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comparative analysis of introductory and advanced
units**

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Abstract

The composition of many professional services firms in the Urban Development area has moved away from a discipline specific 'silo' structure to a more multidisciplinary environment. The benefits of multidisciplinary have been seen in industry by providing synergies across many of the related disciplines. Similarly, the Queensland University of Technology, Bachelor of Urban Development degree has sought to broaden the knowledge base of students and achieve a greater level of synergy between related urban development disciplines through the introduction of generic and multidisciplinary units. This study aims to evaluate the effectiveness of delivering core property units in a multidisciplinary context. A comparative analysis has been undertaken between core property units and more generic units offered in a multidisciplinary context from introductory, intermediate and advanced years within the property program. This analysis was based on data collected from course performance surveys, student performance results, a student focus group and was informed by a reflective process from the student perspective and lecturer/ tutor feedback.

The study showed that there are many benefits associated with multidisciplinary unit offerings across the QUT Urban Development program particularly in the more generic units. However, these units require a greater degree of management. It is more difficult to organise, teach and coordinate multidisciplinary student cohorts due to a difference in prior knowledge and experience between each of the discipline groups. In addition, the interaction between lecturers/ tutors and the students frequently becomes more limited. A perception exists within the student body that this more limited face to face contact with academic staff is not valuable which may be exacerbated by the quality of complimentary online teaching materials. For many academics, non-attendance at lectures was coupled with an increase in email communication. From the limited data collected during the study there appears to be no clear correlation between large multidisciplinary student classes and student academic performance or satisfaction.

Keywords: Property education, multidisciplinary students, advanced, introductory

1. Introduction

The composition of many professional services firms in the Urban Development area has moved away from a discipline specific 'silo' structure to a more multidisciplinary environment. In the context of an urban development project, professionals from varied

disciplines are engaged early in the planning stage to promote innovation and achieve efficient life cycle costing. In the context of urban development education, working in multidisciplinary teams will help “to shape a more coherent view of knowledge and a more integrated, more authentic view of life” (Boyer, 1990 in (Franz, 2007, p.3)

The benefits of multidisciplinary have been seen in industry by providing synergies across many related disciplines. Similarly, many urban development programs have sought to achieve a greater level of synergy between related disciplines through the introduction of more generic and multidisciplinary units. In a multidisciplinary curriculum, students are taught to “integrate, analyse, innovate, synthesize, communicate, and work together with others from diverse backgrounds and experiences” (Butler, Guntermann, & Wolverton, 1998, p.54).

It is common for students enrolled in Engineering and Business degrees to undertake generic multidisciplinary units in their first year of study. Although these students may have different career aspirations they generally commence university study with a comparable level of knowledge and understanding of their discipline areas. In the more advanced stages of their academic studies students from different disciplines may again study together in the completion of second majors or minors. The recently introduced Bachelor of Urban Development Program at Queensland University of Technology (QUT) offers multidisciplinary study at an introductory, intermediate and advanced level in the completion of compulsory units for the degree program. The Bachelor of Urban Development comprises the five disciplines of property economics, construction management, quantity surveying, spatial science and urban and regional planning and students will be awarded a first major in one of these discipline areas. In addition, students will undertake a second major or two minors in their degree.

This study aims to evaluate the effectiveness of delivering core property units in a multidisciplinary context. This study will focus on the curriculum for the recently introduced Bachelor of Urban Development degree where a number of multidisciplinary units are offered. A comparative analysis has been undertaken between core property units and more generic units offered in a multidisciplinary context from introductory, intermediate and advanced years of the program. This analysis was based on data collected from course performance surveys, student performance results, a student focus group and was informed by a reflective process from the students’ perspective and lecturer and tutor feedback.

2. Literature Review

Callanan and McCarthy (2003) suggest that regular feedback from students and industry professionals is necessary to ensure the best possible property education is provided. Boyd (2000) has commented that traditionally, Australian universities have not had regular communication with industry professionals to ensure that their courses meet the demands of industry. Maintaining industry relevance of property programs will assist universities in maintaining market share against other education providers who are capable of acting as competent education and training providers (Boyd, 2000).

Property education is multidisciplinary in nature because of the coverage of many different professional areas such as town planning, economics, law, accounting, tax and building

studies as well as core property units. Many of these units are offered in a multi-disciplinary context as generic units (introductory units) which give credit for more than one degree. For property degree courses offered by a business faculty introductory economic, accounting and law units are offered for property and other business degrees. For property degrees offered through a built environment faculty units such as building studies will be offered for the property discipline and other related disciplines such as construction management and quantity surveying.

In the design and evaluation of a property course, students and employers may assist academics to make improvements through defining targeted selected learning objectives, outlining course content, teaching materials and pedagogy (Manning, 2002, p.27). For the curriculum to be responsive to changing demands in the workplace it should be industry centred rather than student centred (Butler et al., 1998). All stakeholders (academics, industry, students and graduates) were in agreement that the curriculum must be integrated, where concepts from a variety of areas e.g. valuation, law and economics are taught in conjunction rather than in isolation (Koulizos, 2006; Newell, 2003). The Graduate Careers Council of Australia conduct a survey for recent graduates (including property students) which may be benchmarked across universities and for longitudinal analysis. For example, the quality of teaching of the property course at QUT has been ‘consistently ranked in the top 3’ for good teaching over 1994 – 2001 and showed a consistent trend of improved teaching ratings from 1998-2001 (Newell, 2003, p.368).

Born (2003) mentioned that the primary USA property accreditation body has emphasised that course material should integrate the following elements: (1) global awareness/ international perspectives; (2) ethics and social involvement; (3) technology application in business; (4) critical thinking; and (5) oral and written communications (Born, 2003, p.239). Born (2003) stated that higher education in real estate needs to sharpen written communication and critical thinking skills, including decision making.

As a response to a tightening fiscal environment in higher education some universities have moved to internet based education. The initial attraction of online education was the capacity for self-directed learning with minimal contact with instructors. However, the reality is that “students need contact with instructors to answer questions, discuss ideas, and assess their learning” (Martinez, 2004, p.267). Martinez stated online course design principles need to comprise the following (Martinez, 2004, p. 267):

- encourage contact between student and academic
- encourage cooperation among students
- Use active learning techniques
- Give prompt feedback
- Emphasize time on task
- Communicate high expectations
- Respect diverse talents and ways of learning”

Page and Parry (2002) acknowledged that the use of a web based medium has been rapidly embraced in teaching and learning. For universities, online courses are seen as a global opportunity without a full awareness of the consequent cost of providing a high quality of service (Page & Parry, 2002, p.4). For academics, the development of online courses will redefine their role in the delivery of teaching programs with changes required in teaching techniques and pedagogies. For students they can achieve a greater level of flexibility in their studies.

Online learning has been seen as favourable for QUT (Koulizos, 2006). QUT views the online medium as a supplement to and not a substitute for face to face contact. Higher Education funding constraints have encouraged innovation at QUT and resulted in the development of multidisciplinary units within and across different degrees. As mentioned in the beginning of this section, multidisciplinary units have been developed to reflect current industry practice.

Furthermore, to compliment the current lecture and tutorial delivery format, property courses need to include field trips and guest speakers from industry to provide the link between the property industry and the university. In a study undertaken by Callanan and McCarthy (2003) graduates also requested more guest speakers not only to cover concepts but also career opportunities.

In research undertaken by Koulizos (2006), all stakeholders agreed that assessment should include a combination of exams, and individual and group assignments. In the study students expressed an aversion to exams and academics expressed the view that individual oral assignments should have a limited role in the overall composition of assessment as there is a perception generally by academics that oral presentations are not a rigorous form of assessment (Koulizos, 2006). The composition of assessment and the weighting of each form of assessment will vary depending on the objectives of the unit. All stakeholder groups agreed that exams should be given the greatest emphasis in overall assessment, followed by individual written assignments.

In addition, group assignments based on real life case studies were viewed positively by all stakeholder groups. Stakeholders also perceived a merit in using real life case studies as a component of curriculum design and delivery. Moreover, educators need to help students develop critical thinking skills, to sharpen their problem solving abilities and foster an environment that promotes group work (Anderson, Loviscek, & Webb, 2000).

Furthermore, field trips are seen as a complimentary delivery technique which may develop transferable skills such as (Hoyt, 2002):

- “1. Observation skills (with and without the aid of the lecturer)
2. Analytical skills
3. Independent learning
4. Decision making (visual or oral evidence can be used as a basis for decision making)
5. Teamwork skills”

In a study undertaken by Koulizos, students expressed a reluctance to embrace group work when they did not participate in the group formation process. Self formation of the work group is likely to evoke a more positive experience of group work by students which is more conducive to learning. Koulizos (2006) also emphasised that group work skills such as working collaboratively, demonstrating leadership and flexibility, need to be explicitly taught. In group work assignments students are working together not just completing the task, but also stimulating active or collaborative learning within the group (Butler et al., 1998, p. 53).

Work experience has been imbedded in the curriculum of QUT, RMIT and UniSA property degrees while Massey University (NZ) is also encouraging students to spend time in the workforce while gaining credit towards their degree (Callanan & McCarthy, 2003). The benefits of work experience are twofold in that potential employers are assisted in the

recruitment process and students have the opportunity to obtain part time or full time employment in the property industry.

QUT has introduced a paradigm shift in the offering of work experience that is integrated with academic learning as opposed to being an extra curricula activity. The 'Work Integrated Learning' (WIL) unit, offered for the first time in 2008, is embedded in all Faculty of Built Environment and Engineering degrees. A separation of work and study has not helped the student learning process. The integration of work and study is designed to enhance student learning. WIL is a cross-disciplinary unit that has been designed "toward more integrative, cooperative, action pedagogy for work-based learning" (Franz, 2008, p. 167).

In summary, property courses have traditionally comprised units from various business and built environment related disciplines. Changes in the higher education sector, including reduced sector funding, have lead to innovations in curriculum design and course delivery and assessment. For some universities this has resulted in a focus towards online programs and for others this has meant the introduction of larger, generic units that are offered in a multidisciplinary context. For QUT, online education has developed to compliment rather than substitute face to face lectures and tutorials. Class sizes in the QUT property course are routinely above the annual property student intake number even for core property units. Some units are designed for all Urban Development students, (property, quantity surveying, construction management, urban and regional planning and spatial science), while other units are offered to all faculty students. In the context of school wide and faculty wide units changes are made to assessment and class activities to cater for large student numbers. For example activities such as field trips and work experience can be more difficult to manage with increased student numbers. The management of large student numbers will be addressed in this study.

3. Methodology

This study used triangulation of mixed quantitative and qualitative data to analyse students' performance in five property discipline core units. The review has been undertaken on units in the new Bachelor of Urban Development - property economics degree at QUT. The Bachelor of Urban Development Degree also comprises five other strands, construction management, quantity surveying, urban and regional planning and spatial science. Quantitative data is collected from secondary sources like past student performance results, unit outlines and course performance surveys over the period of 2007 and 2008. Limited qualitative information was also provided by these information sources which has been incorporated as appropriate. Nine multidisciplinary units are included in this study (refer Table 1).

Koulizos (2006) suggested that to achieve more detailed discovery of information interviews with both lecturers and students be undertaken to identify 'innovative methods of teaching and learning'. To compliment secondary data sources, primary data collection was also undertaken. A focus group interview of final year property students was selected as an effective medium to ascertain the view of this student cohort. This method was chosen above a survey to identify the consensus views of the group. Students were invited via email to attend the focus group. The students were given opportunities to reflect on

their experiences at university and share their opinions on their learning within a multidisciplinary environment.

Table 1. Multidisciplinary units offered in 2008

ID	Level	Number of students in 2008	Category
U1002	Introductory	353	Large
U1006	Introductory	313	Large
U1007	Introductory	393	Large
U3007	Advanced	296	Large
U3005	Advanced	294	Large
U3006	Advanced	161	Medium
U3004	Advanced	69	Small
U1004	Introductory	1274	Very large
U1005	Introductory	1248	Very large

Notes:

Very large (VL): class for units that are offered to all disciplines in the Faculty (approximately 1200 students)

Large (L): class size comprising of all Bachelor of Urban Development students. (300-400 students)

Medium (M): class size comprising a selected group of Bachelor of Urban Development students (approximately 250 students)

Small (S): class size of property economics students (less than 100 students)

According to Small and Karantonis the assessment of the quality of education has shifted to be more student focus and is addressed by asking students as quality assessment measurement. Further comment was made that “quality in delivery has become ‘more important’ than content” (Small & Karantonis, 2001, p.4). Unit survey are also used extensively to assess quality for a range of purposes including promotion and funding (Small & Karantonis, 2001). At QUT a Learning Experience Survey (LEX) is undertaken on every unit offered each semester to ascertain the views of students.

In addition, a series of in-depth interviews of lecturers and tutors who have taught and coordinated multidisciplinary units was undertaken (see Appendix for semi-structure interview questions). The aim of these interviews was to capture academic’s reflections on issues such as delivery strategies, assessment, work load and student engagement and participation. The academics were asked to compare and contrast unit delivery and assessment strategies for single discipline property units and units offered in a multidisciplinary context where student numbers are larger.

Students’ performance and satisfaction was compared between property core units and multidisciplinary units offered in Semester 1, 2008 in the QUT property course. Further analysis is undertaken between units offered in 2007 and in 2008. Five first year units are compared with four intermediate and advanced units. The first year units have been offered for the past three years since 2006, the advanced units have been offered either once or twice depending on the transition arrangements from the former property economics program to the current Bachelor of Urban Development program. The quantitative data is analysed using descriptive analysis, graphical, cross tabulation and ‘correlation’.

Seven academics from different disciplines with an involvement in the planning, delivery and operation of multidisciplinary units have been interviewed (see Table 2). These academics also teach discipline specific units and therefore are able to share their experiences and provide a useful comparison between the two. In addition, some of these academics have experience in teaching introductory and advanced multidisciplinary units.

Table 2. Academic participants

Academics	Male/ Female	Multidisciplinary units		Discipline
		Introductory	Advanced	
Academic 1	Male	V		Property
Academic 2	Female	V		Property
Academic 3	Male	V		Civil
Academic 4	Male	V		Construction
Academic 5	Male		V	Construction
Academic 6	Female	V		Spatial Science
Academic 7	Female		V	Property

Final year students were invited to participate in a focus group to draw a comparison between introductory and more advanced units as they are close to completion of all units required for their first major (Property Economics). All final year students were invited via email to participate in the discussion which was entirely voluntary. Seven final year students participated in the focus group discussion, four male and three female (refer Table 3).

Almost all final year students are working part time or full time in the property industry. Students were representative of 15% of the final year student cohort. Two of the students commenced studies in property economics after completing part of a business degree.

The focus group allowed students to voice their opinions in a less constrained environment such as a written survey. The focus group was led by an academic who is not currently teaching in the property course which was intended to promote openness and honesty without fear of academic repercussion. This is directly in contrast to feedback provided directly to lecturers and course coordinators where students may be reluctant to participate.

Table 3. Profile of student focus group participants

Student	Male/ Female	Sector Employed	Employed Since	Public/ Private
Student 1	Male	Portfolio Analysis	Year 2	Public
Student 2	Female	Valuation	Year 3	Public
Student 3	Male	Real Estate/ Divestment	Year 1	Public
Student 4	Male	Portfolio Analysis	Year 1	Public
Student 5	Male	Professional Services	Year 2	Private
Student 6	Female	Development	Year 2	Private
Student 7	Female	Professional Services	Year 1	Private

4. Results and discussion

Sections 4(a), 4(b) and 4(c) of this paper address the quantitative data collected from secondary data sources such as unit outlines, students' academic results and student satisfaction surveys. Analysis of all units, both multidisciplinary and core property units offered in semester 1, 2008 is undertaken in section 4(a) of this paper.

In section 4(b) a comparison of student results in multidisciplinary units for each of the disciplines is undertaken over the period of 2007 and 2008. Unit outlines for multidisciplinary units offered in 2008 are analysed in section 4(c).

Qualitative data gathered through reflective interviews with academics and a student focus group discussion is analysed in sections 4(d) and 4(e) of this paper respectively. Finally, conclusions will be drawn from quantitative and qualitative data analysis in the final section of this paper.

4(a). Units offered in semester 1, 2008: multidisciplinary and property core units

Figure 1 shows a comparison in the number of enrolled students in the property core units and a opposed to multidisciplinary units in semester 1, 2008. Student enrolled in core property units range from 60 to 140 students. Low student numbers in some of the more advanced core property units is attributable to the transition to the Bachelor of Urban Development program with some students choosing to exit this degree with the former Bachelor of Applied Science – Property Economics degree after three years of study. This degree will not be available to students after 2008. The relatively high number of students in U1001, one of the core property units, is based on the requirement for non-property students to complete this unit as part of a second major or minor. Of the multidisciplinary units offered in the property course the units offered to all Bachelor of Urban Development disciplines comprise approximately 400 students while the units offered faculty-wide have in excess of 1250 students enrolled.

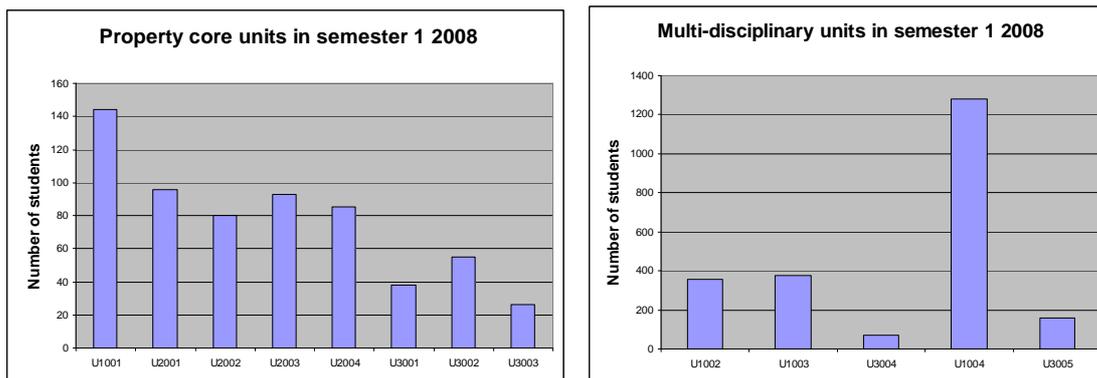


Figure 1. Number of students enrolled in core property and multidisciplinary units in semester 1, 2008

The level of overall satisfaction of students' as determined through the LEX survey was higher in discipline specific units as opposed to larger multidisciplinary units. More students in their first year of study provided LEX feedback and consequently their comments are statistically more significant. For example almost 60% of the students

enrolled in U1004 completed the LEX survey. Not surprisingly, students felt that more generic multidisciplinary units have less relevance when compared to discipline specific units.

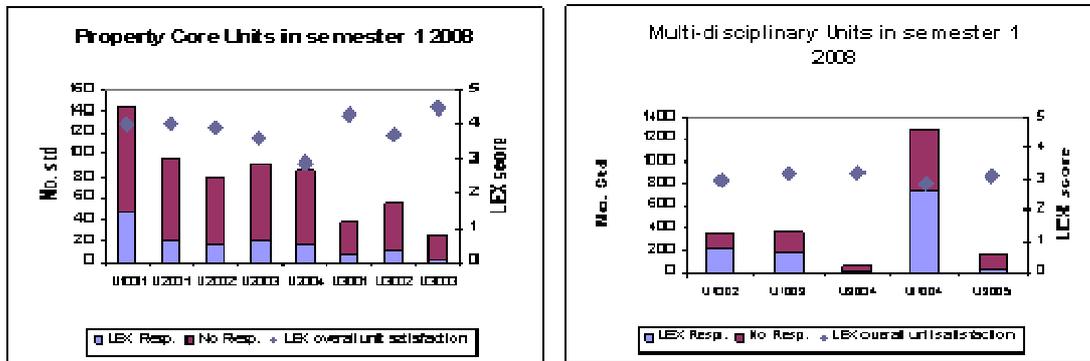


Figure 2. Students overall satisfaction in the property core and multidisciplinary units in semester 1 2008

Table 4 shows strong correlations between the number of students and student performance in property units. There is a strong positive correlation between the number of students and the failure rate and there is a negative strong correlation for the high achievers (students who achieve grade 6 and 7, 7 is the highest grade that student may be granted). However, this correlation is not statistically significant as the number of sample is small. Student satisfaction results did not have the same trend. For multidisciplinary units, the higher the student satisfaction to overall units tends to correlate with a higher failure rate or lower achievement rate. In analysing these statistics it is relevant that LEX results represent a sample of students who complete an online survey which is not reflective of the opinions of the majority of students. Therefore, this study indicates that other forms of feedback are required to evaluate specific units and the property course more rigorously.

Table 4. Correlation of number of students and their performances, satisfaction and their performance

	# vs failure	# vs 6&7	LEX vs failure	LEX vs 6&7
Property core	0.43	-0.45	0.1999	0.283116
Multidisciplinary	-0.04	0.07	0.3724	-0.46603
All units	0.20	0.08	-0.16408	0.016086

4(b). Comparison of student results in multidisciplinary units in 2007 and 2008 based on their discipline

Figure 3 provides a comparison of the number of students from each of the Bachelor of Urban Development disciplines enrolled in multidisciplinary units in 2007 and 2008. A change in the composition of inter-disciplinary students is evident. The Bachelor of Urban Development comprises the five disciplines of construction management (CM), property economics (PE), quantity surveying (QS), spatial science (Spatial) and urban and regional planning (URP). In 2008 construction management is the dominant student group with property economics students and urban and regional planning students being in

approximately equal numbers. Quantity surveying and spatial science represent the smaller student cohorts.

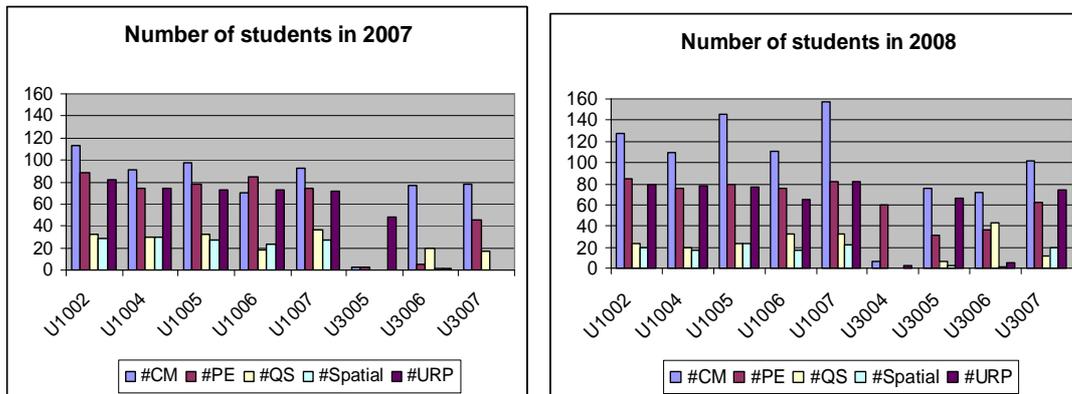


Figure 3. Students number in multidisciplinary units in 2007 and 2008

The average of student results by discipline in 2007 and/ or 2008 is illustrated in Figure 4. Property economics students achieved a higher average grade than the urban development average. This study has not proven that the Grade Point Average (GPA) of students has been impacted by non-discipline core units such as multidisciplinary units and units required for a second major or minor.

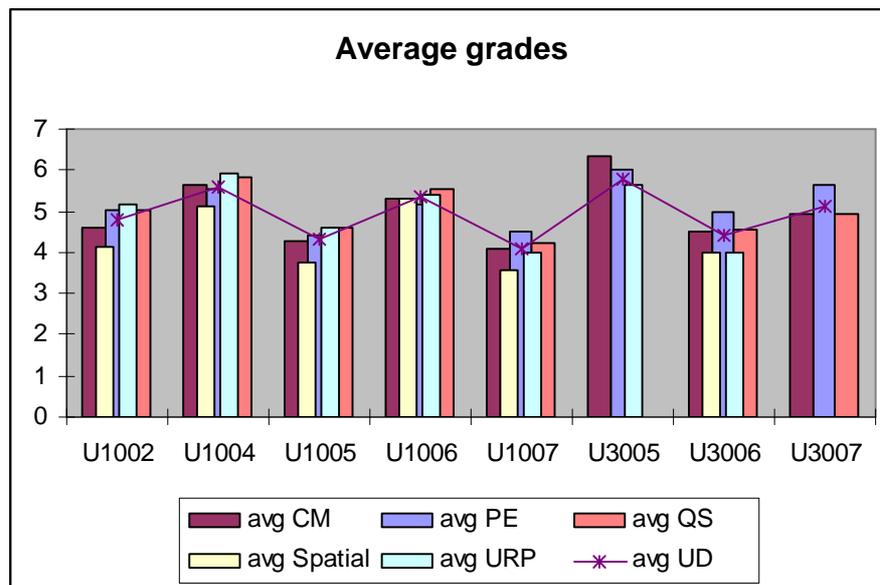


Figure 4. Average grades of students in multidisciplinary units in 2007 and/ or 2008

4(c). Unit outline analysis of multidisciplinary units offered in 2008

Introductory and advanced units analysed in this section of the paper are similar in that there are no pre-requisite requirements. Students are considered to have the same level of knowledge for all introductory units however this expectation does not exist for the advanced units. According to Table 5 some of the class sizes for advanced multidisciplinary units are small or medium sized which is due to the transition to the new

Bachelor of Urban Development program. Once fully transitioned to the new program these units will have large student numbers.

Table 5. Unit outline analysis of multidisciplinary units offered in 2008

ID	level	size	L	T	Individual assignment	Group assignment	Oral presentation	weekly quizzes	Number of exam	Contribution of final exam
U1002	Intro	L	2	1	1		1	1	2	50%
U1006	Intro	L	2	1					3	60%
U1007	Intro	L	3	1	1				1	60%
U3007	Adv	L	2	2		2			1	30%
U3005	Adv	L	2		2				0	
U3006	Adv	M	3	1	1		1		2	30%
U3004	Adv	S	2	2	1	2	1	1	0	
U1004	Intro	VL	1	2	1	1		1	1	30%
U1005	Intro	VL	2	1	1	1	1		1	25%

From above table, it is evident that the unit assessment types are not related directly to number of students or class sizes but rather are determined by the units' characteristics. Almost all units have included an exam as the ultimate assessment item for students. All introductory level units assessed students using at least one final exam. For all very large introductory units one exam only is conducted attributing a relatively small percentage to the students' overall result. Although not evident from this analysis academic capacity to mark large volumes of student papers within a limited timeframe may have influenced the composition of assessment items in very large units.

Individual verbal presentations are not included as assessment items in multidisciplinary units due to the time pressures this would place on unit delivery. For this reason students work in groups to undertake verbal presentations during tutorial time. To compliment the above results further primary data has been collected and analysed. QUT Academic staff have been asked to reflect on their experiences in teaching in large multidisciplinary units and discipline specific units and compare and contrast the differences in approach to unit management, delivery and assessment.

4(d) Academic perceptions

Table 6 illustrates academic's experiences on teaching large multidisciplinary units and discipline specific units. Some lecturers state that they adopt different delivery strategies, but Academic 6 conducts the same delivery techniques.

Table 6. Differences between large multidisciplinary units and discipline specific units

	Multidisciplinary units	Discipline specific units
Delivery strategies	<p>No difference to smaller class</p> <p>Need to be more orchestrated</p> <p>Less time and program flexibility</p> <p>Difficult to find generic examples</p> <p>Difficult to maintain connection with all disciplines (invariably one discipline doesn't see the relevance)</p> <p>Tutorial for introductory, generic units: requires less effort in preparation (often text book based tutorial)</p> <p>Tutorial for advanced units: more difficult to engage cross disciplinary students</p>	<p>Flexibility in breaking from lecture to tutorial exercises where appropriate</p> <p>Students are more responsive and see the relevance to their discipline</p> <p>More interactive classes where students are known to the lecturer/tutor (i.e., personal approach)</p> <p>Engage in problem based tutorials or assignment based tutorials</p>
Student engagement and participation	<p>Videos introduced to maintain interaction with large class (funding and time are required)</p> <p>Students have different level of interest in content.</p> <p>Weekly quizzes assist in engaging students</p>	<p>Interactive discussion</p> <p>Weekly quizzes used to engage students</p>
Assessment	<p>One big report</p> <p>Presentation in tutorial times</p> <p>Exam</p> <p>Multiple Choice Questionnaire online quizzes (MCQ)</p> <p>Group assessment items aimed to reduce academic marking load. Giving a template to tutors to ease the marking as well</p> <p>Mid semester exam in MCQ format</p> <p>Select own inter-disciplinary group within tutorial time</p> <p>Multidisciplinary team requires equal workload from each discipline</p>	<p>Weekly assignment to facilitate learning process</p> <p>Learning through doing on assessment (directed read books)</p> <p>MCQ quizzes in class</p> <p>Student required to form a group lead tutorial discussion (assessment piece)</p> <p>Combination of group and individual assessment items.</p>
Academic work load	<p>High academic workload generated by:</p> <p>Typing online quizzes and inputting marks</p> <p>Maintaining consistency of marking across tutors (difficult to moderate).</p> <p>Large marking workload when individual assignment are set</p> <p>More emails from students and on line blog/ discussion forum</p> <p>Spend more time even before class started (answers enquiries)</p> <p>The enquiries for first year related to their inexperience as university students (some are non subject related questions)</p>	<p>Less workload (number of students significantly less)</p> <ul style="list-style-type: none"> - number of emails - marking requirement - feedback <p>Possible to conduct field trip</p>

General consensus among academics was that student learning was driven by assessment and therefore setting progressive assessment items will assist students to learn. It was stated by academics that students liked to use blog as a learning tool to learn from other

students' comments. The sequence of lecture content was also recognised as being important to engage students in learning. "Students in the first semester are not interested in theory and international issues, it is better to start with local issues and more practical examples and then introducing theory" (Academic 6).

Some academics also provided comment on the support required for multi-disciplinary units. The most obvious is in additional funding for marking assistance. Although not suitable for all units it was suggested by one academic that the workload associated with large multidisciplinary units could be shared with other academics as co-unit coordinator (Academic 2). However, not all interviewees agreed that sharing load will affect the clarity of responsibility. A lecturer needs an experienced mentor to run multidisciplinary units. In addition, administrative assistance was recognised as potentially easing the burden of coordinating a number of lecturers, guest lecturers, tutors in addition to the students.

Some lecturers commented on the sequence of the units in the Bachelor of Urban Development degree. Although a more comprehensive study beyond one discipline is required to evaluate the course structure, this study suggests that an overall course review be conducted following its complete implementation in 2009. Wherever possible, specific requirements from different disciplines need to be accommodated in the multidisciplinary units. For example, the number of days required for work experience may vary in the same Work Integrated Learning (WIL) unit based on the course and accrediting body requirements.

4(e). Students' perceptions

The consensus views expressed by students in the focus group discussion is summarised in Table 7.

Table 7. Student focus group results

Themes	Multidisciplinary units	Discipline specific units
Work load	Their current workload in year 3, semester 2 is too minimal with too many generic and multidisciplinary units. Students don't feel challenged enough. Students generally thought that first year was quite good and the multidisciplinary units worked reasonably well	The workload in semester 2, year 2 was very challenging but the students enjoyed the challenge of increasing technical skills.
Level of difficulty of assessment	There is quite a lot of group work which allows students to "ride on the efforts of other students". Generally they thought that university was too easy to pass - they liked the level of satisfaction they felt through performing with difficult assessment	Students feel they were most challenged in year 2 of the course where new technical skills were introduced. Students commented that year 2 of the course would have been very difficult if they were not engaged in the workplace as this provided useful background and context to what they were learning at university. Generally, those students who were not working in a professional

Themes	Multidisciplinary units	Discipline specific units
		position experienced difficulty at university. Valuation 2 was considered to be very challenging and students responded positively to this challenge.
Relevance	<p>The relevance of some of the multidisciplinary generic units was questioned.</p> <p>WIL unit is not considered to be helpful where it is currently programmed in the course because most students are already working. WIL would be useful if it was programmed when students were first seeking employment - maybe semester 1, year 2. The assessment for WIL was also considered to be unclear and should relate more closely to what is being done at work.</p> <p>Students identified that Research Methods, offered in third year, would be more useful in the earlier years of the program.</p>	<p>Students expressed concern over repetition of content in a first year multidisciplinary unit which contained legal content with a more thorough coverage of the legal concepts again in second year for the PE students. [These concepts are covered for the benefit of the other disciplines who are not exposed to them again].</p> <p>A suggestion from the students: include an introductory subject in first year first semester that puts the entire course in perspective.</p>
Useful course feedback	<p>Students stated that they are much less likely to attend lectures when class sizes are large and they would probably be more inclined to seek clarification from the lecturer separately or rely on other students to keep up to date. In the later years they are more likely to rely on other students.</p>	<p>Student stated that they achieved superior learning outcomes through discipline specific education. They felt that their classes were more interactive and it was helpful that delivery was specifically targeted to their background and experience. They would like to see more discipline specific units and more core technical units in the areas of property finance, portfolio management and funds management. The students have to seek complementary units from the second major/ minors which are mainly offered by the Faculty of Business.</p>
Mode of delivery	<p>Students expressed a general lack of support for the large class delivery format. Students liked to be provided with access to notes prior to the lecture and found the study guide produced in Residential Construction and Engineering very helpful in staying on track with their study.</p>	
Mode of communication with lecturer and other students	<p>As mentioned previously the larger the group the less interaction there will be with the lecturer and the less likely the students are to attend classes.</p> <p>As they get to know others in the course they are more likely to rely on their student networks to keep up to date with material covered.</p>	

In general, students are accepting of multidisciplinary units being offered in the first year of the course but objected to them in the final year. They commented that they “just don't work because of the differences in experience” of each discipline’s student cohort. Development Processes was cited as an example whereby the assessment was exclusively targeted towards the skills and experience of the property economics students and students from other disciplines were able to contribute far less. One student said that the “positive experience of the final year multidisciplinary units is the real world team work experience, but this could be improved if work was distributed more equally across the disciplines”.

Qualitative data sourced from academics and students is complimentary to the limited quantitative data from unit student enrolments and results, unit outlines and students surveys. Students and academics explained their experiences which have been summarised below. From the quantitative analysis, it appears that the size of the class and multi disciplinary format has impacted student performance. There appears to be no direct correlative relationship between class size, assessment methods and student satisfaction.

Academic’s experiences

The strategies employed to deliver discipline specific and multidisciplinary units differ for introductory and advanced units. Teaching in a multidisciplinary context for the delivery of advanced units presents difficulties because of variations in knowledge, background and interest and engagement of each of the disciplines in the student cohort. Designing assessment pieces that are equitable across each of the discipline groups can also be challenging.

It was recommended by academics that additional funding be sought to support unit management and develop engaging and interesting course material. Finally, a comprehensive course review was recommended to evaluate the sequence and specific requirements of unit offerings for each of the different disciplines.

Students’ experiences

Similarly, students recommended that the structure of the course be reviewed with a view to balancing workload between the second and third years of the program. Students felt that some units in the program contained repetition of content and an increase focus should be given to discipline specific education to gain more core technical skills in the areas of property finance, portfolio management and funds management. Motivation to attend large classes has lowered as the students question the relevance of some multidisciplinary units and more limited interaction with academic staff.

4. Conclusion

From the limited data collected during the study there appears to be no clear correlation between large multidisciplinary student classes and student academic performance or satisfaction. The large number of students within one unit has some impact on student academic performance but not on their overall satisfaction with the unit.

This study also showed that there are many benefits associated with multidisciplinary unit offerings across the program particularly in the more generic units. However, these units require a greater degree of management by academic staff. It was noted by academic staff

that it is more difficult to organise, teach and coordinate multidisciplinary student cohorts due to a difference in prior knowledge, motivation and experience between each of the discipline groups. In addition the interaction between lecturers, tutors and the students frequently becomes more limited.

A perception exists for students that more limited face to face contact with academic staff in larger multidisciplinary units is not valuable which may be partially due to the quality of complimentary online teaching materials. For many academics, non-attendance at lectures was coupled with an increase in email communication which creates an additional administrative burden on academic staff.

Finally, a comprehensive course review to evaluate the sequence of units and the specific requirements of the units offered is also suggested. Some of the advanced units may require a single discipline perspective and students may benefit from the offering of these units earlier in the program.

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Semi-structure interview questions:

A. Focus group discussion - Final year students:

Third year students have experience introductory and advanced level of multidisciplinary units. They are also able to compare their experiences on discipline specific and multidisciplinary units with respect to the following:

- workload
- level of difficulties of the assessment
- relevance
- helpful feedback and interaction (lecture-students)
- general comments
- mode of delivery
- mode of communication with lecture and students

B. Lectures and tutors who have taught and coordinated multidisciplinary units

In addition, a series of in-depth interviews of lecturers and tutors who have taught and coordinated multidisciplinary units. A reflective interview also conducted to understand the academics experiences with focus on:

- the delivery strategies,
- assessment,
- work load,
- students engagement and participation.

The academics are asked to compare the difference between discipline specific and multidiscipline units in the area of delivery and assessment.