Practice Paper

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TRANSLATING FEMINIST ANALYTICAL CONCEPTS INTO OPERATIONAL TOOLS TO SENSITISE ENGINEERING STUDENTS ON POWERSPLAINING AND MANSPLAINING

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ABSTRACT

We designed a 20-minute interactive session on mansplaining and manterrupting reframed as powersplaining. This paper presents the format, the content and the feedback from 8 training sessions carried out in courses in civil engineering, environmental engineering and architecture. As an expression of entitlement to knowledge, powersplaining is presented as a commonplace behavior of competitive study climates typical of engineering studies. Powersplaining helps to explain self-depreciation, self-doubt, decreased engagement and efficacy. It seems that entitlement to knowledge embodies well the negative impact of powersplaining and mansplaining and successfully prepares participants to respond. We also share our experience, as subject experts outside engineering, in gaining access as well as in capturing engineering students' attention. Participants' feedback showed that the training succeeds in equipping them to react and identify powersplaining. This format seems adequate to address gender-biased communication in engineering education.

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1 INTRODUCTION

The opportunity to offer a targeted implicit bias training to a wide audience was presented to the equality office and the organisational culture expert through a direct request from a faculty council consisting of a dean, faculty, staff, undergraduate and post-graduate students. The request specifically asked to address mansplaining, as discriminatory and down-putting behaviours, mostly addressed to women that are present in formal and informal learning spaces, such as lectures and corridors.

It would be an understatement to say that the reported effects of gender-biased forms of communication in engineering education was not surprising. These and other forms of discrimination have already been documented through internal surveys and widely by research, amongst which an institutional harassment and culture of respect survey (Tormey, 2021; Le Duc, 2022), and the mental health and well-being survey (EPFL, 2022). Both show an impeding need for concrete measures addressing implicit gender biases in communication and their detrimental effects on learners, teachers and staff. The list of effects includes feeling pressured to produce and not complain and a disregard to resilience. These outcomes coincide with emerging studies on discrimination and ethics in Higher Education; for a recent review see Clancy et al (2020); Müller et al (2022) and Isaac et al (2023).

In this paper, we introduce the concept of **powersplaining** as an extension of mansplaining. We define powersplaining as a form of entitlement to knowledge that dismisses or undermines others' expertise, prioritizing status over truth. Here, we defend that powersplaining functions as a social currency that legitimizes inappropriate and harmful behaviours, reinforcing them as normative modes of interaction and particularly in engineering learning environments.

1.1 Many surveys, similar recommendations

Multiple institutional surveys, along with informal conversations, have deepened our understanding of lived experiences related to harassment, diversity and well-being within our institution.

Finding from three surveys consistently show that discriminatory comments and down-putting are often perceived as normalized within the high-performance culture of our setting (Tormey, 2019, Tormey, 2021 & Le Duc, 2022). Such behaviours disproportionately affect students from diverse backgrounds and underrepresented groups, particularly women. These results align with general studies on gender bias in engineering. For example, Farrell & Minerick, (2018) found that repeated exposure to mockery and interruptions have a negative impact on academic performance and potentially drive women to fail or abandon studies.

The 2021 findings of harassment survey (13.5% response rate across students, faculty and staff) show that one in four respondents have witnessed discrimination or

harassment. Also, 44% of female respondents and 16% of male respondents reported receiving belittling comments, such the example below:

'… the teaching assistants bet that I and another girl were going to a certain faculty just because we didn't understand the exercises well'.

A follow-up survey using the same metrics, found an increase in perceived bullying and mobbing from 13% to 19% (Tormey, 2019; EPFL, 2022). This trend is coherent with finding that micro-aggressions are a recurrent form of discrimination towards women in engineering (Kim & Meister, 2023).

These findings, emphasize the need for pedagogical intervention that empower students, especially those from marginalized groups, to respond confidently. Huges, (2017) for example, encourages collaborative teaching that develops critical debate skills in students. Also, de Lima et al, (2024) found that teaching assistants appreciate inclusive-minded teaching approach to problem solving. Contrarily, Danielson's et al (2019) longitudinal study of masculinity and self-confidence in mechanical engineering students found that engineering education reinforces stereotypical masculinity, as men testified to feel naturally equipped to take on the technical studies requiring precision and dedication.

These results seem prevalent in Engineering Education, beyond Europe. In North America, Clancy et al (2020, p, 22614) enlisted implicit biases and follow-up actions, that 'simply don't work', a conclusion aligning with Tadesse, et al (2022) results, advocating for a review of institutional policies.

Lastly, we share some results and the answer to our main question: Did we design a good enough training that raises awareness and prepares participants to respond to acts of entitlement to knowledge reframed as powersplaining?

1.2. Speaking to be heard by linking mansplaining to the educational mission

To fulfil the mandate, we planned a format and selected content to align with the learning goals. 1) raise awareness of problematic behaviours, 2) help participants identify these behaviours when they happen, and 3) equip them with strategies to respond confidently.

The training addressed the concept of mansplaining, which can be met with resistance and aversion, particularly from male teachers and participants -the majority. At the same time, we aimed for a broad and diverse audience, including students and faculty, within varying levels of openness and engagement to learn about mansplaining.

Introducing the topic of gender-biased communication, and its discriminatory or even violent consequences, to a predominantly international male audience with limited

exposure to the humanities posed the challenge of “speaking in an audible language”. To meet this challenge, we connected concepts of mansplaining with the core academic missions of teaching and research. This approach allowed us to engage with the audience without singling out men. The approach also set the floor for critical reflection.

We began by exploring the notion of masculine privilege, and we presented the classic definition for mansplaining. In her seminal book, *Entitled*, Kate Manne, defines mansplaining as:

‘A man presuming to “explain” something incorrect to a more expert female speaker - and in an overtly confident manner, not backing down or admitting his mistake after it has been pointed out to him.’ (Manne, 2021, p.139).

Accordingly, mansplaining is, in essence, a behaviour of *entitlement to knowledge* (which is the title of Manne’s book chapter on the topic). This framing of mansplaining connects it directly to the main currency of the school – knowledge.

We refer to masculine privilege as entitlement to knowledge because it is an inevitable part of an academic institution’s mission. Our assumption is that behaviours implicitly guided by an entitlement to knowledge impact students’ self-confidence and well-being. By organizing collaboration and competition around its main currency – knowledge – a university necessarily is affected by it and has a responsibility for the relations of power related to it.

1.3 Reframing mansplaining as ‘powersplaining’

Experience shows that explicitly targeting men on their masculinity triggers a strong defence mechanism counterproductive to change, especially in vertical and non-participative formats where nuance is not possible. Addressing relations of power via the elicitation of the privileged aspects of social identity is not conducive to self-awareness, on the contrary, it reinforces the status-quo of a social positioning.

Speaking of mansplaining in a predominantly male environment was running the double risk of failing to connect with our audience, and creating the illusion that it is impossible to do so. Failure would inevitably lead to abandoning further attempts to address problematic behaviour related to norms of masculinity (Delval, 2023).

The concept of powersplaining allowed us to achieve two goals: address the issue of mansplaining without compromising on the reality of engineering education and open the discussion to other forms of power relations that might be present, such as racial background, academic status, age, disability, and so on.

Firstly, *entitlement to knowledge* is a function of the perceived power of the speaker over its audience. Mansplaining is directly linked to the way power relations are organized in each context, such as in engineering education. To speak of powersplaining, does not compromise on the reality of mansplaining, particularly

relevant since men are the majority and occupy most positions of power. In other terms, powersplaining is done mostly by men, in this context. Powersplaining allows broadening to other forms communicative biases

Secondly, *entitlement to knowledge* allows to open the conversation on the fact that it is not *because* men are men that they powersplain, but because of the power they have. In a widely international school, power relations can also express themselves relative to racial background, disability, geographical origin, socio-economic status, and academic status (Delval, 2022),

In our educational setting powersplaining is expected and valued. It is normalized , and grants status for its mastery. It is therefore a collective issue that men should engage with, but not solely because they identify as men. We use the concept of powersplaining as a form of entitlement to knowledge, which allows to keep true the feminist meaning behind it manifested regardless of one's gender, or the recipient's gender, and appears as a power differential to justify the behaviour.

2 AN INNOVATIVE FORMAT

2.1 A format where less is more

Our proposal was for broad outreach, of about 800 students. This set the parameters for pedagogical design. Once tailored in a short format, we proposed intercalating into class time.

At our school, teaching is structured in 45-minute periods. The training was designed as a 20' interactive session, brief enough to fit into the early weeks of the semester. Within this time, we defined and illustrated powersplaining, explored real-life situation provided previously by the faculty council and shared key strategies to address it. The interactive format aligns with active learning principles that increase learning (Freeman, 2014). We also chose to co-animate starting with a "comical duo", pretending to be powersplained by the other one, thus breaking the ice with humour, and improving relatability since both of us have a different gender.

Table 1. Planning of intervention (times may vary)

Timing	Description
:00	'Comical duo' Role play setting the tone for taking turns to speak. *Presenter 1 constantly interrupts presenter 2 who gets slightly annoyed. Presenter 1 realises this and apologises saying: 'I felt the need to speak-up, followed by: 'Thank you, it's ok, we are here to talk about this.'*
:03	Explaining aims and ways to participate in the session.
:02	Interactive definition of mansplaining, powersplaining and their impact.
:12	Electronic voting with immediate debriefing of answers. a) Choose a troubling consequence of being powersplained. (single answer, ie. suppresses motivation to engage, makes debate boring, kills my ambition to deliver). b) To you, is gender the reason for powersplaining? (single answer -yes, no, unsure.

	c) Your reaction to being powersplained (multiple answers, ie. Stay quiet and nod, powersplain the powersplainer, look for support). d) Your reaction as a bystander: (multiple answers, ie. Pointing out the behavior, objecting, never seen it). e) I have powersplained (yes, no unsure) f) After following this session, I can explain powersplaining to my peers.
:20	End, thanks, show links to support, information, opportunities for further training.
+2days	Participant feedback survey is sent.

Finally, the intervention ends with the advertising opportunities for longer training on a voluntary basis.

A few days after the session, students from that class receive an email requesting them to respond to an online feedback form. A final reminder was sent closer to the end of the semester.

3 THE COHORT

A total of 8 courses for different student cohorts and in three different programs followed the training. Table 2 summarizes the cohort and the reach our rate. Three criteria were used to select courses: 1) taught by an internal teacher, 2) an obligatory course expecting full cohort attendance, and 3) students grouped in one room. Only one Master level course met the criteria in all three programs.

Table 2: Presence in class vs. student cohort per program.

	Students present/ students registered	**Reach out rate of student presence**
Architecture 3 Bachelor courses	147/529	28%
Civil Engineering 2 Bachelor, 1 Master course	85/127	70%
Environmental Engineering 2 Bachelor courses	90/134	67%

The table above shows the ‘reach out rate’, this is the percentage of students we attempted to contact (reach out to) compared to the total number of those were present, thus contacted. We established student presence by head counts during class, which couldn’t include gender. To respect teacher anonymity, we group courses per program. Presence in a course is not controlled nor obligatory, which helps to explain the reach out rate. It is worth mentioning that teachers preferred not to announce our presence in advance, to ensure students will show up.

4 POSITIVE APPRECIATION AND EFFECTIVE SENSIBILISATION

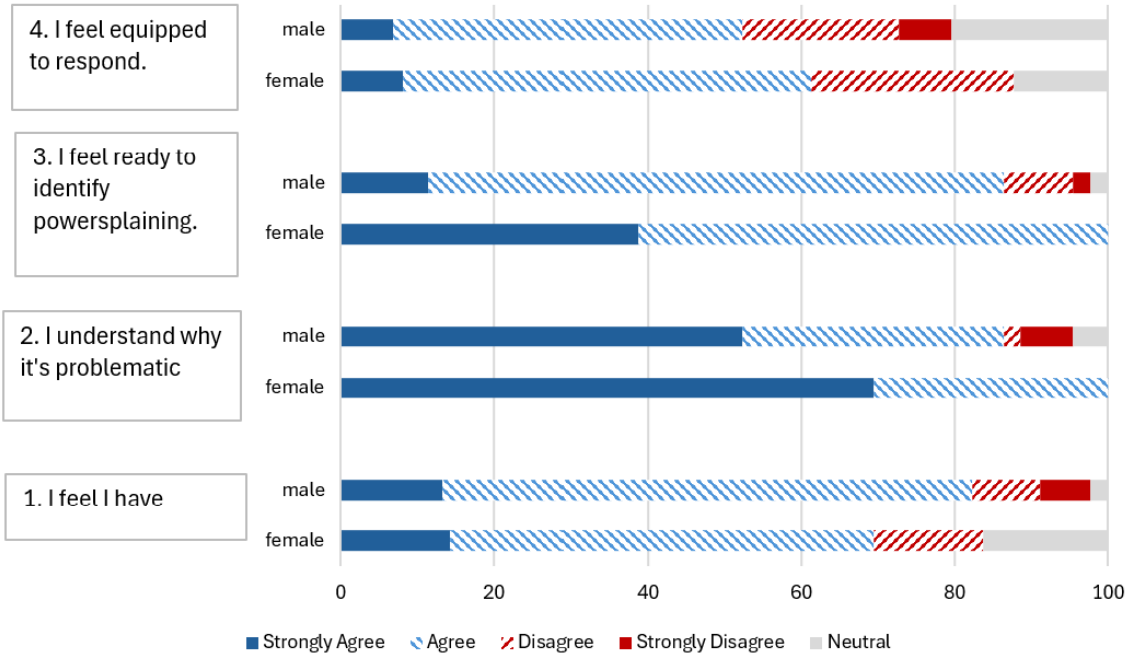
Informal exchanges when discussing the training with teachers is a first qualitative outcome. In more than one occasion speaking of powersplaining is perceived as threatening by faculty who positions themselves as engaged to diversity and inclusion. Likewise, there was a reputational risk: what if people spread rumours

about us being sent to their class because there is a big mansplaining problem already?

Interactivity and humour were essential to engage participants and drive change. The powersplaining session, like other implicit bias trainings, often provoke discomfort, prompting reflection on individual biases. The impact of such training is subject to debate, whether participants are targets or bystanders. Recently studies show promising outcomes: for example, Ballan, et al. (2024) found increased bystander confidence to addressing micro-aggressions in medical care, while Isaac et al (2023) reported that giving students opportunities to discuss and apply strategies foster greater awareness and empathy even if full accountability is difficult to measure.

The result graph below splits data by gender as reported in the feedback survey.

Chart 1: Feedback from 8 sessions, 117respondents / 322 participants (37.5 % response rate of which 46% women, 43% men, 17% NA)



Almost half of respondents were environmental engineering students 47%, followed by civil engineers 29% and architects 22%, also 3% of respondents identified themselves as teachers. We found no significant differences between answers per program.

Results show that overall, we succeeded in offering a training that accommodates into the study routine. It raises awareness about powersplaining and mansplaining and provides a space to reflect on personal implicit biases.

Results show that respondents were already somewhat familiar with powersplaining and felt that the session equipped them to identify it. However, they feel, only moderately equipped to respond, women slightly more than men.

A large majority was positive (58%) or indifferent (24%) to having more sessions like this in the future. They also proposed themes for future sessions such as: discriminatory and hurtful comments towards women, stigma, racism student well-being and stress and workload management and power dynamics. We are now preparing a new session for the next academic year.

4 CONCLUSIONS

This paper described the content and the format for a training aiming to reduce mansplaining and to raise awareness on issues linked to entitlement to knowledge.

The answer to our question, is *yes*, we feel that we found a good format: The short and immersive format was welcomed by 8 courses for civil, environmental engineering and architecture at Bachelor and Master levels. Likewise, the concept *entitlement to knowledge* was a good entry point to raise awareness and self-reflection on to it as well as to prepare participants to address powersplaining.

A main strength was the broad reach out and presenting in classes where people unlikely volunteers would follow the powersplaining session. The low percentage of people uninterested to more sessions, guides us towards proposing new session following this format on related topics.

Student absenteeism was a limitation and because class attendance is not obligatory, it may be adequate to consider course popularity as a selection criterion of courses for future sessions.

With hindsight, it became clear that a key enabler to carry out the trainings and reach more than 300 students from different cohorts was the origin of the request: a Dean, students, faculty and administrators. Henceforth, we recommend that implicit bias trainings, like this one keep a stick to short, interactive and intercalated to class formats, when responding to specific internal requests.

A next step would be presenting this training to doctoral students and teaching assistants, and finding longer formats to engage staff and teachers. A question that remains open is if other themes also pose a reputational threat causing teachers to reject the training.

Finally, addressing hurtful comments, gossip and sexism are among the themes that were proposed for future trainings, and we suggest illustrating these using examples for real life scenarios of ethics in engineering education.

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