CHALMERS
UNIVERSITY OF TECHNOLOGY

CDIO Seminar:

Gender and diversity inclusive engineering education. What are the challenges for CDIO programmes?

October 10, 2018

INTRODUCTION

- **This seminar aims to discuss gender and diversity issues with particular relevance to CDIO education. For example, CDIO programmes feature many team-based projects. Appropriate approaches for managing team dynamics and task selection are critical. If the team is international, gender issues may be even more critical. In addition, many CDIO programmes are male-dominated, in terms of student numbers as well as the culture in the programmes**

- **The seminar will provide an opportunity to learn insights from some leading experts in the area and to share knowledge and experiences with other CDIO educators**

SCHEDULE

Time	Title	Presenter
9.30-10.00	*Registration*	
10.00-10.05	Introduction	Johan Malmqvist
10.05-10-15	Welcome to Chalmers	Maria Knutson Wedel
10.15-11.00	Educating socially responsible engineers for the future	Univ.-Prof. Dr. Carmen Leicht-Scholten RWTH Aachen, Germany
11.00-11.45	Situating 'the gender question' in engineering education: curriculum, student culture and beyond	Dr Andreas Ottemo Gothenburg University, Sweden
11.45-12.30	*Lunch*	
12.30-13.15	Gender and CDIO: The role of instructors in facilitating inclusive teamwork	Dr Kacey Beddoes Research in Sociology of Engineering, USA
13.15-14.00	Panel discussion	Dr Lena Peterson, Chalmers CSE Mr Rasmus Standar, Chalmers Student Union Mr Anthony Norman, Chalmers CLS
14.00-	*Wrap up & coffee*	

Educating socially responsible engineers for the future

Workshop: Gender and Diversity inclusive engineering education.

What are the challenges for CDIO programmes?

October 10th 2018, Chalmers University, Sweden

Univ.-Prof. Dr. Carmen Leicht-Scholten

GDI Gender and Diversity in Engineering | RWTH AACHEN UNIVERSITY

Outline

1. Background
2. State of the at : RRI and Gender
3. Being a change agent: Bridging Professorship GDI
4. Fostering social responsibility in engineering education
5. Good practices
6. Vision
7. Sources

1. Personal background

GDI Gender und Diversity in den Ingenieurwissenschaften
RWTH AACHEN

RWTH FAKULTÄT für bauingenieurwesen
Vice Dean in Charge of Studies

UHH Universität Hamburg
DER FORSCHUNG | DER LEHRE | DER BILDUNG

GENDER & DIVERSITY berlin
in den Ingenieurwissenschaften

GENDER AND DIVERSITY MANAGEMENT
RWTH AACHEN UNIVERSITY

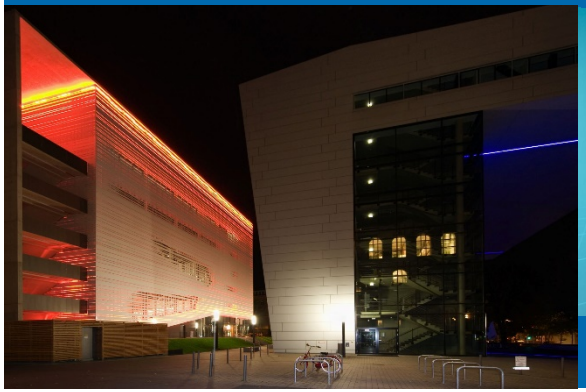
1. Institutional background

547 Professors (92 females)

45.377 Students

948 million € Budget

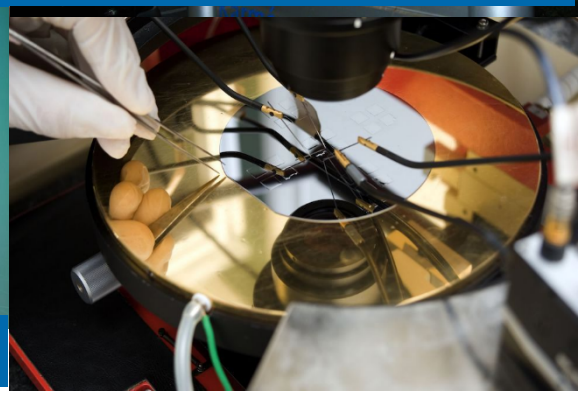
9 Faculties



Excellence University (DFG)

Leading technical university

360 million € 3rd party fund.



Source images: RWTH Aachen University

Source: https://www.rwth-aachen.de/cms/root/Die-RWTH/Profil/~enw/Daten-Fakten/, 2017.

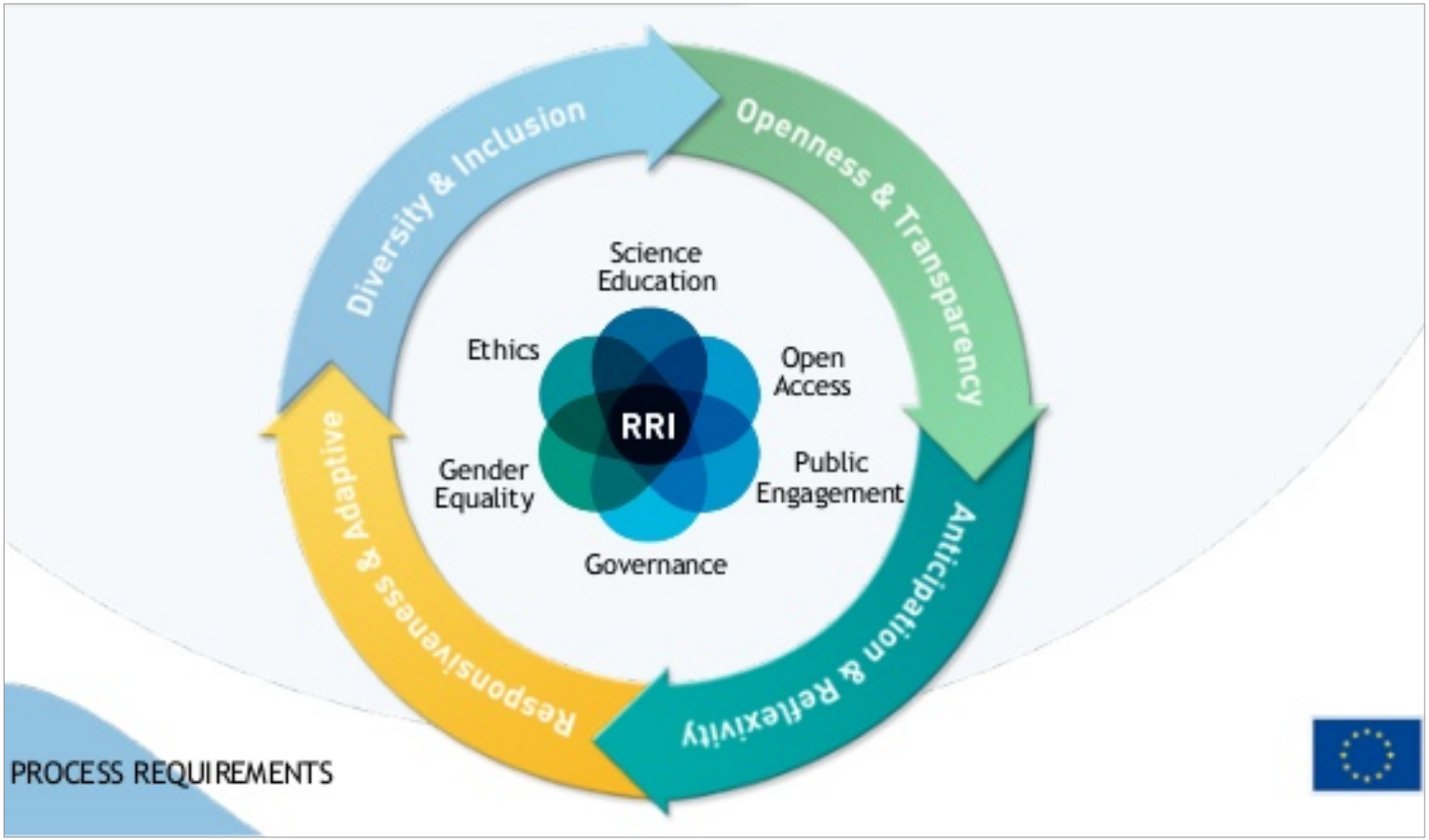
2. State of the art : Responsible Research and Innovation…

„...is a transparent, interactive process by which societal actors and innovators become mutually responsive to each other with a view to the (ethical) acceptability, sustainability and societal desirability of the innovation process and its marketable products (in order to allow a proper embedding of scientific and technological advances in our society).”

(René von Schomberg 2013: 19)

Source: www.berlin.de/stadtbibliothek-spandau/bibliotheken/kladow/stadtteilbibliothek-kladow-182136.php

2. State of the art: Responsible Research and Innovation



Source: www.rri-tools.eu/de/uber-rri

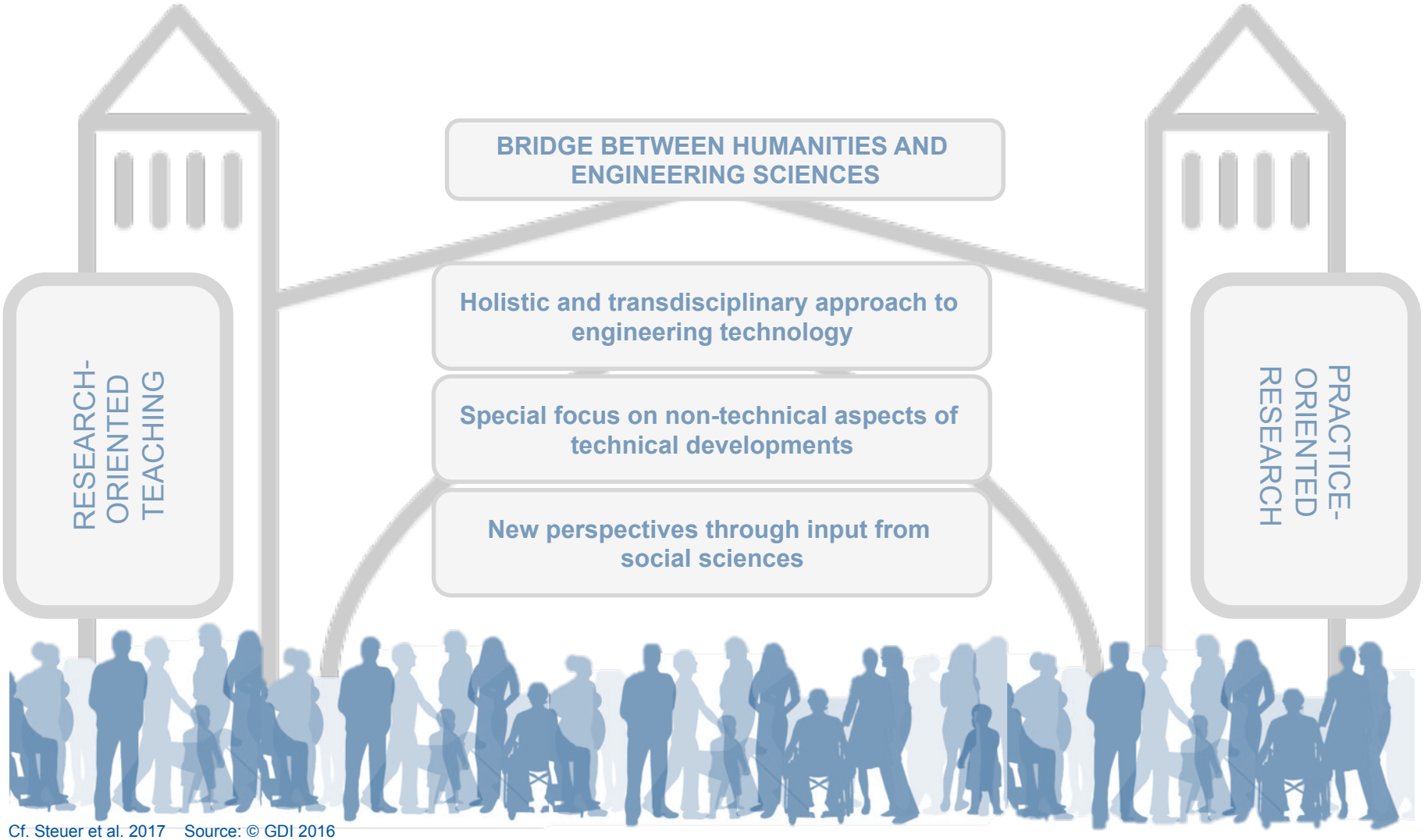
2. State of the art: Responsible Research and Innovation

Source: www.un.org

2. State of the art: and gender

Quelle: Steuer, Bouffier & Leicht-Scholten (2017)

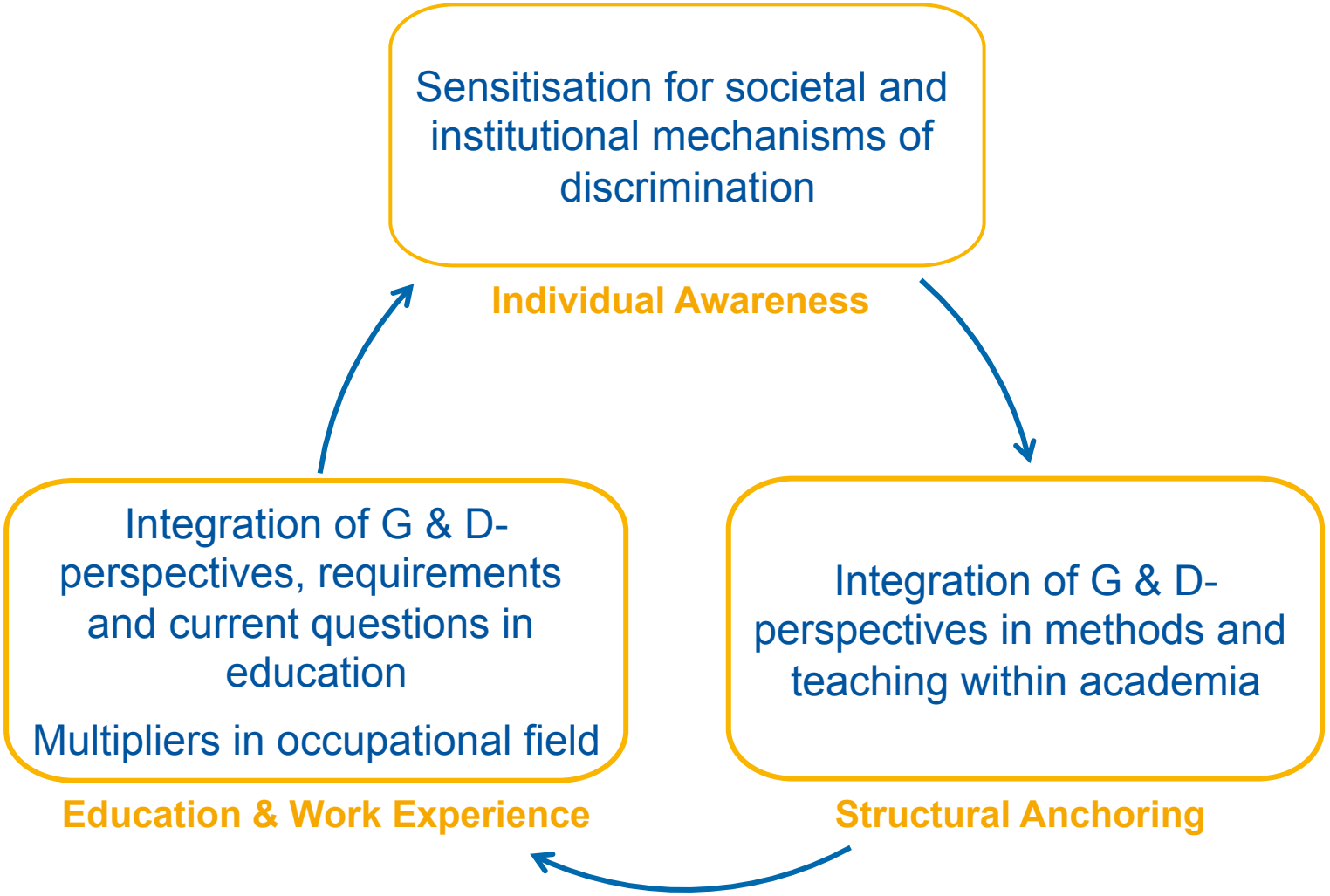
3. Being a change agent: Bridging Professorship GDI



Cf. Steuer et al. 2017 Source: © GDI 2016

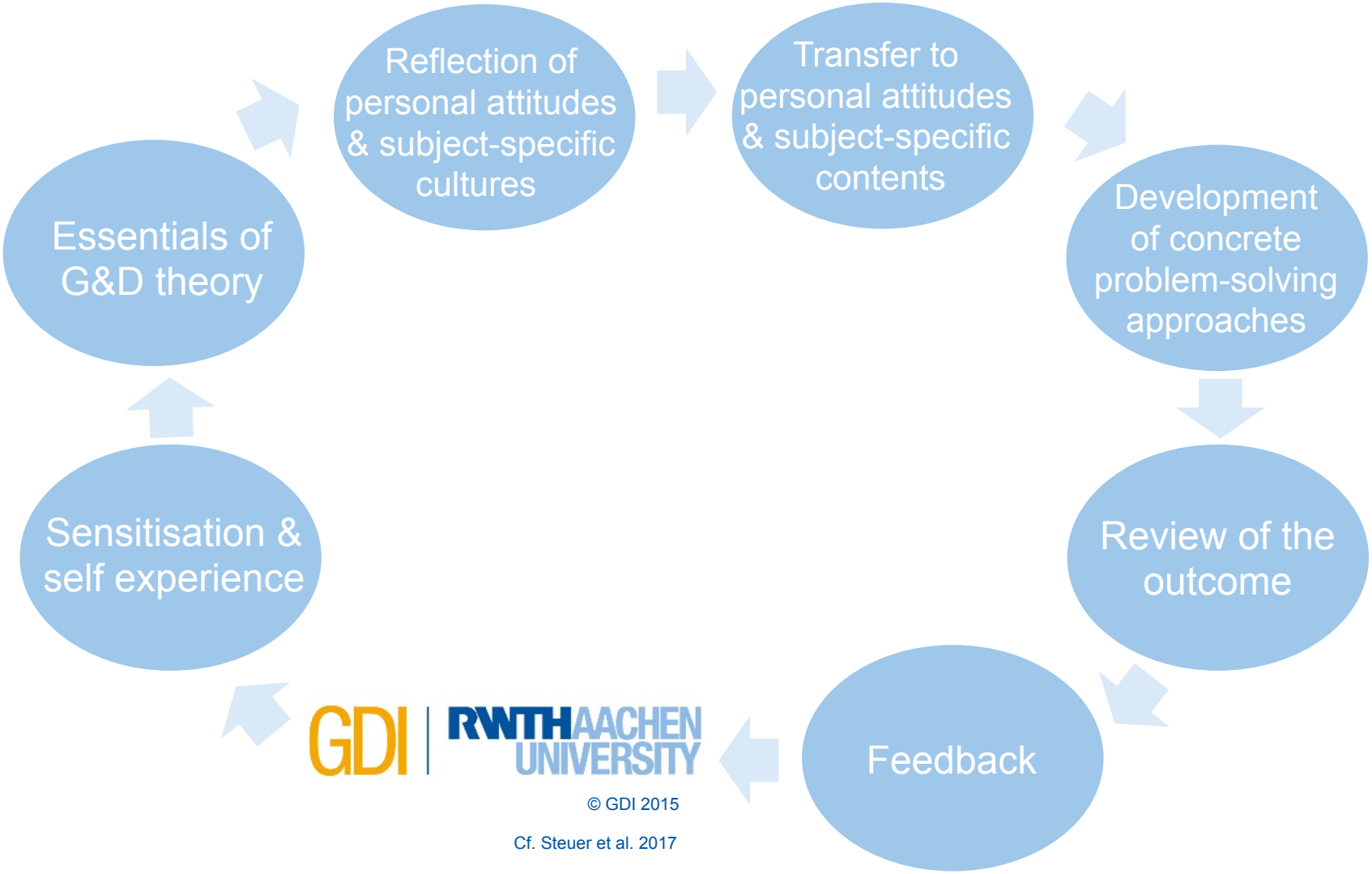
Quelle: theodysseyonline.com

4. Fostering social responsibility in engineering education



Cf. Leicht-Scholten 2018 Source: © GDI 2016

4. Fostering social responsibility in engineering education



Cf. Steuer et al. 2017

4. Fostering social responsibility in engineering education

Guiding principles on engineering education at GDI

Source: www.berlin.de/stadtbibliothek-spandau/bibliotheken/kladow/stadtteilbibliothek-kladow-182136.php

- ✓ Introduction to Gender & Diversity
- ✓ Practice- and research-oriented
- ✓ Plurality of perspectives
- ✓ Interdisciplinary
- ✓ Ethical reflection
- ✓ Independent learning
- ✓ Core values of scientific work

Cf. Steuer et al. 2017

Theoretical teaching concept

5. Good practice – diverse concepts

Source: GDI

Source: GDI

Source: GDI

Source: Ingenieure ohne Grenzen

Source: RWTH Aachen University

5. Good practice: Mandatory lecture

Mandatory module as part of curriculum

RWTH Aachen University:
Introduction of Gender- and Diversity-Perspectives: Discussion of social questions with regard to the area of specialisation in Civil engineering.

Source: RWTH Aachen University

5. Good practice: Mandatory lecture

Gender and diversity perspectives in Civil Engineering – An introduction

- Interactive teaching units
- Lectures by external experts from practice
- References to the different scientific fields of Civil Engineering
- Application of a Blended Learning Concept
- Computer-based e-tests
- Virtual learning space during the semester

Source: RWTH Aachen University

5. Good practice: Problem-based learning in master course with NGOs and companies

Source: http://www.ingenieure-ohne-grenzen.org/de/Regionalgruppen/Aachen

Water supply

Sanitation

Renewable energies

Structural + bridge engineering

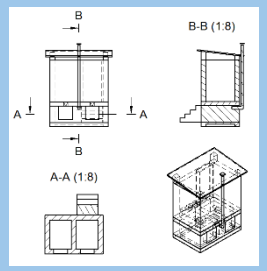
Intercultural communication

Source: http://www.ingenieure-ohne-grenzen.org/de/Projekte

5. Good practice: Problem-based learning in master course with NGOs and companies

Case: Urine-Diverting Dry Toilets – Sierra Leone

Technological sustainability



Social sustainability

Cultural acceptance

Source: Ingenieure ohne Grenzen 2014, within the GDI seminar “Skills for social and sustainable technology design“, own diagram

5. Good practice: Problem-based learning in master course with NGOs and companies

Perspectives - Gender and Diversity Modules in Science

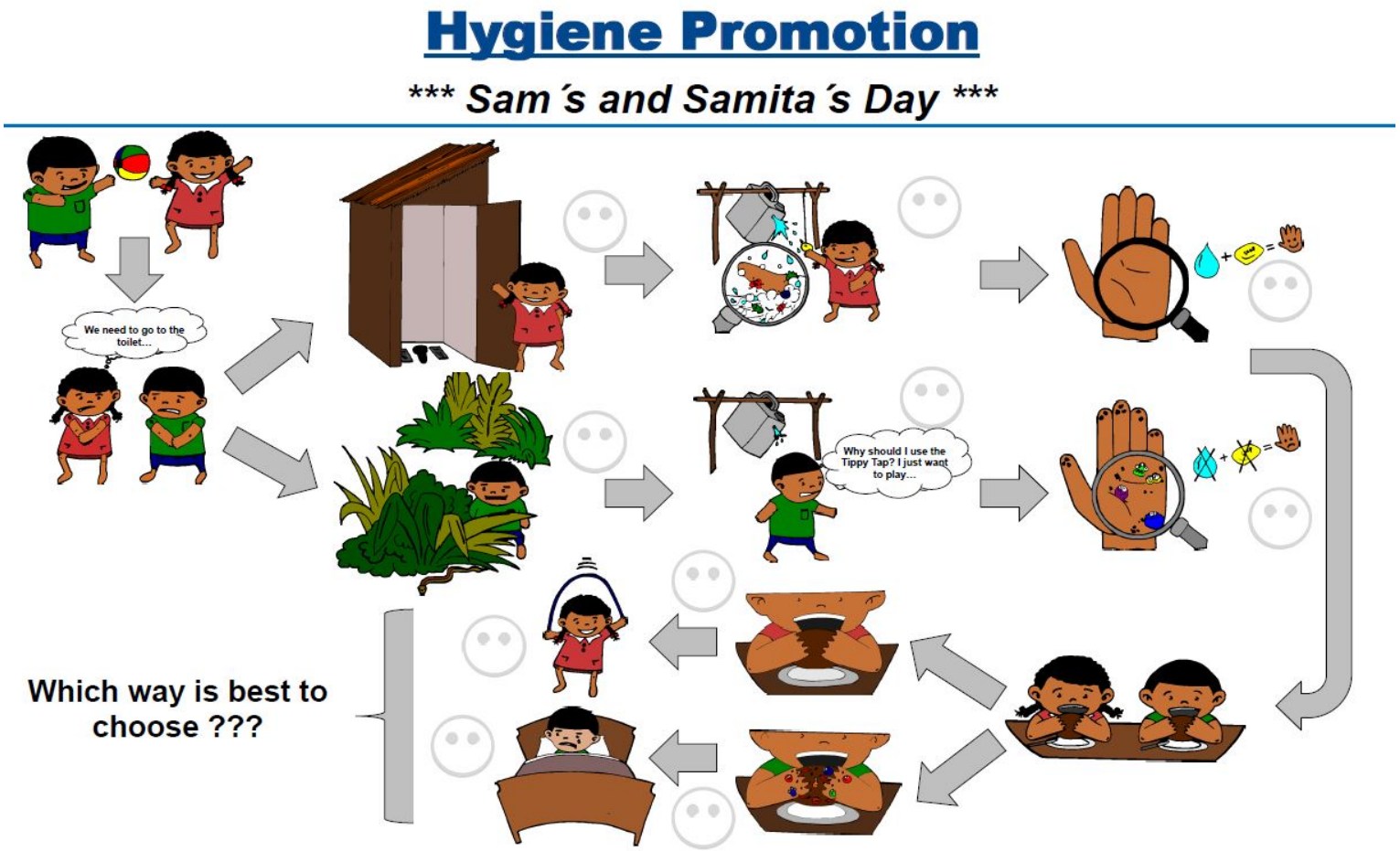
- Identifying technical difficulties by German *Engineers without Borders* in Tanzania
- Introducing four challenges to the students
- Elaboration of the challenges by the students regarding Gender- and Diversity-perspectives
- Presentation of the results to the jury of *Engineers without Borders* on a graduation event
- Feedback of the implementation concepts to the project partner MAVUNO in Tanzania

INGENIEURE OHNE GRENZEN CHALLENGE

INGENIEURE OHNE GRENZEN

Source: GDI 2014

5. Good practice: Problem-based learning in master course with NGOs and companies



Source: Ingenieure ohne Grenzen 2014, within the GDI seminar “Skills for social and sustainable technology design“

5. Good practice: Expanding Engineering Limits

5. Good practice: Expanding Engineering Limits

Students from RWTH Aachen University visiting Stanford University

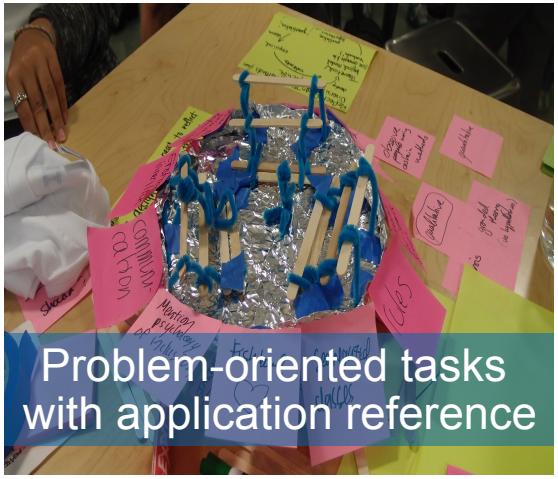
"Expanding engineering limits: Culture, diversity and gender"

Students from Stanford visiting RWTH Aachen University

Source: „RWTH Aachen Hauptgebäude“ von א Aleph) - Eigenes Werk. Lizenziert unter CC BY-SA 2.5 über Wikimedia Commons; Stanford.edu, aachen.de, "32 aerial" by Zadonix at en.wikipedia - Transferred from en.wikipedia by SreeBot. Licensed under Public Domain via Wikimedia Commons - http://commons.wikimedia.org/wiki/File:32_aerial.jpg#/media/File:32_aerial.jpg

5. Good practice: Teaching concept

Joint Pop-Up Class



Follow Up Course

Cf. Steuer & Leicht-Scholten 2016

5. Good practice: Testimonials for “Expanding Engineering Limits”

“It's good to talk about non-technical content and to take the chance to think outside the box!”

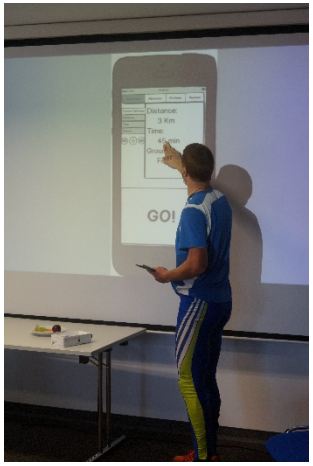
“I realized why Gender and Diversity-skills are also important for engineers!”

“Great that the lecture was not about feminism, but was scientifically sound on the issues of Gender and Diversity”

“Working in interdisciplinary teams was a challenge and has brought me closer to other points of view.”

Source:
Evaluation form Stanford University
Evaluation form RWTH Aachen University
Recalibration Survey, Project EEL

5. Good practice: Idea League Challenge



Source: GDI

6. Vision

Integrating the knowledge and perspectives of gender and diversity studies

Source: https://www. bajajelectricals.com

as central approaches into engineering research and teaching as chance to foster social responsible research and innovation in technology.

7. Sources

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RWTH AACHEN UNIVERSITY

The Aachen Way

Thank you for your attention!

Univ.-Prof. Dr. Carmen Leicht-Scholten

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52056 Aachen
Germany

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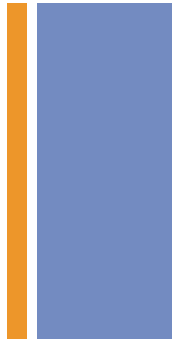
GDI Gender and Diversity in Engineering | RWTH AACHEN UNIVERSITY

CDIO & Diversity Seminar
Chalmers University
October 10, 2018

Gender & CDIO: The Role of Instructors in Facilitating Inclusive Teamwork

Dr. Kacey Beddoes

Overview



- Background & prior literature
- Interview study
- Training tool
- Recommendations

Findings from prior literature

- Teamwork growing in importance, but presents many openings for gender biases
  - Topics
  - Processes & interactions
  - Roles
  - Environments
  - Evaluation
- Women tend to take on non-technical team roles
- Women and other minority students receive lower peer evaluations
- Students may not perceive gender biases as such
- If they do, they are not likely to report them

Prior findings on team formation

- Self-selection
  - Does not increase student satisfaction or learning
- Assigned
  - Take into account unique characteristics of each student
    - Maximizes the team learning experience
    - Characteristics include abilities, experience, gender, and other demographics

Purpose of Study

Examine professors' practices and knowledge surrounding teamwork and gender

- To what extent are professors practicing gender inclusive teamwork?
- Do professors take gender into consideration during team formation, facilitation or assessment?
- (How) do professors think about gender in teamwork?

Methods

- Interviews with 39 engineering professors in the US
  - 3 universities
  - All engineering disciplines
  - Mix of men and women and career levels
- Overarching research question: *What and how do professors think about gender in engineering education?*
  - Teamwork was one of many topics

Findings

- Some awareness of best practices
  - But lack of implementation
    - "laziness"
    - Prior experiences
- Nearly all let students self-select teams
  - Reasoning
    - Work with people they felt most comfortable with
    - Topic that appeals most to the student
- Overwhelming lack of consideration of gender in teamwork
  - Planning
  - Implementing
  - Assessing
- Peer evaluations not valuable

Findings: Problematic Discourses

- Leadership role
- Bad experiences are actually good

Conclusions from Study

- Need to further integrate gender awareness into faculty development, especially around teamwork
- Need tools and trainings
- Need further research and ongoing conversations about "best practices"

TARGIT: Training and Resources for Gender Inclusive Teamwork

TARGIT: HOME

TARGIT: Team Formation

Learning Objective: Identify gender inclusive practices for forming teams and recall how various features of teamwork should affect decision-making around team formation

Self-selection

Instructor assigned teams

Please select the team formation strategies that you would like to learn more about! Once complete, please click the target icon in the upper left hand corner to go HOME.

TARGIT: Assigning Team Roles

Professional Skills

Team Roles

Note-taker

Team Manager

Technical Skills

Team Roles

Technical expert

Please select the picture of the different types of roles and skills that you would like to learn more about!

Next

TARGIT: Team Facilitation

Learning Objective: Identify problems that women and students from other underrepresented groups can experience in teamwork, and choose strategies to minimize those problems

Please select the team facilitation element that you would like to learn more about!
Once complete, please click the target icon in the upper left hand corner to go HOME.

TARGIT: Gender Bias Challenges

Offensive comments or "jokes"

For more information about microaggressions, please consult the following resources:

http://breakingprejudice.org/teaching/group-activities/microaggression-activity/

https://academicaffairs.ucsc.edu/events/documents/Microaggressions_Examples_Arial_2014_11_12.pdf

https://www.unh.edu/sites/www.unh.edu/files/departments/unh_advance/PDFs/microaggressions.pdf

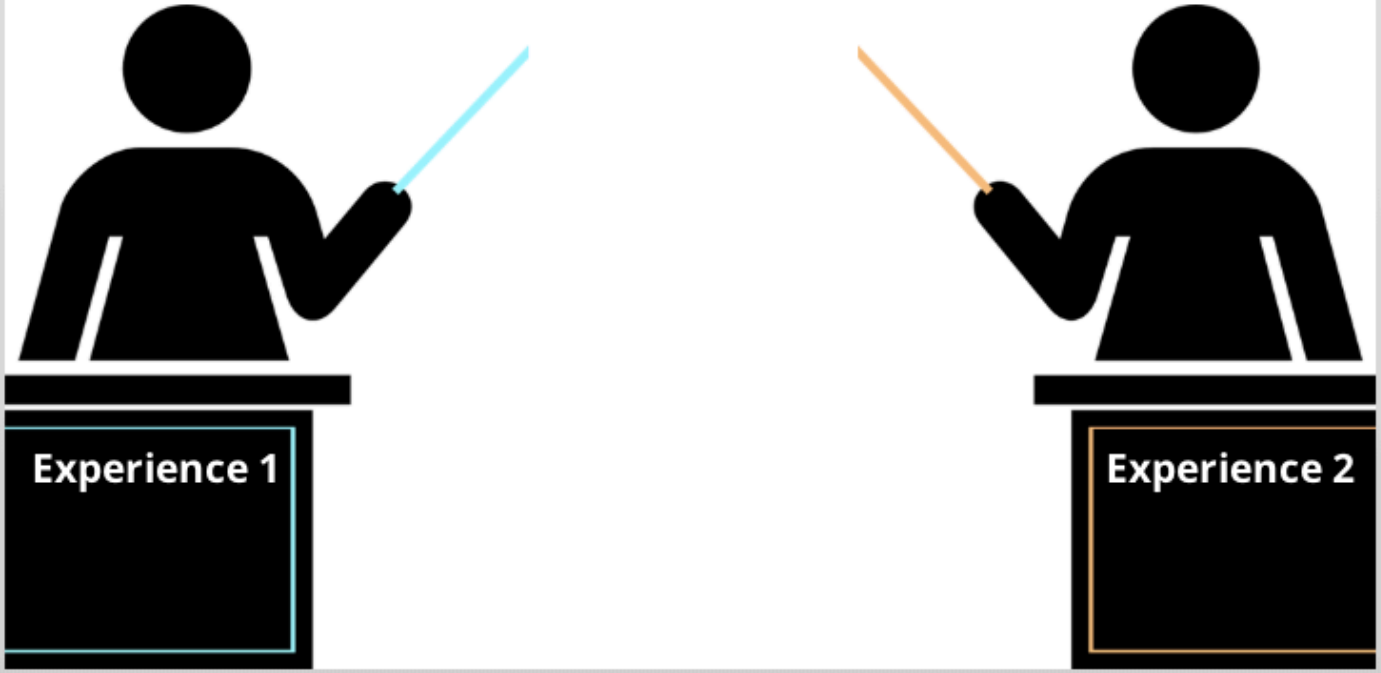
1. Women are not recognized for their contributions to the team,
2. Women's ideas are ignored and/or not "heard" by fellow teammates,
3. Women may be expected to work in environments or situations where they feel uncomfortable or unsafe, and
4. There may be inappropriate or offensive comments or "jokes" made by teammates. Such slights may be overt and blatantly sexist, but can also be subtle and hard to detect microaggressions.

Next

TARGIT: Experiences

We will now test what you have learned by looking at Example Experiences.

Select the Experience you wish to explore!
Once complete please click the target icon in the upper left hand corner to go HOME.



TARGIT: Experience 2

For this activity, answer the questions using the blue boxes as we move through the scenario and receive feedback on your responses.

Next, you need to form your teams. You decide that you will put four students on each team. **From the below strategies, how will you form student teams to maximize inclusivity?**

- Students rank their choice of project, then you assign teams to avoid soloing women students
- Assign teams randomly
- Allow students to self-select their teams

TARGIT: Recommended Best Practices

1. Do not allow students to self-select teams. Teams should primarily be formed by the instructor so that individual student characteristics can be considered during the formation process.
2. Consider whether the topics of your projects could be made more appealing to diverse groups.
3. Soloing women should be avoided with the exception of expressed concern by women themselves or after an in-depth classroom discussion.
4. Forming teams as heterogeneous or homogeneous should be done on a case-by-case basis depending on the particular class with consideration of the benefits and drawbacks of each.
5. Team roles should be designated from the beginning and team members should rotate roles on a schedule and spend equal amounts of time in technical and non-technical roles to better diversify student abilities and prepare them for the workforce.
6. Pre-teamwork interventions should be used to teach students about common problems and convey that you want problems to be reported.
7. Instructors should actively engage in teamwork facilitation throughout the course of the project to address gendered practices as they arise and to create a space where students are comfortable discussing teamwork issues in order to promptly make adjustments and avoid on-going negative experiences.
8. Women students should list their individual contributions to the team project in order to receive full recognition for their work.

Next

Formation and Planning Best Practices

- Consider if project topic can be made more appealing to a broader group
- Assign teams
- Avoid soloing minority students
  - Except in certain circumstances
- Assign team roles
- Create a plan for role rotation

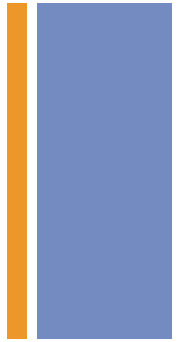
Facilitation Best Practices

- Pre-teamwork interventions
  - Common problems encountered by teams
  - You want problems reported
  - General team-building exercises
- On-going active facilitation
  - Regularly scheduled check-ins
  - Have a plan for when problems arise
- Rotate roles per your plan

Evaluation Best Practices

- Evaluate both process and product
- Have students list their individual contributions
- Group grade adjusted by self and group evaluation and individual contributions
  - Group only grade implies group work counts for everything and individuals only do well if the group functions
  - Individual only grade enhances individual outcomes
- Self and Peer Evaluation
  - Be aware of gender biases in both self and peer evals
  - Males typically rate other males higher than females
  - Conduct multiple times throughout project as team learns how to work together

Future Work



- Usability studies for TARGIT
  - Refinements & multiple versions
- Online bibliography
- Systematic Literature Review

Thank you!

www.sociologyofengineering.org

UNIVERSITY OF GOTHENBURG

SITUATING 'THE GENDER QUESTION' IN ENGINEERING EDUCATION: CURRICULUM, STUDENT CULTURE AND BEYOND

Andreas Ottemo
The Department of Education and Special Education
University of Gothenburg
E-mail: andreas.ottemo@ped.gu.se

CDIO seminar - Gender and diversity inclusive engineering education,
Chalmers University of Technology, October 10, 2018

Outline

- Ways of addressing ‘the gender question’ in engineering education
- Integrative approach: Student culture and the interweaving of formal/informal (based on dissertation study, Ottemo 2015)
- Discussion

‘The gender question’ in engineering education: three tendencies in previous research

- Focus on gender differences, assuming already established gender categories.
  - Problem: Homogenizes gender categories. Assumes gender as explanatory factor/cause.
- Focus on women/femininity.
  - Problem: Deficit model/studying down. Women/femininity as problematic.
- Focus on classroom practices and subject matter (curriculum)
  - Relevant for engineering educators, but challenging for a number of reasons…

”Subjectless” curriculum: content

- Engineering education rooted in an “engineering science-based model” (Crawley et al 2014), prioritizing mathematics and science, decontextualizes technology.
- “The student must learn to perceive the world of mechanics and machinery as embodying mathematical and physical principle alone, must in effect learn to *not* see what is there but irrelevant. […] Reductionism is the lesson.” (Bucciarelli 1994:107f)
- ”Such exercises also act to exclude much ‘social’ information, which is vital to the design and implementation of new technologies.” (Faulkner 2001:87)
- Distances engineering education from “other fields where the human connection is more manifest” (Bug 2003:890). This also makes it methodologically challenging for gender researchers to address.

”Subjectless” curriculum: teaching

- Seymour & Hewitt (1997:150ff) *Talking about leaving: Why undergraduates leave the sciences:*
  - ”There’s no sort of interaction back and forth. Just the professor sitting up there presenting material to you. It’s sort of a one-way kind of lecture.”
  - ”You walk in, you sit down and you get your pencil going. It’s just write, write, write.”
  - “The first chem class was totally *dead.*”
  - ”I liked science, I really did. But in the liberal arts, you would bring more of yourself into the class.”

Conclusion

- Technological subject matter is articulated in a ”subjectless”, reductionist mode that priviliges certainty, objectivity, distance, non-relationality…
- Claim: This makes subject matter as well as teaching hard to analyze in relation to gender. No explicit articulation of subjectivity, particular conceptualizations of the body or of categories such as race, gender, sexuality etc. (cf. Trojer 2002;)
- Irigaray (1985:74): “In the language of science there is neither I nor you nor us. There is no subjective… “ (1985:74).

”Solution” – The imputation of gender into the analysis

- Mode 1: Through equating what women/men say, do, prefer or complain about with articulations of femininity/masculinity.
- Mode 2: Through pre-establishing what femininity and masculinity “is” drawing on feminist philosophy or the history of ideas (~ masculinity = mind, reason, rationality, reductionism, valuing objectivity, ~feminity = body, emotions, relations, connectedness, valuing context)

Schematically

P: ”Feminist critiques of science have demonstrated […] that ’scientific reasoning' is profoundly masculine” (Stonyer 2002:395)

P: Engineering education is dominated by ’scientific reasoning’.

C: Engineering education is masculine.

- What such analyses do not show is *how* objectivity, reason, non-relationality, ”subjectlessness” or certainty are articulated with masculinity within the contexts researched.

Alternative

- Follow Jezze Bazzul's (2012:1016) suggestion to continually "ask after the types of subjectivities" articulated in engineering education.
- Given the "subjectless" of technoscience, we might not expect to find an explicitly gendered subject within the classroom.
- Solution: trace the production of this subject in its broader context
  - Broad focus on formal + informal aspects of education -> student culture
  - Engineering education *means* a lot and student culture is an important arena for the establishment of such meaning.
  - Ambition: avoid doing 'pure' cultural studies, retain an interest in subject matter/curriculum.

The CSE student - passion

- Strong emphasis on being passionate about computers (although not necessarily in relation to the formal studies).
- David: “People who study here have grown up with computers and have their entire background… We don’t encounter a new subject, we just continue with our hobby”.
- Those who are most passionate about what they're doing, that's probably CSE students. [...] Most people that study here, if they choose to study mechanical engineering, they have no experience with that, they come here, they learn, and they might change a bit. But a CSE student, a classical CSE student, has lived in this “world of computers” all life, before applying here.
- Derek: "I was interested in computers long before I started studying here, for sure!“
- Well documented, see Holth & Mellström (2011), Margolis & Fisher (2002)

Gendering passion

- Diana: “A girl who is really into fashion would probably find the program really boring […] You’ve got to have an interest in computers, and if you do, you are kind of ‘boyish’. Of course, as a girl at the program you could probably like computers and still have an interest in fashion, but you cannot be the stereotype who only likes to shop. People like that would find the program really boring because their oriented in the completely opposite way.”
- Douglas: “To be feminine is to go shopping for clothes. To be masculine is to go shopping for unnecessary gadgets [laughs].”

The CSE student - style

- Dennis: ”Sweatpants and a washed out t-shirt, preferably from a programming contest, that is the ideal here.”
- David: “Well, you know… It’s this CSE guy, with a bit of a slacker posture and often sweatpants. And if you see someone at School, you recognize... Maybe I’m being caught up with appearance, but, I don’t know, generally CSE students seem a bit less concerned with appearance…”
- Derek: ”Characteristic for the CSE student is a very poor taste in clothes […] It is a man, fairly fat hair, was not the coolest guy in high school… I spend most of my time with computer people and this is almost extra true among them… it is not a random stereotype.”

Carrie Paechter, on the importance of embodiment and style:

- ”It is also important to be aware that legitimacy is connected to embodiment in multiple ways. Legitimate perheripal participation […] is in most cases initially conferred on the basis of bodily forms, and we continue to use an individual's appearance to confirm or to question their membership.” (2006:15)

Nothing new - Sherry Turkle (1984/2005:183)

- On the MIT contest “the ugliest man on campus”:
- ”For several weeks, the students who think of themselves as most ugly parade around the main corridors of the Institute, wearing placards that announce their candidacy. They flaunt their pimples, their pasty complexions, their knobby knees, their thin, undeveloped bodies.”
- A former student: ”Everyone knows that engineers are ugly. To be at Harvard is to be a gentleman, to be sexy, to be desired. To be at MIT is to be a tool, a nerd, a person without a body. The contest just makes irony of the obvious” (Ibid: 183)

CSE and the rejection of the body

- Rejecting the (aestheticized) body:
  - ”No pants pub”
  - ”Plastic wrap pub”
  - ”Gross sketches” – the male body nude, throwing up, “grossing out”.
- Interpretation:
  - ‘Symptomatic’ for intimate male homosocial settings
  - Border work against homoeroticism (cf. Andreasson, 2007; Brännberg, 1998; Skelton, 1993; Žižek, 1997)
  - Border work towards other programs
  - A form of “geek” identity that resonates well with a gendered mind/body split and CSE as ’immaterial’

Consequences

- Daniela, when asked if she considers herself interested in computers: “Well, I am, but it feels as if someone has patented the words “interested in computers” and that definition I do not know if I conform to. That's what’s making me feel hesitant to the term. Because, myself, I think it's really exciting with computers and their possibilities. [...] But still, if someone would ask me "are you interested in computers", I would probably feel compelled to narrow down and clarify what one means with being interested in computers…”
- Dexter: “I do not want the perception to be that if you are a CSE student you are also fat, have a beard and a pony tail and like to play computer games. I really wish that that image, which is unfortunately still prevailing, I wish it would go away so that we can form a new image.”
- Darin: “It is a male dominated program – without men.”

The CE program

- Profound ’expectancy-experience gap’ (cf. Henriksen, Dillon & Ryder 2015)
  - The focus on chemical *technology* surprised many
- Students articulate a very *limited* relation to CE (in sharp contrast to the students at the CSE program).
- Student adopt an instrumental approach to studies.

A limited relation to CE

- Karin: "I really do not know why people end up in the chemical engineering program, there is no one that stands out as particularily interest in chemistry."
- Kristoffer, on whether an interest in chemistry is something one nurtures or has nurtured before or beyond school, "Nah, it's really not. I had no interest in chemistry before meeting it as a school subject. I didn’t engage with it at all"

Manifested in the formal education

- Kajsa: Many classmates have thought that “god no, it's so boring" and "no, do we have to do that now?" and "yikes and boo".
- Kasper suggests that the three, four courses in chemical technology they have studied have been "really tough" to get through because "they have been so terribly boring."
- Karin, responding to whether she has found anything she has studied so far particularly interesting: "No, not really, not so far, more of a constant pain" but she remains on the program because she wants to "get a good education so you can get a good job".
- Instrumentalism a recurring theme: Students emphasize "graduation" and to "get a job" rather than interest in the area.

Instrumentality as pluralization

- The position as CE student is ‘empty’, in the sense that being a CE student does not seem to say so much about who one is or one’s interests.
- Thus, the CE student position becomes more open to identification for both males and females.
- In line with previous research on gender and technology, that suggest that many women emphasize good career opportunities rather than an interest in the subject matter as such (cf. Holth 2012, Lagesen 2008, Margolis & Fisher 2002).

The same phenomenon characterizes the CSE program

- "Most of it is interesting really, but they manage to make things so dull in the courses. You do not realize that it is interesting until the last week in the course. But then there is so much to do, so then it becomes boring anyway.“ (CSE student)
- Dylan, on entire study periods he finds "terribly boring": “You almost become depressed. I mean, you really do get… It's no fun at all to go to school, knowing that 'Whew, now I have to do this and... it's boring ... "
- Darin: "It's like, I don’t enjoy this at all [laughs] There is no pleasure right now. So I just have to finish this crap and move on."

Technology taught – the cause of instrumentality?

- Reductionist technology articulated during ‘non-relational’ teaching. (Fill-in-the blanks during laboratory work, exam questions with irrelevant context and so on).
- Students struggle to find the meaning and relevance of the teaching and subject matter they encounter (cf. Feenberg 2011:161).

Gender relevant?

- As demonstrated above, it is often argued that reductionism, valuing objectivity, rationality and (instrumental) reason establishes technoscience as “masculine”. Women want context and interactive/relational teaching.
- Many of these studies do not show is *how* these aspects of technology and teaching are articulated with masculinity.

Alternative analysis

- The combination of subject matter and the way it is taught privileges ‘the already passionate student’. This student can cope with teaching that fails to engage.
- A position that is primarily available at the CSE program, where it is established and masculinized in contexts *beyond* the formal education.
- Conclusion: Reductionist technology taught in a non-relational mode ‘inherits’ gendered meanings/consequences through the context of where it is enacted.

Thank you for listening!

Questions?