

Measuring Work-Study Engagement In Built Environment Undergraduate Education In Australia

Anthony Mills PhD FAIQS , Helen Lingard PhD and Patricia McLaughlin

School of Property Construction and Project Management

RMIT University

Melbourne Victoria, Australia

The cost of accessing higher education is expensive causing students to juggle the demands of paid work with study responsibilities. Whilst some work can be beneficial to student learning this research seeks a more accurate understanding of why students undertake paid experience work to the level that they do. This paper examines the extent of work and study during an undergraduate program in construction at RMIT University Australia. Students responded to a questionnaire on the duration and nature of their work and study times. The results indicate that students who were involved in paid work do in excess of 20 hours per week, whilst also enrolled as full-time undergraduates. The results of the study show that students in the early years of the program seem to be more engaged with study and spent slightly less time at work. This is contrasted with students in the final two years of the course spend considerable more time in paid work and less time undertaking study.

The paper concludes by suggesting that the results are partly the result of the unstructured work-experience requirements that occur from about year 3 of the program. Students who were encouraged by the university to undertake paid work-experience appeared to be increasingly disinterested in connecting with the broader university experience.

Key words: construction, cooperative education, engagement, work-study conflict

Introduction

In recent years, the cost of financing an education has increased to such an extent that combining work and study may be a financial necessity for some students (Lipke 2000). However, it is possible that excessive job demands interfere with the breadth and depth of the students' educational experience. Students seem to accept a view that education is subordinate to employment, and that a university exists to prepare individuals for the world of work. This statement is based on a study of over 500 students who were enrolled in construction-based undergraduate courses in five universities across Australia conducted by the authors a few years earlier. (Lingard, Mills & Ashford 2003; Mills & Ashford 2004)

Graduates of construction course enter an industry which is under supplied with tertiary trained people and salary prospects are very good. This research asked students about their long-term motivations for work and contrasted this with their short-term financial imperatives. In addition, this research considers whether universities have a responsibility to their students to assist them in obtaining the best educational outcomes and not just provide them with pathways to a job

The changing attitudes of students towards their own education are having an impact on the ability of universities to offer broad educational experiences. Past research by the authors (Mills and Ashford, 2004; Lingard et al, 2003) has shown that students now adopt a minimalist attitude to tertiary education because they have become aware that a degree alone will not guarantee entry to a profession. Indeed, evidence shows that Construction Management students are frequently absent from lectures and tutorials and display a lack of involvement in course-related activities, such as participation in seminars or discussion groups.

Aims and Objectives

This paper builds on previous work which measured the amount of paid work being undertaken by built environment students; comprising, quantity surveying and construction and project management. The paper presents an exploratory analysis of the factors predicting construction undergraduates' work engagement with university study. The aims of this paper were to:

- explore the extent to which students work and study in; and
- develop a model of the work-study interface, describing the conflict between paid work and study due to time commitments,

The Study Context

Australia has one of the highest rates of urbanisation in the world, and the vast majority of the population live in one of six large state-capital cities. Each of these cities has a number of universities that between them accommodate the needs of most students. Due to the cost of education and living away from home the vast majority of Australian students attend a university in their own home city. This historical context creates opportunities for higher education students to live at home, undertake work and study in the one city.

This arrangement would seem to benefit Australian students because it allows them to cover the cost of their education by working near the home while attending university. However, the downside is that students are increasingly combining their work commitments with their study responsibilities during the same period. This can lead to Work-Study conflicts where students juggle the demands of both domains, and sometime meet the requirements of neither.

The RMIT University construction management program is a four year undergraduate degree and graduates of the program experience full employment upon completion. The study compares the work and study arrangements of students in each year of their program. It is believed that increases in work level are at least partly to do with the introduction of unstructured work-placements that occur from year 3. Students are required to achieve a minimum of 60 days unstructured work experience in industry prior to graduation. Whilst this period can easily be achieved during university breaks, it is well known that employers entice the students to stay employed during semester time by offering much higher levels of pay that would be achievable in other casual jobs. This is not an enrolled university course but is as part of the industry accreditation of the program. The work-experience is not formally monitored and is negotiated directly between the students and individual employers.

There are a finite number of hours in the day and consequently, students with demanding work schedules are likely to experience this time-based conflict between their work and their study. Such conflict is known to have a negative impact upon individuals' well-being and performance. This low level of interest in pursuing higher level construction education may reflect students' waning interest in what the University has to offer in the later years of the degree program.

Past research identifies (Denning 1992) a general trend among university students to believe they will be more valuable to employers if they have less theory and more practical experience. Given this sentiment, Denning argues that students do not want to prolong their stay on campus. The tension between academic research and theory and industry practitioners' views of the business world is well-documented and resilient (Wilkerson 1999).

Work-Study Theory

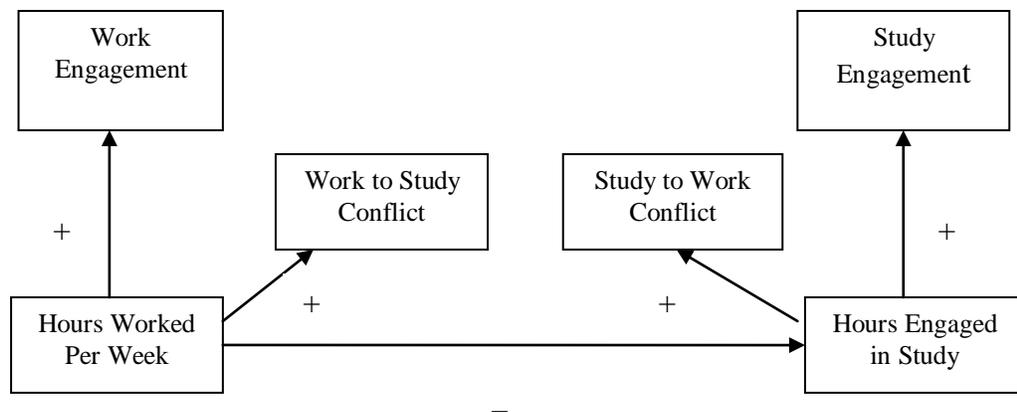
The conflict between one's work role and other life roles is an important aspect of the relationship between work and non-work life. Much research and theory building has focused on the conflict between work and family. For example, (Greenhaus, Collins & Shaw 2003) defined work-family conflict as "a form of inter-role conflict in which the role pressures from the work and family domains are mutually incompatible in some respect." In adult life work and family are primary life domains and researchers have developed and tested various models of the antecedents (eg work hours, number of children etc) and consequences (eg absenteeism, low job satisfaction) of work-family conflict. Very little theory development has related to the forms of inter-role conflict affecting adolescents or young adults in full time education. However, the work-family literature provides a useful basis for this development.

Markel and Frone (1997) suggest that that, in adolescent life, work and education are likely to be primary life domains. Empirical evidence indicates that the number of hours spent in paid employment each week is positively associated with a sense of conflict between work and education among adolescents and young adults (Markel & Frone 1998) For the purposes of this study a model of the work-study interface was developed based upon a model of the work-family interface, proposed and tested by (Frone, Yardley & Markel 1997). This model uses work-study conflict as a key mediating variable in the relationship between the time demands of both work and university, students' satisfaction with work and university life and burnout. Thus it is suggested that time demands impact upon students' work-study conflict.

Work-study conflict represents the extent to which involvement in one role (e.g. work) interferes with students' ability to participate in the other role (e.g. study). However, consistent with the research on the work-family interface, work-study conflict is conceptualized as a bi-directional phenomenon. Therefore, a distinction is made between the extent to which participation in paid work interferes with students' ability to meet university responsibilities (work-to-study conflict) and the extent to which participation in university life interferes with students' ability to fulfil the requirements of their paid work (study-to-work conflict).

Figure 1

Hypothesized model of work – study interface



In the model (Figure 1), role-related time commitments are regarded as predictors of work-study conflict. Time is a limited resource and university students' time commitments to paid work reduce the time available to fulfil duties required of another role. It may therefore be expected that excessive time involvement in paid

work would make the fulfilment of university requirements more difficult for students, giving rise to a sense of work-to-study conflict. Conversely, the time requirements of university might negatively interfere with students' work responsibilities, for example when a lecture clashes with a scheduled project meeting. Thus it was expected that there would be a positive relationship between the number of hours spent at university and study-to-work conflict.

METHOD

The research was based on a paper-based questionnaire, which was adapted from similar studies of Work-Family conflict. Three academic staff from RMIT university were contacted, each were asked if they would assist by offering a questionnaire to their students enrolled in the RMIT University, Property Construction and Project Management courses. Students were asked to respond to questions on a number of issues including; the reasons for seeking work, the type of work undertaken, and the amount of time spent in paid employment and the amount of time spent studying during semester.

The survey forms were given to each course coordinator for distribution to students in class. The completed survey forms were returned anonymously into a closed box. The data was entered into an Excel spreadsheet, which was later converted in to SPSS for analysis. In addition, each course coordinator was asked to specify the total number of students enrolled in their courses. The overall response rate was 23% (104/450) indicating that the survey represents a sufficiently large sample of the courses.

One of the principle aims of the research was to explore more deeply the impact of paid work on the undergraduate student study experience. Past research by the authors (Mills and Ashford, 2004; Lingard et al, 2003) indicated that students were working sufficiently long hours to experience conflicts with university study. Work-to-Study conflict was measured using a modified version of the bi-directional work-family conflict scale developed by (Netemeyer, Boles & McMurrian 1996). Items were re-worded to replace aspects of family life with study or university life. For example, "the demands of my work interfere with my home and family life" was changed to "the demands of my work interfere with my study." Items were rated on a seven point Likert scale ranging from 1 (strongly disagree) to 7 (strongly agree).

The next section presents the results of the questionnaire, including the amount of time students spend on work and study. In addition, the respondents were quizzed about their perceptions of their work-study conflicts, this data was then analysed to produce a model of the work-study interface.

RESULTS

Table 1 shows the average number of hours worked and used for study each week during semester time. The number of hours students work during semester-time was relatively high. The results indicate that students spend on average 24 hours per week engaged in part-time work during semester. This is higher than 14.9 hours which is the average time spent by students nationally across all undergraduate courses in Australia (McInnis 2003).

The results of previous research conducted by the authors (Mills and Ashford, 2004; Lingard et al, 2003) showed that other Australian construction management students averaged 18 hours of paid industry work per week during semester time.

Table 1.

Average number of hours of study and work per week (Semester 2) by Year Level

Year Level	Casual-based Work Time	Industry-based Work Time	Study Time
Year 1	19.0	5.3	20.7
Year 2	17.5	23.3	16.8
Year 3	19.8	17.1	17.1
Year 4	26.2	41.1	10.7

19.7

27.1

16.4

The next part of the survey asked students to indicate the type of work that they undertook. As expected, the results of Table 2 shows that most students in the early years of the program tend to work in casual jobs, like retailing and food service. However, students in the later years of the program gravitate towards industry-based jobs in order to meet the Work Experience requirements of the program. This generally occurs from about third year when students reduce their preference for casual-based work. Students are aware that there is more benefit in perusing industry-based work compared to casual work due to higher pay and better career prospect upon graduation.

Table 2.

Number of students undertaking work by Type and Year (Q6)

	Casual Work	Industry-based Work	Total
Year 1	19 (86%)	3 (14%)	22 (100%)
Year 2	12 (52%)	11 (48%)	23 (100%)
Year 3	6 (21%)	23 (79%)	29 (100%)
Year 4	6 (20%)	24 (80%)	30 (100%)
Total	43 (41%)	61 (59%)	104 (100%)

The next section of the paper measures the students' attitudes to work and study using the Work-study framework mentioned above. The framework comprised a series of questions asking students to explain their perceptions of work and study engagement on a 7-point Likert scale; the results were analysed using Factor Analysis and Correlations

Factor Analysis and Correlations

Past literature on Work-Family conflict suggested that there were a number of issues that resulted from the amount of time students spent working and studying. The questions in Table 4 show factor loadings that applied to the above aspects of work-study interfaces. A principal components factor analysis with varimax rotation confirmed the discriminant validity of the four dimensions.

The results of this analysis are presented in the Table 3. Items loaded clearly on the four factors which explained 76% of the variance. The factors comprised:

- (1) Work Engagement
- (2) Study Engagement
- (3) Study to Work conflict
- (4) Work to Study conflict

Table 3

Factor Analysis of Work Study Interface

Survey Question	Component			
	1	2	3	4
I am enthusiastic about my paid work	.066	-.072	.812	.136
My job really inspires me	-.026	.065	.930	.040
I find my job full of meaning and purpose	.032	.118	.881	.091
I am enthusiastic about my university study	-.014	-.012	.187	.861
My study really inspires me	-.115	.053	-.052	.936

I find my university study full of meaning and purpose	.018	-.183	.153	.868
The demands of my work interfere with my study	.875	.126	.053	.043
Because of my job I can't involve myself as much as I would like in my study	.913	.094	.063	.017
The things that I want to do at university do not get done because of the demands my job puts on me	.864	.213	-.018	-.140
There is conflict between my job and the commitments I have as a university student	.831	.319	-.039	-.076
The demands of my study interferes with work-related activities	.463	.618	.122	-.017
I sometimes have to miss work so that study responsibilities are met	.422	.691	.182	.046
Things I want to do at work do not get done because of the demands my university study puts on me	.307	.827	.077	-.064
My study interferes with my responsibilities at work, such as getting to work on time, accomplishing daily tasks and working overtime	.251	.833	.058	.026
My employers and/or co-workers dislike how often I am preoccupied with university life	-.162	.623	-.186	-.145

Extraction Method: Principal Component Analysis,
 Rotation Method: Varimax with Kaiser Normalization.
 a. Rotation converged in 5 iterations.

The factor loading were saved and correlated with two other variables, namely; *time spent in work* and *time spent engaged in study*. The next section of the paper examines the correlations of each of the components and offers some possible explanations.

Bivariate Pearson correlations between the variables measured in the research are presented in Table 4. The inter-correlations between the factors and the work and study hours showed that little conflict seems to exist. Surprisingly only *Work to Study Conflict* was significant. Contrary to expectations, neither the number of hour's students spent in paid work nor the number of hours per week engaged in learning were significantly correlated with the *Study to Work Conflict* dimension.

Table 4:

Bi-variate correlations between the variables

Factor	1.	2.	3.	4.	5.	6.
1. Work to Study conflict	1					
2. Study to Work Conflict	.000	1				
3. Work Engagement	.000	.000	1			
4. Study Engagement	.000	.000	.000	1		
5. Hours Worked per week	-.371**	-.075	-.016	.170	1	
6. Hours Engaged in Learning per week	.264**	-.063	.152	-.071	-.434**	1

** Correlation is significant at the 0.01 level (2-tailed)

The results (Table 4) indicated that *Work to Study Conflict* was also positively correlated with *Hours Engaged in Learning* ($r = .264, p = .010$). *Hours Worked per Week* was negatively correlated with *Work to Study Conflict* ($r = -.371, p = .000$). And also *Hours Work per week* was also negatively correlated with *Hours Engaged in Learning* ($r = -.434, p = .000$).

The results of the surveys have shown that students seemingly work long hours in industry-based jobs while also engaged in full-time study. Past research indicated that this mix was a recipe for conflicts. The incidence of high levels of work DOES translate into *Work to Study conflicts*, but surprisingly NOT into *Study to Work conflicts*. This suggests that students are concerned more about meeting work obligations, and less worried about missing learning opportunities and study. The next section of the paper discusses the above findings and draws some conclusions.

Discussion

Past research has shown that work in excess of the 10-15 hours per week is believed not to be beneficial to student learning (Curtis and Lucas, 2001). The results of this research show that students work 1.65 hours for every hour spent in study, this appear to be longer than what may be considered useful to gain work skills. Students in the later years appear to be increasingly disinterested in connecting with the broader university experience, and instead seek to adopt a minimalist attitude to learning.

The results of the RMIT study validate the previous studies of other built environment courses across Australia. Students in Built Environment courses tend to work longer than average for all students in Australia which is 14.7 hours per week (McInnis 2003) The study confirmed that *industry-based* students were working for longer hours than *Casual-based* students who were typically not engaged in the unstructured construction work-experience. There suggested that there is some evidence to suggest that work-study conflict exist, although the conflict seems to be asymmetrical and does not seem to affect their ability to meet the demands of study.

This also supports the work of (Micklewright, Rajah & Smith 1994) who suggested that the unknown future state of the industry encourages students to seek work as soon as possible. It may be reasonable to suggest that the benefits may be due to maintaining industry contacts and developing a stronger resume for future job applications. This may be occurring in spite of the negative impact on their educational experiences at university. The next section explores some aspects of the conflicts as perceived by the student respondents

Work to Study Conflict

Past research based on work-family conflicts indicated that conflicts were expected to be bi-directional in nature. In other words, there should be both study to work conflict, and work to study conflict. The results of this research were somewhat surprising. Students' experiences at the work-study interface are presently asymmetrical with students indicating a greater tolerance for the time demands of paid work than those of university study. Overall these findings suggest that the students in the present sample prefer to be working and tend resent the time commitments required by the university.

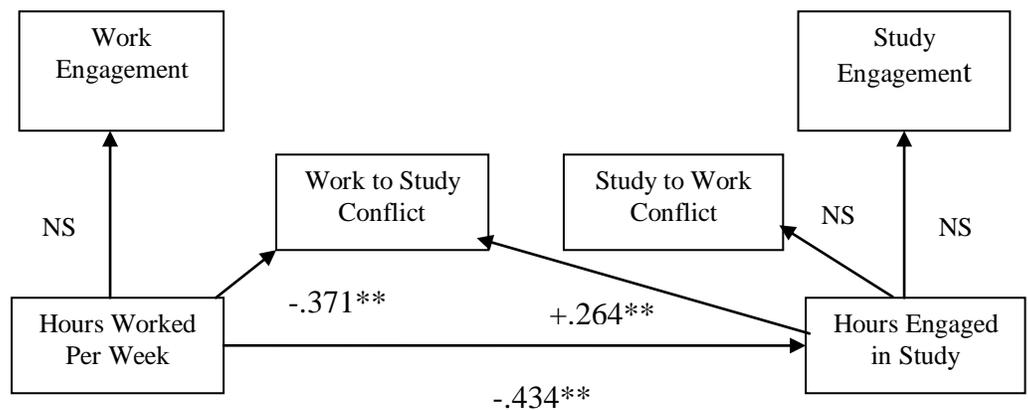
Students in the earlier years of the program spend much more time at university than those in the later years. The results correlation analysis in Table 4 has been used to form the model in Figure 2. The model indicates that when student worked longer hours it reduced the time available for university but that contributed to less *Work to Study Conflict*. In addition, there were no significant correlations with the *Study to Work Conflict*.

The non-significant relationship between time involvement in work and students' perceptions of work-study conflict was unexpected. This finding indicates that work-study conflict does not mediate the relationship between time demands of work and the outcome variables measured in the study. This is in contrast to the role played by work-family conflict, which mediates the relationship between time demands of work. This result also suggests that, among the students in our study, the amount of time spent in paid work may be a less significant source of work-study conflict than other variables. This finding is similar to a report by (Ackerman & Gross 2003) that marketing students in an American university were less affected by a

perceived scarcity of free time than by an individual's emotional reaction to work and university commitments.

Figure 2

Correlation coefficients for work-study interface



** Correlation is significant at .01 level (2-tailed)
 NS Correlation is Not Significant

Conclusion

In higher education research there is a growing interest in the importance of work-based learning, which is defined as linking learning to the roles in work. The significance of this research was that it demonstrated that when student worked longer hours it reduced the time available for university, but that it also contributed to less *Work to Study Conflict*. In addition, there were no significant correlations with the *Study to Work Conflict* suggesting that they placed greater value on work-experience than on study, particularly in the final years of their course. If this is the case universities should consider whether the length and type of education on offer is still appropriate to students intending to enter the construction industry.

From an educational perspective, there is some debate as to whether the quality of education should be judged according to the breadth and width of the problems that education poses for students (Lomas 1997) or by the market model, in which excellence is displayed when the product (the graduate) sells well (McMurtry, 1991). If the former perspective is taken, then it is possible that the breadth, if not depth, will suffer where the graduate focuses solely on behaviours, which he or she knows will be attractive to future employers. This research is important in that it examines the university-industry interface to identify contradictions between the University's educational objectives and industry expectations of the University's students.

The results of this study indicate that students seem to be engaged more with work than study as a result of the unstructured work-experience arrangements that are currently offered by the university. While the educators are keen to acknowledge that some work is good for development of the students, especially in construction management. This research seems to suggest that the unstructured nature and high pay of the work-experience creates disengagement from the university at a time when students are still enrolled full-time. However, the paper does not address the issue of whether the student derived education benefit from the work.

The development of a partnership between the University and the industry in providing work experience that complements the program of study would be helpful. Without this partnership, students may not get the range of experience they need and may struggle to find the linkages between theory and practice. More research is needed to determine the form and structure of the work-integrated learning program. Nevertheless the results of this research show that such a program is likely to be very well received by students. Universities have a responsibility to their students to assist them in obtaining the best educational outcomes from their degree courses. Given the reality of student employment, this must include being flexible and supportive of students in paid work.

A follow up to this study could also address whether hours worked correlate to students' grades, understanding of material in various classes, and retention of information learned. Future research could also examine the extent to which variables other than time involvement predict students' work-study conflict. Other variables of interest may include subjective perceptions of the qualitative and quantitative workload, available resources and support and the amount of control that the students are able to exercise over their work and university arrangements. Students' commitment to their work and/or their university education was not measured in this study but it is possible that these findings reflect that the role of employee is more salient to Property and Construction students than the role of university student.

References

- Ackerman, DS & Gross, BL 2003, 'Is time pressure all bad? Measuring the relationship between free time availability and student performance and perceptions', *Marketing Education Review*, vol. 13, pp. 21-32.
- Denning, PJ 1992, 'Educating a new engineer', *Communications of the Association for Computing Machinery*, vol. 35.
- Frone, MR, Yardley, JK & Markel, KS 1997, 'Developing and testing an integrative model of the work-family interface', *Journal of Vocational Behaviour*, vol. 50, pp. 145-67.
- Greenhaus, J, Collins, K & Shaw, J 2003, 'The relation between work-family balance and quality of life', *Journal of Vocational Behavior*, vol. 63, pp. 510-31.
- Lingard, H, Mills, A & Ashford, P 2003, 'Patterns of semester-time employment among undergraduate property and construction students: A preliminary study', paper presented to AUBEA 2003: Working together, Deakin University, Geelong, Victoria, 9-11 July 2003.
- Lipke, DJ 2000, 'Work study', *American Demographics*, vol. 22, pp. 9-14.
- Markel, KS & Frone, MR 1998, 'Job characteristics, work-school conflict and school outcomes among adolescents: Testing a structural model.' *Journal of Applied Psychology*, vol. 83, pp. 277-87.
- McInnis, C 2003, 'New realities of the student experience: How should universities respond?' paper presented to 25th Annual Conference of the European Association for Institutional Research, Limerick, Ireland.
- Micklewright, J, Rajah, N & Smith, S 1994, 'Labouring and learning: part-time work and full time education', *National Institute Economic Review*, no. May, pp. 73-85.
-

Mills, A & Ashford, P 2004, 'Full time student and part-time worker: Employment practices of undergraduate students in built environment courses in Australia', paper presented to Australian University Building Educators Association (AUBEA), University of Newcastle, NSW, 7-9th July 2004.

Netemeyer, RG, Boles, JS & McMurrian, R 1996, 'Development and Validation of Work-Family Conflict and Family-Work Conflict Scales', *Journal of Applied Psychology*, vol. 81, no. 4, pp. 400-10.

Wilkerson, JM 1999, 'On research relevance, professors' "real world" experience and management development: are we closing the gap?' *Journal of Management Development*, vol. 18, no. 598-613.
