



THE UNIVERSITY OF
MELBOURNE

Science and Engineering in Digital Space

Gender inclusivity in engineering education

Gender Summit – Europe 2021

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Gender inclusivity

Not binary.
However
studies
compare men
and women.

Equity (not equality) in
opportunity to learn, and
engage



Presentation Structure

1. Problems in engineering practice
2. The experience of Ella the engineering student, compared with Ernie the engineering student (in Western countries)
3. Recommendations
4. Relevance to engineering practice

PROBLEMS IN ENGINEERING PRACTICE



Problems in Engineering Practice

1. Women in engineering experience doubted technical competence, and marginalising interactions (Hatmaker).
2. Teamwork and empathy are critical to success of engineering practice (Hess et al.) but engineering faculties are gendered (Acker, Godfrey). Therefore teamwork and empathy have low status, students misunderstand practice, and suffer identity crises upon graduation (Faulkner).

How can educators address the above problems?



EXPERIENCES OF ENGINEERING STUDENTS, ELLA AND ERNIE

Admission Scores

Ella



Ella is likely to
have
matriculated
with a higher
score.

Ernie



Success Rates

Ella



Ella is more
likely to be
successful in
studies.

Ernie



Teamwork Experiences

Ella



Ernie



Ella is likely to:

- miss out on technical roles
- have technical contributions doubted
- have contributions under-valued by peers.

(Tonso; Male, Male, Kim, Sydney)

Workplace Learning Experiences

Ella



Ernie



Ella is likely to experience:

- tuning out when she speaks
- gendered assumptions about her role and capabilities
- doubted technical ability
- attention drawn to her sex over her profession

(Male & MacNish; Male, Gardner et al.)

Transitioning to Managerial Roles

Ella



Ella:

- Needs to demonstrate technical credibility
- Takes short professional courses
- Does not often use formal education, due to limited time

Opportunity for microcredentials?

(Marinelli, Male & Lord)

RECOMMENDATIONS FOR UNIVERSITIES



Recommendations for universities: improve gender inclusion in education to improve practice

1. Teach educators to facilitate inclusive teamwork
2. Teach students about gendered organizations
3. Teach and assess inclusive teamwork processes, including empathic communication
4. Teach inclusive peer review
5. Explore micro-credentials for inclusive lifelong learning

RELEVANCE TO ENGINEERING PRACTICE

By teaching theory about gender, inclusive teamwork skills, inclusive peer-review, and empathic communication, we expect to improve:

1. Inclusion in engineering education
2. Inclusion in engineering practice, and
3. Engineering project outcomes



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