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DUAL SECTOR EDUCATION: TAFE AND HIGHER EDUCATION COLLABORATE IN CONSTRUCTION MANAGEMENT.

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Abstract

Curriculum collaboration between TAFE (vocational college) and universities in Australia has had a chequered history. Attempts to collaborate on curriculum development and delivery have mostly been at the margins of articulation and educational pathways. This study examines a pilot project in dual sector construction management education conducted at RMIT University over a two year period. The study demonstrates the challenges with mutual curriculum development between TAFE and higher education in Australia, and demonstrates the methods utilised to overcome these challenges. The results of the projects reveal that the benefits to students in hands-on experiences, theoretical knowledge gained and practical demonstrations were invaluable and worthy of ongoing research and development. The paper also raises critical questions about flexibility and mobility in educational institutions in Australia.

Keywords: dual-sector education, TAFE, construction management, experiential learning

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Introduction

Historically post-school learning in Australia has been divided into vocational education and higher education. This centuries old divide was created by industry and community need, government funding and societal expectations as well as policy, planning and implementation decisions. Most commonly, vocational education has been delivered by TAFE colleges and higher education has been delivered by universities. As far back as 1987, the Australian government released the first ‘green paper’ entitled “Higher Education – A Policy Discussion Paper.” One of the key points to emerge from this discussion was the idea of a unified national post-school sector or system. The release of this first government policy paper on a unified higher education system coincided with a shift to universal higher education in Australia. The new policy agenda created a high priority on educational attainment and post-compulsory or post-school education. (Gallagher, 1999; Robinson, 1999). This agenda combined with the changing nature of work in the second half of the twentieth century in Australia created a demand for education places in vocational institutions and universities (Spierings, 1999; Teese, 2000) Young people were no longer confident of getting a job without possessing educational qualifications (McClelland, McDonald and MacDonald, 1997). Continuous participation in education was seen as the key to long-term success in the Australian labour market (MacKenzie and Long, 1995). The concept of universal, mass post-school education was born. Throughout the 1990’s, government policy remained firmly focussed upon promoting “lifelong learning” (Kemp, 1999). Although in the national context of Australian higher education there still exists in some states a funding and responsibility divide between universities and vocational colleges (TAFEs), there is general recognition that the systems must adopt a more united, cohesive lifelong education offering. This concept has been supported by funding to institutions that could show “pathways” or curriculum collaboration in common areas of study.

The Bradley review of Higher Education in Australia (2008) has demanded a more holistic approach to provision of tertiary curriculum. The review recommends a single level of governance of what have traditionally been two sectors of tertiary education. This “continuum of tertiary skills provision” (p.16) calls for a more coherent approach utilising the advantages of both the vocational and higher education sectors. It builds upon the lifelong learning model advanced in the early 1990’s.
Models of Collaboration

These concepts of lifelong learning, seamless education and skills continuum have resulted in a number of models of curriculum delivery in recent years. These models include articulation, dual awards, credit-transfer arrangements, TAFE-University guaranteed pathways, nested awards and collaborative curriculum partnerships. (Doughney, 2000). In addition to providing multiple exit and entry points, these models have all sought to address the gulf between the TAFE sector and the Higher Education sector. The more traditional models of dual sector education have focussed upon credit transfer and articulation of previous courses or qualifications, particularly those obtained in the vocational or technical education sector (Ross, 2006; Wheelahan & Beven, 2006; Young, 2005). According to MacKenzie (2006: 17) it is frequently suggested that credit transfer and articulation arrangements broaden students’ study pathways and encourage “higher educational attainment”. However, such models are weighted heavily towards a “time served” approach to learning, where credit or exemptions for existing qualifications are translated into reduced contact hours in higher education studies. Doughney (2000: 63) underlines this point when noting that “standardised learning pathways are usually based on sequential movement from one course to the next.” These models assume a progression of qualifications, commencing with a technical qualification and progressing onto a higher education or university qualification. The underlying assumption is one of progressive qualifications, rather than a model focussing exclusively upon learning and learner behaviour.

A dual-sector university where both vocational education (TAFE) and higher education (university) are provided has significant potential to develop efficient models of continuous education that are not simply based upon credit transfer, nested and articulation arrangements. Such institutions can provide curriculum collaboration, value-adding vocational learning experiences side by side with theoretical concepts traditionally taught in higher education. The concept of seamless curriculum that, as Doughney (2000: 59) notes, can “transcend fractured educational arrangements,” is still relatively novel.

This seamless curriculum collaboration can build into the desired lifelong learning model. A significant number of attempts across disciplines have resulted in successfully building a collaborative curriculum of teaching and learning (Young et al, 1997; Ramsey et al, 1997; Watson et al, 2001; Wheelahan, 2000) but efforts at curriculum collaboration within courses and subjects is still relatively limited.
The increased emphasis upon dual-sector education has at its core this concept of a skills continuum and lifelong learning. But there is considerable evidence that the vocational (TAFE) sector and the higher education (university) sector approach curriculum-teaching and learning- in a different manner. Young and Spours (1997) define the key difference between the two sectors as the way they relate educational changes to the wider social change. Their definition of future unified sectors is one in which the uniform, united system will need to have connections between different types/levels of learning and will need to highlight these relationships with the overall goals of society. The authors argue this may mean universities and vocational institutions may need to prioritise some aspects of learning over others.

A major criticism that is often levelled at university curriculum is that students are not required to adopt a participatory role in their learning. Synder (2003) points out that passive learning techniques characterise the typical university classroom, with students listening to the lecturer and dutifully recording notes. Oliver (2007) expands on this, stating that lectures and presentations frequently fail to engage learners and have been found to encourage “surface level learning”. With limited opportunities for students to actively combine theory and practice, a total reliance on these methods is untenable for undergraduate programs whose graduates are required to possess both theoretical and practical knowledge. In the case of construction management, employers expect graduates to possess practical building knowledge in addition to more generic management skills (Love, Smith & Georgiou, 2003). As such, experiential learning approaches, used in conjunction with traditional learning formats, would appear to form a more effective pedagogy. According to Smart and Csapo (2007: 451), most experts agree that “students learn best when they take an active role in the education process, discussing what they read, practicing what they learn, and applying concepts and ideas.”

Hawtrey (2007) argues that significant pedagogical benefits can be gained from combining traditional teaching methods with experiential learning activities. These include better retention of knowledge and improved student motivation. She also notes that students see the value in experiential learning. Other research by Curtin (2000) indicates that practical or experiential learning involving concrete experiences, observation and reflection represents an effective learning experience in getting higher education students to demonstrate
knowledge of theoretical concepts. Hicks’ (1996) research with project management students and practical learning experiences led to the conclusion of “more profound” student learning.

Construction management education in Australia spans both vocational and higher education. Whilst qualifications between both sectors differ, the industry desire for graduates with practical experience combined with a higher knowledge base has strengthened (Lucas, 2001). The changing nature of construction and its subsequent changing skill mix also created an imperative for a more seamless construction curriculum, combining experiential learning and theoretical frameworks. Experiential learning endorses a more collaborative curriculum in construction.

This research project examines a pilot curriculum collaboration in construction between higher education and TAFE at RMIT, a dual-sector university in Melbourne.

The Construction Management Project

In 2007 the School of Property, Construction and Project Management at RMIT was funded under the Learning and Teaching Investment Fund (LTIF) to examine the possibility of dual sector education in construction and to undertake a pilot project in this area. The project aims were:

- to provide students with industry relevant education and learning
- to develop a model for staff exchange and curriculum collaboration between HE and TAFE in construction
- to promote pathways for dual-sector qualifications

Priority 2 of RMIT 2010 is “to position RMIT as the first choice provider of work and industry-relevant learning,” and Priority 4 of RMIT 2010 is “to ensure flexible, useful pathways and learning opportunities for students.”

This project addressed the fundamental premise of each of these priorities.

Changing work practices in construction are now demanding greater breadth and depth of understanding of technical equipment and construction processes (Productivity Commission, 2000). Reliance upon narrow understandings of building processes is not adequately equipping future students for the rigours of an ever changing international workplace. The construction industry skill/knowledge profile of graduates is changing. Industry sources and
research quote the need for “hands on” experience coupled with a higher education knowledge base (Curtis and Lucas, 2001).

There was an urgent need to develop dual-sector and nested curriculum in line with the knowledge and skill requirements of current and future labour markets. There was also a need to provide our students with both academic and technical qualifications and various entry and exit points. This project would allow students to tailor courses and qualifications to match their current employment needs and their long-term construction careers.

The 2007 project targeted Building Services, one of the courses in the construction management program. This is a compulsory course in the four year degree and examines services in buildings, in particular water and plumbing, air, heating and cooling services. Although the lecturer used innovative teaching methods, there was a considerable gap in the students’ understanding exacerbated by their lack of first hand experience of the material and their lack of hands-on skill.

The 2007 pilot project drew upon sound educational research indicating the importance of hands-on knowledge and first hand experience in the learning process (Smart & Csapo, 2007). Approaches were made to the TAFE School of Plumbing and Fire Protection and the School of Air-Conditioning and Refrigeration. These two schools were identified as containing curriculum that had practical modules matching the theoretical knowledge offered in the degree course. The level of co-operation between the three groups was at first tentative but over time grew to a position of mutual respect and professional collaboration. All 40 enrolled HE students in the Building Services course were given the opportunity to undertake two units in each of these TAFE schools. The curriculum was carefully selected by the teachers and HE staff to reflect learning needs and to “value-add” to the HE course.

Wherever possible, existing curriculum in Building Services was utilized at Certificate 3 and 4 levels. The 40 students undertook the units over a full, intensive week of classes in TAFE, rotating between the teachers and buildings. At the completion of each TAFE unit, competency assessments were undertaken and student feedback was obtained. Competency assessments of practical modules will allow for eventual dual-sector qualifications, as the HE students complete the required number of modules for a TAFE qualification.
The results were overwhelmingly positive. Students and staff were immensely satisfied with the pilot project and rated it highly in terms of improved learning, better understandings and greater opportunities for dual-sector qualifications. Table 1 shows that 85% of the students involved rated this learning experience as enjoyable. The initial figures indicate that 15% of the students involved did not find the learning experiences enjoyable. Experiential learning such as this project involved elements of challenge and learning risk. Students who value traditional learning in a university setting were ill at ease in a practical workshop. Further follow up interviews may be required to ascertain the reasons. When asked to comment upon the learning experience, the students were almost entirely divided between the value of the project as linking theory with practices and building their own practical skills (table 2). It appeared that students were able to transfer theory previously learnt. The experiential learning involved concrete, hands-on experiences, observation and reflection. Hawtrey (2007) has argued that there are significant pedagogical benefits from combining traditional teaching methods with experiential learning activities. Students in the 2007 pilot project indicated greater understanding of the theoretical components of building services as a result of undertaking the practical TAFE units. Their understanding of theoretical concepts was enhanced and a number commented upon their capacity to now “fully understand” what had been presented in theory classes in higher education. The staff involved were also overwhelmingly supportive of the classes and were prepared to undertake additional work to enhance the project. The professional collaboration between the three schools was much enhanced and was one of the unexpected positives in the pilot project.

Reviews of the project however revealed that the success of the 2007 pilot project, although outstanding and beyond expectations, was not sustainable in terms of project budgeting, staffing and resourcing. The 2007 pilot project was a huge success, due in most part to the goodwill and energy of the TAFE Heads of School, the HE staff and in particular the TAFE teachers who had engaged in the day to day teaching. The research outcomes indicated that the students’ level of satisfaction was in part due to the professionalism and energy of the TAFE teachers involved. Also the sheer numbers of students enrolled in the HE program was prohibitive: over 200 students in any year level. If the pilot was to become a permanent feature some further options had to be trialled. Clearly a better alternative was required to sustain dual sector collaboration into the future! All of the staff involved were heavily committed to the vision of cross sector education and the value of the project, so in 2008, LTIF funding was sought to create a more sustainable model of dual-sector education.
In 2008, the School of PCPM and TAFE School of Plumbing and Fire Services jointly offered skills electives in a range of areas. Students could freely enrol into an elective in the TAFE school. HE students in the School of PCPM selected elective units from existing TAFE modules in School of Plumbing and Fire Services to build a program of study leading to a TAFE statement of competency and, if they wished to continue, an eventual TAFE qualification.

Due to resourcing issues, the number of students enrolling at any one time was capped. This was an OHS and TAFE structural requirement. Over an intensive week of classes, 40 students undertook modules drawn from the Certificate 3 and 4 programs. Students and staff also undertook a variety of site visits to the Multiplex Brookfield Convention Centre site to enhance learning and practical applications learnt in the TAFE workshops. Students were required to complete competency assessments and undertake a reflective journal. Table 3 indicates that 97% of the students enjoyed this learning experience and shows a breakdown of the reasons behind this. Half the students surveys indicated that the practical modules they had undertaken enhanced their understanding of the theoretical work they had done in their higher education course. Over half felt better prepared and better able to understand what they had been learning. Jackson, Robertson and Verrinder (2007) discuss the value of experiential learning where “theory informs practice and in turn, practice informs theory” (p. 56). Evidence from these pilot projects indicates support for this type of learning approach.

An unexpected outcome was the experiences of the TAFE staff involved. Anecdotal responses indicated that their initial apprehension in dealing with HE students and curriculum applications was overwhelmed by the enthusiasm and interest of the students. The TAFE approach to teaching competency based learning modules was highly appreciated by the HE students who appeared further motivated by the opportunities presented by the staff. The learning environment was welcoming and positive and this was reflected in the attitude of the staff to the pilot projects. Current feedback indicated the success of these electives and again indicates the desire by students to have dual-sector pathways provided in their programs.

Positive outcomes were also indicated by anecdotal staff feedback. The Construction Skill electives were embedded in the HE program with course codes and curriculum and are now self-funding through HE enrolment.
The provision of cross-sector (TAFE/HE) skills electives in construction allowed flexibility of learning by enabling students to pursue areas of interest at the technical and vocational level and to develop skills in new areas that would enhance their changing work careers into the future.

**Conclusion**

The two pilots (2007 and 2008) were different in delivery and philosophy. One embedded TAFE units in the existing HE course, value adding to the learning experience; one created stand alone elective courses built upon TAFE units of competency. For these projects to succeed, the goodwill and additional support of a wide-range of people from the PVC, to Heads of Schools, co-ordinators and administrators was required. Most importantly they required the energetic support of the front line personnel: the teachers and lecturers. It was these people who provided the learning experience for the students and created solutions to the problems on the ground when the pilot was conducted. Without the support of these staff the projects would not succeed.

Construction management students who were involved in the 2007 and 2008 pilot projects have demonstrated by their comments and feedback that dual sector education can enhance their learning and understanding. The challenge is to find ways to build vocational experiences into the existing construction management curriculum to deepen theoretical understandings and provide our students with enhanced skills.

These pilot projects created a template for the future of vocational (TAFE) and higher education (university) dual sector education. The projects provided flexible, useful pathways and learning experiences for construction management students, ensuring construction graduates remain industry leaders into the future. It has the potential to allow construction management students to complete vocational (TAFE) qualifications and well as HE (university) qualifications in their chosen speciality area, as well as provide practical experiential learning to underpin their theoretical understanding. It is a collaborative success for everyone!
References


Doughney, L. (2000) Bridging the divide: developing the institutional structures that most effectively deliver cross-sectoral education and training. Lifelong Learning Network/NCVER (in press)


### Appendix 1

#### Table 1

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<th>Reason for enjoyment</th>
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<td>Percent</td>
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#### Table 2

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<td>Better learning environment</td>
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<td>Broadens understanding</td>
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<tr>
<td>Builds practical skills</td>
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### Table 3a (Count = 40)

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<th>Q1: These practical modules gave me a greater understanding for the type of work we do in the building services course</th>
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<th>Year 3</th>
<th>Year 4</th>
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<td>5</td>
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<tr>
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<td>0</td>
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</tr>
<tr>
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### Table 3b (Count = 40)

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<th>Year 3</th>
<th>Year 4</th>
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<tr>
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Table 3c. (Count = 40)

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<td>Year 3</td>
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