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ENCOURAGING MORE STUDENTS INTO CONSTRUCTION MANAGEMENT.

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ABSTRACT

The construction industry is plagued by the persistent, long-term problem of skill shortages and skill gaps, especially in construction management. Evidence indicates that the industry will not have enough flexible, qualified professionals able to exercise skills to match changing work requirements especially in new technology, over the coming decade. Upskilling existing workers and individuals with vocational education qualifications into higher education could provide an important solution to skill gap problems. Currently less than 16% of all individuals with vocational qualifications in construction undertake upskilling into higher education. This project investigated the factors that supported upskilling and transfer from VET to higher education (HE) in the construction industry. Interviews were conducted with 36 students who were upskilling from vocational education into higher education in eight Australian universities to elicit "enablers" of upskilling. The results, which identify a number of key enablers as seen through the eyes of students who have made the transition, provides the industry with insights into solving current and future skill gaps. These insights will benefit both the construction industry and the wider national population.

Keywords: construction management, skill shortages, lifelong learning, upskilling.

INTRODUCTION

The building and construction industry is vital to the Australian economy. It is a significant contributor to economic activity and growth, as well as being a major source of employment. According to the ABS (2012), the construction industry's total share of the production of goods and services in Australia was 7.7% or \$102 billion dollars in 2010–11. This makes construction the fourth largest industry in Australia, as measured by economic value. The industry is also the third largest source of employment in Australia, in 2011 reaching a high in employment of 1 043 000 people, or 9.1% of the total Australian workforce.

The demand for skilled professionals, in particular construction managers, remains high and is at the forefront of skills shortages in the industry. The Department of Education, Employment and Workplace Relations (2011a,) identified this occupation as a skills shortage in both 2011 and 2012. In addition demand will remain high for the next 20 years , with workforce projections by the Australian Workforce Productivity Agency suggesting employment growth for construction management of between 2.7 and 3% per annum over the next 15 years, 2010–25, (AWPA 2012). The basis for this projected future growth in employment demand and skills shortfall in construction management includes a number of factors:

- changing qualification requirements for construction management: the industry is increasingly seeking degree-qualified personnel in construction management jobs, whereas in the past many jobs at this level were 'experience based'
- an ageing workforce, particularly in experience-based construction managers, with projected replacement needs in the order of 70 000–75 000 persons over the period 2010–25
- increasing internationalisation and globalisation within parts of the industry and the need for suitably qualified staff
- the increasing need for project managers for large infrastructure projects, particularly in the resources sector
- increasing regulation and complexity of the industry, requiring staff with such skills
- the gap between current higher education provision in construction management and industry requirements for suitably qualified staff.

Addressing these workforce projections and skills shortages in construction management will rely upon a number of factors and strategies. One key strategy will include increasing the number of university (higher education) bachelor degree students from the existing TAFE (vocational education) diploma students. One mechanism for meeting industry skills needs is improved pathways into higher education for VET qualification holders. This mechanism is important because it provides opportunities for upskilling by recent VET graduates and for experienced employees, and builds on skills and knowledge already

attained. It also provides higher education providers with a pipeline into second and third years. This research explores enablers to this strategy.

LITERATURE REVIEW

Building effective pathways for students to transfer from and between education sectors and qualifications has been the subject of extensive research, policy development and practice over the last 20 years, both in Australia and internationally. Different researchers and policy-makers have examined this topic from various angles, but all from the perspective that improved pathways constitute an essential feature in a more flexible and integrated tertiary education system. The breadth of past research has included consideration of:

- system and institutional drivers and enablers (Phillips KPA 2006)
- system barriers, including cultural and pedagogical differences between the sectors (Walls & Pardy 2010)
- different types of pathways and emerging pathway models, including integrated VET and higher education qualifications (Carnegie 2009; Phillips KPA 2010)
- patterns of student movement and transfer (Moodie 2010)
- the changing landscape of institutional provision and the blurring of sector boundaries (Wheelahan, Moodie & Buchanan 2012)
- guidance on building better pathways (Integrated Articulation and Credit Transfer Project 2011) and

The role of industry in pathways development and the relationship between pathways and workforce needs have also been recent research themes. Phillips KPA (2006) reflected that employers want work-ready graduates with a mix of vocational and higher education outcomes. More recently, the Australian Workforce Productivity Agency (2012) called for a new partnership approach to workforce development that involves education institutions and industry and suggest the way forward is to build pathways around industry skills shortages, skills gaps and workforce development needs within 'an industry determined articulation model'.

Transition has also figured as both an enabler and barrier in the research following Phillips KPA (2006). Some researchers have identified the need to recognise the special challenges faced by 'pathways' students and to put in place specific arrangements both before and after transfer into higher education (Brown et al. 2011). Others have considered the implications of credit provision and the need for bridging skills (King, Dowling & Godfrey 2011). Significantly, little research has focused on the enablers from the students' perspective. Wheelahan (2009c) notes this as 'an extraordinary gap in the literature,' noting the following as student-focused enablers:

- student preparation by TAFE (technical and further education) teachers before entering higher education
- student preparation in the TAFE course through the acquisition of knowledge and skills within the field
- a 'good fit' between the TAFE and higher education programs.

This research focuses on these and other enablers. It focuses upon vertical pathways from vocational education and training to higher education, from diploma qualifications into bachelor degrees within Australia.

RESEARCH METHOD

The principal purpose of this study was to investigate the student-identified enablers that support tertiary student pathways from VET diplomas into bachelor degrees in construction management and related degrees. The specific project objectives were to:

- research the enablers that support pathways from VET diplomas into higher education bachelor degrees from a student perspective
- map and evaluate these enablers using the Design and Evaluation Matrix for Outreach, developed by Gale et al. (2010)
- based on the student voices, identify the critical enablers.

Research questions and themes

In accord with this research purpose and objectives, the following research questions were identified:

- What or who assisted the students interviewed for this study in continuing on to a degree and in selecting destination universities?
- Which enablers were the most evident and how did these relate to the selected evaluation tool?
- How did the students find the transition from VET into higher education studies in this field?

This project was undertaken in two overlapping stages using different research methods. The first stage involved a brief review of past research on pathways and the second stage entailed qualitative research, involving interviews with 'pathways' students and the interpretation and evaluation of the collated student interview data.

Of 50 students approached, a total of 36 bachelor degree students were interviewed for the project, made up of 13 final year students and 23 second/third year students. All were male, with one exception. These students were nominated by participating universities and were selected on the basis of student records as a prior VET student. All interviews were conducted in accord with the relevant University privacy requirements. The students came from eight higher education institutions offering

degrees in construction management or related qualifications. The higher education providers were selected as the interview sites for a number of reasons including:

- a history of providing sustained VET to higher education pathways over a significant period of time
- a mix of institutional type: stand-alone higher education, mixed provision and dual-sector
- a known cohort of construction students moving from vocational education and training into degrees in these institutions
- the capacity to identify pathways students within the project timeframe through university contacts
- broad national coverage.

The student interview responses were mapped against the Design and Evaluation Matrix for Outreach, developed by Gale et al. (2010) for the National Centre for Student Equity in Higher Education. The matrix was selected because its structure and features form a useful and meaningful scaffold for organising the diverse students' responses and for mapping these into distinct 'enablers'.

Scope and limitations of the study

The findings of this project are drawn principally from the student interview data, which involved a relatively small number of participants. While their perspectives have shed light on the key enablers, and provided valuable insights, it is not possible to generalise broadly from this sample. A more substantial interview cohort would be needed and other studies undertaken to verify the findings. The perspectives of other key groups, including staff in the original VET providers for these pathways students and staff in their destination higher education provider, were also beyond scope. This study was also conducted exclusively within Australia and whilst there may be international parallels, caution must be used in extrapolating the study beyond Australia.

RESULTS and DISCUSSION

All of the students interviewed were aged in their early to mid-20s and had undertaken a diploma or had been recognised by their university as having an equivalent qualification. All the students had either entered university directly after finishing their VET qualification or within a year or two of completing their VET studies.

Many of the students indicated that they had enrolled in the diploma primarily as a means for gaining entry into higher education, either because they had not been initially accepted into the degree of first choice on the basis of their tertiary entrance ranking or because they were aware

that vocational education and training provided an alternative entry point into university.

I wanted to get into a construction degree, so going to Granville TAFE was the way to get there. I didn't get the entry to UWS. (University of Western Sydney)

I chose this program because it offered me a chance to go to uni that is something I didn't see myself doing. (University of Technology Sydney)

These responses are not surprising, given the high tertiary entrance requirements for the construction and related degrees and the limited number of places on offer. They also indicate, in the case study participants, a cohort who deliberately chose vocational education as a stepping stone to university and who had prior awareness of pathway possibilities. Other students indicated additional reasons for undertaking vocational education as the basis for their initial qualification including:

- work in the industry
- practical experience first
- extent of ability unknown; the diploma was an easier option
- personal time commitment and flexible offering making the diploma attractive
- relevance of the diploma to current work/workplace
- cheaper fees in the diploma (excluding Victoria)
- perceived shorter course/study period.

For these students the option and the decision to go on to university studies appears to be more directly related to their experience as a VET student and the guidance given to them in the course of their studies.

A number of characteristics based upon the DEMO matrix (Gale et al, 2010) were present across all interviews. These were:

- *People-rich*: this term refers to the development of relationships between the students and other people who are in a position to offer ongoing guidance and support that is appropriate and relevant to the situation and capacities of the students.

In this study, such guidance relates to pathways knowledge and advice, support for continuing studies, identification of pathways opportunities and assistance.

- *Early and sustained intervention*: this addresses working with students to provide supports from the commencement of studies.

In this context it incorporates interventions from the commencement of VET studies through transition into higher education.

- *Engaging learners*: This refers to enablers such as recognition of difference and enhanced academic curriculum.

In a pathways context, recognition of difference involves recognising and valuing the existing knowledge and skills of VET pathways students by a destination university. This is expressed through admission into a degree and credit for VET qualifications or specific units. It can also include recognition of skills and knowledge gained through work, for those students who have industry experience.

- *Working together*: this means collaboration in program/pathways development between different sectors and agencies and different stakeholders; an approach that engages whole cohorts, that is, cohort-based.

Collaboration is critical to developing pathways and exists on many levels. VET teachers had a significant role in assisting and guiding the students in this study to continue on to higher education. That guidance presupposes collaboration through relationships forged by teachers across the sectors and built on knowledge and trust.

- *Building confidence*: this means communication/information about university life through digital and other media, familiarisation and site experiences.

People-rich enablers

Many of the students interviewed identified a strong people-rich component in their decision to go on to higher education following their VET studies. This was particularly important where students had not initially contemplated further study beyond the diploma. It was most often VET staff who first gave them the idea to continue with their education. Teachers were the most commonly named people in providing such advice and guidance but other staff were also mentioned, including heads of department and coordinators. The students commented upon the knowledge and willingness of VET staff to answer their questions, undertake enquiries for them and provide support as they progressed through VET studies. Gale et al. (2010) stress the importance of 'extended conversations' to provide resources for learners.

When I started the diploma I wasn't really thinking about the degree you know ... it was just as I was finishing I talked to [teacher name] ... who told me about the degree.(University of Technology Sydney)

I didn't think I could do it actually, then Mr [teacher name] ... said it wasn't that much more involved really. (RMIT University)

The capacity of VET staff to provide a people-rich experience is also dependent upon their understandings of pathways and the opportunities a degree might provide to their students, in addition to a VET qualification.

VET staff who were aware of which universities were more likely to give access to pathways students and who had a collegial relationship with their university colleagues were able to make this guidance more specific.

Well this uni had a relationship with the Leederville TAFE and that meant you could find out about the degree. (Curtin University of Technology)

Other significant people-rich resources included family and employers (for the students who were working). Many of the students had family working in the industry and family who were aware of the job opportunities offered by a degree. Employers could also give such advice:

At work they told me the degree would be more helpful ... I wasn't sure till I spoke with the programme director. (Holmesglen Institute)

The use of mentors, tutors and peers as support resources is seen as a valuable aspect of 'enabling resources' in the context of outreach (Gale et al. 2010). In this study, such resources were not strongly identified, although it could be argued that VET staff also played a mentoring role in guiding students with the capacity towards higher education because they knew them individually (a consequence of much smaller classes in vocational education and training). Some students also mentioned peers:

I knew students who had gone to higher education last year and they gave me advice about the electives etc. (RMIT University)

Early and sustained intervention

This research also highlighted early sustained interventions to promote pathways. Interventions are evident in institutions' commitment to developing sustainable pathways through models that suit their contexts. These might include: partnership arrangements for credit transfer and articulation between VET and higher education institutions; mixed-sector provision in institutions, including integrated VET and higher education degrees; and transparent or guaranteed pathways, which provide students with predetermined admission and/or credit.

The development of these models requires significant commitments in human, financial and infrastructure resources by the institutions. As such, the students in this study did not necessarily see this as an enabler, except where the primary focus of the VET studies was to provide a pathway. This was the case for the University of Western Sydney students who had used the UWS College pathways model, which combines foundation studies and the Diploma of Construction Management and feeds directly into the second year of the construction degree. This pathway was transparent and its structure well understood by the students. For others their experience of such interventions is evident in the ease of transition:

It was really smooth ... the staff all knew what credit you got and what subjects you would have to do. (University of Technology Sydney)

Such examples can only exist where universities have well-established and resourced systems where it is not up to the students to drive the credit transfer process; rather, the systems are already in place and operating well.

Engaging learners

Where a VET provider had the opportunity/capacity to modify and enhance learning experiences to meet pathways students' needs and better align the outcomes with the university curriculum, the advantages were obvious. Such approaches to pathways reflect continuity and complementarities that support and enhance educational progression (Wheelahan 2009).

Enhanced academic curriculum, which Gale et al. (2010) refers to high-quality and rigorous student learning, driven by quality teaching was identified as an enabler by the interviewed students. The value of the learning experiences and the quality of teaching in vocational education and training were commented upon by many of the interviewees and this characteristic stood out as an enabler. The students identified a number of different aspects in their learning experiences that had helped them in their VET studies and subsequent transfer to university. These included the:

- level of interest, encouragement and assistance given by the VET teachers in class (also another aspect of 'people-rich')
- small size of VET classes compared with university, which enabled VET teachers to know their students individually
- the way learning is done in class as a group activity and the amount of time available for learning activities
- similarity of the learning in TAFE and the educational base it provided for university studies.

The observations of the students were detailed and provide a clear picture of the value of their VET teaching/learning experiences:

Because I did the course, I mean the diploma, I liked it so much, they made me enjoy it so much, that I wanted to do the degree in it as well. (University of Western Sydney)

These or similar views were expressed by nearly all of the students in our study. The interviews demonstrate a common thread of a rich and positive learning experience in vocational education and training, which supported these students both in the VET environment and as the foundations for their studies in higher education.

Working together

Gale et al. (2010) emphasise the valuing and recognition of individual knowledge brought by students from diverse backgrounds. Applied to pathways this would involve a recognition of prior learning, assessment and individualised credit. Some students indicated that recognition was used in determining the credit they received, but for most the credit was predetermined on the basis of standardised credit transfer agreements between institutions for the VET diploma qualification. Many of the students in this study commented positively on the recognition they received from their university for their prior VET studies. Most of the students indicated receiving block credit outcomes of 12 months (and up to 18 months) for the diploma/advanced diploma. For some, the granting of credit was one of the most important enablers, especially for those who undertook the diploma expressly as a pathway to higher education.

I did the diploma because I knew I could get credit into the degree and I didn't have any work experience so I probably wouldn't have got in without the diploma. (Deakin University)

But the university as a whole ... they do, they give you exemptions so they obviously value the education that you've learned if you choose to take that. (Curtin University of Technology)

Another aspect of recognising difference is reflected in understanding that not all VET students have the same prior learning experiences and that, for some, extra time and effort are needed to address the transition into higher education.

Building confidence

The importance of familiarisation and university site visits became evident in a number of the interviews. Orientation and information nights were conducted in a number of university and college settings, at which briefings were provided to students about transition to higher education before they commenced higher education studies.

In the case of dual-sector organisations (RMIT), or co-located campuses (Sydney Institute of TAFE and University of Technology Sydney), the geography of the sites made such visits easier.

They took us to Deakin one day and explained all the pathways and the different career paths that we could take from there. (Gordon TAFE to Deakin University)

At the University of Western Sydney, this experience was enhanced by using 'link' staff, who were familiar with both the students and the pathways model and who conducted special orientation nights. In these experiences, students were exposed to staff who were all employed at the

university and who were able to give casual advice about university pathways and credit transfer.

The transformation and boost in confidence levels created through the positive learning experiences of vocational education and consolidated by academic success in higher education was highlighted by a number of students. A number of the students had feelings of anxiety and genuine concern about their ability to cope with university but found they were well prepared by their experiences in VET and often saw themselves as better prepared than students who had come straight from school. The researchers were continually presented with comments such as:

I didn't think I could go to uni then I went through TAFE and changed my mind.

I just didn't think I was clever enough to go ... then I found out about TAFE here. (University of Newcastle)

In some cases, students commented that they were performing better than their non-pathway peers and that they were more motivated and thus self-confident.

I definitely think TAFE helped build my confidence to cope here ... the ones straight from school are not as motivated. You want to be there so you work well ... the kids are not so dedicated. (University of South Australia, student with first class honours)

One of the reasons students proposed for their increased self-confidence, high motivation and success in higher education was the pathways model itself. By undertaking vocational education and training first they had developed a far clearer understanding of the degree's focus and the industry/career they had chosen compared with some of their peers; they knew from their VET studies what the degree entailed and from studying in a tertiary environment they knew what they needed to do to succeed.

While these were the most common enablers, there were a number of characteristics of the learners interviewed in this research. These were:

- high levels of motivation to study and succeed at university
- a clear focus on the value of the degree, the work and career it leads to and the industry of choice
- the value of existing knowledge and skills brought to the degree studies through vocational education and training and which other higher education students don't possess
- commitment and perseverance in making the VET to higher education transition successful
- ongoing building of confidence as learners
- a capacity for self-directed learning.

Pathways build both student motivation and the capacity for self-directed learning. Each of these could be considered student-centred 'enablers'.

CONCLUSIONS

This project investigated student transfer from vocational education and training (VET) to higher education, that is, from diploma to degree, in the building and construction industry. Diploma students currently studying a degree in construction management and related qualifications were interviewed across eight universities to identify what helped them to make the transition. While previous research on pathways has considered the question of enablers, limited research has been undertaken from the perspective of students. Students who have used a pathway from a building diploma to a construction degree identified various enablers. The most common were:

- people who provided guidance, support and knowledge of pathways (particularly VET teachers)
- positive VET learning experiences, which built confidence and motivation for ongoing learning and the development of self-directed learning skills
- the recognition given for prior VET studies through admission and credit by the receiving universities.

This research has contributed to a wider understanding of the importance of VET to higher education pathways to workforce needs in the building and construction industry. It has highlighted the factors/ enablers which assist students to use these pathways and identified further ways by which to build and improve pathways.

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