

Student evaluation of their learning: differences in male and female students' perceptions of their units

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Abstract:

This paper reports an investigation into differences between undergraduate male and female students' perceptions of their learning using **eVALUate**, an online unit evaluation survey. The sample included unit survey feedback from all semesters from Semester 1 2006 onwards. Aggregated percentage agreement was calculated for each survey item for undergraduate females and males for the university, by year of study and in four de-identified courses. The investigation found that females reported higher percentage agreement than males but there were smaller differences between males and females in more recent semesters. Differences between males and females by year of study also decreased over time with both reporting the same overall satisfaction in their first year of study in the latest semester's data. Differences over four different courses with varying ratios of males and females showed that results varied widely between courses and males reported higher percentage agreement than females in one of the four courses. The findings showed that caution is needed when generalising results and interpreting differences in feedback between male and female students.

Keywords: student evaluation; sex differences; teaching and learning; student satisfaction

Introduction

Students at Curtin University of Technology have been giving feedback about their perceptions of their learning experiences using the online **eVALUate** unit survey since 2006. Analysis of aggregated student data shows that all demographic groups participate in **eVALUate**. However since implementation, there has been greater participation across the university by female students, full-time students and students with a higher semester weighted average. Analysis of the aggregated results show that female students are more likely to agree with the quantitative items in the **eVALUate** unit survey (Oliver, Tucker, & Pegden, 2007).

Recent research in higher education has begun to focus on differences in the characteristics of students who respond to evaluation surveys and the differences in students' perceptions (Darby, 2006; Davies, Hirschberg, Lye, Johnston, & McDonald, 2006; Heckert, Latier, Ringwald, & Silvey, 2006; Smith, Yoo, Farr, Salmon, & Miller, 2007). The greater participation by female students at Curtin University of Technology has also been reported by others who use online evaluation systems (Anderson, 2005; Sax, Gilmartin, & Bryant, 2003; Thorpe, 2002) and is reported by the Graduate Careers Australia in their annual Course Experience Questionnaire (CEQ) (Graduate Careers Australia, 2008).

Research indicates that the difference in satisfaction by female and male students is dependent on the evaluation tool and whether the student is rating: the 'teacher'; their learning experience; and/or factors related to the university (Darby, 2006). Much of this research has focussed on differences in the ratings of female and male students of their teachers (Feldman, 1989; Heckert et al., 2006; Smith et al., 2007). Research on student experiences of their course and the higher education experience indicate that student ratings may change as they progress through their course of study (Grebennikov & Skaines, 2009). Results from the annual national CEQ indicated that there are very slight differences between female and male responses for most of the scales. The main differences lie in the area of assessment; females giving higher scores for the items (females = 57.5 percentage agreement vs males = 48.0 percentage agreement) (Graduate Careers Australia, 2008). A small difference in mean percentage for the overall satisfaction index is reported; females reporting 71.5 percentage agreement and males 69.9 percentage agreement (Graduate Careers Australia, 2008).

Grebennikov and Skaines (2009) found that female students' expectations regarding most of one university's services were higher, their satisfaction tended to be lower compared to those of their male peers. They were more demanding about the quality of university services in later stages of their study whereas ratings by males remained relatively stable. Grebennikov and Skaines (2009) reported that whilst females reported higher satisfaction than males, there was variability within these groups with large overlaps between males and females.

Results from the CEQ administered in one Australian university indicated that females have differences in perception of educational aspects of their course (Grebennikov & Skaines, 2009). Graduating female students had lower satisfaction with assessment; clarity in requirements and expectations; development of analytical and problem-solving skills; flexibility, structure and vocational relevance of the course; intellectual outcomes of the program; and the quality of the library.

Since **eVALUate** was implemented at Curtin in 2006, student response rates have increased each semester and university-wide are now over 45 percent. At

the conclusion of each semester, the response rates, quantitative and qualitative results of the unit evaluation are analysed and reported to all students and staff at the University. Analysis of each quantitative item shows that each semester, students are increasingly satisfied with the quality of the unit teaching and learning experiences (that is, percentage agreement for each unit survey item has improved).

Female students have consistently reported higher percentage agreement with all survey items, including overall satisfaction, than male students each semester since 2006. This difference seems to have narrowed in recent semesters. This study examines the differences in aggregated percentage agreement with each of the survey items between undergraduate females and males for the University, by year of study and at the course level.

Method

Sample

The sample included **eVALUate** unit survey feedback collected from all undergraduate coursework units at all of Curtin's Australian campuses and at most offshore campuses from all semesters from Semester 1 2006 onwards.

Instruments and procedure

eVALUate is Curtin's online system for gathering and reporting students' perceptions of their learning experiences. Students can give feedback about their unit and their teacher in two separate surveys:

- The **eVALUate unit survey** asks students their perceptions of what helps and hinders their achievement of unit learning outcomes, their motivation and engagement, and their overall satisfaction with the unit.
- The **eVALUate teaching survey** asks students to give feedback to individual teachers on their teaching effectiveness.

The **eVALUate** unit survey focuses on student achievement of unit learning outcomes: it asks students' level of agreement with three key indicators:

1. what helped their achievement of learning outcomes (Items 1 to 7)
2. their level of motivation and engagement (Items 8 to 10) and
3. their overall satisfaction with the unit (Item 11).

Two qualitative items ask about the most helpful aspects of this unit and how the unit might be improved. The quantitative items ask students to indicate their level of agreement. Students may indicate Strongly Agree, Agree, Disagree, Strongly Disagree or Unable to Judge for each item. The **eVALUate** unit survey items are provided in the Appendix. The survey items and rating scale have undergone rigorous testing to ensure reliability and validity (face validity with Australian and International students and content validity). Statistical testing shows that the rating scale is sufficiently discriminating to indicate areas of teaching and learning practice that need attention (Oliver, Tucker, Gupta, & Yeo, 2008).

The **eVALUate** instrument is administered online through OASIS, the student web portal. Students are notified when **eVALUate** is open for student feedback by an Official Communications Channel (OCC) message sent from the **eVALUate** team. Each week non-responders are sent additional messages to their email addresses encouraging them to give feedback. Students are also triggered to evaluate their units when the **eVALUate** logo appears on the Curtin home page and via posters distributed on campuses. Although students must login to use the

system, all student feedback is anonymous. Under no circumstance is any student feedback traced or any student identified. The Human Research Ethics Committee, Curtin University of Technology, granted ethical approval for this study.

Percentage agreement was calculated for each item for all undergraduate females and males for each semester. Differences in results are made between 'like' semesters, i.e. a comparison of Semester 1 with that same semester in each year, and Semester 2 compared with that same semester in each year. This is because all first semesters have a similar unit load and profile as do second semesters. Chi square values were also generated to measure the significance of the differences between males and females.

Percentage agreement was calculated for each item for undergraduate females and males in four de-identified courses which were selected for the study:

1. Courses A and B – both undergraduate courses with more than 1000 enrolments with equal numbers of male and female enrolments
2. Course C – a large undergraduate course with more than 1000 enrolments with mainly male enrolments (93% male enrolments, 7% female enrolments)
3. Course D – large undergraduate course with more than 1000 enrolments with mainly female enrolments (93% female enrolments, 7% male enrolments)

Percentage agreement was also calculated for each item for undergraduate females and males by their year of study.

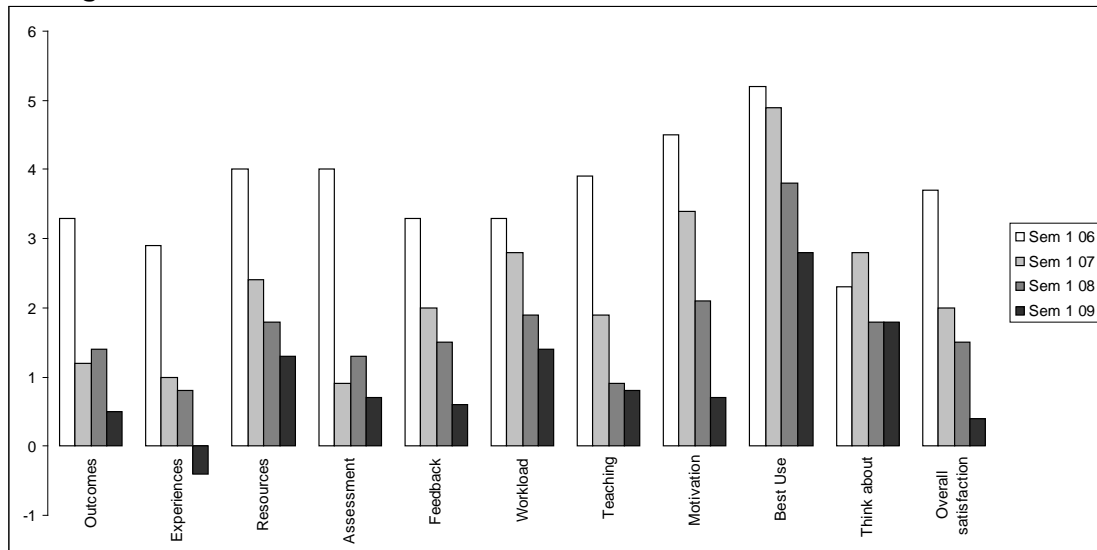
Results

Differences in undergraduate males and females

Figures 1 and 2 show the differences between male and female undergraduate student perceptions with each unit survey item over 'like' semesters from semester 1 2006 to semester 1 2009. During this time, response rates increased from 27.8% to 42.2% for males and from 35.7% to 50.6% for females (see Table 1 for details on student numbers, enrolments, response rates and Chi Square differences).

Figure 1 shows there were greater differences in percentage agreement for each item between males and females in earlier semesters (with differences as high as 5.2% in 2006) than in later semesters (with most differences in semester 1 2009 below 1% and with males reporting higher percentage agreement than females in Item 2 [learning experiences]).

Figure 1 Differences in percentage agreement between male and female undergraduate students from semester 1 2006 to 2009

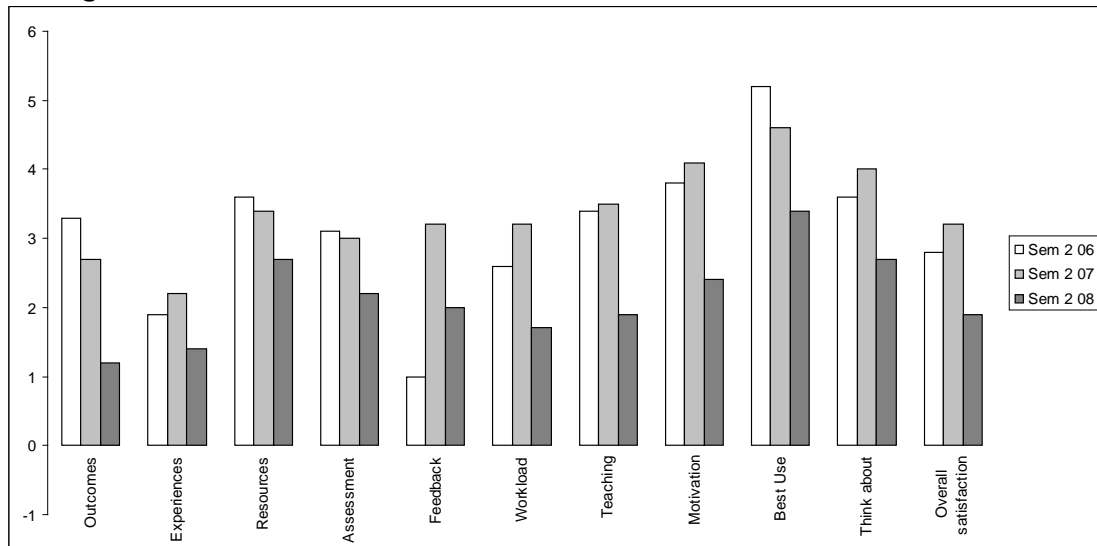


Difference in percentage agreement (females minus males)

Figure 2 shows a similar trend; there were greater differences in percentage agreement for many items between males and females in earlier semesters with the exception of Item 5 (feedback) than in semester 2 2008.

Although the differences in percentage agreement between males and females in all items are diminishing over time, the differences are greater in semester 2. The differences are greatest in Item 9 and 10 (items on student engagement) and Item 3 (resources).

Figure 2 Differences in percentage agreement between male and female undergraduate students from semester 2 2006 to 2008



Difference in percentage agreement (females minus males)

Event	Sex	Number of Students	Number of Respondents	Response Rate	Outcomes	Experiences	Resources	Assessment	Feedback	Workload	Teaching	Motivation	Best Use	Think about	Overall satisfaction
Semester 1															
Sem 1 06	M	10499	2921	27.8%											
	F	11421	4080	35.7%	+3.3%	+2.9%	+4.0%	+4.0%	+3.3%	+3.3%	+3.9%	+4.5%	+5.2%	+2.3%	+3.7%
	χ^2				44.8	33.1	61.0	58.4	69.9	41.3	57.1	61.3	91.1	16.6	47.1
	$p=$.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
Sem 1 07	M	10816	4069	37.6%											
	F	11864	5401	45.5%	+1.2%	+1.0%	+2.4%	+0.9%	+2.0%	+2.8%	+1.9%	+3.4%	+4.9%	+2.8%	+2.0%
	χ^2				9.4	6.0	29.4	7.1	28.1	40.9	20.5	58.8	120.3	39.1	20.2
	$p=$.009	.049	.000	.028	.000	.000	.000	.000	.000	.000	.000
Sem 1 08	M	11229	4424	39.4%											
	F	12615	5966	47.2%	+1.4%	+0.8%	+1.8%	+1.3%	+1.5%	+1.9%	+0.9%	+2.1%	+3.8%	+1.8%	+1.5%
	χ^2				15.4	3.7	17.5	12.9	12.6	22.3	9.4	29.6	84.5	18.7	13.0
	$p=$.000	0.16	.000	.002	.002	.000	.009	.000	.000	.000	.000
Sem 1 09	M	12242	5170	42.2%		+0.4%									
	F	14069	7120	50.6%	+0.5%		+1.3%	+0.7%	+0.6%	+1.4%	+0.8%	+0.7%	+2.8%	+1.8%	+0.4%
	χ^2				2.9	1.2	10.2	3.3	2.0	12.6	10.9	9.7	54.1	27.0	1.2
	$p=$.240	.562	.006	.195	.373	.002	.004	.008	.000	.000	.000
Semester 2															
Sem 2 06	M	10496	2999	28.6%											
	F	11511	4173	36.3%	+3.3%	+1.9%	+3.6%	+3.1%	+1.0%	+2.6%	+3.4%	+3.8%	+5.2%	+3.6%	+2.8%
	χ^2				53.2	12.6	46.4	33.6	21.6	23.8	55.9	51.7	100.7	46.9	26.7
	$p=$.000	.002	.000	.000	.000	.000	.000	.000	.000	.000	.000
Sem 2 07	M	11197	3490	31.2%											
	F	12224	4754	38.9%	+2.7%	+2.2%	+3.4%	+3.0%	+3.2%	+3.2%	+3.5%	+4.1%	+4.6%	+4.0%	+3.2%
	χ^2				37.9	21.2	52.0	39.6	41.6	46.1	65.1	77.4	99.5	66.6	45.3
	$p=$.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
Sem 2 08	M	11759	4259	36.2%											
	F	13082	5831	44.6%	+1.2%	+1.4%	+2.7%	+2.2%	+2.0%	+1.7%	+1.9%	+2.4%	+3.4%	+2.7%	+1.9%
	χ^2				11.5	10.7	39.9	26.4	25.2	17.3	21.2	31.1	66.0	39.6	18.0
	$p=$.003	.005	.000	.000	.000	.000	.000	.000	.000	.000	.000

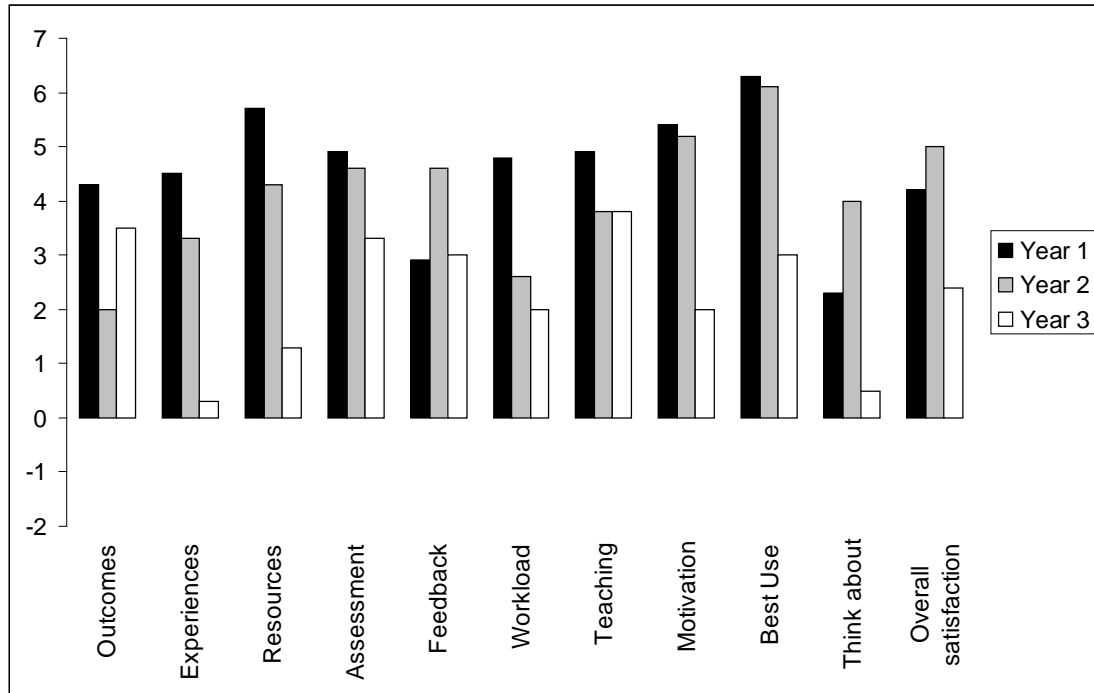
Sem = Semester; M = male; F = female; % = percentage

Table 1 Differences in percentage agreement between male and female undergraduate students from semester 1 2006 to 2009

Differences in undergraduate males and females by student year of study

Analysis of the differences in males and females by their year of study show that generally, both male and female students report higher percentage agreement in first year than in 2nd and 3rd year of their undergraduate study. Figure 3 shows that in semester 1 2006, undergraduate female students reported higher percentage agreement with all items and the difference between females and males was greater than 3.0% in most items. There were greater differences between males and females in first and second year in comparison to third year.

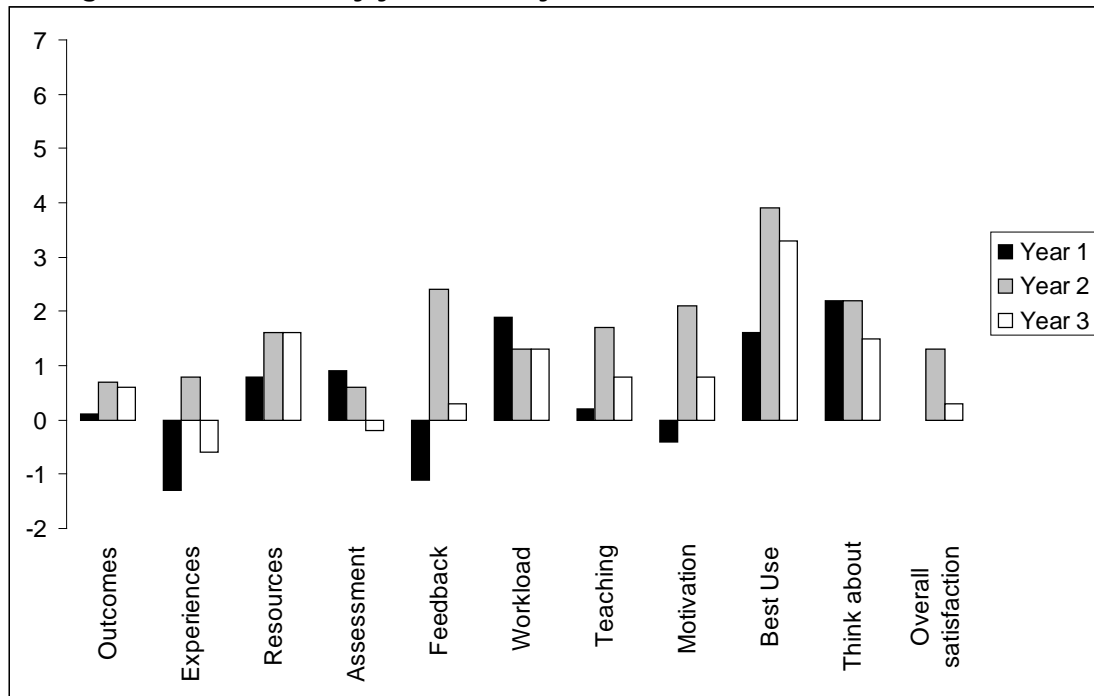
Figure 3 Differences in percentage agreement between male and female undergraduate students by year of study in semester 1 2006



Difference in percentage agreement (females minus males)

In semester 1 2009, undergraduate male students reported 5.0% less agreement with Item 11 (overall satisfaction) in second year than first year and 4.1% less agreement in third year than first year. Females reported 4.0% less agreement with the same item in both second and third year compared to first year. Male and female first year students reported the same percentage agreement with Item 11 (overall satisfaction) in semester 1 2009. Differences between females and males by year of study have decreased markedly. Figure 4 shows that in semester 1 2009 the most notable difference in percentage agreement between females and males is in second year in Item 9 and 10 (student engagement) and Item 5 (feedback).

Figure 4 Differences in percentage agreement between male and female undergraduate students by year of study in semester 1 2009



Difference in percentage agreement (females minus males)

Differences in undergraduate males and females in different courses

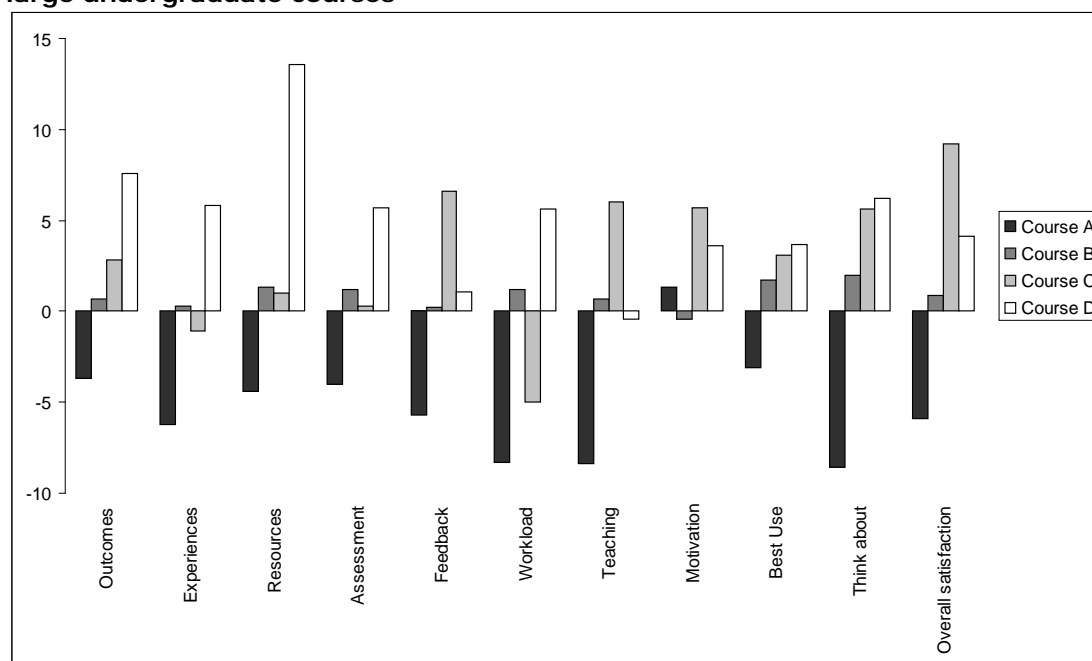
Table 2 gives the response rates and percentage agreement for males and females in four different large undergraduate courses with varying ratios of male and female students for semester 1 2009. Figure 5 shows the percentage agreement for males and females in each course.

Course	Gender	Resp Rate	Outcomes	Experiences	Resources	Assessment	Feedback	Workload	Teaching	Motivation	Best Use	Think about	Overall satisfaction
A	F	43.6%	85.7	81.3	79.1	85.3	78.1	80.7	80.9	86.9	86.2	78.9	82.2
	M	38.0%	89.4	87.5	83.5	89.3	83.8	89.0	89.3	85.6	89.3	87.5	88.1
B	F	51.1%	88.5	82.9	83.6	83.4	76.7	84.4	82.4	83.1	84.1	83.7	83.0
	M	39.1%	87.8	82.6	82.3	82.2	76.5	83.2	81.7	83.5	82.4	81.7	82.1
C	F	48.2%	91.0	82.0	82.0	82.0	79.8	77.3	85.2	87.5	85.2	87.5	89.9
	M	44.0%	88.2	83.1	81.0	81.7	73.2	82.3	79.2	81.8	82.1	81.9	80.7
D	F	57.9%	83.4	83.2	84.6	78.3	70.5	81.4	81.6	79.4	82.7	75.6	78.3
	M	55.9%	75.8	77.4	71.0	72.6	69.4	75.8	82.0	75.8	79.0	69.4	74.2

Table 2 Percentage agreement by males and females in large undergraduate courses with varying proportions of male and female students

Percentage agreement for all items in course A (with equal numbers of males and females) show that males report higher percentage agreement in all items except Item 8 (student motivation). In course B, females report higher percentage agreement in all items, although the differences were very small. In course C, females report higher percentage agreement in all items except Item 2 (experiences), Item 6 (workload)

Figure 5 Difference in percentage agreement between females and males in four large undergraduate courses



Difference in percentage agreement (females minus males)

Courses A and B – both large undergraduate courses with more than 1000 enrolments with equal numbers of male and female enrolments

Course C – a large undergraduate course with more than 1000 enrolments with mainly male enrolments

Course D – large undergraduate course with more than 1000 enrolments with mainly female enrolments

Discussion

Analysis of aggregated university results of the **eVALUate** unit survey has shown that female students consistently report higher percentage agreement with all items. This indicates that female students are reporting greater satisfaction with the quality of the unit teaching and learning experiences. Recent data has shown that, across the university, the differences between females and males in their perceptions are declining as survey participation for both groups increases. The most notable items where female students report higher percentage agreement are those related to student engagement. These items ask students to report on what they bring to the learning experience: whether they make best use of the learning experiences in the unit (that is, whether they prepare for and follow up on the learning experiences offered in the unit) and whether they think about how they can learn more effectively. Grebennikov and Skaines (2009) also report that females tend to value their education more than males and spend more time engaged in their studies.

To our knowledge, **eVALUate** is the only Australian unit survey that asks students to report on their engagement with learning at unit level. The Australasian Survey of Student Engagement (AUSSE) survey instrument, called the Student Engagement Questionnaire (SEQ), administered annually by the Australian Council for Educational Research (ACER), ask students to report on their engagement in effective learning practise and on whether universities provide the support mechanisms to facilitate such engagement. The scales measured in the SEQ relate to the whole of university experience. Results from the AUSSE administered in 2007 shows that across all the scales of the SEQ,

females tend to report higher levels of engagement than males and this difference is small, but consistent. The findings of this study are consistent with those reported for the SEQ (ACER, 2008).

One possible explanation for the declining difference between males and females in the **eVALUate** unit survey at Curtin is that response rates for both males and females have increased. While there are still more females than males participating (around 8% more each semester), the male response rate has increased from 27.6% to 42.2% and is therefore now much more representative of the survey population. The 2009 results may be more representative of the differences between females and males. Future analysis of these trends is recommended.

There has been increased satisfaction by the respondents as a whole since **eVALUate** was introduced at Curtin. Improvements at unit level may have led to a higher increase in agreement by male students than for female students because males were less satisfied initially. Improvements in unit survey results at Curtin have tended to be more sizeable in groups where the results were lower to begin with (e.g. in units with high numbers of enrolments).

Another possibility is that the improvements in units at Curtin have focussed on groups identified as being less satisfied. Each semester, the Schools and Faculty are provided with a detailed analysis of the **eVALUate** unit quantitative and qualitative data and student subgroups which register lower agreement are identified. Strategies for improvement are provided to Schools. There has been a focus on improving male students, particularly in second year in some Faculties.

The most notable difference in undergraduate student perceptions between females and males is in the items of student engagement and feedback with females registering higher agreement with these survey items. Differences between female and male perceptions become less clear when analysed at course level. Students enrolled in courses that attract females and males equally may have different experiences because of the nature of the course or the characteristics of those enrolling in the course.

Course A which registered higher levels of agreement and satisfaction is an undergraduate course in the creative arts. Students entering this course may have differing characteristics and motivational factors for entering the 'soft' science as opposed to those entering the 'hard' sciences (Wilson, Bartosik Stocking, & Goldstein, 1994). In contrast, course B is a business related degree which is likely to attract students with more similar viewpoints. Hence, student perceptions' of their level of engagement may be related to intrinsic factors related to these differences. Student perceptions in courses which attract a higher percentage of either males or females (due to the nature of the discipline) are more varied. There is a trend of greater satisfaction for many items by female students and the difference between females and males is large in many items.

The limitation of this study is that the analysis was restricted to student sex, year of study and a selection of courses. Further analysis of other student demographics may be useful to determine the effect of student sex on their learning experiences within a unit of study. Younger students, for example, have generally reported lower agreement with the unit survey items and it would be useful to analyse differences between males and females' perceptions of their units across different age groups. The effect of the wider university experience such as the university facilities and services is also important to determine their influence on student evaluations of their units.

Conclusion

Female students generally report higher percentage agreement with their learning experiences in unit evaluations than males. This investigation found that differences in student satisfaction between males and females are decreasing in more recent semesters. Although female undergraduate students report higher levels of satisfaction across the university and particularly in second year of study, males report higher percentage agreement in some courses. These findings show that caution is needed when generalising results and when interpreting differences between males and females.

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Appendix

eVALUate Unit Survey Items

Quantitative items seek students' level of agreement with 11 items:

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 invite students to make constructive comments (limit of 600 characters):

12. **What are the most helpful aspects of this unit?**
13. **How do you think this unit might be improved?**