

CHALLENGES OF MEASURING LEARNING OUTCOMES FOR PROPERTY STUDENTS ENGAGED IN WORK INTEGRATED LEARNING

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ABSTRACT

Work integrated learning (WIL) or professional practice units are recognised as providing learning experiences that help students make successful transitions to professional practice. These units require students to engage in learning in the workplace; to reflect on this learning; and to integrate it with learning at university. However, an analysis of a recent cohort of property economics students at a large urban university provides evidence that there is great variation in work based learning experiences undertaken and that this impacts on students' capacity to respond to assessment tasks which involve critiquing these experiences in the form of reflective reports. This paper highlights the need to recognise the diversity of work based experiences; the impact this has on learning outcomes; and to find more effective and equitable ways of measuring these outcomes.

The paper briefly discusses assessing learning outcomes in WIL and then describes the model of WIL in the Faculty of Built Environment and Engineering at the Queensland University of Technology (QUT). The paper elaborates on the diversity of students' experiences and backgrounds including variations in the length of work experience, placement opportunities and conditions of employment.. For example, the analysis shows that students with limited work experience often have difficulty critiquing this work experience and producing high level reflective reports. On the other hand students with extensive, discipline relevant work experience can be frustrated by assessment requirements that do not take their experience into account. Added to this the Global Financial Crisis (GFC) has restricted both part time and full time placement opportunities for some students. These factors affect students' capacity to a) secure a relevant work experience, b) reflect critically on the work experiences and c) appreciate the impact the overall experience can have on their learning outcomes and future professional opportunities. Our investigation highlights some of the challenges faced in implementing effective and equitable approaches across diverse student cohorts. We suggest that increased flexibility in assessment requirements and increased feedback from industry may help address these challenges.

Keywords: work integrated learning, professional practice, property economics, learning outcomes, assessment

BACKGROUND AND CONTEXT

Work integrated learning (WIL) forms an integral part of curriculum design across the disciplines at QUT and supports the University's focus on 'real world' learning. All undergraduate courses are expected to provide the opportunity for students to undertake various forms of WIL during their courses, and this includes, but is not limited to, experience in professional workplaces. Further, WIL opportunities are expected to build mutually beneficial and long term outcomes for students, the University, professional partners and the community. The importance of work integrated learning has long been recognised by built environment, engineering and design disciplines and stakeholders. University courses are expected to respond by not only developing technical knowledge and skills, but also by supporting the transition to professional practice by emphasising skills and

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capabilities such as professionalism, strong communication skills, creativity and innovation. Poon and Hoxley (2011) stated that employability of graduate is not just supported by their hard skills but more importantly their soft skills ability. In addition, international work experience will significantly improve employability of our graduates.

A recent study in the built environment and design disciplines (Savage, Davis & Miller, 2010) explored a range of transition-to-work strategies designed to improve the transition to work experience. Stakeholders agree that it is critical that students encounter authentic instances of work experience prior to graduation, and that opportunities such as cadetships should be more widely available. The study also stressed the importance of mentoring new graduates in the first six months in the workplace and of the necessity for continuing professional development for improved performance. Most respondents believe that capabilities such as commitment, loyalty, professionalism, ambition, work/life balance, creativity and innovation, willingness to learn should be developed at university and that compulsory work experience and continuing education is part of successful transition-to-work strategies (Savage, Davis & Miller, 2010, p. 53). Similarly, in another study (Scott, 2008, p.7) respondents were asked to reflect on their university studies and their subsequent professional experience, firstly to rate a set of educational quality items and secondly to rate the extent to which their university had focused upon that area. In every instance, graduates indicated that they would have liked to have seen a more intense focus on real-world, problem-based assessment; real-life, work-based problems; real-life case studies; the development of relevant graduate attributes; utilising staff with industry currency; recent graduates as guest lecturers; and relevant work placements.

A study of a small cohort of graduating, property education students (Blake & Susilawati, 2009) revealed that students and employers consider that the transition-to-work is generally made more seamless by the trend towards the integration of academic studies with professional work experience. That is, "recognition of the need for authentic property education achieved through increased engagement with industry participation, field work and contemporary technologies" (Blake & Susilawati, 2009, p.13). Relevant work experience is recognised as providing benefits for students, affording an opportunity to apply theory learned at university in a practical context; a chance to observe how industry works; and the possibility to learn generic as well as technical skills. Students also recognise the benefits of work experience with good supervision that enables them to make 'mistakes' prior to performing truly independent work as graduates and professionals in the field. Students report that such experiences build confidence and in both technical and generic skills in the work environment (Patrick, et.al., 2009; Savage, Davis & Miller, 2010; Peach, et.al., 2011).

ASSESSING LEARNING OUTCOMES IN WORK INTEGRATED LEARNING

The holistic nature of WIL as a learning experience requires students to recognise knowledge presented in unfamiliar ways and to develop the skills of meta-cognition in order to recognise and learn from these experiences (Crisp, 2007; Peach & Matthew, 2011). Assessing the learning outcomes of these experiences is a challenge and most WIL assessment tasks require students to apply principles of reflection to identify where learning has occurred and to demonstrate how it was achieved (Brodie & Irving, 2007, p. 14). Students are required to produce evidence to support their claims for learning usually in the form of presentations, reflective interviews, reflective reports, portfolios, and journals. That is, students must be able to recognise and measure their learning in different circumstances, as they engage in assignments that demand articulation of their knowledge, understanding and critical reflection (Brodie & Irving, 2007, p. 16).

Issues about assessing WIL are hardly new. In a briefing paper (Brennan & Little, 1996) on assessment strategies for work-based learning, it is argued that the veracity of the assessment of WIL can be enhanced by drawing on several sources of evidence and using a variety of assessment methods. Some examples of these methods are summarised in Table 1. It is desirable to use as many methods as possible, within the constraints of cost and time, in order to triangulate and so increase the reliability and validity of the overall assessment. According to Scott (2008, p.7) these methods need to be 'relevant, integrated, practice-based, criterion-referenced, and reliably marked to a university standard'.

Table 1: Methods for assessing work integrated learning (Little & Nixon, 1995)

Method	Useful for	Disadvantages	Comment
direct observation of the student at work	assessing competence of students, can provide evidence of team work, <i>etc.</i>	expensive disruptive to workplace	important to have 'checklist' of what to observe
assessment of student's log book or work diary	encourages self-reflection as a learner	some doubt about validity	needs to be combined with interview to check validity
interviewing/ interrogation at work	obtaining evidence for knowledge, understanding needed for work place tasks	oral assessment can be subject and less reliable	Sometimes workplace might need to be simulated
surrogate assessment, <i>i.e.</i> assessor obtains views of others (managers, peers)	coverage of all work place tasks and performance	may be doubts about reliability	cheaper than trying to observe all tasks
student prepares a final report and this is assessed	encouraging reflection and communication skills	needs to be combined with other methods	report should contain reflection on what has been learnt
written or oral tests of the intended learning outcomes from the work based learning	testing background knowledge and understanding	lacks validity of direct observation	some institutions will wish to include this method, if assessment leads to credit used for an academic award

Poikela (2004) examines the interdependence of processes involved in assessing learning and knowledge in a professional context. She argues that in traditional assessment, reflective and social knowing is weakly assessed, and this can and should be addressed through the use of more authentic assessment. That is, assessment related to tasks that are relevant to professional practice or real life. Such context-based assessment requires that situational and contextual factors of knowing, and the social, reflective, cognitive processes of learning are considered carefully. Traditional assessment, based on perceiving and measuring knowledge possession and practical performance, provides limited information about the capability of the learner to develop as a professional and to learn at work. In a typical skill test situation the teacher estimates how well students know knowledge content and the work supervisors appraise how they perform in practice. However, reflective and social knowing is weakly assessed because of problems with tacit and potential knowledge (Poikela, 2004).

Crisp, 2007, affirms that:

Students require an immersive, authentic and communal environment with which to test their skills and their ability to adopt and adapt behaviours and resources to more productive uses. Access to content and people and instant feedback to their responses [are] an important part of this process. (Crisp, 2007, p.229).

Such assessments require student to interact with real world tools and to contemplate the real world consequences of their responses, where authentic assessment attempts to measure the process of generating the responses as well as the response itself (Crisp, 2007, p.37).

Pickford and Brown (2006) suggest that there are key questions that should be asked when assessing skills and practice. These questions are summarised in Table 2.

Table 2 Key questions related to WIL assessment

Why are you assessing WIL?	<input type="checkbox"/> To help students to adjust their practices? <input type="checkbox"/> To make a pass/ fail decision? <input type="checkbox"/> To motivate or reinforce practice? <input type="checkbox"/> To grade or categorise students? <input type="checkbox"/> To certify fitness-to-practice? <input type="checkbox"/> To enable informed option or career choice? <input type="checkbox"/> To help students know how they are doing? <input type="checkbox"/> To help them know where they need to direct their energies? <input type="checkbox"/> To remediate errors and modify inappropriate behaviours?
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	<input type="checkbox"/> To review under-pinning values? <input type="checkbox"/> To help you know what impact your teaching is having?
What aspects of WIL are you assessing?	<input type="checkbox"/> Product, outcome or process, or the use of theory in practice? <input type="checkbox"/> The means by which the practical outcome is achieved? <input type="checkbox"/> Work in progress as well as the finished product? <input type="checkbox"/> Group work or teamwork as an important component of WIL? <input type="checkbox"/> Originality/ creativity? <input type="checkbox"/> Conformance with standards?
How are you assessing?	<input type="checkbox"/> What models and types of assessment should be used? <input type="checkbox"/> Is group, self or peer assessment useful or appropriate?
Who is best placed to assess?	<input type="checkbox"/> Teaching staff <input type="checkbox"/> Peer review <input type="checkbox"/> Self-assessment? <input type="checkbox"/> Should employers, clients and workplace line managers be involved? <input type="checkbox"/> Audiences (at performances or visitors to exhibitions, displays and installations)?
When should assessment take place?	<input type="checkbox"/> Once the student has more or less finished with the subject? <input type="checkbox"/> Can it be incremental, at intervals through the learning experience? <input type="checkbox"/> Is there an opportunity for students to practice and prepare for new types of assessment without penalty? <input type="checkbox"/> To what extent is it important for the assessment to align with the traditional academic year?
With what frequency the assessment should be conducted?	<input type="checkbox"/> Is it enough to assess students' capability only once? <input type="checkbox"/> How would you assure that students' competence is repeatable?

These key questions help inform the design of WIL experiences including appropriate assessment practices that provide opportunities for students to critically reflect on their performance in the contexts of the work environment (Sahama, et al., 2010).

WORK INTEGRATED LEARNING (WIL) MODEL AT QUT

The model of WIL implemented in the Faculty of Built Environment and Engineering at QUT is based on the integration of theory and practice, privileging the workplace environment as an authentic site for learning (Franz, 2007). Work integrated learning is mandatory with all students in urban development and engineering undertaking at least one 12 credit point WIL unit (BEB701) and completing between 14 to 90 days of work experience depending on the discipline.

The intended learning outcomes of BEB701 are to:

1. Keep an accurate and comprehensive daily work log and reflective journal of work place learning activities and experiences;
2. Plan, manage and critically reflect on the implementation of a range of work place learning experiences while conducting yourself professionally, developing research, time management and professional writing skills;
3. Report on aspects of professional practice relevant to your development as a professional including collaboration and team work; work place health and safety; professional conduct; ethical responsibility; and other aspects of your work place experience.

Assessment items include two reports requiring reflection on the work place experience. Formative assessment includes an employer appraisal on the students' performance in the workplace. This appraisal uses a 5 point Likert scale to assess professional work habits; communication skills; problem-solving and decision-making skills; team work skills; professional skills; technical skills and competencies; application of discipline-specific

skills; ability to use computer software and company's systems; resourcefulness; and the ability to work independently.

In recent months the content and delivery of the unit have been redesigned with an increased focus on problem-based, collaborative learning, and career development learning (CDL). Student engagement has increased and learning experiences improved through the incorporation of flexible learning strategies, as well as the enhancement of staff capacity in working with new technologies and in new learning spaces. An ongoing challenge however, is to address diversity within the student cohort and different professional requirements. The next section considers the impact of a 'one size fits all' model on property economic students from 2009 to 2010.

PROPERTY ECONOMICS STUDENTS AND WIL

This section examines aspects of the profiles of property economic students who attended the same classes as other urban development students in 2009 and 2010. The following data is analysed from all students within urban development courses who enrolled in BEB701 (2009-2010). This brief analysis considers enrolment patterns and results; length of required and previous work experience, availability of placement opportunities; conditions of employment; types of work placements; and assessing performance.

Enrolment and Results

The Bachelor Urban Development has five first majors which include Construction Management (CM), Property Economics (PE), Quantity Surveying (QS), Spatial Science (Spatial) and Urban Regional Planning (URP). Table 3 shows the number of urban development students enrolled in BEB701 for each semester in 2009 and 2010.

Table 3 BEB701 student enrolment for Urban Development course.

Discipline	Semester 1/ 2009	Semester 2/ 2009	Semester 1/ 2010	Semester 2/ 2010
CM	33	46	36	47
PE	16	34	10	28
QS	38	13	20	15
Spatial	14	0	13	2
URP	23	14	25	18
Total	124	107	104	110

Figure 1 compares student performance in 2009 and 2010 across the five disciplines in urban development.

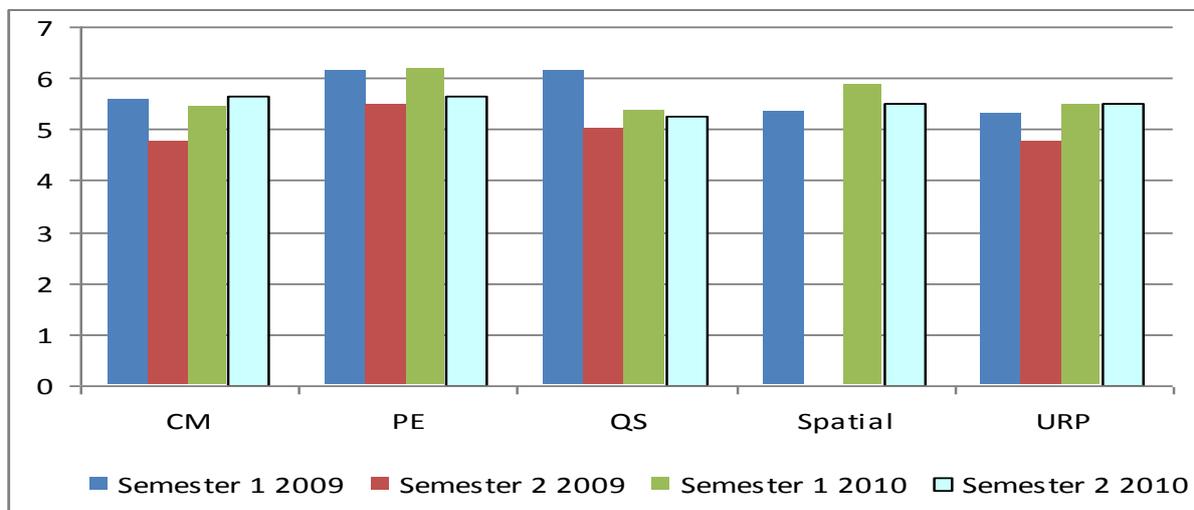


Figure 1 Bachelor Urban Development average student performance 2009-2010

Figure 1 shows that property economics (PE) students achieved the highest results on average of the whole cohort in all semesters. However, the number of students enrolled across the disciplines each semester in BEB701 is not equal. That is, property economic students usually take the unit in the final semester (second semester) of study whereas it is recommended that students in CM, QS, and Spatial take the unit the first semester of final year.

Length of required and previous work experience

QUT requires property economics students to work a minimum 30 days. However, Figure 2 illustrates that the majority of students in 2009 and 2010 had more than 30 days work experience by the time they enrolled in BEB701 in their final semester of study. However, this study is unable to show the actual length of experience, as students only have to claim that they have done the minimum work experience duration.

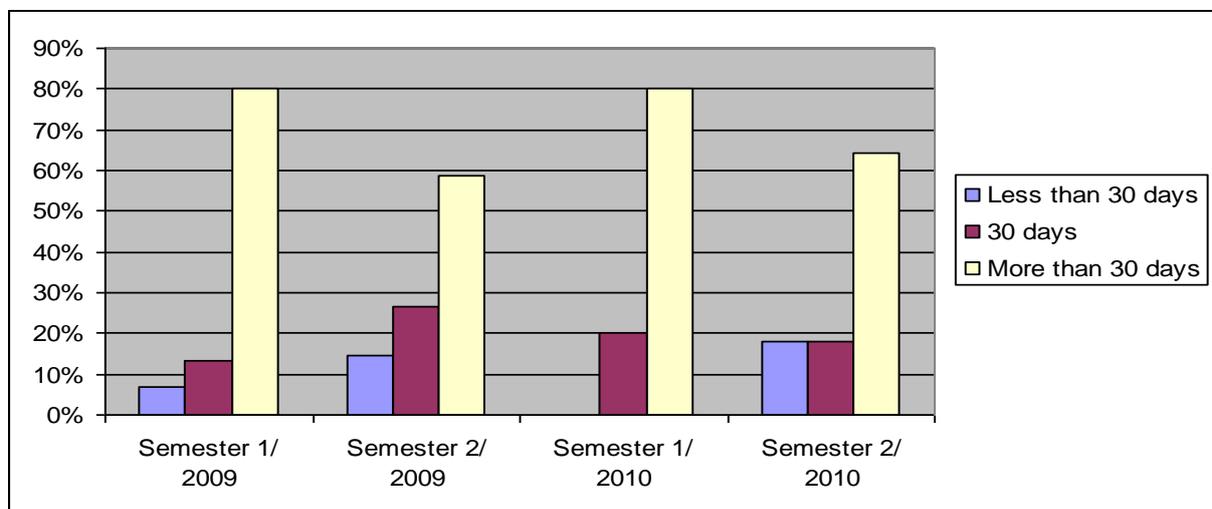


Figure 2 Property economics length of previous work experience

Availability of work experience opportunities

In the Faculty model students are responsible for finding their own work placement. However, the impact of the Global Financial Crisis (GFC) has made this increasingly difficult for some students. Many companies have discontinued contract workers and are not recruiting new workers or providing work experience. This has prevented some students from gaining required work experience in the industry and delayed course progression (although students with recent, relevant work experience have been able to use this experience for BEB701 assessment purposes).

Conditions of employment

Unpaid work experience is one way some students have been able to secure a work placement and meet course requirements. Moreover, QUT provides insurance for students who conducted unpaid placement. The companies get direct benefit on providing work placement, so they can ‘try before they hire’ the students. There is also anecdotal evidence that students hope that undertaking an unpaid placement will open up opportunities for full time work following graduation. The distribution of paid and unpaid work in 2009 was the same with an increase in paid work in 2010 (75% and 25% respectively).

Table 4 illustrates that the majority of students worked in medium (47%) and large size (42%) organisations and that the majority were paid.

Table 4 Size of organisations where Property economics students engaged in work experience

Size of organisation	Percentage	Unpaid	Paid
Small	11%	29%	71%
Medium	47%	34%	66%
Large	42%	31%	69%

Type of work experience

Figure 3 shows that many property economics students work in agency (residential and commercial agency). It also shows that in 2010 students worked in a more diverse range of jobs with improvements in job opportunities in banking, construction, development, and management.

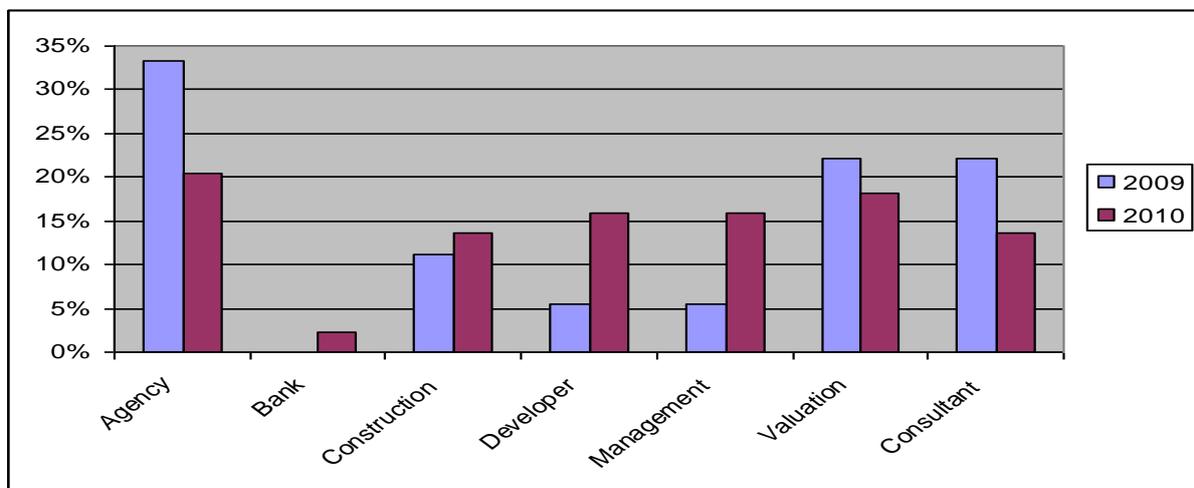


Figure 3 Property economics type of work experience 2009 and 2010

Assessing Performance

This unit has provided two separate assignment questions for a diverse range of length of student experiences. There is a brief for students with limited work experiences and students with long term paid employment. This is ensuring equity for students with diverse experience. For example, the students with limited work experience will reflect on their early days of work experience which will be difficult for the students who has long term paid employment.

Table 5 shows a weak correlation (0.296) between the size of the organisation and the quality of students' reflective reports produced based on their work experiences. There is no correlation (0.049) between unpaid or paid work and the quality of reflective reports.

Table 5 Correlation between organisation size, employment conditions and student performance

	Correlation
Organisation size to student performance	0.296
Paid/unpaid work to student performance	0.049

Further comparisons of average students' performance are shown in Table 6 and Table 7.

Table 6 Average of student performance categorised by organisation size

Size of organisation	Average student grades (1 to 7)
Small	5.57
Medium	5.34
Large	6.04
Total	5.66

Students who worked in larger organisation produced better reports shown by higher average marks (6.04). Table 7 also shows that paid students produced only slightly better reports (5.7) than unpaid students (5.6).

Table 7 Average of student performance categorised on employment conditions

Paid/Unpaid	Average student grades (1 to 7)
Unpaid	5.6
Paid	5.7
Total	5.65

It is suggested that students who are able to secure either paid or unpaid placements in larger organisations may be exposed to more structured experiences and complex system and are better able to relate these experiences to the unit learning outcomes than if they have limited experience in a smaller organisation.

CONCLUSIONS

There are several challenges that impact on property economics and other urban development students enrolled in the work integrated learning unit BEB701. These challenges include students' capacity to reflect and critique their experiences given variations in the length of experience, placement opportunities, conditions of employment, and types of work placements. The GFC has restricted placement and project opportunities with unpaid experience often the only option available. These factors can delay course progression and affect students' capacity to critically reflect on their work experiences which impacts on the quality of overall learning outcomes. In BEB701 student performance is heavily dependent on reflective writing ability. Although the unit aims to test both process and content, criterion-referenced assessment can only really measure the report writing process because it is very difficult to mark or judge the content when the contexts of the students' work experiences are all so different. Students with limited work experience have difficulty seeing how their work experience relates to their course of study. On the other hand, students with extensive work experience can be frustrated by assessment requirements that do not take this into account.

A new challenge and opportunity is the imminent restructure of the faculty as a larger, more diverse STEM faculty. From a WIL perspective this will involve finding ways to accommodate even greater diversity across disciplines and professional requirements. There are opportunities to consider increased flexibility in assessment requirements and diversity of methods specifically in relation to timing and frequency of assessment. For example, could assessment be incremental, at intervals throughout the course? Could opportunities be provided for students to practice and prepare for new types of assessment without penalty (Pickford & Brown, 2006)? Could peer and self assessment approaches be incorporated along with increased use of employer appraisal of student performance? One suggestion is that an audience for the reflective reports be identified e.g. employer, professional body (currently the audience is the marker). Having a real audience might help clarify the report writing task. There is scope for further research in this area and at QUT the opportunities and challenges of measuring WIL learning outcomes will be considered in the months ahead as part of a planned review of curriculum with the emergence of the STEM faculty.

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