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Outcomes and evaluations: Is there a relationship between indicators of student success and student evaluations of learning?

Beatrice Tucker
Curtin University, Perth, Australia
B.Tucker@curtin.edu.au

Julie-Ann Pegden
Curtin University, Perth, Australia
J.Pegden@curtin.edu.au

Jon Yorke
Curtin University, Perth, Australia
J.Yorke@curtin.edu.au

Contemporary Australian higher education policy draws together a number of measures of quality relating to the student experience and the achievement of learning outcomes within a regulatory framework. New performance indicators are in the process of being developed and piloted, with results ultimately to be made public on the 'My University' website. This paper explores the connections between existing institutional measures of the student experience and the outcomes these students achieve at the level of the individual unit of study within the context of a large university in Western Australia. Fulltime students enrolled in seven core units in the first year of a Bachelor course were studied (n=2920). Student evaluation data (qualitative and quantitative), unit grades and course retention data were interrogated. A number of patterns were observed relating to student evaluations and student achievement which were in places contrary to previous findings. This observation has implications for the external publication of evaluation data and student outcomes. Suggestions for internal quality improvement approaches are identified and discussed.

Keywords: student evaluation of teaching and learning, student grades, student retention

Introduction

Higher education institutions have had an enduring interest in the quality of the student experience and the learning outcomes they achieve. In Australia, the student experience has been appraised using the long standing Course Experience Questionnaire (CEQ), a survey instrument administered to recent graduates. The CEQ is partnered with the Graduate Destination Survey (GDS), a survey instrument which collects information about the activities of graduates after they have completed their studies. Together, the CEQ and GDS are collectively known as the Australian Graduate Survey (AGS). It is important to note that both surveys report recent graduates' evaluation of a whole programme. Other institution-specific surveys are also used for quality improvement and assurance, with a range of approaches in use across the sector.

The landmark *Review of Australian Higher Education* (Bradley, Noonan, Nugent, & Scales, 2008) pointed to a number of concerns with the continued use of these indicators, asserting that "Australia has now fallen behind its major competitor countries on key teaching and

student experience indicators" and arguing that a "comprehensive approach to measuring and monitoring the level of student engagement and the total student experience" was needed, thereby drawing more closely together the student experience and the achievement of learning outcomes (Bradley et al., 2008, p.78). Federal Government subsequently accepted the majority of the Review's recommendations, establishing the *Transforming Australia's Higher Education System* policy position in May 2009. This landmark policy paper foreshadowed the formation of the Tertiary Education Quality Standards Agency (TEQSA) as a single unified regulator for the sector and proposed the introduction of a suite of new performance indicators.

On 29th January 2012, TEQSA commenced its regulatory duties. TEQSA itself is regulated by the Tertiary Education Quality and Standards Agency Act 2011, with six 'objects' (objectives) established to define an operational frame of reference. In addition to objects relating to the assurance of quality and the protection of Australia's reputation, a final object requires TEQSA to ensure the provision of information relating to higher education in Australia, to both current and future students. In part, this provision of information will be achieved through the publication of institutional information on the forthcoming My University website (DEEWR, 2011). Inevitably, institutions are sensitive to the publication of quality information, and particularly so when new performance indicators are to be deployed.

It is anticipated that the tools for measuring the student experience will include the new University Experience Survey (UES) and an updated version of the GDS (DEEWR, 2011). A draft version of the UES was piloted during 2011, with a number of recommendations arising from that trial phase (Radloff, Coates, James, & Krause, 2011). Firstly, Radloff et al. suggest that students in their first and final year of their bachelor program should be surveyed about their experience in three core areas: Learner Engagement, Teaching and Support, and Educational Development. They further suggest that sampling should be conducted so as to yield reports at the level of the discipline within an institution. Such evaluations, occurring at stages prior to graduation, therefore constitute a departure from the long standing post-programme view taken by the CEQ and GDS.

Alongside such measures of student experience, other measures (such as an Australian version of the Collegiate Learning Assessment) will aim to provide evidence of academic standards. Higher education institutions therefore face new challenges in the evidencing of quality of teaching and learning outcomes within a regulatory framework that focuses on the demonstrated achievement of academic standards and the measurement of the student experience.

Despite the external facing nature of the proposed indicator framework, institutions will presumably also wish to use such measures for internal quality improvement purposes. There has been a long standing (if somewhat inconclusive) interest in the connection between surveys of student experience and assessments of student achievement. The study reported here aims to make a contribution to that discussion, within the context of an emergent quality framework to be established for Australian higher education.

Literature review

Previous research has focused on the connections between graduate surveys and final outcomes (such as Trigwell & Prosser, 1991) however studies of this type do not, by definition, investigate the relationship between student evaluations and outcomes at the level of the **unit** of study (as opposed to the broader level of the whole programme). There is a significant positive correlation between academic achievement and students overall satisfaction with their courses,

as perceived by graduates using the Course Experience Questionnaire (Wilson, Lizzio, & Ramsden, 1997). However, the Course Experience Questionnaire survey measures a different construct than surveys used by students for evaluating student experiences of teaching and learning, the focus of this investigation (Hirschberg, Lye, Davies, & Johnston, 2011). Much of the research on evaluation instruments has focussed on students' grade expectations and their evaluations of teaching (Marsh, 2007). Results of studies on the correlation between grades and student evaluations of teaching differ, showing either no relationship or a positive relationship (Patrick, 2009). Mustafa and Chiang (2006) investigated the relationship between student evaluations of teachers and student grades. They established that students with a low grade point average (GPA) believe the teacher has a significant role in enhancing the content of the unit in contrast to students with a high GPA who perceive the unit content is more significant in enhancing the quality of education (Mustafa & Chiang, 2006). A model for evaluating student perceptions of their learning outcomes and satisfaction has been developed (Duque & Weeks, 2010) however, to date, there is little research on the relationship between student perceptions of their learning and objective measures of their learning outcomes such as grades or retention.

The research, mainly conducted on small student numbers, indicates there is a modest relationship between student grades and learning and a small relationship between student ratings of teaching effectiveness and learning (Arthur, Tubre´, Paul, & Edens, 2003; Spooren & Mortelmans, 2006; Stark-Wroblewski, Ahlering, & Brill, 2007). However, the student evaluation instrument used by Arthur et al. and Stark-Wroblewski et al. measures student perceptions of teacher attributes and behaviours rather than their perceptions of learning. In a much larger study of 16,484 students and 434 lecturers, no correlations were found between student grades and teacher evaluations (Davidovitch & Soen, 2009).

Indicators currently used by many universities for quality improvement include the results of internally developed student evaluation surveys and indicators of student success (such as retention rates and pass rates). At Curtin, such quality improvement tools focus on the improvement of the student's experience at the level of the course (i.e. the degree program). Annual course reviews provide a regular process for monitoring the quality of a course, partnered by a comprehensive course review that provides the opportunity for a complete review of the academic program, its structure, the student pathways, student profile, curriculum, quality of teaching and learning, assessments and graduate outcomes (Jones & Oliver, 2008; Oliver, Ferns, Whelan, & Lilly, 2010; Oliver, Jones, Ferns, & Tucker, 2007).

The course review process draws on a number of sources of data including pass rates, retention rates and student evaluations of their teaching and learning experiences. This information is gathered at the level of the individual unit of study within the course (Ferns, McMahon, & Yorke, 2009; Jones & Oliver, 2008). As the first year curriculum has a critical role to play in engaging students and in their subsequent success and retention (Kift, 2008), first year student retention and pass rates are interrogated along with grade profiles for all units. Analysis of this data provides the course academic team with a better understanding of student expectations.

In 2005, Curtin implemented a university-wide system called *e*VALUate for gathering and reporting students' perceptions of their learning experiences. *e*VALUate comprises a unit survey and a teaching survey. The unit survey contains eleven quantitative items and two qualitative items (see Appendix). Quantitative items ask students for their perceptions of what helped their achievement of unit learning outcomes (Items 1 to 7), their engagement and motivation (Items 8 to10) and overall satisfaction (Item 11) (Oliver, Tucker, Gupta, & Yeo, 2008). This unit survey differs radically from other student evaluation of teaching instruments which mainly

focus on what the teacher does: it reflects Curtin's commitment to student learning through an outcomes-focused approach whereby learning experiences (including face-to face teaching, online learning, fieldwork, studios, laboratories, clinics and so on) are designed to help students achieve the unit learning outcomes.

Research on the *e*VALUate data, aggregated at university wide level has shown that contrary to what some staff believe, students of lower semester weighted averages are less likely to give feedback in this survey. In contrast, students of higher semester weighted averages are more likely to give feedback and are more likely to agree with the survey items indicating they have a more favourable learning experience. It is likely that higher participation by more academically accomplished and motivated students is skewing results in a positive manner when reporting aggregated university data (Oliver, Tucker, & Pegden, 2007; Pegden & Tucker, 2010). This study provides further interrogation of this trend by analysing first year student perceptions of a course over one semester.

The main purpose of this study, therefore, was to determine whether there is a relationship between first year student evaluations of their units (using *e*VALUate) and student outcomes (their grade for that unit), after completing one semester of study. Factors that might influence non-success were also examined along with retention within the course. The aim of this study is to provide academics with greater understanding of student evaluation data in relation to the student experience and their academic outcomes, through the investigation of the following research questions:

What kinds of relationships are there between student evaluations and student grades?

1. What are the student's perceptions of their learning experiences in a unit where the pass rate is high, or where the pass rate is low?
2. How many students fail to be retained by the course? For those students who fail, what comments do they make about the quality of their experience?

Methods

Prior to the beginning of this research, ethics approval was granted by the Curtin Human Research Ethics Committee. Data was retrieved from two systems, the *e*VALUate database and the University student management system (Student One). This study examined the data gathered from the core first year units from one large course in semester 1 2011, where students enrol in four of the seven core units offered. *e*VALUate unit survey responses were analysed to determine: 1) overall percentage Agreement (percentage of responses with Agree or Strongly Agree) for each unit and 2) percentage Agreement disaggregated by student grade. Retention rates were analysed based on whether students passed or failed the units. Analyses were carried out at the unit level in accordance with the survey items which relate to the unit and the unique grade patterns found within each unit. Qualitative student comments were analysed using IBM® SPSS® Text Analytics for Surveys 4.0. This program creates categories of words and themes based on the number of times (hits) they appear in the dataset. Visual representations can be created (called a category web) which represent the relationship between categories. The categories appear on the outer of the circle with the number of hits in brackets. The lines between categories indicate association; the darker the line, the stronger the association between the categories. All data was de-identified for the purpose of this study.

Results

All fulltime students enrolled in the seven core units in one Bachelor course were included in the study (n=2920). Students enrol in four units in each semester of the Bachelor course, seven of which are core units and one unit is specific to a major. Fifty nine percent of enrolments in semester 1 were international students, 50.5% were male and 98% were internally enrolled in one of eight campuses located in four countries. Fifty five per cent of students were 20 years of age or younger and 39% were 21 to 25 years of age. Unit enrolments ranged from 900 – 1700 students.

For all seven units, the overall survey response rate was 39.1% (internal mode = 39.1%; external mode 38.4%). Student response rates for each subgroup of interest are shown in Table 1. *e*VALUate survey response rates were representative for each unit (range: 35 – 42%) with a 95% confidence that the actual percentage agreement is within 10% (±) of the observed percentage agreement for the total student group enrolled in the unit.

Table 1: Student response rates for all seven units

Student subgroup	Student response rate
International students	40.2%
Australian students	43.6%
Females	46.5%
Males	36.8%
Age 20 yrs & under	43.5%
Age 21-25 years	37.7%

Survey response rates for each grade category are shown in Table 2. Students with a fail grade had the lowest response rate.

Table 2: Survey response rates by grade category

Grade Category	Student response rate
Fail	20.7%
Pass	37.1%
Credit	42.6%
Distinction	51.3%
High Distinction	59.7%

Pass rates in the units varied from 68-91%. Table 3 shows the percentage of students who passed each unit. Overall, 19.7% of student enrolments resulted in a fail grade in one or more of the seven units. The student subgroups with the greatest percentage of fails were students enrolled in an external mode of study (35.4%), males (24.0%), students aged 21-25 years (26.2%) and students studying in two of the offshore campuses (23.5% and 24.7%).

Table 3: Student pass rates for all seven units

Unit:	Unit 1	Unit 2	Unit 3	Unit 4	Unit 5	Unit 6	Unit 7
Pass rate:	91.2%	68.5%	79.6%	76.1%	76.7%	73.4%	86.3%

Table 4 shows the percentage Agreement with each of the 11 quantitative *e*VALUate items in each of the seven core units. Percentage Agreement with Item 11 (Overall satisfaction) ranged from 73.6% to 93.9% and was highest in Units 2, 3 and 7. Items 8-10 (student motivation and engagement) were lowest in Units 1 and 5. In the items about what helped students achieve the learning outcomes, Unit 1 had the lowest percentage Agreement for all items except Item 5 (feedback) and in particular for Items 1-3 (clear learning outcomes, learning experiences and learning resources). Unit 4 had low percentage Agreement for Item 5 (feedback).

Table 4: Student feedback (eVALUate results) for all seven units

	Outcomes	**Experiences**	**Resources**	**Assessment**	**Feedback**	**Workload**	**Teaching**	**Motivation**	**Best use**	**Think about**	**Satisfaction**
Unit 1	78.2	76.5	75.7	84.2	82.0	80.0	77.9	75.7	77.9	72.9	73.6
Unit 2	92.5	89.1	92.2	90.9	78.9	90.1	89.5	88.7	87.3	88.4	90.0
Unit 3	94.2	91.8	93.7	91.1	90.1	89.3	90.9	87.9	86.8	83.7	90.3
Unit 4	94.5	84.3	88.7	80.4	68.3	87.3	82.4	83.6	83.1	81.4	84.8
Unit 5	88.3	81.7	83.5	86.6	83.3	82.3	78.5	73.9	76.1	70.5	81.2
Unit 6	88.0	83.3	87.1	84.1	80.0	86.0	80.9	82.9	84.9	78.0	83.0
Unit 7	96.3	93.7	92.1	91.6	82.2	90.3	92.7	90.0	87.9	81.6	93.9

Values are percentage Agreement for each eVALUate item

Results for *e*VALUate Item 11 (Overall Satisfaction) were further analysed by student grade for each unit. Perhaps unsurprisingly, students who achieved a fail grade registered lower overall satisfaction than students who passed in all seven units. However, three distinct patterns were found. The first pattern (shown in Figure 1) where student overall satisfaction declined as grades increased, was found in Unit 1 only. The second pattern (Figure 2) where student overall satisfaction was relatively stable across the different student grades was found in Units 2 and 6. The third pattern (Figure 3) where student overall satisfaction increased as grade increased was found in Units 3, 4 and 5.

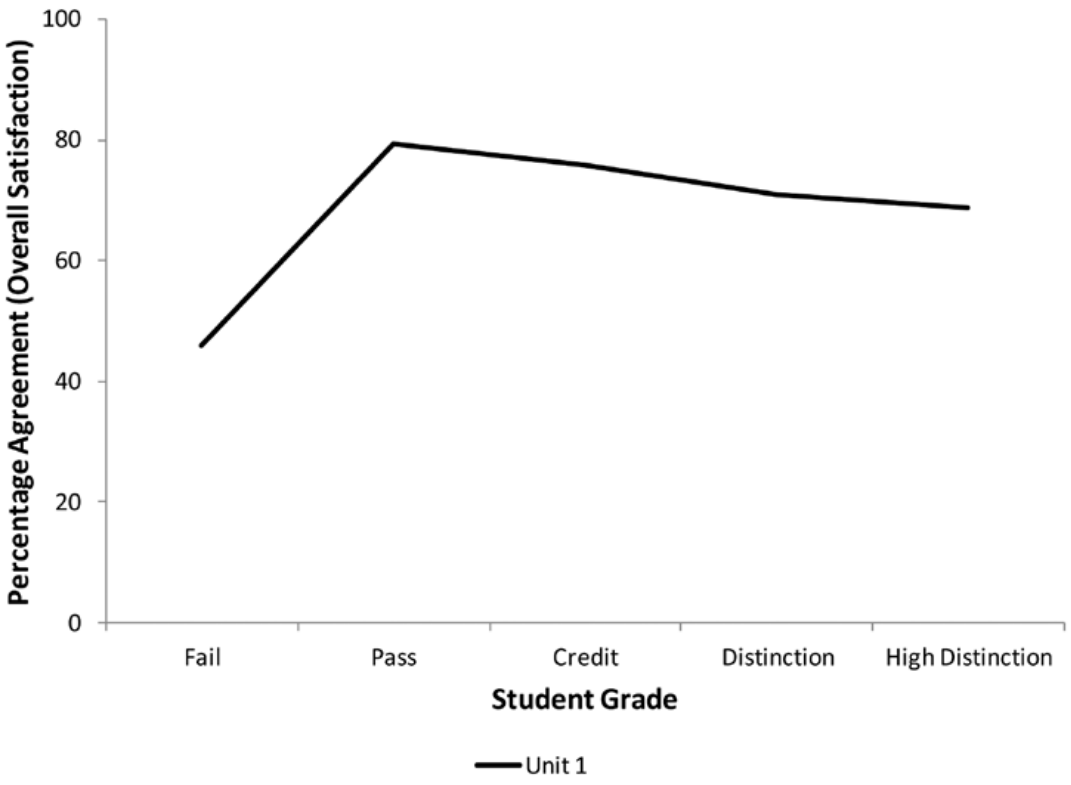

Figure 1: Student percentage agreement with Item 11 (Overall Satisfaction) by student grade for Unit 1

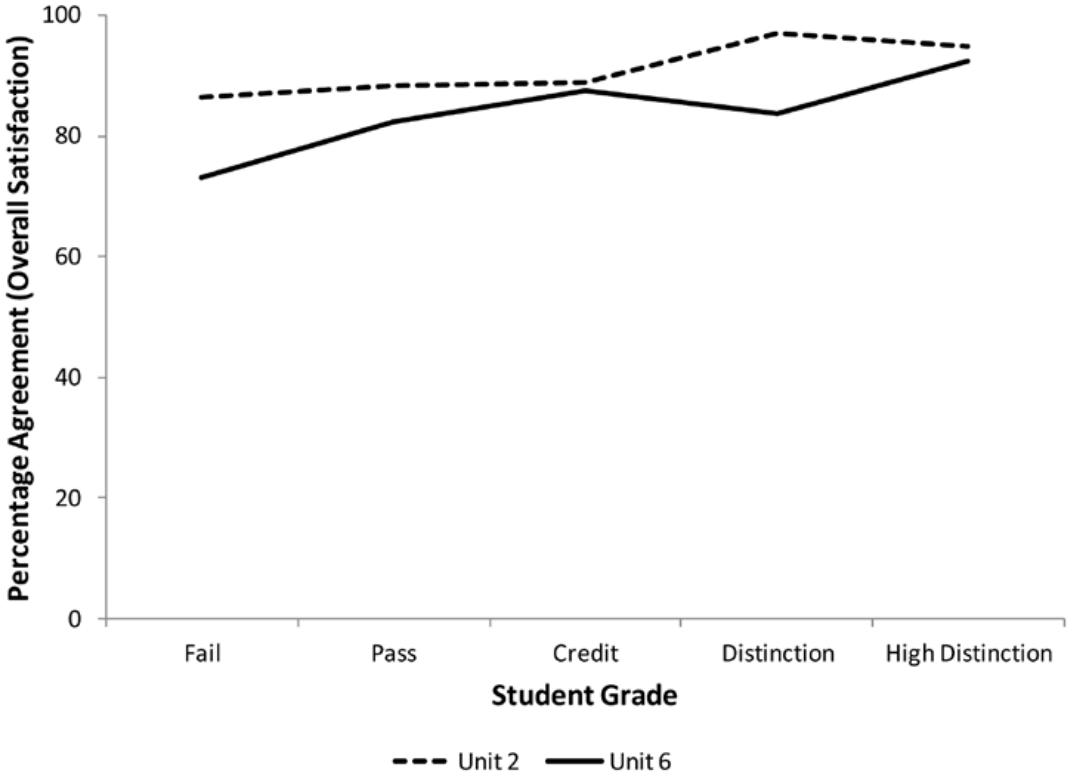

Figure 2: Student percentage agreement with Item 11 (Overall Satisfaction) by student grade for Units 2 and 6

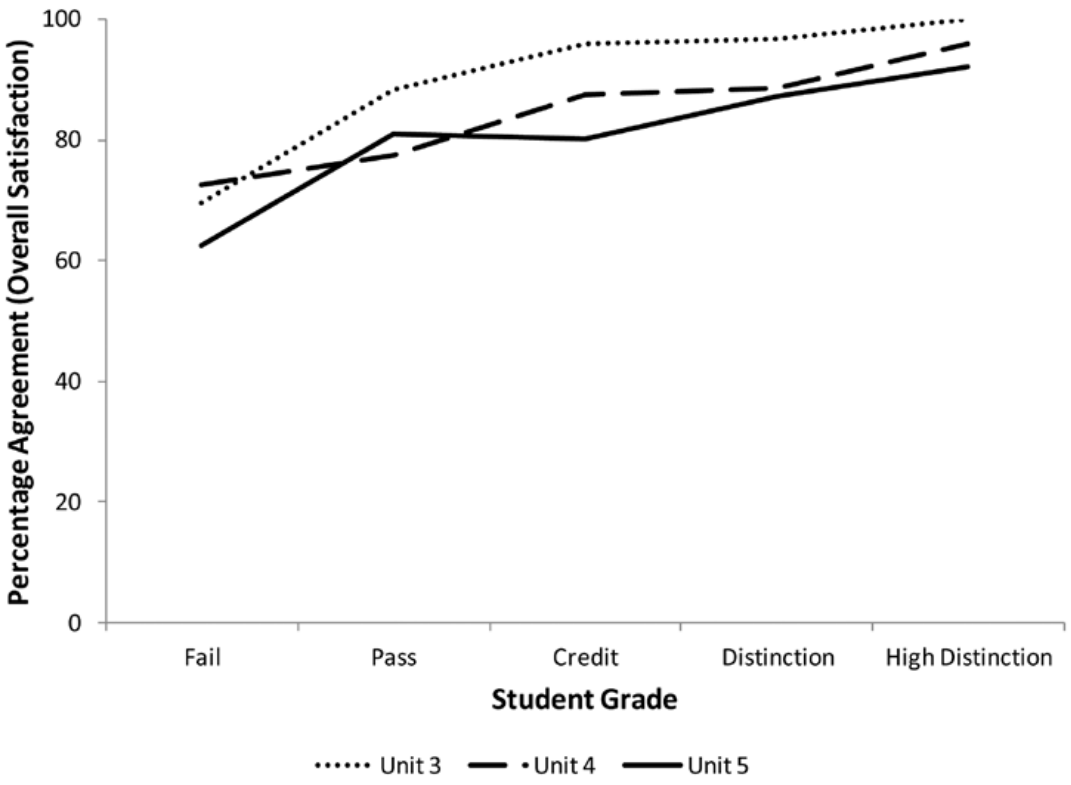

Figure 3: Student percentage agreement with Item 11 (Overall Satisfaction) by student grade for Units 3, 4 and 5

An analysis was conducted to determine whether students who passed and students who failed were still enrolled in the course one year later (course retention). Figure 4 shows the course retention from all seven units for both students who failed and students who passed. Course retention for students who passed was fairly consistent across the different units and ranged from 69.7% to 83.1%. Course retention for students who failed was lowest in the units with the highest pass rates (Units 1=25.2% and 7=35%). Course retention for students who failed was highest in the unit with the lowest pass rate, that is, Unit 2 (54.4%).

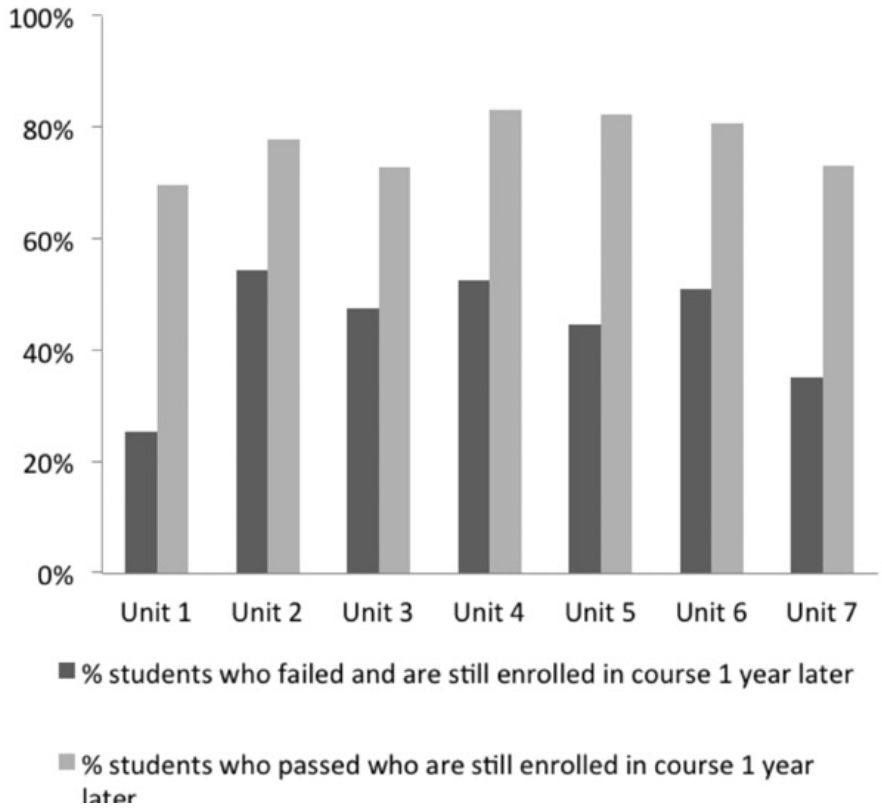

Figure 4: Percentage of students who failed and passed still enrolled in course 1 year later

Visualisations for student comments relating to the *e*VALUate Item 13 'How do you think this unit might be improved?' for Unit 1 (n=370; 52.6% of respondents made a comment) and Unit 2 (n=206; 54.9% of respondents made a comment) are shown in Figures 5 and 6.

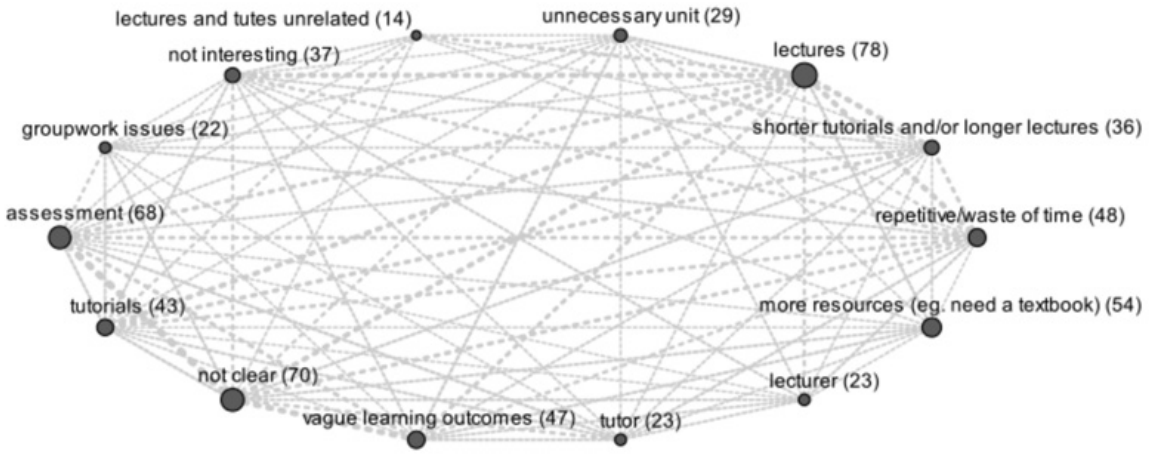

Figure 5: SPSS visualisation of student comments from Unit 1 for Item 13 'How do you think the unit can be improved'

For Unit 1, students reported that assessment and learning outcomes were unclear. Many students felt that the unit was unnecessary and/or aspects of it were a waste of time or were repetitive. Some students found the unit uninteresting and some wanted shorter tutorials and longer lectures.

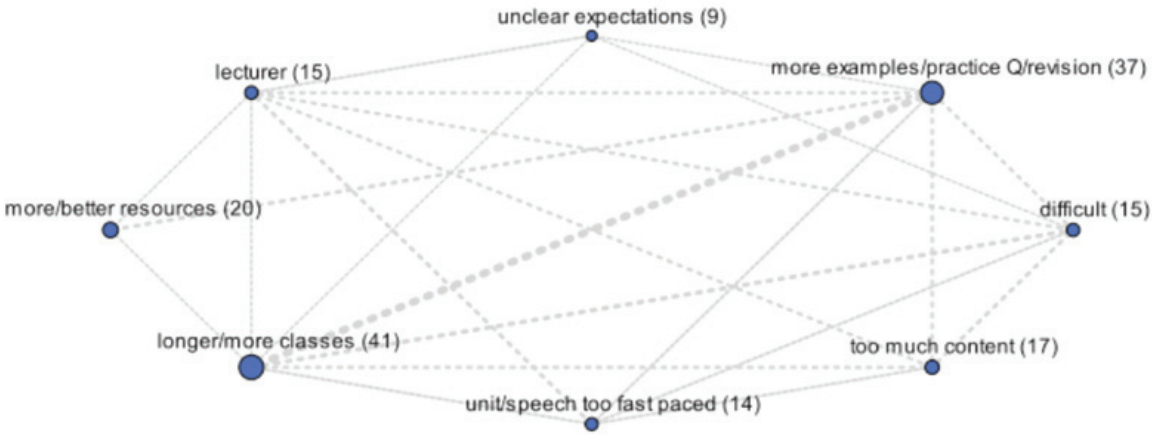

Figure 6: SPSS visualisation of student comments from Unit 2 for Item 13 'How do you think the unit can be improved'

For Unit 2, students reported that they wanted more class time and more examples, practice questions and revision. Many students wanted more or better resources. Some students found the unit or the instruction too fast paced and some students found the unit difficult or felt that it had too much content.

The visualisation for student comments by those with a fail grade in any of the seven units (n= 153; 48.1% of respondents made a comment) relating to the eVALUate Item 13 'How do you think this unit might be improved?' is shown in Figure 7.

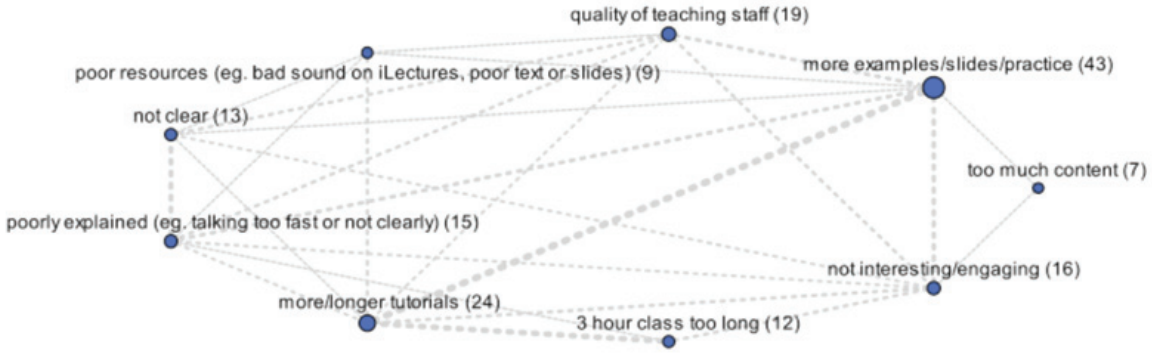

Figure 7: Text analysis of Needs Improvement comments for 7 units made where the result was a fail

Students who failed wanted more and/or better resources, as well as more examples and tutorials. Students who failed also reported that explanations were not always clear.

Discussion

We acknowledge the methodological limitations of this approach given that these indicator measures were derived from different units (which were taught by different teachers, using different resources and drawing on different assessments). Despite this limitation, an expectation that in general, students would be more satisfied as their grades increased was not always borne

out in the results reported above. In these cases, and somewhat contrary to staff beliefs, student perceptions do not always relate to their grade. This study of seven units found that in four units, students with higher grades reported increasing overall satisfaction. However, in 2 units, students reported the same overall satisfaction with their experience across the whole spectrum of grades (fail, pass, credit, distinction, high distinction). Running contrary to expectations, it was interesting to note that students in one unit who gained a bare 'Pass' reported higher satisfaction than those who attained a higher grade.

For this Bachelor course, higher pass rates were associated with lower retention rates. This may be explained by examining the unit learning outcomes and related assessment tasks. All units had 3-4 assessment tasks throughout the semester. With the exception of Units 1 and 7, all units had a final written examination worth 50% of the unit mark. The final written examination for Unit 1 was 40% and 35% for Unit 7. Unit 1 provides students with the key aspects of research and academic writing, written and oral communication skills in the context of the discipline, and beginning practices of teamwork. For some students, this unit provides 'gate-keeping' assessment tasks considered to be essential for student success in higher education. Unit 7 is an introductory unit to a discipline area and students are required to demonstrate application of discipline knowledge and analytical skills. These concepts and skills are considered to be essential for progression within the course.

On the other hand, the units with higher pass rates are not always the units with the greatest percentage of high achievement (distinctions and high distinctions). For example Unit 4 has one of the lower pass rates in our sample but it has the greatest percentage of students achieving distinctions and high distinctions.

Student motivation and engagement is generally in keeping with measures of overall satisfaction. The four units with the highest overall satisfaction are also the four units with the highest student motivation and engagement. Student motivation and engagement is not necessarily highest in units with the lowest pass rate. For example, in Unit 1 which had the highest pass rate, students had the second lowest motivation and engagement levels. In Unit 2 with the lowest pass rate, they had the second highest motivation and engagement level in this unit.

Qualitative analysis provided further information about differences in students' experiences and provided insight into possible reasons for the differing patterns of student feedback relative to student grade and pass rates. Some students enrolled in Unit 1 (the unit with the lowest number of fail grades) indicated that the student learning outcomes were unclear and that they needed more resources. For other students, the unit was too easy and repeated prior learning. Some students enrolled in Unit 2 (the unit with the highest number of fail grades) indict that some students found the unit challenging. An analysis of all students who failed in the course revealed the need for specific requirements for this subgroup (such as improvements in technologies, learning resources and a change to the tuition pattern) and professional development for staff teaching in these units.

Concluding remarks

Student perceptions about their experiences in teaching and learning surveys provide useful information to universities; however, the views of those students who do not respond are unknown and need further investigation (Guthrie & Johnson, 1997; Thorpe, 2002). In particular, the students who attain a fail grade are the most underrepresented group submitting surveys, a limitation of this study. Universities need to continue to work hard to increase response rates for

surveys and in particular, target non-responders in the students who fail.

Given the patterns reported here, we argue that closer attention is warranted to the connection between student satisfaction and student outcomes. Students may pass a particular unit of study. However, if this is accompanied with a sense of dissatisfaction and questions about academic standards, this position represents an undesirable outcome on the part of the institution. The introduction of published indicators such as the UES as a measure of satisfaction in the first year will act to sharpen the focus on this critical part of the student experience.

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Appendix

The eVALUate Unit Survey

Quantitative items with the following rating scale (Strongly agree, Agree, Disagree, Strongly disagree and Unable to judge). *Explanatory text in italics appears online by default.*

1. The learning outcomes in this unit are clearly identified.
   The learning outcomes are what you are expected to know, understand or be able to do in order to be successful in this unit.
2. The learning experiences in this unit help me to achieve the learning outcomes.
   The learning experiences could include: face-to-face lectures, tutorials, laboratories, clinical practicums, fieldwork, directed learning tasks, and online and distance education experiences.
3. The learning resources in this unit help me to achieve the learning outcomes.
   Learning resources could include print, multimedia and online study materials, and equipment available in lectures, laboratories, clinics or studios.
4. The assessment tasks in this unit evaluate my achievement of the learning outcomes.
   Assessment tasks are those which are rewarded by marks, grades or feedback. Assessment tasks directly assess your achievement of the learning outcomes.
5. Feedback on my work in this unit helps me to achieve the learning outcomes.
   Feedback includes written or verbal comments on your work.
6. The workload in this unit is appropriate to the achievement of the learning outcomes.
   Workload includes class attendance, reading, researching, group activities and assessment tasks.
7. The quality of teaching in this unit helps me to achieve the learning outcomes.
   Quality teaching occurs when knowledgeable and enthusiastic teaching staff interact positively with students in well-organised teaching and learning experiences.
8. I am motivated to achieve the learning outcomes in this unit.
   Being motivated means having the desire or drive to learn, to complete tasks and to willingly strive for goals.
9. I make best use of the learning experiences in this unit.
   I prepare for and follow up on the learning experiences offered in this unit.
10. I think about how I can learn more effectively in this unit.
    I take time to think about how I can learn more effectively.

11. Overall, I am satisfied with this unit.
    Overall, this unit provides a quality learning experience.

Qualitative items

1. What are the most helpful aspects of this unit?
2. How do you think this unit might be improved?