student outcomes: A qualitative longitudinal study using expectancy-value theory

Holly M. Matusovich (Virginia Tech, USA), Ruth Streveler (Purdue University, USA)

RT 2: Teaching research-based gender competencies to high school and university students. The projects Techno-Club and GENDER PRO MINT at the Technische Universität Berlin

Inka Greusing, Petra Lucht, Bärbel Mauß (all from Technische Universität Berlin, Germany)



1 UNIVERSITY

Poster Presentation ID 601: The role of gender for choosing mathematics teaching as a career – Comparative analysis for Germany, Switzerland and Norway

Authors: Christin Laschke (Humboldt-Universität Berlin, Germany), Sigrid Blömeke (Humboldt-Universität Berlin, Germany), Gabriele Kaiser (University of Hamburg, Germany)

Poster Presentation ID 602: Exploring student persistence in STEM programs: A motivational model

Authors: Kyle Hubbard (McGill University, Canada), Rebecca Simon (McGill University, Canada), Nathan C. Hall (McGill University, Canada), Hui Wang (McGill University, Canada)

Poster Presentation ID 603: A pattern approach to increasing enrollment and retention of female students in computer science and STEM education

Authors: Anne Bartilla (Independent, Utrecht, The Netherlands), Christian Köppe (HAN University of Applied Sciences, The Netherlands)

Poster Presentation ID 608: Promoting gender equality in university STEM education

Authors: Alessandra Bonoli, Danilo Cinti, Elena Luppi (all from University of Bologna, Italy)

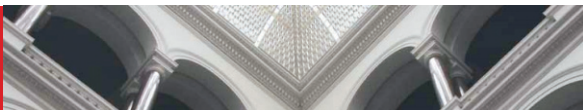
Poster Presentation ID 614: The experience of graduate STEM training in the U.S. among native and international students: Effects of gender, nativity, and intersectionality

Authors: Amy Roberson Hayes (University of Texas at Austin, USA), Rebecca S. Bigler (University of Texas at Austin, USA)

2 CHILDREN AND YOUNG ADOLESCENTS' STEM LEARNING AND CAREER ASPIRATIONS

Poster Presentation ID 604: The earliest STEM learning: The influences of parents and gender-based marketing on preschoolers' play with a construction toy

Authors: Emily F. Coyle (Pennsylvania State University, USA), Lynn S. Liben (Pennsylvania State University, USA)



Poster Presentation ID 606: Gendered aspirations in STEM careers across junior secondary school

Author: Milagros Sáinz (Internet Interdisciplinary Institute, Spain)

Poster Presentation ID 609: Children's occupational aspirations and domain specific school attainments: Beginning of a long path to a gender segmented labor market?

Authors: Julia Schorlemmer (Freie Universität Berlin, Germany), Bettina Hannover (Freie Universität Berlin, Germany)

Poster Presentation ID 615: A pre-university outreach activity on human-computer interfaces

Authors: Borbála Hunyadi, Hans De Clercq, Ninah Koolen, Valentijn De Smedt, Sandro Iacovella, Geert Deconinck, Georges G. E. Gielen, Robert Puers, Sabine Van Huffel, Wim Dehaene (all from University of Leuven, Belgium)

Poster Presentation ID 616: Gender-aware mathematics education

Author: Silke Fleckenstein (University of Halle, Germany)

Poster Presentation ID 617: What can schools do to reinforce female upper secondary students' motivation for science and technology careers? A Spanish experience

Authors: Gloria Gratacos (University of Madrid, Spain), Rosa Marcuello (Canigó School, Spain)

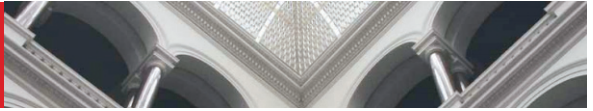
3 SOCIETY

Poster Presentation ID 605: Girls' and women's experiences with sexism in STEM: Prevalence rates and preferred coping responses

Author: Rachael D. Robnett (University of Nevada, USA)

Poster Presentation ID 607: Teaching gender studies & queer issues in STEM teacher education

Authors: Helene Götschel (Technische Universität Darmstadt, Germany), Florian Klenk (Technische Universität Darmstadt, Germany)



Poster Presentation ID 612: Gender stereotypes in Finland?

Author: Karin Habermehl-Cwirzen (Aalto University, Finland)

Poster Presentation ID 619: “The design of technology and knowledge transfer in Germany – a gender perspective”

Authors: Kathinka Best (Fraunhofer, Berlin, Germany), Marie Heidingsfelder (Fraunhofer, Berlin, Germany), Martina Schraudner (Fraunhofer, Berlin, Germany)

4 INTERVENTION

Poster Presentation ID 610: Online motivational interventions: Improving academic achievement in female STEM students

Authors: Nathan C. Hall, Hui Wang, Sonia Rahimi, John Ranellucci (all from McGill University, Canada)

Poster Presentation ID 611: Encouraging expectations in STEM students: Differential gender effects of a motivational intervention

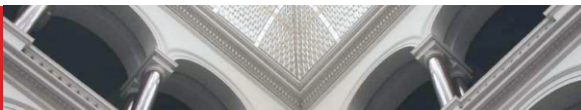
Authors: Anna Sverdlik, Nathan C. Hall, Jutta Heckhausen, Sonia Rahimi, Rebecca Maymon (all from McGill University, Canada)

Poster Presentation ID 613: A smart robot contest, based on a versatile electronics platform, entices bachelor students to opt for electrical engineering education

Authors: Hans de Clercq, Valentijn De Smedt, Jelle Van Rethy, Piet Callemeyn, Jeroen Lecoutere, Niels Van Thienen, Hans Reyserhove, Robert Puers, Patrick Reynaert, Michiel S. J. Steyaert, Georges G. E. Gielen, Wim Dehaene (all from University of Leuven, Belgium)

Poster Presentation ID 618: Women engineers as ambassadors of environmental issues at highschools

Authors: Panagiotia Rouni (National Technical University of Athens, Greece), Damiani Antanassioti (President Emeritus of EDEM, Greece)



Workshop 1 (ID 506): Niedersachsen-Technikum: Criteria for successful STEM projects – for young women with university entrance qualification

Authors: Judith Bräuer (Niedersachsen-Technikum, University of applied sciences Osnabrück, Germany), Helen Koepke (Niedersachsen-Technikum, University of Osnabrück, Germany)

Workshop 2 (ID 505): Gender sensitive teaching and learning of mathematics

Authors: Anina Mischau (Freie Universität Berlin, Germany), Katrin Bohnet (Freie Universität Berlin, Germany)

Workshop 3 (invited Workshop): Educational policies on STEM

Authors: Noortje Jansen (VHTO Dutch national expert organisation on girls/women and science/technology, Netherlands), Gertje Joukes (VHTO Dutch national expert organisation on girls/women and science/technology, Netherlands)

Workshop 4 (ID 504): Using collaboration to increase STEM engagement for girls

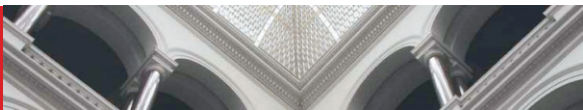
Authors: Karen Peterson (EdLab Group, USA), Anita Krishnamurthi (Afterschool Alliance, USA)

Workshop 5 (ID 501): Integrative STEM Education: How can we reach more women earlier in the STEM pipeline?

Author: Patricia Simmons (North Carolina State University, USA)

Workshop 6 (ID 502): De-Gendering STEM education and research

Authors: Corinna Bath (Technische Universität Braunschweig, Germany), Waltraud Ernst (University Koblenz-Landau, Germany), Helene Götschel (Technische Universität Darmstadt, Germany), Petra Lucht (Technische Universität Berlin, Germany), Bärbel Mauß (Technische Universität Berlin, Germany), Kerstin Palm (Humboldt-Universität Berlin, Germany), Sigrid Schmitz (University Vienna, Austria), Heike Wiesner (Berlin School of Economics and Law, Germany)



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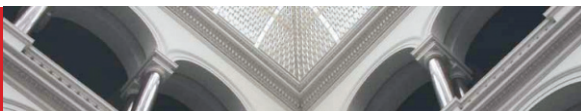
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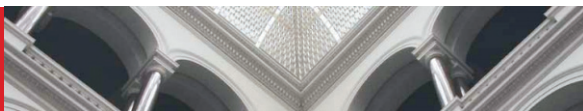
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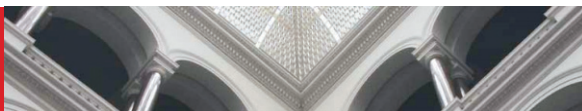


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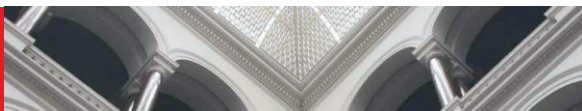
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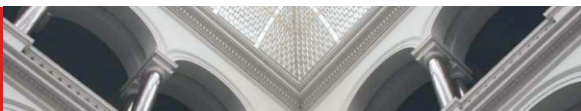
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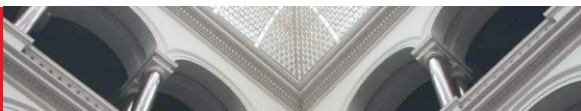
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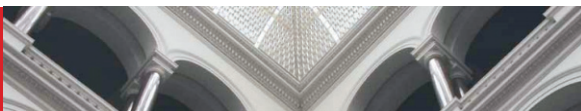
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