Students perceptions of gendered language in an engineering classroom

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Abstract: The importance of language both in written and oral form has been underestimated in engineering education. Observation of an engineering classroom environment identified persistent use of comments with sexual connotations and examples of sexist language both in terms of treating women as objects as well as excluding them from the technological world.

In a study conducted into the dynamics between genders in an engineering classroom in an Australian University, language was identified as a significant aspect of the creating of a gendered environment. The students in this study generally indicated that they were not concerned at all about the use of bias language in the classroom nor to its affect on them or others. However, the questions and discussion on language created the strongest reactions from both sexes in relation to the whole discussion on possible gender differences in the engineering classroom. This study highlights the importance and power of language and the need to understand its use and affect. This paper presents part of the results obtained in the study conducted in 2000.

1.0 BACKGROUND

1.1 The Importance of Language

Language is a guide to our social reality [Wittengstein, 1961, cited in Wilson, 1992] as it both shapes and reflects the way we think [Wilson, 1992; Pauwels, 1991]. Language, in the wider English speaking community, has created a reality which is gender biased, as it often excludes women and can treat women and men unequally. The assumptions that our language makes tend to be that the male is the 'norm', female is the 'other'. Thus the language we are use to is sexist and therefore is ambiguous and unjust to women and girls. The most familiar example is the use of the generic terms such as 'he' or 'man'.

Although adults know logically that 'he' is to be inclusive, they tend to think of 'he' as meaning male. An example which clearly demonstrates the deliberate exclusion that language can create is reiterated by Miller and Swift: a British Act of Parliament in 1850 gave official sanction to the invented concept of the generic 'he' and the concept was adopted by English-speaking-countries. Yet, on the other hand, this same pronoun 'he' has been used as the justification for excluding females from admission to or

membership of institutions whose constitution or bylaws used the generic 'he' to refer to members [Miller and Swift, 1981 pg 33-38].

1.2 Language in Engineering

Engineering, as with other professions is not isolated from the language used in the broader community which is accepted and even expected as appropriate social and professional behaviour. However, engineering does have specific language-related issues which have been allowed to develop through the sub-cultures that operate within the engineering profession.

Fiona Wilson in a paper *Language, technology, gender and power* [1992] argues that men seek, 'knowingly or unknowingly, to facilitate the technological change process by drawing upon linguistic resources which reproduce relations of power'. That is, they can maintain dominance by controlling language and thus recreating reality as it evolves in a constantly gender biased way. Examples which illustrated this include the story retold by Miller and Swift [1981] above and Tonso [1996] and Jolly's [1996] findings of women's experience of overt and covert verbal 'put downs' as well as the persistence of sexist and sexual comments in engineering classrooms.

Sally Hacker's [1989] research on engineering education showed how the images of gender were used in the making of an engineer's skill base and in fact went on to claim that the exclusion of women is part of the process of creating these skills and is done in part through language use. Supporting this notion is Tonso's [1996] work which collected evidence in an engineering design classroom of the mild but persistent use of profanity and attention to semi-sexual, double entendres by male students. This male peer behaviour combined with the male engineering lecturer's persistent use of images from military and hunter/warrior traditions, Tonso concluded, created an environment where women's social worth was undermined and established a context where a female student would find it difficult to coexist with the projected engineering professional values. The discourse, therefore, in this design classroom defined the tone of the classroom and reinforced engineering traditions and to a limited extent redefined customs.

On the positive side we should recognize that our language is not fixed but constantly evolving [Pauwels, 1991] and so it is important to have a greater awareness of these expressions and usages. This paper presents the results of a study done into the perceptions students have on language used in an engineering classroom at an Australian University in 2000.

2.0 THE STUDY

The study on gendered language within an engineering classroom is a section of a much larger study performed to investigate the dynamics in an engineering classroom. To do this both the learning environment and social world of an engineering classroom was studied and the complex interactions between student behaviour, their knowledge, and learning experiences within that classroom was investigated [Burrowes, 2001]. An ethnographic research methodology was used to obtain an understanding of the behaviours and socio-cultural activities and patterns of a group of engineering students,

from their perspective, in a 'typical' engineering classroom setting. Ethnographic research is designed to present a dynamic picture of the student group and their interactions and provide an alternative, more humanistic research paradigm to the traditional empirical scientific method.

The process of ethnographic research is essentially to collect descriptive data as the basis for interpretation and analysis of the research questions. Data for this research study was obtained primarily through fieldwork, which involved both observations of the engineering classroom setting and interviews of participants within that setting. Surveys were also used and have provided some quantitative measures to increase the reliability of the results. Thus, three data collection techniques were used: observation, focus groups and surveys to produce the empirical findings.

The classroom used in this study was a second semester first year subject taken by students in the Mechanical, Environment, Surveying and Civil discipline areas. There were 136 students who participated in each of the two surveys conducted at the beginning and end of the semester, 122 male students and 14 female students (10.3%) which reflects the female average participation in engineering classrooms at the University. Three groups of 6 students participated in the focus groups sessions which were held twice during the semester. There were 12 male students and 6 female students in these focus group sessions. The researcher was also a second tutor in one of the large tutorial groups and so was able to make observations during class sessions as well as in assignment work.

3.0 RESULTS

3.1 Awareness of Gendered Issues

The predominate feeling expressed by the students involved in the study was that the use of gendered language was not an important or relevant issue to consider in their study environment. Yet the questions on language were the ones that stirred the most active responses. In fact, typical comments from students either through the surveys or during the focus group sessions included such statements as: it is *"irrelevant", "not an issue",* we *"don't care"* as well as it *"doesn't bother me, can't understand why it would".* Female students appeared slightly more aware in the focus groups and during tutorial sessions but were not willing or able to do anything. As one female student stated; *"mostly males are referred to but I don't think this is deliberate or has any bearing on my education or (that of) someone of the opposite sex"* (Female Student) [Burrowes, 2001]. A male student also inferred that the occurrences of gendered language were not intentional with *"as if it matters, as long as they don't go overboard. It's usually just a slip of the tongue"* (Male Student) [ibid].

Despite being careful with the terminology which was used in the survey and in the focus group questions there remained an immediate negative or defensive response to these questions. Comments such as *"give feminism a rest, will you"* to *"it is not really an issue if you don't let it be one"* to *"it can't be helped. The majority of classes are made up of males anyway"* illustrate these feelings. Also, *"changing the name of things like manhole cover to say people cover and many other various things, (to try to) equal the different sexes in (the) work place makes me sick, its all just a waste of time"* (Male Student) [ibid].

3.2 Awareness of Gendered Language and Examples

The response from the question on how often students noticed the use of male/female specific language or examples in (a) prescribed texts, (b) lectures, (c) tutorials, (d) laboratories, provided an interesting insight into the

awareness and/or perception students have of gendered language in their study environment. The results, which are presented in Figure 1 (a) to (d), show that the majority of male students believe that there is never or rarely any male/female specific language or examples in texts, lectures, tutorials or laboratories. There was a consistent group of 12 male students (10%) who did specify that male/female language was used in these contexts.
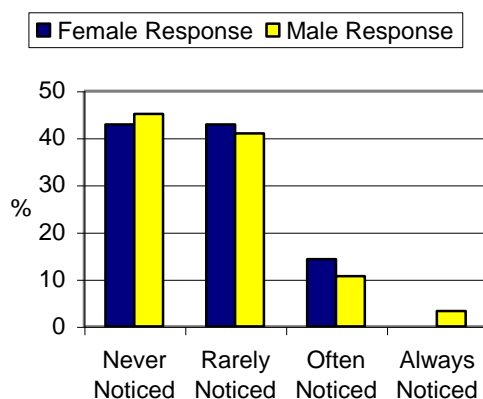
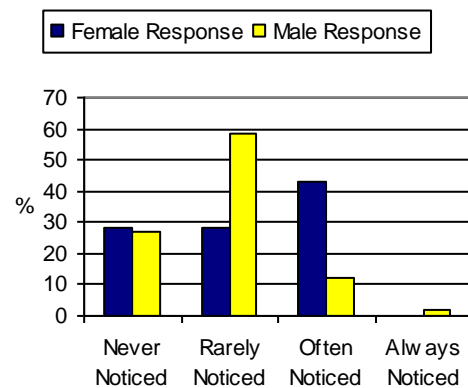**Figure 1(a) Percentage Response to Male/Female Language or Examples Noticed in Textbooks by Gender**

Figure 1(b) Percentage Response to Male/Female Language or Examples Noticed in Lectures by Gender
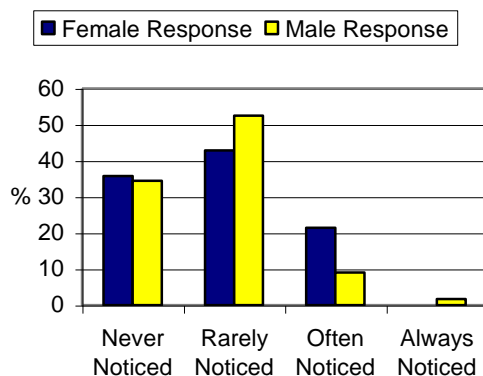

Figure 1(c) Percentage Response to Male/Female Language or Examples Noticed in Tutorials by Gender
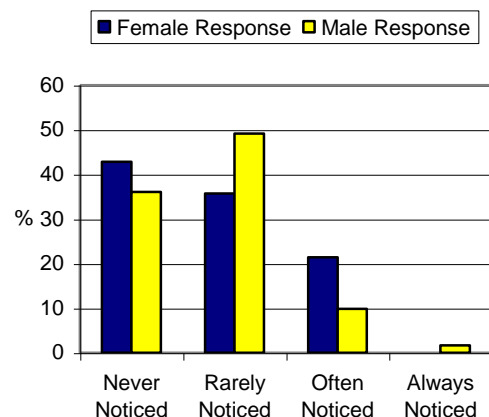

Figure 1(d) Percentage Response to Male/Female Language or Examples Noticed in Laboratories by Gender

Whilst women's responses to this question were also similar in supporting the 'never' or 'rarely' did they find male/female specific language or examples in tutorials, texts or laboratories, there was 44% of the female students who did find that gendered language 'often' occurred during lectures, Figure 1(b).

When asked which gender this language referred to, male student responses were much more divided with 45% saying 'I don't know' and 45% saying it was 'male' with the remaining 10% saying that it was 'female' language/examples. Female student responses were more consistent with 82% saying that the language was 'male' with the other 18% saying 'I don't know' and none of them saying it was female. These results are presented in Figure 2.

3.3 Affect of Gendered Language and Examples on Aspects of the Learning Environment

To the question on whether the students in the study felt that they were affected by the use of gendered language, both the male and female student responses showed a strong dismissive attitude. The results illustrated in Figure 3 show that all of the female students said that this (male) language and examples did not make them 'feel uncomfortable' nor did it 'hinder their learning' or 'affect their assessment'. More specifically in terms of making them feel uncomfortable there were comments such as *'depending on the context'* and *'I merely feel this unfair'* (not uncomfortable).

The male students on the other hand also generally felt that gendered language and examples did not adversely affect their learning with only a small percentage of male students indicating some issues. Four male students selected the 'yes' response to all, which I suspect from later discussions was their way of protesting to the survey.
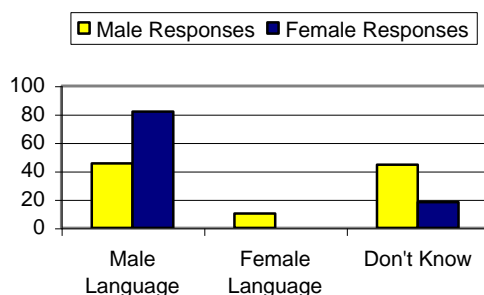

Figure 2 Percentage Responses by Gender to whether Male or Female Language is Used
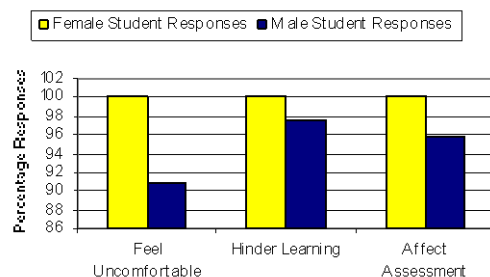
Figure 3 The NO response by Gender of whether the use of male/female language or examples affected aspects of their learning environment

As with other questions asked in the study the initial responses were generally negative and defensive. However, contrary to the above results and some comments made by female students during the tutorial session, 30% responded in the survey to the fact that there was a need to challenge the bias (Figure 4). Also, the comments from female students in the focus group sessions supported the need to challenge the bias, however, most were accepting of the environment. *'I am a female and I don't really see it as an issue, as long as I can understand it I don't care '*(Female Student) [Burrowes, 2001].

On several occasions, female students would make excuses for the male students despite not being happy about it. Comments such as: *"in the context that they are completely*

unable to understand" and *"seems to make them feel more acceptable. It gives me the shits"* provides an insight into the deeper feelings of many of the female students. (Female Students) [ibid].
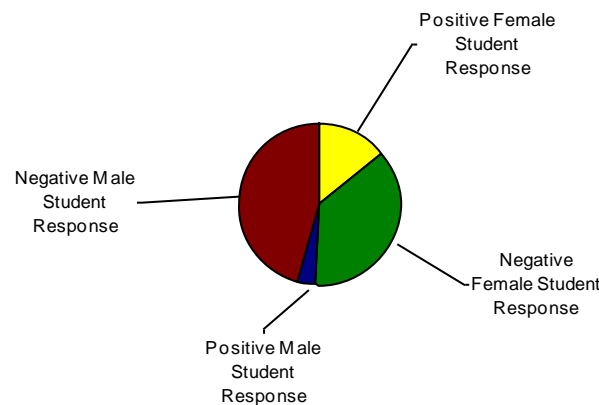

Figure 4 Responses By Gender to Whether They Would Challenge Any Gender Language Bias

One male student commented in the survey *"if I was a female, I would probably challenge the bias, but the language usually assumes male. If it were to assume female most of the time I certainly would challenge it"* (Male Student) [ibid].

During the focus groups sessions there was a genuine feeling from a small percentage of males in the overall group that women did have a difficult time in this area and that they felt most males were not interested or didn't understand or didn't care. A conversation between an male student (MS) and a female student (FS) went as follows.

MS: *"Well I think women add a real separate tone to the group. If there are women present, in a study group or tutorial, they normally set the standard of language"*
FS: *"So it doesn't sink down to the gutter, is that what you are saying?"*
MS: *"Well, yeah. Some blokes can get pretty crude"*
FS: *"And some of the lecturers as well. You can see them stopping themselves before they say something smart because there are females in the audience."*
MS: *"Sometimes it is just a bit of a joke or a bit of play on words but everyone laughs at it. Gee, you could get in a lot of trouble if anyone objected but no one ever has."*

4.0 DISCUSSION & FUTURE WORK

Women are socialized to gendered language in their broader social context and in non-traditional areas of mathematics and science subjects at school. They have therefore already developed mechanisms to deal with the use of gendered language.

There was a significant amount of acceptance amongst female students that this was 'the way it was' and that they were not willing or able to do anything about it. In general female students felt that they just didn't notice the use of male language and therefore it didn't make them feel uncomfortable. If it did occur they made excuses that it wasn't meant to mean anything. As gendered language is accepted there is no perceived disadvantage and therefore the suspected erosion of their confidence and comfort in the environment is not clearly seen by both genders

On the other hand, male students were not interested and felt quite threatened by the discussions on gendered language. Generally they would tend to claim that there was no use of gendered language and that they simply could not see any bias. They clearly spoke out if they thought that there was even an attempt to change the status quo and were quick to challenge any changes. Several male students indicated that they felt that it was ridiculous that women should have a problem with male language and would simply put it down to it being an irrelevant issue (irrelevant to them of course). There were a few male students who attempted to evaluate the situation from a female perspective and were also able to sympathise with the difficult situation that the female students have. There seems much potential to work with these positive sentiments.

There is still much work needed to gain a clearer picture of the complexities of language use and affect in the engineering classroom. Understanding of a broader student population as well as the staff perspective needs to continue as our language continues to change. This change then needs to be influenced so that new forms of expression can be developed to describe engineering functions and interactions within engineering in non-discriminatory ways.

Deconstruction techniques have already been presented by researchers to unsettle engineering practice in areas of design [Tonso, 1996] and culture [Copland & Lewis, 1998] to interrupt the fundamental images and assumptions made in engineering that position women (in particular) in the margins of the discourse. The value in this methodology is that it can also begin to build a different way of thinking of language that will be needed to begin a change process towards a genderless classroom.

5.0 CONCLUSION

Language is one of the strongest determinants of the classroom experience for students, yet potentially one of the hardest aspects to address as students in general trivialise it and claim not to recognise it. Students also responded emotionally to the discussion that was generated when gendered language was raised. Yet the continued denial of language use and its power to devalue women is a critical issue for women who are coping subconsciously with the often unintentional questioning of their place in the engineering classroom.

Much of the sexist language which occurs in the engineering classroom, more often than not is not deliberate. Language has been demonstrated to be integral to the practice of power in technological fields, so while the 'male as norm' syndrome continues, there needs to be a conscious questioning of the status of language practices within engineering classrooms instead of excuses.

In changing our language we can challenge any unspoken assumptions and more accurately reflect the reality of the culture and if engineering is to become truly genderless then language will be an aspect that needs special consideration.

6.0 REFERENCES

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7.0 ACKNOWLEDGEMENTS