

CHALLENGES AND OPPORTUNITIES FOR CONSTRUCTION EDUCATION IN AUSTRALIA

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***Abstract:** The university education of construction professionals is unique as curricula straddle diverse areas, including technology, design, law, management and finance. Furthermore, the opportunities for would-be Construction Managers, Quantity Surveyors and Building Surveyors (CMQSBS) are extensive. A buoyant construction industry is currently fuelling high student expectations. Currently CMQSBS programs contribute over 1000 graduates annually. This paper reports on data gathered in an Australian Learning and Teaching Council grant which, inter alia, showcases innovation and best practice within these disciplines. The findings of some components of an online survey as well as interviews and focus groups are documented here as well as some observations of how these disciplines might be improved.*

Introduction

Graduates from CMQSBS disciplines are currently in great demand largely as a result of a buoyant industry at home and abroad. The education of construction and building professionals at Universities is unique as the curricula straddle diverse areas such as building technology, design, law, management and finance. Graduates are ideally placed to exploit opportunities abroad and at home but the boom/bust nature of the industry has led to a hand-to-mouth existence for many Australian Universities. The educational landscape for CMQSBS programs has changed significantly due to a number of factors including changes in Government funding, the integration of ICT initiatives and the provision of on-site training packages (Hager, Crowley, & Melville 2001).

An Australian Learning and Teaching Council (ALTC), formally the Carrick Committee, grant has provided an opportunity to study CMQSBS education in Australia and this paper discusses the findings in a number of the areas studied. Issues within CMQSBS disciplines have been studied through an online survey administered to full-time academic staff. An in-depth analysis was then conducted using qualitative research methods. Concurrently quantitative data was elicited from universities records and websites as well as from the Department of Education, Employment and Workplace Relations (DEEWR). The project aims to develop an understanding of key curriculum, teaching and instructional challenges and opportunities facing the CMQSBS disciplines in Australia. This paper outlines the methodological processes it employed then goes on to discuss broad trends observed from relevant DEEWR data. Finally emerging issues from the data and related literature are then identified.

The Study

What challenges face Australian CMQSBS higher education in maintaining and improving its quality, responsiveness and competitiveness in a global educational environment? This study aims to identify these factors and to ascertain the 'change readiness' of CMQSBS education units, their staff, as well as that of relevant professional institutions, government bodies and business and employer organizations.

While the primary motivation for the study is to promote innovation and 'best practice', a substantial component involves gaining a broad perspective of the context in which this education is located. Thus, the outcomes of our study have immediate relevance to CMQSBS education as well as to related disciplines.

There are few current studies that analyse CMQSBS education in Australia (Taylor 2004). It is argued that industry training has become increasingly fragmented and specialised and this has resulted in a lack of breadth of skills being taught and learnt (Hager et al. 2001). Other issues identified from relevant literature include:

- a low level of qualifications across the industry,
- modest access to resources,
- a decrease in practical experience within subjects,
- an increase in students studying part-time,
- issues related to course structure (Birch, Warren & Westcott 2005; Hager et al. 2001; Ashford & Mills 2006; NCVET 2001; Taylor 2004).

This research is supported by the key professional and academic bodies representing the CMQSBS disciplines including: the Australian Institute of Building (AIB), the Australian Institute of Building Surveyors (AIBS), the Australian Institute of Quantity Surveying (AIQS), and the Australasian Universities Building Educators Association (AUBEA). The final results of this study (due in December 2008) will be disseminated through ALTC.

Methodology

To achieve the objectives of the study an empirical investigation of CMQSBS education was conducted. Within this investigation the state of CMQSBS education was explored. The study specifically focussed on academic units that educate CMQSBS graduates in 12 universities across Australia, representing all but one institution offering programs in the discipline. Issues within CMQSBS disciplines were initially mapped through an online survey administered to teachers in the professions along with the analysis of historical data gained from DEEWR, the Department of Education, Employment and Work Relations (formally DEST Department of Education, Science and Training), historical comparisons of the disciplines structures sourced from University's websites, and the Graduation Destination Survey (GDS) to get a broad understanding of possible issues exist and changes over time. Interviews and focus groups were then implemented and conducted with Educational Leaders, teachers and students to find out more in-depth opinions and reasons for these issues which have been confronting the disciplines.

In stage one of the research, the quantitative aspect of the study, historical data was obtained from DEEWR collections, data from University's websites on the curricula and the Graduate Destination Survey. These data sets were managed in an Access database and comparisons were conducted. These historical data provided the research team with an initial understanding of trends and recent changes and/or developments which have occurred over the past 6 years in regards to student numbers, graduate numbers, and changes of the curriculum structures within the disciplines and the destinations of Construction education graduates.

An additional quantitative stage of the research included the implementation of an online survey which was devised and sent to full-time staff teaching in the disciplines which demonstrated overall potential issues and opportunities through statistical measures. The online survey was sent to approximately 150 staff teaching in the disciplines and had a response rate of approximately 50%. The aim of the online survey was to allow the researchers to make reliable comparisons of quantitative and additional qualitative data from the devised open-questions in the survey.

In stage two semi-structured interviews with Heads of School in Construction, Discipline Heads and Subject Convenors in Built Environment Faculties were conducted to further explore the issues confronting CMQSBS education. Interviewing was chosen as it is the most suitable method to

thoroughly examine individuals' experiences as it provides an immediacy of communication with the source (Jones 2004).

Focus groups with both staff and students teaching and learning in CMQSBS disciplines were also conducted. Focus groups are the ideal method for the purpose of pedagogic research as they provide an arena to generate ideas for the purposes of making recommendations for curriculum development, future changes and improvements in student learning (Breen 2006).

Discussion

Number of Students

Figure 1 shows CMQSBS student numbers over the past six years, including the total, commencing and completing number of students.

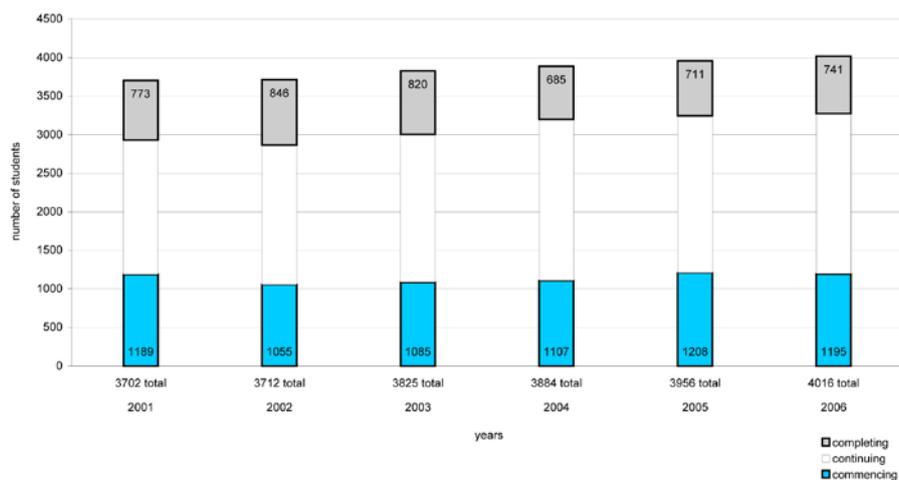


Figure 1: Total Number of Students, Commencing, Continuing and Completing, 2001 - 2006.

Figure 2 shows the total number of students, EFTSL and total enrolments for 2001 to 2006. Both Figures 1 and 2 show a slow increase in enrolment in all three of the disciplines over the past 6 years. According to Birch, Warren & Wescott (2005), prospective students do not appear to be aware of opportunities in CMQSBS (in particular in Quantity Surveying and Building Surveying).

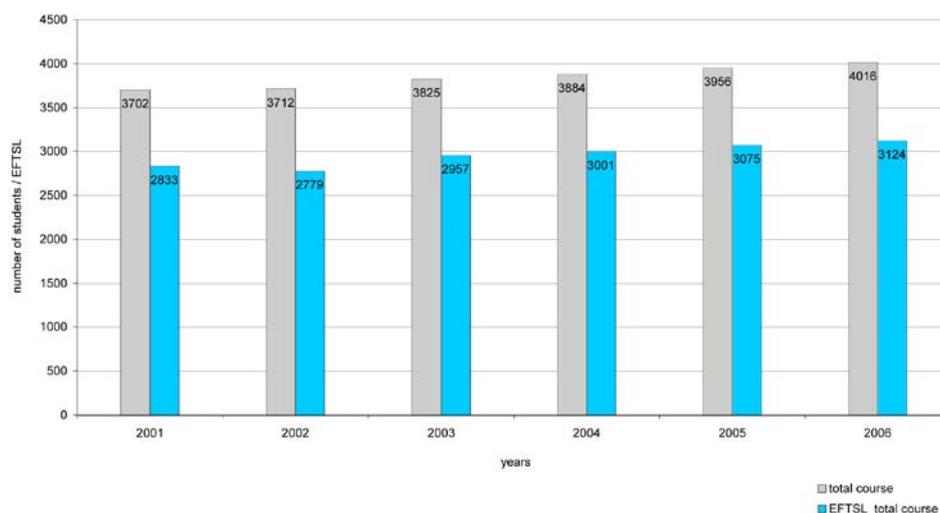


Figure 2: Total Number of Students, EFTSL and Total Enrolments, 2001 – 2006.

Gender

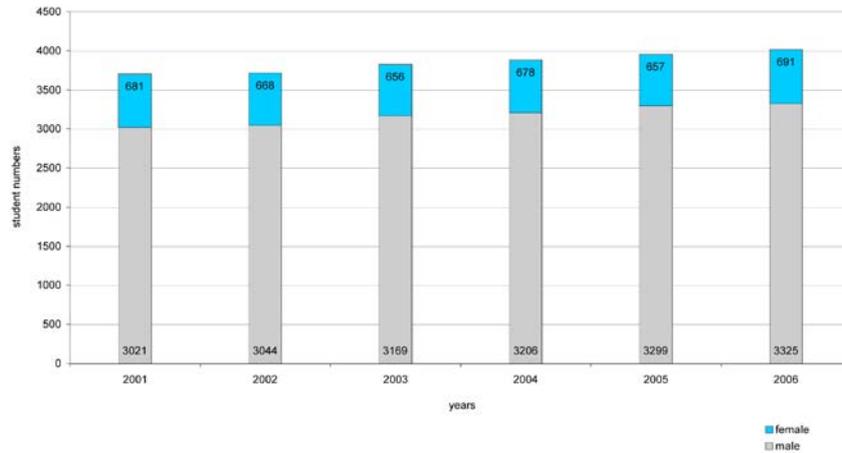


Figure 3: Total Number of Students by Gender, 2001 - 2006

Figure 3 shows that the gender of these disciplines is predominantly male. Literature notes that women do not consider CMQSBS careers because these are regarded as male domain (Francis, Kestle, Scofield & Wilkinson 2004; Fielden, Davidson, Gale & Davey 2000). Figure 3 shows that this trend is continuing. This situation is shared with similar disciplines, including Engineering. Retention of engineering students is also a critical issue. In the recent Carrick Discipline Based Initiative Grant report Addressing the supply and quality of Engineering graduates for the new century it was noted that “on average, male Australian engineering students have about 52% likelihood of successful graduation from a bachelor level engineering program, and females about 60%”, a situation that clearly requires a re-examination of the current teaching and learning regimes in these areas. This report also recommends more female - friendly engineering education and workplaces to address these issues and proposes specific action within its recommendation for implementing best practice engineering education to “define and implement inclusive curriculum for engineering: reducing male stereotypes within the curriculum” (King, 2008, p. 107). Thus the need for curriculum development in this area has already been confirmed as very important by leading engineering educators and the engineering profession.

Changes in Curricula

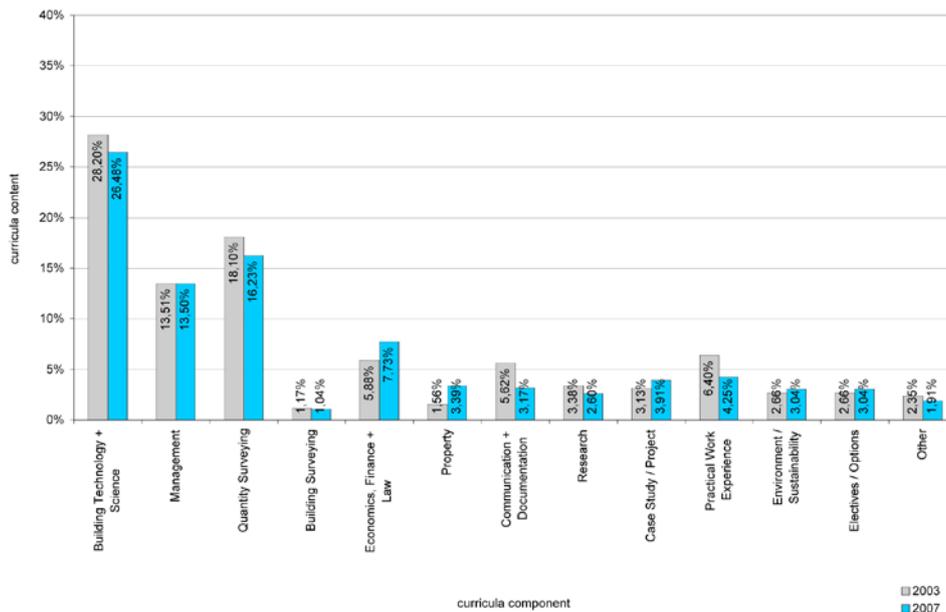


Figure 5 – Curricula Content (%), 2003 compared to 2007

Figure 5 shows that “sustainability” has recently emerged as a course topic. This reflects changes in attitudes to the environment. Other changes may have been influenced by the introduction of the Bologna agreement (Ashford and Francis 2007). Also indicated is that there has been a reduction of practical work experience. It also shows reductions in areas of ‘Building Technology and Science’ and ‘Quantity Surveying’. Conversely there has been an increase in ‘Economics, Finance and Law’.

CMQSBS Emerging Issues

The following issues were distilled from the online survey, interviews and focus groups:

- the different ideologies of universities and the construction industry,
- staff and their increased workload,
- students and their workload, in particular students’ paid work whilst studying.

Industry Requirements and University Education

It is apparent that the construction industry and universities have different ideological objectives. Hager et al (2001) note that employers view industry-related skills as being predominately acquired through on-site experience rather than formal education. Hager et al (2001) confirm this trend by stating that the construction industry has become increasingly IT sophisticated and competitive locally and globally (1990-2000) which has resulted in the need for new graduate skills. The data have highlighted other issues including an overall include a lack of time due to increased staff workload, lack of up to date industry experience of staff, and students working whilst studying. These are discussed below.

Students’ Workload Pressures

Another lean time factor influencing these disciplines is students studying and working workloads, in particular the pressures of working in industry whilst studying and its impact on learning. As Birch, Warren et al. (2005) state in regards to the BS and QS professions there has been an increase in work based learning and part-time study in the disciplines. This issue of students working whilst studying in the built environment disciplines has been explored and analysed extensively by Ashford & Francis (2007) and Mills & Ashford (2004). They argue that students have changed compared to the past by taking on more paid employment whilst studying. This issue becomes more apparent in these disciplines as industry poaches students as soon as in their first year of studying (a student participant discussed this happening to them in this study). Indeed, so far the majority of students in the discussions for this study were working full time and studying full time, this is evidenced in Fig.2 where it can be seen that there has been little change in the percentage in the ratio of student numbers to EFTSL which indicates the increased outside work commitment has not come at the expense of full time study.

A student working whilst studying has the potential to create a tremendous issue in regards to learning performance. For example, students may not have the time to learn and meet their demands of assessment tasks and further possibly desire a short, quick fix degree. Indeed, some students in this study mentioned that they would prefer if their degree was shorter. Mills and Ashford (2004) found in their study that students could accommodate their work responsibilities whilst studying though students were “unclear about their obligations to the university, and tend to spend less time on tasks that improve their learning experience” (McInnis 2003 cited in Mills and Ashford 2004, p.197).

Lingard, Yip, Rowlinson & Kvan (2007) similarly discuss student burnout in their research of students from Australia and Hong Kong from the demands of studying in the construction disciplines. They found that in their “Australian sample, tension rose as inner-role conflict between paid work and study” (Lingard et al. 2007 p.355). From the existing research on this issue of students paid work whilst studying and further it becoming an emerging issue again in this study implies that this is a significant problem within the disciplines that has the potential to influence learning and the skills of graduates and further be frustrating for teaches when students do not attend classes. This issue needs addressing and changes made by all parties involved - the Universities, Industry demands for student labour and student’s choices.

Conclusion

This paper has introduced an ALTC study which addresses opportunities and issues for CMQSBS disciplines in Australian universities. Trends relating to student enrolments, gender and curriculum structures have been identified. Issues highlighting the need for time to effect improvements in teaching and learning, and to address industry expectations have also been identified. This paper provides preliminary findings of this study. As more in-depth analysis continues further issues and possible solutions will emerge. These will be reported to ALTC in December 2008 and will then be disseminated.

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