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# An Investigation into the Contribution of Student Profile, Student-Lecturer Interaction and Student Workload in Teaching Evaluations

D.S. Liyanapathirana

*School of Computing, Engineering and Mathematics, University of Western Sydney, Penrith, NSW 2751, Australia*

*Corresponding Author Email: [s.liyanapathirana@uws.edu.au](mailto:s.liyanapathirana@uws.edu.au)*

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## BACKGROUND

These days, in higher education institutions, teaching evaluations are compulsory for academics. They are used as a measure of the quality of teaching provided by the academics to students. However, teaching evaluations can be affected by many variables over which academics may not have any control. These can either be the nature of a unit (the level of mathematical knowledge required for a particular unit in an engineering course), interaction between students and the lecturer, the profile of students (gender, academic and cultural background), or the profile of lecturers (personality, expertise, gender, cultural background and general appearance). In addition, assessment tasks developed by academics aimed at improving the standard of units can also have an impact on teaching evaluations as they will increase the workload of a particular unit relative to the other units for the same cohort of students. Therefore it is questionable whether teaching evaluations provide a true picture of a lecturer's ability or effectiveness in teaching.

## PURPOSE

This paper investigates the influence of student profile, student-lecturer interaction and increased student workload on teaching evaluations. Also, the paper investigates whether there is any correlation between teaching evaluations and student grades.

## DESIGN/METHOD

Teaching evaluations received by a lecturer while teaching at two Australian universities are used for this study. These evaluations are collected for two units in the Engineering program with similar content. Also, student grades are collected for these units at the end of semester during the same period over which teaching evaluations were obtained. The student entry requirements and demographics of the two universities are used to define the profile of students. Hence the profile defined is merely an indicator of the academic achievement of students before gaining entry to each university and the cultural background. Also, the profile of the lecturer is not included because the collected teaching evaluations are for one lecturer. The influence of student workload is assessed based on the assessments given to students during the semester which contribute to the final grade, and the student-lecturer interaction is studied using teaching evaluations for small and large classes.

## RESULTS

The data collected during this investigation clearly demonstrates that there is a correlation between student profile, student workload for a particular unit, student-lecturer interaction and the teaching evaluations. Conversely, there is no correlation between student grades or pass rate and the teaching evaluations.

## CONCLUSIONS

It appears that the profile of students, workload and student-lecturer interaction may have a significant influence on the teaching evaluations. Use of this data to measure the quality of teaching provided by academics may not be ideal. Hence other measures such as peer review processes by colleagues, and questionnaires with open ended questions rather than quantitative measures need to be integrated with traditional teaching evaluations.

## KEYWORDS

Teaching evaluations, student profiles, student-lecturer interaction, student workload

## INTRODUCTION

Student evaluation of teaching is compulsory in universities these days for all the units taught by lecturers. These evaluation surveys give valuable data in relation to the student perception of the unit and the teaching style of the lecturers. They can be used to improve the quality of the service provided to students and teaching style of the academic staff member to a certain extent. However, the teaching style depends on the personality of lecturers and it is difficult to completely change the individuality of a lecturer based on the comments made by students.

Although teaching evaluations are developed to measure teaching effectiveness, universities are tending to put a higher emphasis on these evaluations in academic promotion processes and during the performance review process at the end of a probationary period leading to tenure. Therefore student evaluations of teaching (SETs) have become a subject of great importance to university lecturers (Hobson and Talbot 2001, Lindahl and Unger 2010) and there is discussion among academics whether it is reasonable to put such a weight on these evaluations ignoring other factors which can contribute to the comments made by students. As pointed out by Dolnicar and Grün (2009), SETs are not developed for comparative use but when they are presented to the promotions and probations committees, they are compared for academics from different disciplines giving the same weight, without giving due consideration for profile of students, and the degree of difficulty of the unit with respect to other units studied by the student cohort. The traditional SETs used in universities do not collect this additional data, which may have a significant contribution to the overall numerical values given by the students for a particular lecturer.

According to the literature (e.g., Blackhart et al. 2006; McPherson and Jewell 2007; Lindahl and Unger 2010) these evaluations can be influenced by various factors such as staff member's teaching load, grading leniency, student interest in the material, entertaining personal style and physical attractiveness. The Dr Fox effect presented by Naftulin et al. (1973) supported the hypothesis that the personality of the lecturer has an influence on SETs more than the quality of the content presented to students. Later, Kulik (2001) pointed out that the Dr Fox study is not relevant for the current context within which SETs are carried out in the higher education sector because the Dr Fox study is based on only one lecture. Recently Backer (2008) presented a case study over a semester long period with a charismatic lecturer with poor subject knowledge. He gave higher marks for reports which discussed theories incorrectly, yet students rated this lecturer highly despite his poor subject knowledge. When the students were asked to provide reports about the lecturer's teaching towards the end of the semester by the coordinator confidentially, students raised their concern about the lack of subject matter presented during the lectures but students were seduced to give favourable evaluations for his teaching. This study confirmed that it is possible to receive higher student ratings if you teach with charisma and wit but without adequate subject knowledge or content over a long period (in this case over one semester).

According to Lindahl and Unger (2010), sometimes SETs can be biased by the gender, physical attractiveness or the race of the lecturer. Sample of comments written by students examined by the author also confirmed that students tend to write comments about what lecturers wear only for female lecturers. In one sample a student wrote "She wears the same shirt for all lectures and needs more clothes". Lindahl and Unger (2010) also mentioned that one student simply wrote to a female lecturer: "Nice ass". Recent SET results for an Asian academic staff member with a very good command of English, a number of students wrote that "It is difficult to understand his English". However, the majority of student comments reflected very strong and encouraging comments about his teaching with comments such as "You are the best teacher" and "I enjoyed attending this class". When the SETs are interpreted in terms of scores received for each question, it is an average numerical value

with scores given by all students including students who put more emphasis on the gender and race of the lecturer than their learning experience or the teaching effectiveness.

Another factor which can significantly contribute to SETs is the profile of students. Profile can be defined using gender, cultural and academic backgrounds of students as well as personality characteristics. According to Palmer et al. (2011) and Moghaddam et al. (2009), personality characteristics of students can also have a significant effect on student responses. Palmer et al. (2011) discussed the influence of the personality characteristic "Agreeableness" on the student response because a person with this characteristic emphasises good qualities of others. During SETs it is difficult to measure the personality characteristics of students or the degree of student-lecturer interaction, especially in large classes with more than 150 students which we teach in the Civil Engineering discipline currently. However, gender, academic background and cultural background are measurable parameters.

In the literature, a number of studies can be found investigating the effect of gender bias on SETs. These studies report conflicting results. Studies by Basow and Silberg (1987) and Etaugh and Riley (1983) found that male students rate female lecturers lower than male lecturers but female students rated male and female lecturers as similarly effective in teaching. In another study Basow and Distenfeld (1985) and Basow and Howe (1987) reported that there is an extremely small difference or no difference between SETs by female and male students on female and male lecturers. Centra and Gaubatz (2000) investigated SETs gathered for male and female lecturers from male and female students. The data set included 741 classes and out of them female lecturers taught 211 classes. The data were gathered over three semesters and from 21 institutions. Due to the large sample size, the collected data can be considered reliable. The eight variables they considered in this analysis showed that female lecturers received higher ratings from female students for six variables: organization, communication, quality of the exams and assessments, feedback and interaction with students. Male lecturers received equal ratings from both male and female students. This study has not considered any engineering units but Natural Science is the male dominated field compared to other fields included in this study. SETs from Natural Science showed that female and male students rated female lecturers higher than male lecturers in certain areas (helpful and approachable). Therefore it is clear that there is some gender bias included in SETs. However, in Engineering, where female student numbers are extremely small, gender bias may not be that significant in overall SETs but we need to further investigate this point.

Regarding the effect of academic background on SETs, Pike (1991) showed that there is a tendency for students with good grades to rank their teachers highly. Langbein (1994), and Sidanius and Crane (1989) showed that students with overall high GPAs tend to give lower evaluations for a particular unit but if the expected grade for that unit is high, students tend to rate the lecturer highly. These studies suggest that of SETs are simply an indication of the examination marks they received. Therefore it is a question whether we can improve SETs by giving students higher grades, employing easy exams or soft marking. Also on the other hand, if the teaching quality is good, students' academic performance should improve. Then the higher ratings given by the students are a result of higher teaching quality and not a result of good grades they received for the unit (Jones, 1988). The research carried out by Jones (1988) using 900 students from four separate entry cohorts confirmed that there is a relationship between student grades and SETs only when the teaching is rated above average.

The cultural background is another factor which can have a significant impact on students' perception on lecturers (den Brok et al. 2002). Cultural background influence the way students think and the way they rate different characteristics of lecturers. When the lecturers and students come from the same minority cultural background, the closeness, identification of students by the lecturers and respect from students is inevitable. Alternatively, when the lecturer is from the negative minority (e.g., Asian or African) compared to the cultural

background of the white majority of a class, it is inevitable that the white majority will rate the lecturers from the minority negatively (Avecilla and Vergara, 2011) on intellectual competence (Ho et al, 2009), helpfulness, clarity and overall quality but rated highly on easiness (Reid, 2010). Avecilla and Vergara (2011) studied the influence of cultural background using student groups from Thai, Asian, African, British, American and Canadian backgrounds and lecturers from Thai background. In their study British, American and Canadian students rated Thai lecturers highly in teaching effectiveness and discipline within the class. However, Asian, Thai and African students rated Thai lecturers with lower ratings. The study by Busser (2007) showed that the cultural background difference between students and lecturers does not have a significant influence on SETs. However, the majority of research shows that cultural background influences on student SET scores.

Endo and Harpel (1982) showed that student interaction with staff is also a factor contributing to SETs. If a student is doing their assigned tasks to a high standard and interacts with a lecturer, it is inevitable that a good relationship will develop between the lecturer and the student. Also the lecturers tend to interact more with students who share their personality characteristics. Then at the time they respond to SETs, they tend to rate that particular lecturer highly.

This literature review clearly shows that there are a number of variables controlling the students' judgement on teaching effectiveness. It is difficult to measure the effect of some variables quantitatively, for example the degree of interaction between students and lecturers, physical attraction and the charisma of lecturers. However, factors such as the academic background of students, cultural background of students and lecturers, and gender of students and lecturers can be measured quantitatively.

In this paper the SETs collected by one lecturer in two universities are used to investigate the influence of student academic and cultural background on SETs. Student gender bias has not been investigated because in all samples, the number of female students is a small proportion compared to male students. The student-lecturer interaction cannot be measured directly. However, data collected in small tutorial and lecture settings are used to investigate the effect of interaction on SETs because interaction is high in a small tutorial setting compared to a lecture with more than 150 students. In addition, end of the semester grades for the same classes are compared to see whether there is any correlation between exam results and SETs.

## **METHOD**

For this study SETs collected at two universities (A and B) by a lecturer over a period of six years are used. These surveys are carried out for a unit in the Civil Engineering program and the content of the two units and assessment tasks are similar, except in Year 3 at University B. The demographics data are not collected during the normal survey process but the university has a record of this data and they are used for the paper. That means they are not exactly the same for the sample of students who completed the SETs but are an average representation of the students enrolled for the unit. The profile of students is defined based on the academic and cultural backgrounds of students. The academic background is measured using the entry requirements to be fulfilled by the students to get entry into each university and not using the current GPA of each student cohort calculated based on the units completed by students at the university. This criterion is used because the GPA of previously completed units may not be uniform due to the different course structures at two universities. The entry criterion for the Engineering degree at University A is: ATAR of about 80, 2 units of English and Mathematics (Mathematics extension 1 or 2 or General Mathematics with minimum 65%). For University B, an ATAR of 70 and no other criteria needs to be met.

In addition to the student profile, this study investigated whether there is any correlation between student-lecturer interaction and SETs. Student-lecturer interaction cannot be measured quantitatively as a direct measure. Hence SETs collected from small tutorial

classes with about 25 students, where the student-lecturer interaction is high, and lectures with about 150 students, where the student-lecturer interaction is low, are compared.

Also it is investigated whether there is any correlation between the student learning outcomes and SETs. In all instances the teaching evaluations were collected before the end of the semester and at that time students did not know their final grade for the unit. Therefore it is difficult to gather this information in class, from the same set of students who completed the SETs. Instead, the learning outcomes are measured using the end of semester exam results for the students enrolled in the unit.

## RESULTS

Figures 1 and 2 show the mean student feedback for the lecturer while teaching at University A and University B, respectively. Clearly the student cohort at University A has ranked the lecturer highly compared to the student cohort at University B. Their satisfaction about the lecturer is high and also the lecturer's teaching satisfaction is high at University A because the students showed an interest towards the unit and actively participated in the classroom discussions and activities. If the profile based on the cultural background is compared for the two universities, about 90% of the students in University A are Australian born Caucasian students. In University B, about 40% are Australian born Caucasian students and about 20% of students are of Middle Eastern origin. As discussed in the previous section, there is a clear difference between the entry criteria for the engineering degrees at the two universities and hence the academic background of students. For many Civil Engineering units (e.g., Engineering Computing, Geomechanics, Mechanics of Materials, Structural Analysis), the background mathematics knowledge and interest towards learning mathematical concepts is important to complete the units successfully. Due to the entry criteria of University A, all students entered the course had completed year 12 Mathematics and show some interest towards Mathematics. Their classroom participation clearly demonstrated that they enjoyed learning the unit. Therefore lecturer received higher SET at University A than at University B.

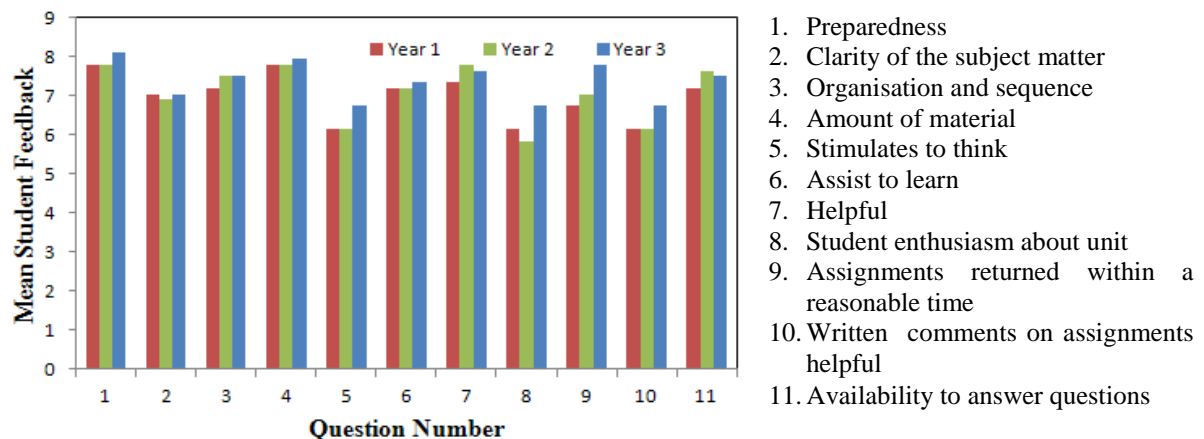


Figure 1. Mean student feedback – University A (score out of 9).

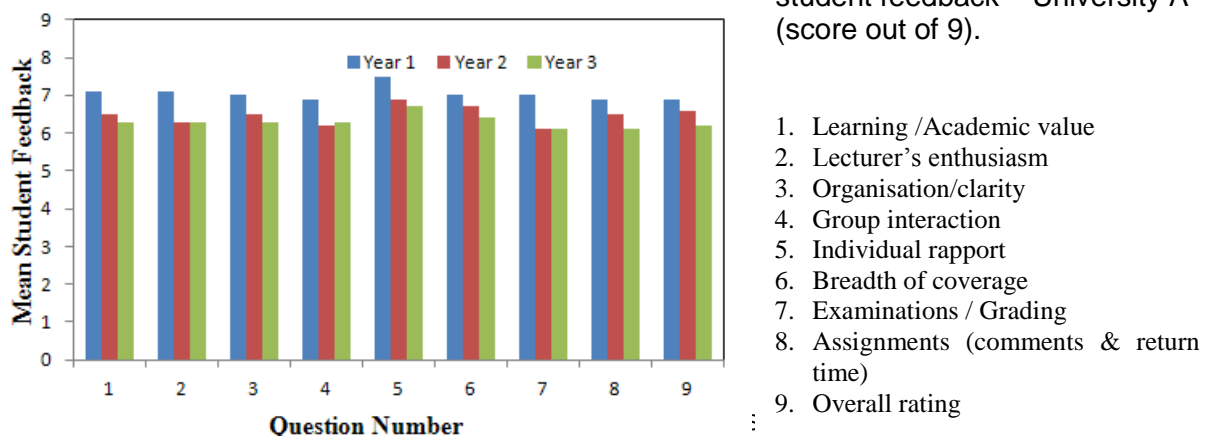


Figure 2. Mean student feedback – University B (score out of 9).

In University A, tutorials are held in the lecture theatre for the whole class and the lecturer and a tutor assisted students during the tutorial. During the three year period at University B, years 1 and 3, tutorials were held for small groups of students less than 25 in each class and in year 2, a lecture tutorial is held for the whole class in the lecture theatre. As a result, year 2 SETs are less than year 1. The written comments by students in year 2 showed that they did not appreciate the large lecture tutorial. The assessment tasks in first two years consist of two in-class quizzes, two lab reports and a two hour final exam. Lecturer could clearly see that the students in University B had difficulty in understanding the concepts and completing the two in-class quizzes. Therefore, online quizzes are introduced in the third year and allowed students to complete them outside the class within a specified time. All students were requested to complete four online quizzes. Each quiz covered three sections covered before the date of the Quiz. The SET completed after the fourth Quiz before the final exam showed that students were not happy about doing four quizzes for one unit. The lower SET for the third year shown in Figure 2 clearly shows that the increased workload has contributed to the decline in SET compared to Years 1 and 2.

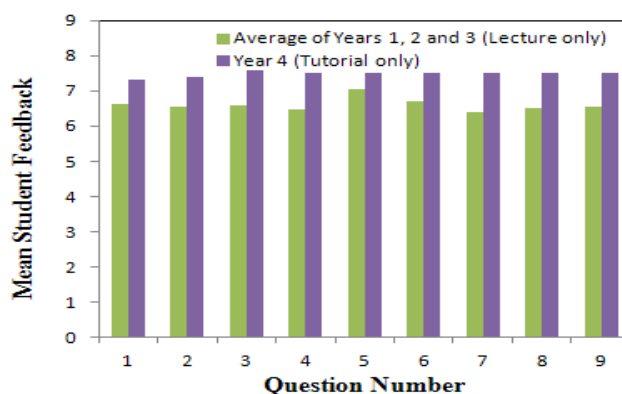


Figure 3. Comparison of SET for lectures and small tutorial classes.

The effect of student-lecturer interaction on SET is investigated using SETs collected during the lectures with about 150 students and small tutorial classes with about 25 students. In Figure 3, the average SET for lectures are calculated using data given in Figure 2 for Years 1, 2 and 3. In the fourth year (University B), the lecturer collected SET from three small tutorial classes and this data set is compared with the average SET from the lectures. During the lectures, the interaction between students and the lecturer is less due to the size of the large lecture theatre and the large number of students. In the tutorial class, a room with flat floor, a lecturer could walk around the class and interact with students. Also the lecturer tried to remember the student names and tried to improve the student-lecturer interaction. These results clearly show a significant improvement in the SETs when the interaction is high.

The effect of SET on student grades is investigated using SETs from Universities A and B. At University A, the failure rate of students decreased from 23% to 13%. Also SET has increased from Years 1 to 3. At University B, SETs decrease from Year 2 to 3, but the failure rate decreased from about 22% to 18%. Therefore, it is clear that there is no relationship between student grades and SET.

## CONCLUSIONS

This study shows that the profile of students, student workload and student-lecturer interaction may have a significant influence on teaching evaluation data. Use of these data

to measure the quality of teaching provided by academics may not be ideal because the student profiles are beyond the control of lecturers. Reduced student workload in the light of increasing SETs may have serious implications on the quality of a unit. Also the reduced size of tutorial classes may increase the workload of academics beyond capacity, especially in the Australian higher education sector with declining funding for additional tutors or demonstrators, although student ratings show a significant increase in student satisfaction when the student-lecturer interaction increases in a small tutorial setting. Therefore it is questionable whether it is reasonable to use these quantitative data as a measure of teaching ability of a lecturer for academic promotions and tenure. Hence other measures such as peer review processes by colleagues in the same discipline area, and questionnaires with open ended questions rather than solely quantitative measures need to be integrated with traditional teaching evaluations.

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