

# Lifelong learning pathways

Addressing participation and diversity in higher education

Final Report 2013



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## List of acronyms used

ABS	Australian Bureau of Statistics
ACEN	Australian Collaborative Education Network
ALTC	Australian Learning and Teaching Council Ltd
ANTA	Australian National Training Authority
ATAR	Australian Tertiary Admission Rank
ATN	Australian Technology Network (of Universities)
AUBEA	Australasian Universities Building Education Association
AQF	Australian Quality Framework
AQFAB	Australian Qualifications Framework Advisory Board
AVCC	Australian Vice-Chancellors' Committee
COAG	Council of Australian Governments
CRICOS	Commonwealth Register of Institutions and Courses for Overseas Students
DEEWR	Department Education, Employment and Workplace Relations
DEMO	Design and Evaluation Matrix for University Outreach
HE	Higher Education
LTIF	Learning and Teaching Investment Fund
IACTP	Integrated Articulation and Credit Transfer Project
MCEETYA	Ministerial Council on Education, Employment, Training and Youth Affairs
NBEET	National Board of Employment, Education and Training
NCVER	National Centre for Vocational Education Research
NCSEHE	National Centre for Student Equity in Higher Education
OECD	Organisation for Economic Co-operation and Development
RICS	Royal Institute of Chartered Surveyors
RTOS	Registered Training Organisations
RMIT	RMIT University
RPL	Recognition of prior learning
STAT	Special Tertiary Admissions Test
SEIFA	Socio-Economic Indexes for Areas
TAFE	Technical and Further Education (institutions)
UAC	University Admissions Centre
UTS	University of Technology Sydney
UWS	University of Western Sydney
UWSC	University of Western Sydney College
VCE	Victorian Certificate of Education
VET	Vocational Education and Training
WIL	Work Integrated Learning

## Executive summary

Tertiary education plays a major role in meeting the economic, social and cultural wellbeing of both individuals and the workforce of the future (OECD, 2011). Increasing participation in tertiary education is vital for the future of all Australians with the emphasis on the provision of increased participation critical. (Gillard, 2012; Bradley, Noonan, Nugent and Scales, 2008):

But the solution is not simply increasing participation in tertiary education, but increasing participation from groups not currently accessing higher education. Higher education must become more accessible, flexible and equitable to under-represented groups. Increasing the diversity of the student cohort is pivotal in addressing skill shortages in key industries such as the built environment and central to ensuring individual, community and social well-being.

This project reviewed higher education pathways models in the built environment discipline (construction management, quantity surveying, estimating, project management) to ascertain their capacity to improve diversity in the student cohort.

The Australian built environment industry has one of the least qualified, most diverse labour forces of all Australian industries. Of all individuals involved in built environment work, 41% do not possess a formal qualification. Of these individuals, at least one third (31%) are in the 25 – 44 year old age bracket (ABS, 2011). Built environment degrees are taught at 15 Australian universities yet built environment professionals make up only 10% of the sector's workforce. The industry does not have a flexible professional workforce to match changing work requirements. Skill shortages and skill gaps reflect this inflexibility, with demand for higher education qualified professionals exceeding supply and outstripping demand for VET/TAFE occupations in the past decade. The profile of student cohorts in built environment disciplines in higher education does not match the diversity of the industry workforce.

This project included three significant objectives:

- to analyse the efficiency of existing examples of lifelong learning/pathways models in the built environment discipline in improving diversity of student cohort
- to develop schema to discern and identify elements of these models that contribute to best practice in creating opportunities for student diversity
- To isolate and disseminate the determinants of best practice pathways models for future use by the built environment discipline and other disciplines.

Dissemination of project findings across both the built environment sector and the wider higher education audience was an important objective. The project helped to bring together a network of interested educators in built environment disciplines that were enthusiastic to implement changed practice in relation to pathways models. Industry and accreditation bodies' engagement overwhelmed the project leaders, and provided further dissemination and discussion about the opportunities for innovation in built environment pathways.

This project, in meeting all objectives, has established that there are three essential determinants or features of effective pathways models in built environment

disciplines that can increase student cohort diversity. The central findings of the project are:

- Pathways models in built environment disciplines vary across Australian states and regions in effectiveness and access for under-represented cohorts.
- The key determinants of the effectiveness of a pathway model to create diversity in built environment disciplines is the adoption of strategies that-
  - assemble resources for learners
  - engage learners and
  - build confidence in learners
- Pathways models can improve the diversity of student cohorts in built environment disciplines in higher education through careful targeting of these three determinants. (Chapter 5)

Importantly the project has identified that:

- The greatest opportunity to increase student cohort diversity in built environment disciplines is through increasing the participation of the existing workforce in pathways models demonstrating these three essential determinants. (Chapters 4 and 5)

By isolating these key determinants for any effective and successful model, the project has developed a template by which future lifelong learning/pathways models can be evaluated. In so doing, this project has contributed knowledge to both the discipline and the wider sector.

There were also a number of additional findings arising from this project:

- Although a range of pathways models are in place in built environment disciplines in Australian universities, the most common model is articulation from VET/TAFE to higher education. Additional models exist, but are isolated and span equity, special access or high school extension models and are not primarily located in built environment disciplines
- In spite of robust VET/TAFE to HE articulation arrangements and nationally agreed credit transfer for built environment discipline students, less than 16% of all VET/TAFE built environment graduating students continue onto higher education in any one year (Chapter 4).

These project outcomes challenge the entrenched attitudes that diversity is not achievable in the built environment discipline in higher education. In so doing the project has identified a template of the essential determinants of best practice pathways models for transforming all disciplines into more inclusive lifelong learning models for all Australians.

## Project Recommendations:

A number of recommendations are supported by the significant findings of this project. These recommendations clearly set out the next steps for achieving full impact of findings and outcomes.

- That, as a high priority, research into a national model of agreed RPL and flexible delivery for the built environment workforce moving into higher education is commenced with the relevant stakeholders and industry skills councils.
- That promotion of effective pathways models to the built environment workforce be commenced with all industry stakeholders
- That all tertiary institutions offering built environment disciplines engage in dissemination activities to raise awareness amongst programme leaders of the implications of this project for their articulating students and potential future students.
- That institutions with built environment disciplines and a strong pathways track record in attracting diverse cohorts of built environment workers be funded by the Australian Government to commence pilot pathways projects in up skilling of the built environment workforce.

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# Chapter 1 Overview of Project

## 1.1 Introduction

Increased participation in tertiary education is fundamental to economic, social and cultural wellbeing (OECD, 2003). Over the past three decades, Australian governments have sought to make it easier for students from a diversity of backgrounds to enter higher education. Drivers for greater participation and increased diversity in higher education are fuelled by the growing conviction that the economic future for all Australians rests upon the development of a skilled, flexible and credentialed workforce. Collier and Morgan (2008) note that “higher education is a critical pathway to achieving occupational success and social status in all industrialised countries” (p. 441).

Accordingly, the Council of Australian Governments (COAG) has a goal of 90% of all 19 year olds achieving year 12 or equivalency by 2020. The Federal Government has an increased participation goal of 40% of all 25 – 34 year olds with at least with at least a Bachelor’s degree by 2025. This necessitates a focus not only on access, but also an achievement for all students. Devlin (2010) notes that whilst the poor participation rates of non-traditional groups has been well acknowledged for many years, there has been little or no improvement or advancement of this situation. Despite “an expansion of overall student numbers and significant target setting and monitoring of universities performance” (Devlin, 2008: p. 1), the participation and achievement of non-traditional groups remains stubbornly low. It is time to consider new models of participation.

In 2008, the Australian Qualifications Framework Council called for improved sector connections to provide flexible qualification linkages and pathways in education and training, including recognition of formal and informal learning. Improved qualification and recognition arrangements lead to more seamless pathways between the VET and HE sectors. This benefits students and individuals wishing to gain or upgrade qualifications. Transparent seamless pathways with multiple exit and entry points encourage increased participation as well as non-linear lifelong learning.

Seamless pathways are a basic tenet of national policy as espoused by the Ministerial Council for Education, Employment, Training and Youth Affairs (2005). Pathways that encourage increased participation and use their seamlessness to reflect greater diversity for those seeking education and training have been emphasised by education policy makers for some time. But the seamlessness of movement between sectors and the use of pathways as a way of broadening participation has remained opaque and at the margins of educational investigation and research. Whilst some researchers have highlighted the difficulties and consequences of pathways models (Wheelahan, 2008; Phillips KPA, 2006), there has been little research into the models themselves in terms of improving access for under-represented groups. And where there is considerable evidence of pathways models that encourage lifelong learning and enable greater participation, such

research remains isolated and contextually specific, rather than mainstream to tertiary education. Bradley (2009) in commenting upon pathways models concluded that “much remains to be done to improve connectedness and ensure that pathways operate effectively” (p. 181). What is needed is better streamlining of existing models and enhanced sector-wide understanding of those models that have ensured participation of under-represented groups.

This project focuses upon the features of successful lifelong learning models that can be disseminated across the wider sector and identifies the processes involved in developing and maintaining these features. In this way, the project is transferable at the local institutional levels.

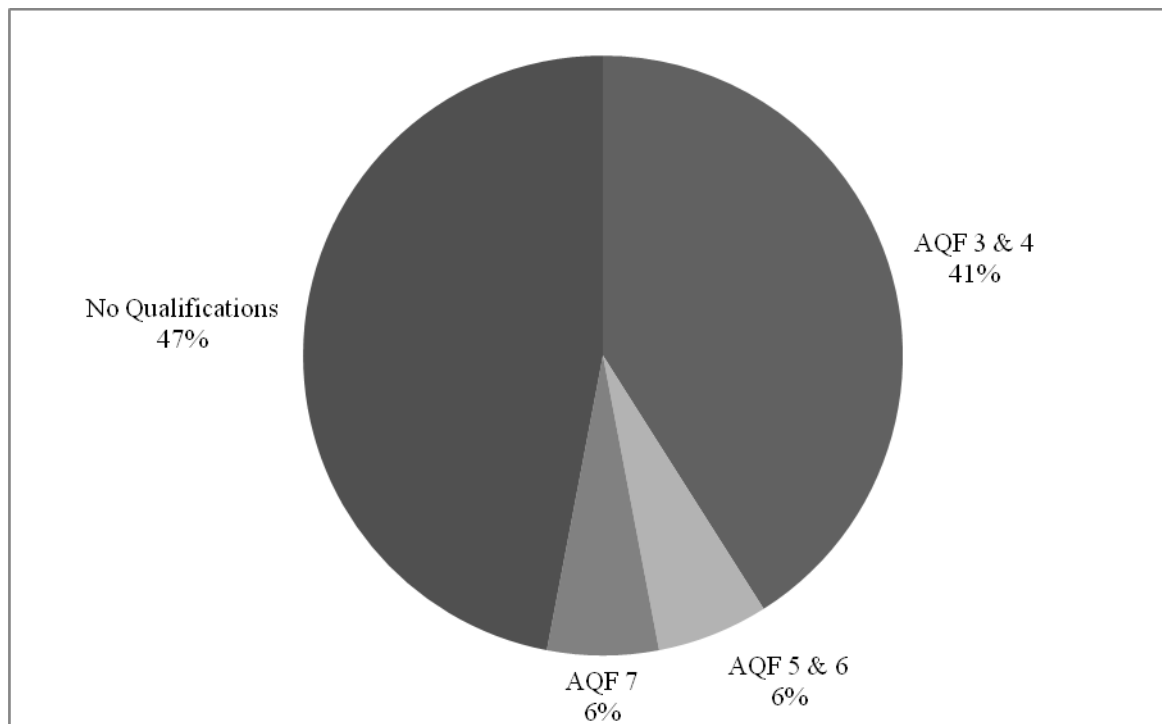
## 1.2 Project Rationale

Australia, as a nation, is facing a national skills shortage. The shortfall in qualified workers over the next five years is predicted at 195,000 people in total (Bradley et al, 2008). This shortfall is expected to increase exponentially as the current labour force ages, the supply of available qualified people declines and industry requirements change. For the past decade, robust economic growth has seen a tightening of the labour market with strong demand across many occupations. This demand has been spread unevenly with key industries such as engineering and construction at the forefront of drastic skill shortages (DEEWR, 2008). More significantly, tertiary qualified professionals within these industries have been in continuing demand. Access Economics (2008) predicts that from 2010, this demand for skilled professionals with undergraduate qualifications across these industries will exceed supply levels.

The construction industry is extremely important to the Australian economy. The industry employs one in seven people in Australia and is the fourth largest employer with nearly one million employees. The industry contributes \$61 billion or 12% of GDP per annum (ABS, 2010)

Despite the economic and national significance of the industry, it has one of the least qualified workforces, (see Figure 1) with significant skill gaps at the higher levels of the AQF from Diploma level (AQF 5) upwards.

Figure 1: AQF Qualifications levels of Building and Construction industry workforce



(Source: ABS Education and Training Experience, 2009)

Data from the ABS Survey of Education and Training 2009 provides an overview of the current qualifications profile of persons employed in the construction industry. Drawing on this data, the following observations are evident:

- Only a very small percentage of the construction workforce has AQF 7 (Bachelor degree) qualifications.
- The total tertiary qualified workforce in construction ( Diploma/AQF 5 and above,) is only 12%
- A massive 47% of the workforce has no post school qualifications

With nearly half the workforce in the Australian construction industry having no formal credentialed post-school qualifications and only a very small number of people in the industry having higher level qualifications, the industry skill levels are stubbornly skewed to the lower levels of the Australian Qualifications Framework. Significantly the building and construction industry is also well above the national labour force industry average for those 25-44 year olds who lack any formal qualification (31%) whatsoever (ABS, 2008).

This qualification profile at the higher AQF levels is significantly below other key industries of similar size by employment and contribution to the economy as set out in Table 1.

*Table 1: Industry comparisons of AQF 5, 6 & 7 qualifications, Australia, 2009*

Industry	AQF Qualification			
	Diploma/Advanced diploma		Bachelor degree	
	<i>Nos of persons</i>	<i>% of workforce</i>	<i>No of persons</i>	<i>% of workforce</i>
Construction	58,000	6.2	49000	5.9
Manufacturing	85600	8.8	99300	10.3
Retail	87100	8.3	103900	9.9
Health services	209700	18.1	285000	24.6

(Source: ABS Education and Training Experience, 2009, Item 6278, Table 11)

In comparative terms with other industries of similar GDP contribution, this makes the Australian Construction industry one of the least qualified industries with little evidence of up skilling or transition between VET qualifications and HE qualifications.

Although there are state by state differences in enrolment figures, the number of Building and Construction Diploma and Advanced diploma students constituted only 6% of all AQF enrolments in this Field in 2010. This figure is almost half that for AQF level 5 & 6 qualifications generally in other industry fields which comprise 15.8% of all AQF qualifications students.

Alarming, of the small number of diploma students in building and construction Australia wide, an even smaller number continue to up skill beyond AQF level 5. The movement to HE is low, with only 1.6% of this AQF level 5 cohort continuing with ongoing study at university. Table 2 sets out the rankings for ongoing study at university

*Table 2: VET Student Outcomes – Further Study at university, ranking by Industry Skills Councils*

Rank	Industry Skills Council	% going on to university
1	Not assigned	9.6
2	Business Services	9.1
3	Services (Retail, Tourism & Hospitality)	9.0
4	Community services & health	8.1
5	Government	5.6
6	Agrifoods	2.9
7	Manufacturing	2.1
8	Transport	2.0
9	Construction	1.6
10	Electro/Electrical	1.1
11	Skills DMC	*
12	Forestry	*
	<b>ALL</b>	<b>6.8</b>

(Source: NCVET Student Outcomes Survey, 2010. NCVET, 2011)

Whilst this data only represents graduates of the 2010 year, and VET graduates from other years may go on to study at university at a later period of time, the key point is that in this industry the percentage of graduates moving on to further study is much lower than many other industries.

Karmel (2010) notes that the movement between VET (AQF levels 1-5) and HE (AQF 6-10) takes place on a spectrum ranging from well organised to haphazard. Student mobility between the sectors or AQF levels is not linear- in many cases policy and organisational processes lag behind the patterns of lifelong learning careers of students (McLaughlin and Mills, 2010). Research by Harris et al (2006) identified the issues as “crazy paving” which describes how student demand drives movement between the sectors in random and unexpected pathways. The phenomenon involves indirect transfer, where movement of tertiary students is not linear, but instead involves several moves within and between institutions and sectors.

Of all disciplines, the building and construction discipline has been one of the weakest in promoting movement between the VET and HE sectors. The industry skill levels and the tertiary institutions providing VET and HE qualifications to the industry are significantly divided. There is very little up skilling or transition of students between vocational education (up to AQF level 5) and higher education (beyond AQF level 6) in the building and construction disciplines.

Whilst research indicates evidence of some existing excellent pathways initiatives between VET and HE, (Moodie, 2010) there is little evidence that the construction

industry has benefitted from such up skilling pathways. Building and construction industry students and workers remain stubbornly under-represented in tertiary pathways.

There is a pressing need for the construction industry to invest in employees with higher-level skills and qualifications and to provide support for those with lower qualifications to move into diplomas/AQF 5 and beyond. The qualification hump in this industry, which essentially stalls at Certificate, III/IV needs to be extended.

Whilst higher education is not necessarily better for all individuals in terms of life choices or economic prosperity, there is considerable evidence that access to up skilling is vital for industry development and employability of individuals over time. Access to formal up skilling is important for a number of reasons (Construction and Property Services Industry Skills Council (CPSISC), 2010). These include:

- The physical demands of construction occupations, particularly trades. The impact of an ageing workforce coupled with physical requirements of the work means older workers need new skills to work in less physically demanding jobs in the industry.
- The changing skill requirements of the industry mean that initial entry level skills training at AQF 3 and 4 can become out-dated over an individual's lifetime in construction, particularly in areas such as technology, materials and energy usage and application.
- Regulatory and compliance issues are increasingly becoming more complex in the industry. Initial training is quickly out-dated resulting in compliance concerns with existing workers.
- The organisation of work is changing. Pre-fabrication and project management techniques mean new work organisation which requires new skills for workers to remain employable.
- Environmental and OHS considerations are constantly reviewed, requiring re-skilling and up skilling for existing workers to remain safe and aware of changing work requirements and opportunities.

The industry workforce of Certificate III and below is at high risk during periods of economic downturn. For employees already in the industry, strategies are needed to upgrade qualifications, particularly amongst older workers who are at the greatest risk of redundancy or reduced physical capacity but who have the skills and experience to support entry into higher-level qualifications and higher level construction occupations.

Persistent skill shortages and skill gaps in this industry reflect the inflexibility and lack of up skilling. Narrow entry-level training that encourages students to exit at the AQF level 3 or 4, and a higher education focus on the professions has been to the long-term detriment of the students and the industry. In effect the industry is not capitalising on the total potential of its workforce with most qualified students exiting at AQF 4 or 5. Without a thorough investigation of the reasons for students not aspiring to further education and an examination of those pathways models that promote retention of building and construction students, the skills and knowledge



base of the industry will continue to suffer. The flow-on effect to other industries is substantial.

In essence, the building and construction industry is perfectly placed to address increased participation and improved access from VET to HE. It has one of the most diverse labour forces in Australia, with very few building and construction students or workers seeking HE qualifications (AQF 6 and above). In the building and construction industry the divide between vocational qualifications (AQF levels 1-5) and higher education qualifications is stark. It is important to examine this divide and promote improved movement between these levels to fully utilise the skills of the individuals. Without this movement the industry cannot deliver a skilled future workforce for Australia.

Because of its strong history in attracting a diverse workforce and the existence of a number of successful pathways models in built environment faculties in the tertiary sector, it is a prominent and useful industry in which to site this project. The identified outcomes of this project will be paramount to the economic health of the nation and the industry workforce. Examining successful pathways models that have been implemented in an industry that has the least qualified workforce and the greatest proportion of 25 – 44 year olds employed in it, allows for greater acceptance and potential uptake of the models within other industries and institutions.

It is important that the built environment industry, with the least qualified, most diverse workforce in the targeted age range of 25 – 44 years be the leader in improved learning and teaching models that deliver greater student cohort diversity.

Therefore, this project examines lifelong learning pathways models that are situated with tertiary institutions that supply skilled graduates to the Australian construction industry. The selection of these tertiary institutions was deliberate. The teaching of the built environment programs (engineering, construction management, building surveying, project management, quantity surveying etc.) are organised differently across various universities in Australia, but the curriculum, student cohort, workforce and qualification structure within all universities provides almost identical graduates that all join the same construction industry. The rationale for selection is detailed below:

- **RMIT University**

RMIT University is a complete tertiary institution from AQF level 1 to 10. The university supplies graduates to all sections of the Australian construction industry, from tradespeople (Certificate III and IV) through to construction managers, quantity surveyors etc. (Bachelor) and post-graduate qualifications (Ph.D). The university has a strong history of supplying work-ready built environment graduates who reflect the industry needs. Built environment qualifications from RMIT reflect modern industry requirements and are sought after by employers. Within Victoria, the majority of credentialed workers in the built environment industry have obtained

their qualifications from RMIT. As a centrally located university, RMIT is well placed to address pathways models targeting greater student cohort diversity. Existing RMIT pathways models are analysed in this project.

- **University of Western Sydney (UWS)**

UWS aspires to be a university that brings positive change in the lives of its students and a source of creativity and new knowledge that is relevant, robust and contributes to individual and community development.

The University is at the leading edge of knowledge, providing a contemporary education that builds successful lives and careers for its students and graduates, and conducting research that speaks to the development of urban and rural regions, the new economy, cultural life and professional development.

The university sees itself as a driving force behind the creation of the highest quality constructed facilities with its Construction Management degree, which equips students with specialised skills in construction management. The UWS construction degree is widely recognised for delivering the full suite of theoretical, practical and hands on experience in the area of construction management. Existing UWS pathways models are analysed in this project.

- **University of Technology, Sydney (UTS)**

UTS is a dynamic and cosmopolitan university that marks the gateway to Sydney - Australia's economic, multicultural and creative global city. In 2008 UTS celebrated twenty years as a university, with a mission to be a world-leading university of technology. UTS Built Environment courses produce graduates who have a reputation for excelling in their fields. Widely regarded as one of the most respected courses within the industry, the Bachelor of Construction Project Management provides a comprehensive construction education.

The course is concerned with the management of all aspects of the construction process, including business management, construction management, design management, project management, quantity surveying, contract administration and property development. The course puts students at the forefront of contemporary industry practice as they deal with real-life examples and case studies that facilitate the application of theory in a way that is practical and relevant. Graduates are renowned among employers for their practical knowledge and professional skills. The degree provides graduates with the broader skills and knowledge base required to meet the changing demands of the construction, infrastructure and related industries. Existing UTS pathways models are analysed in this project.

- **Curtin University, Western Australia**

Curtin University is Western Australia's largest and most multi-cultural university. It has a strong commitment to international engagement with Australia's third largest

international student population. The university has a long standing commitment to indigenous education and culture and has the highest enrolment of Indigenous Australians of any university in the country. Curtin is widely recognised for the practical and applied nature of its courses, which equip graduates with essential skills through exposure to industry and business. The breadth of the Construction Management program at Curtin means that students are able to select from a broad range of diverse career paths within the construction industry resulting in excellent employment prospects. The construction management course is the only such program offered in West Australia and is also successfully run in Singapore and Hong Kong. Students learn how to deal with the many managerial, technical and economic problems that occur within the stimulating environment of construction projects. Curtin University is the benchmark university in this project

- **Deakin University**

Deakin University aims to be a catalyst for positive change for the individuals and the communities it serves. Deakin's Bachelor of Construction Management degree consists of academic study and practical experience and meets the requirements for professional recognition by the building profession.

The course is offered to students wishing to gain employment in management positions in the construction and allied industries in Australia and overseas. They will be provided with an excellent mix of hands-on practice and theory and integrated studies in technology and building management, including building economics and law, project management, building technology, measurement and estimation, quantity surveying, building surveying and building practice. The course develops progressively from the elementary concepts underlying planning and management of building production and technical studies through to the complexities and interrelationships of modern construction practices.

### 1.3 Project Aims

This project had a number of key objectives:

- To review existing examples of lifelong learning and teaching pathways models in the discipline of the built environment in selected Australian universities.
- To analyse the efficacy of these models and delineate the salient features.
- To develop schema to discern and map elements of these models to identify best practice features.
- To trial, track and evaluate performance of these models in alternate settings.
- To disseminate the successful, salient features of each of the models to the discipline sector and the wider tertiary environment.

Lifelong learning is not directly measurable or quantifiable. Within the scope and timeframe of this project it is impossible to demonstrate either short or long term

measurements of improved student cohort diversity – the timeframe is simply too short. What is measurable is the extent to which the examined pathways models demonstrate features of increased participation and access of any of the under-represented groups identified by the *National Reform Agenda for Tertiary Education* (Australian Government, 2009; Bradley, 2008). These groups include:

- Individuals from regional and remote Australia
- Individuals from lower socio-economic backgrounds
- Individuals in the 25 – 44 year old bracket who lack a formal tertiary qualification
- School leavers who have not previously accessed tertiary education
- Indigenous Australians

Improving access for some or all of these groups is a high priority of the Australian government and this project examines pathways models that facilitate this access. In Chapter 2 a detailed discussion of the rationale pertaining to diversity is included.

### 1.3.1 Definitions

A number of definitions have been adopted for the purposes of this report.

#### *Built environment disciplines*

The definition of built environment differs across universities and training providers, but in this report, built environment disciplines are used to describe the field which addresses the design, construction, management and use of man-made surroundings as an interrelated whole, as well as their relationship to human activities over time, ranging in scale from buildings and parks or green space to neighbourhoods and cities that can often include their supporting infrastructure, such as water supply, or energy networks. The built environment is a material, spatial and cultural product of human labour that combines physical elements and energy in forms for living, working and playing. It encompasses professional studies in building and construction, urban development, property economics, quantity surveying, construction management, spacial science, construction economics and project management.

#### *Lifelong learning (pathways) models:*

The concept of lifelong learning encompasses notions of economic development and progress, personal development and enrichment and the extension of knowledge, with learning conceptualised as flexible, universal and accessible (Hyland & Merrill, 2003; Candy & Crebert, 1991).

Lifelong learning or pathways models offer a fundamental organising principle to broaden and diversify access to tertiary education by facilitating access to and movement across the education sectors. They are defined by principles of social inclusiveness and democratic understanding and activity (Aspin & Chapman, 2001). Within the concept of lifelong learning is the notion that education can be non-linear and thus incorporate vertical articulation and horizontal integration across

curriculum and programs to create effectiveness of learning pathways which are responsive to student needs and to labour force requirements.

#### *Socio-economic status (SES):*

For the purposes of this project the authors adopted the Australian Government definition of Socio-economic status, using the Socio-Economic Indexes for Areas (SEIFA). SEIFA is a suite of four summary measures that have been created from Census information. The indexes can be used to explore different aspects of socio-economic conditions by geographic areas. For each index, every geographic area in Australia is given a SEIFA number which shows how disadvantaged that area is compared with other areas in Australia. Each index summarises a different aspect of the socio-economic conditions of people living in an area. They each summarise a different set of social and economic information. The indexes provide more general measures of socio-economic status than is given by measuring income or unemployment alone, for example.

The four most recent indexes in SEIFA are:

- **Index of Relative Socio-economic Disadvantage:** is derived from Census variables related to disadvantage, such as low income, low educational attainment, unemployment, and dwellings without motor vehicles.
- **Index of Relative Socio-economic Advantage and Disadvantage:** a continuum of advantage (high values) to disadvantage (low values) which is derived from Census variables related to both advantage and disadvantage, like household with low income and people with a tertiary education.
- **Index of Economic Resources:** focuses on Census variables like the income, housing expenditure and assets of households.
- **Index of Education and Occupation:** includes Census variables relating to the educational and occupational characteristics of communities, like the proportion of people with a higher qualification or those employed in a skilled occupation.

The concept of relative socio-economic disadvantage is neither simple, nor well defined. SEIFA uses a broad definition of relative socio-economic disadvantage in terms people's access to material and social resources, and their ability to participate in society. While SEIFA represents an average of all people living in an area, SEIFA does not represent the individual situation of each person. Larger areas are more likely to have greater diversity of people and households. The most recent SEIFA data pertains to the 2011 Census.

#### *Diversity:*

For the purposes of this project, diversity of cohort is defined as “non-traditional” student groups who attend university. Non-traditional is measured against the “traditional” student cohort of Australian universities, that is the students who continue education, often, but not always, directly from secondary school, who tend to study, in the main, on campus and full-time. These traditional students have typically been drawn from high and medium socioeconomic backgrounds and aspire to tertiary education prior to their final year of secondary schooling. This definition

of “traditional” best defines the non-traditional cohort (Devlin, 2010). Non-traditional student cohorts using this definition include:

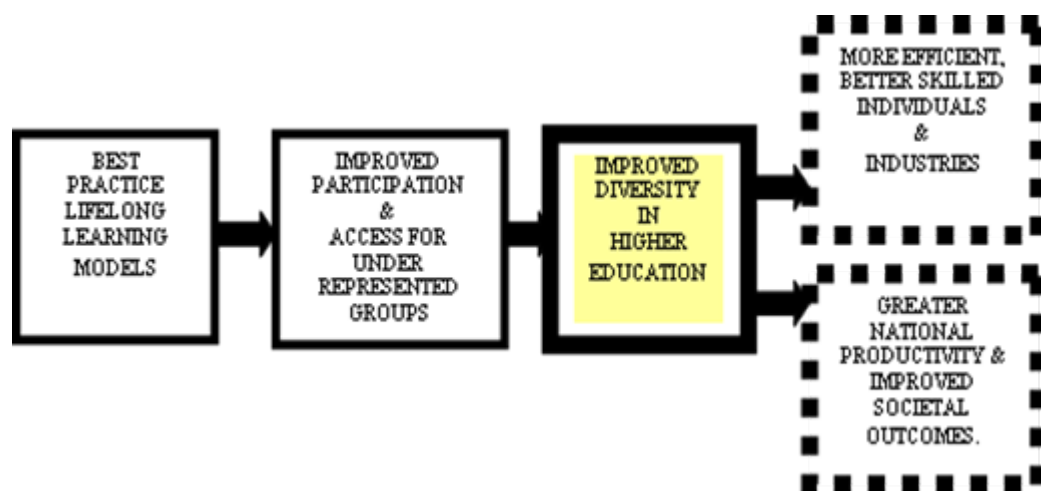
- Students from rural and remote regions
- Students from low socio-economic backgrounds
- Students who are mature aged without tertiary qualifications
- Students involved in VET programmes
- Students from indigenous backgrounds
- Students who are the first in their family to attend university
- Students who do not aspire to university education

This definition was adopted for the duration of the project across all participating universities.

## 1.4 The Project Overview

This project reviewed existing examples of successful lifelong learning and teaching models in the discipline of the Built environment; analysed the efficacy of these models; developed schema to discern and map elements of these models to identify best practice; and trialled, tracked and evaluated best practice models. The overall objective was to contribute knowledge to develop and promote lifelong learning models which successfully enhance and facilitate participation and student cohort diversity in higher education.

Figure 2: Lifelong learning & Diversity Impacts



## 1.5 The Project Significance

Lifelong learning or pathways models offer a fundamental organising principle to broaden and diversify access to tertiary education by facilitating access to and movement across the education sectors. Defined by principles of social inclusiveness and democratic understanding and activity (Aspin & Chapman, 2001), the concept of

lifelong learning encompasses notions of economic development and progress, personal development and enrichment and the extension of knowledge, with learning conceptualised as flexible, universal and accessible (Candy & Crebert, 1991; Tight, 1998; Hyland & Merrill, 2003). Implicit in the concept of lifelong learning is the notion that education can be nonlinear and thus incorporate vertical articulation and horizontal integration across curriculum and programs to create pathways within and across the education sectors. Further, this concept is underpinned by the notion of learning as flexible, universal and accessible, including to diverse groups of learners, with learning conceptualised as occurring through a life cycle.

In the context of significance to the sector and tertiary education, lifelong learning is premised upon a tertiary education system that reflects the development of skills and knowledge at different levels of competency and qualifications across both sectors of HE and VET. It is a system that provides multiple entry and exit points for those already in the workforce or those anticipating entry. It is a system that is able to provide integrated responses to individual and industry needs to reflect changing educational requirements at all levels and link qualifications with strong, articulated, transparent lifelong pathways.

This project is of significance to students as lifelong learning models encourage the acquisition of education and skill throughout an individual's life. These learning and teaching models allow seamless, transparent pathways between qualifications. Such models commence with the first transition from compulsory schooling, but are not necessarily linear. There is significant evidence that within the Australian tertiary sector reverse articulation (Harris, Rainey & Sumner, 2006) and parallel articulation between qualifications (Ticknell & Smyrnios, 2004) is occurring. Such models enhance opportunities for individuals from under-represented groups to successfully access tertiary education.

Participation rates in post compulsory education reflect complex intersecting, cultural, social, political and economic factors. As the literature confirms, Australian rates of access to, and successful uptake in, higher education and training amongst particular cohorts fall well below OECD targets with students from low SES backgrounds a significant proportion of those individuals currently under represented. Yet, as Bradley et al (2008) highlight, most Australian universities fall below the recently announced Federal target of 20%. Lifelong learning models have significant capacity to deliver a change in this diversity participation, thus benefitting all students.

This project is of national significance as there are strong links between national productivity and a qualified labour force. Without sufficient qualified workers, industries such as built environment will have difficulty continuing to produce their current level of output, let alone expand output to keep pace with global markets. Modelling indicates the built environment industry will be unable to meet domestic consumption in the coming decades (DEEWR, 2008). The built environment sector is a significant contributor to the Australian economy and employs one in seven workers in Australia. Built environment industry professionals make up 9 % of the

workforce (ABS, 2008a). However, the built environment industry lags significantly behind other industries in terms of post-school educational attainment.

This project is of significance as it focuses upon the successful pathways models of lifelong learning that already exist in tertiary institutions offering building and construction degrees. These models provide multiple entry and exit points across a range of qualifications, designed to meet the needs of learners from diverse backgrounds, including low SES students.

Studies by *Harris, Sumner and Rainey (2005)* indicate that students, including those in the workforce, want movement between vocational education and higher education. A significant finding from this study is that student movement between HE and VET is three times higher nationally than linear movements from VET to HE. It is also significant that student “traffic” involves various combinations of complete and incomplete qualifications and concurrent enrolment. It appears students and workers are engaging in multiple entry and exit points as their lifelong learning needs dictate. This project by trialling and disseminating lifelong learning models provides formal research about these learning pathways and gives insight into the educational benefits these students and workers are demanding.

Research indicates that the quality of education is improved overall by an inclusive curriculum, without any loss of rigour. International studies have clearly shown that inclusive curriculum strategies have significantly improved student engagement, retention and success for all students, not just under-represented groups (Froyd & Ohland 2005; Beraud, 2003; Fromm, 2003; Kramer-Koehler, 1995). Currently models of lifelong learning are isolated across a small number of universities and disciplines. There is little specific guidance about participation of under-represented groups for educators. This project will supply necessary strategies for embedding these lifelong learning models in discipline-specific curriculum. The project outcomes challenge the entrenched attitudes that diversity is not achievable in specific disciplines and in so doing it creates a template for transforming all disciplines into more inclusive areas of study.

## 1.6 Project Methodology Summary

The project used the built environment as the discipline for research. The project utilised a four phased approach over two years, detailed below. It should be noted that several of the phases were overlapping or ongoing during the project, to ensure that the method was flexible enough to allow continuing development for the life of the project and beyond. A complete description of the methodology for each phase is also detailed in Chapter 2.

The four project phases were:

**PHASE 1** (July 2010-Dec 2010) In the first stage the project focussed upon successful lifelong learning (pathways) models, as exemplars for the development of generic and specific skills, knowledge and credentialing in the built environment discipline. In



this first phase, the project systematically analysed successful initiatives and transparent pathways that allowed harmonised planning, increased student diversity, provided better responses to the needs of the students and industry, and allowed greater flexibility in skills/qualifications delivery. The aim was to develop the main themes of the project by developing benchmark knowledge about current pathways and articulation practices within built environment disciplines in Australian universities. This phase also reviewed existing literature and practices. The results of this phase are detailed in Chapter 3.

**PHASE 2** (Jan 2011-July 2011) The second phase of the project created a picture of successful lifelong learning models which facilitated learning pathways in a systematic way and documented both enablers and obstacles to access and participation by diverse student groups. The aim of this project phase was to collect data by case study interview and national surveys that mapped effective learning and teaching models to achieve improved diversity. Using the built environment as the discipline, effective determinants that achieved diversity were mapped using case studies of partner university practices. The results of this phase are discussed in chapter 4.

**PHASE 3** (July 2011-Jan 2012) The third phase of the project developed exemplar lifelong learning (pathways) templates that can deliver best practice student cohort diversity. The aim of this phase was to evaluate the collected data against the DEMO matrix for outreach and student equity and provide a best practice template (matrix) for improved practice. This phase led to an understanding of best practices and the overall response to the project question of achieving greater diversity of built environment cohorts in tertiary institutions. The results of this phase are discussed in Chapter 5.

**PHASE 4** (Jan 2012-July 2012) The fourth phase of the project trialled, evaluated and disseminated lifelong learning models in higher education institutions seeking to address student cohort diversity and transparent, efficient pathways. The project team repeated the national benchmarking exercise (from Phase 1) at three partner universities, to determine changes following the understandings of Phase 3. The overall aim of this phase was to evaluate and disseminate the outcomes of the project across both the built environment sector and the wider higher education sector.

The project methods and methodology are discussed in greater depth in Chapter 2, where detailed information about the DEMO framework and the template is sited. Outcomes of each of the project phases can also be found in Chapter 6.

## 1.7 The Project Limitations

All research has limitations – this study is not unique in having limitations and boundaries to what was researched and what interpretations and conclusions were drawn from the data. One obvious limitation of the study lies in the boundaries

placed around the project themes of diversity and lifelong learning models in the built environment.

By examining only the formal pathways models of universities in the built environment discipline only a very narrow slice of the total pathway experience was analysed. The pathway experience is far broader than the structures, processes and relationships set up formally by a university or tertiary institution. This study only examined data collected from national pathways models and students interviewed within those models. It thus examined only formal aspects of transition without identifying the contribution of social and informal environments to the total experience. However the boundary must be drawn at some point. Informal experiences and enablers such as peer pressure, alternate sources of information, social constructs and academic factors, were not examined. In addition there are institutional, economic and political nuances that affect the complex role the institution can play in the experience. In deciding where to limit the study, the key factor was the examination of lifelong learning models in the partner universities and the impact of pathways upon the built environment discipline in those universities. Although this creates limitations upon the data collected, the student cohort differences of the partner universities allowed for greater analysis and variety in responses and thus greater flexibility in interpretation of the data.

A significant strength of this project is the voice of the participants elicited through the interviews. Their voices and subsequent understandings of the learning structures, processes and relationships presented to them in their movement between AQF levels are unique. Their comments and feelings about the educational journey they have taken belong to them as constructs of their experiences. Their voices and reflections mirror their grasp of the learning situations – at the point in time in which they sought to express them. Their insights allowed reconstruction and interpretation for this project, analysed in the DEMO framework selected as best suited to convey the messages of the constructs. Their contributions allowed for conclusions to be drawn in this project, conclusions which will contribute to the body of knowledge around lifelong learning pathways in construction and the built environment.

But this strength is also a limitation. The individual participants were exactly that – individuals, whose constructs of the learning structures, processes and relationships was their own. The qualitative data was measured against the national survey which strengthened the individual constructs; however the number of individual interview participants remains small. This is a limitation of the study. However the richness of the data, the thick descriptions, the depth (or layers) of interpretation and the triangulation through the national survey, to a large extent, ameliorated this limitation.

The research relating to lifelong learning and pathways is significant, fluid and ongoing. It is dynamic as the Australian tertiary sector searches for improved performance in an industry competing for funding of undergraduate places. Eliciting interview data from articulants between VET and Higher Education has revealed a

“snapshot “ in time and is limited to the policy, structures and institutional activity surrounding that time. Whilst the interview data has been carefully triangulated against staff and other students, changes in government legislation, tertiary institutional policy and even student choice is fluid and may reveal alternate results at another time. This “snapshot in time” limitation is true of all dynamic research, especially in the scholarship of learning and teaching

A final limitation of this project was the sheer quantity of research that could be included in phase one of the project, when existing pathways models of lifelong learning were examined and benchmarks reviewed. Whilst the literature highlighted in this report is relevant and significant, it is beyond the scope of this project to include every possible pathway model for examination. As noted in Chapter 3, the selection of previous research has been confined to a small number of relevant themes and is in no way exhaustive or indicative of the total literature reviewed, or of all the themes relevant to lifelong learning and pathways.

This study has, as one of its objectives, the aim of contributing knowledge to develop and promote lifelong learning models which successfully enhance and facilitate participation and student cohort diversity in both the built environment discipline and higher education. Whilst the limitations discussed above have gravity and indicate some restrictions, the overall conclusions drawn from this report remain relevant to the whole tertiary sector and provide concrete challenges to create effective change in lifelong learning and educational participation for all Australians.

# Chapter 2 Project Approach

## 2.1 Introduction

The access and participation of more diverse student cohorts in higher education means different things to different people, across time and place. Economists highlight the economic imperative to broaden higher education participation (Wells, 2008), whilst social scientists indicate the social and moral imperatives. From both perspectives, widening as well as increasing participation in higher education serves national goals of social justice and socio-economic development. The funding of higher education represents a significant investment for governments, and the underpinning rationale for increasing participation in the knowledge economy, as expressed in a raft of policy documents, is the development of human capital, the broadening of the social and talent pool, the up-skilling of the population and the increase in national productivity (Schuller et al. 2002).

However despite two decades of policies and programs designed to promote their inclusion, the under-representation of disadvantaged students in higher education persists in

Australia, as in other Organisation for Economic Co-operation and Development (OECD) nations (OECD 2008). Reasons for under-representation of disadvantaged groups are complex and socio-cultural as well as economic.

In 2009, the Australian Government announced two ambitions for student participation and attainment in Australian higher education: that, by 2020, 20% of all undergraduate students in higher education will come from low socioeconomic status (SES) backgrounds; and, by 2025, 40% of all 25-34 year olds will hold a Bachelor's degree (Australian Government 2009: 12-13).

In setting these targets, the Government identified the first as 'key' to achieving the second (Australian Government 2009: 14). The *Review of Australian Higher Education* (Bradley et al. 2008. ) positioned higher education as "integral to achieving the Government's vision of a stronger and fairer Australia" (Australian Government 2009: 5); The Australian Government noted the importance of "a highly educated workforce to advance the growth of a dynamic knowledge economy" (Australian Government 2009: 12) and one where "Australians of all backgrounds who have the ability to study at university get the opportunity to do so" (Australian Government 2009: 12). *Gale et al, (2010)* noted that the number one challenge confronting Australian higher education would seem to be to encourage and enable people to seek entry from among those who currently do not enter.

The built environment industry has one of the least qualified workforces in Australia and of the total workforce, only approximately 10% of individuals' access higher Education. Student cohorts in built environment disciplines in Australian universities do not reflect the diversity of the industry. In this project a key research outcome was to improving the diversity of higher education to match both the diversity of the built environment/construction industry and to provide opportunities for lifelong learning in built environment disciplines. Whilst the report is specific to this industry,

the insights gained are applicable to all tertiary institutions and industries in Australia.

Economically the imperative is stark – Australia faces a growing crisis in demand for a highly broadly and deeply skilled workforce to sustain its economic growth and provide the capacity to exploit its economic opportunities and resources. This imperative is not unique to Australia and is echoed in government policy of developed countries across the globe. (Berger, 2008; Leathwood and Hayton, 2002)

This economic imperative is, to a large extent, driving a renewed focus on equity and higher education inclusion. Bradley (2008) notes the inter-relationship of equity and economics when recommending increased participation in higher education – “for the benefits it brings to the individual and for the long-term social and economic benefits in terms of workforce participation and a more socially inclusive society.” (p.28, 2008)

The Australian Government has set an ambitious target to raise the proportion of young people enrolling and completing a bachelor level qualification by 2025, equating to 40% of all 25 – 34 year olds. The achievement of this ambition will produce around 217,000 additional graduates by 2025.

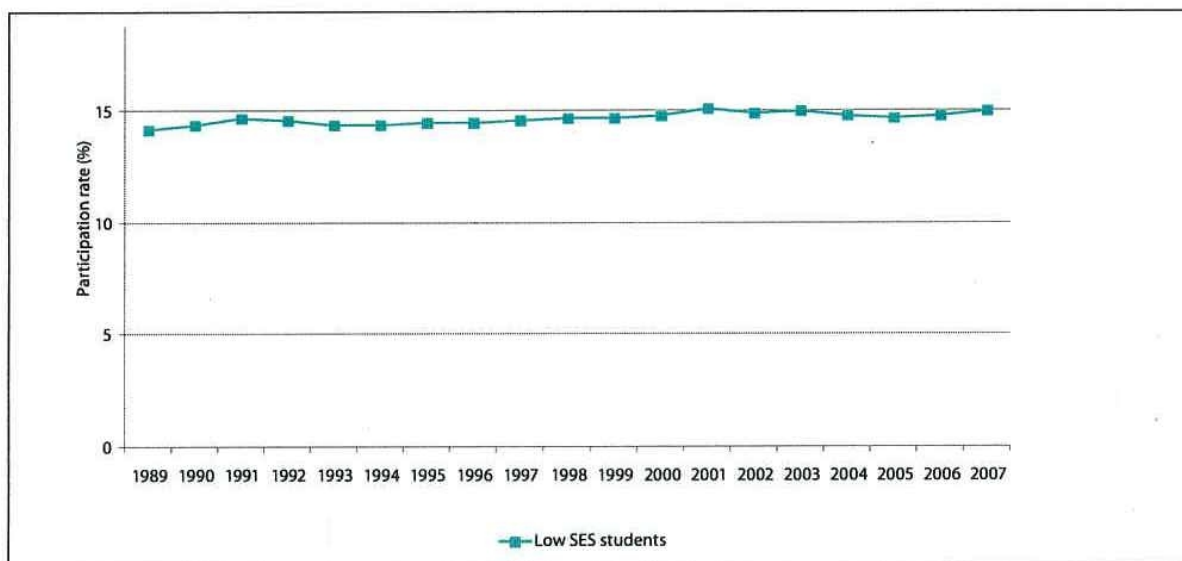
The improvement of pathways and movements between the VET and higher education sectors is seen as critical to this target. Government policy documents – *Transforming Australia’s higher education system, 2010* – indicate ‘tertiary education in Australia should be a continuum of delivery, with better connections between sectors in both directions, while avoiding one sector subsuming the other’. (p.43, 2010)

Over the last 20 years, there has been an increase in the rate of students obtaining bachelor level qualifications, primarily due to the reforms during the late 1980s and early 1990s as part of the move to mass participation in higher education. The current attainment rate for bachelor degrees for 25 to 34 year olds stands at around 32 %, and under current policy settings this is likely to rise only slightly, to around 34 % by 2025. However this is unlikely to be enough to meet the future economic needs of the nation.

The Australian Government is also committed to ensuring that Australians of all backgrounds who have the ability to study at university get the opportunity to do so. The proportion of low SES students enrolled in higher education in Australia has remained static at about 15 % over the last two decades, yet this group makes up 25 % of the broader population. Targeted equity funding over that period has been limited, with no real incentives for institutions to increase their low SES student enrolments.

Figure 3: Participation Rates for Low SES students

### Participation rate for students from a low socio economic background, 1989 to 2007



Note: Post-2001 is based on 2006 Census SES postcode allocations, whereas prior years are based on earlier Census SES postcode allocations

Source: DEEWR (Equity Performance Indicators - national indicators), various years

This report analyses the data arising from the project “*Lifelong Learning Pathways: addressing participation and diversity in higher education*”.

This project focussed upon research data examining pathways models for students in built environment disciplines. The data was analysed using an equity orientation framework (Gale et al, 2010) to establish competency of the pathways model as an avenue of student cohort diversity.

Lifelong learning or pathways models offer a fundamental organising principle to broaden and diversify access to tertiary education by facilitating access to and movement across the education sectors. Defined by principles of social inclusiveness and democratic understanding and activity (Aspin & Chapman, 2001), the concept of lifelong learning encompasses notions of economic development and progress, personal development and enrichment and the extension of knowledge, with learning conceptualised as flexible, universal and accessible. (Candy & Crebet, 1991, Hyland & Merrill, 2003).

Within the concept of lifelong learning is the notion that education can be non-linear and thus incorporate vertical articulation and horizontal integration across curriculum and programs to create pathways within and across the education sectors. Further, this concept is underpinned by the notion of learning is flexible, universal and accessible, including diverse groups of learners, with learning conceptualised as occurring through a life cycle. It is a system that provides multiple entry and exit points for those already in the workforce or those anticipating entry. It

is a system that is able to provide the integrated responses to individual and industry needs to reflect changing educational requirements at all levels and link qualifications with strong, articulated, transparent lifelong pathways.

In examining case study data of pathways models, enhanced opportunities for individuals from under-represented cohorts in higher education was detailed and analysed in this report.

## 2.2 Rationale of method

The examination of pathways models in the built environment discipline and their capacity to improve cohort diversity in higher education is premised upon a number of rationales.

Firstly the built environment sector is a significant contributor to the Australian economy and employs one in seven workers in Australia. Built environment industry professionals make up 9 % of the workforce (ABS, 2008a). There is a strong link between national productivity and a qualified labour force. Without sufficient qualified workers, industries such as the built environment will have difficulty continuing to produce their current level of output, let alone expand output to keep pace with global markets. Modelling indicates the built environment industry will be unable to meet domestic consumption in the coming decades (DEEWR, 2008). In essence the built environment industry is perfectly placed to address the concept of diversity development in tertiary education. Through models that have been deliberately designed to increase access to built environment programmes (McLaughlin & Mills, 2008), the diversity profile of the university cohort and thus the industry, has improved. The team leaders have extensive research in lifelong learning and pathways and models in construction. It is important that the built environment industry, with the least qualified, most diverse workforce in the targeted age range of 25 – 44 years be the leader in improved learning and teaching models that deliver greater student cohort diversity.

Secondly this project will directly benefit students. This project focuses upon the successful pathways models of lifelong learning and that already exist in higher education institutions. These models provide multiple entry and exit points across a range of qualifications, designed to meet the needs of learners from diverse backgrounds, including low SES students.

Studies by Harris, Sumner and Rainey (2005) indicate that students, including those in the workforce, want movement between vocational education and higher education. A significant finding from this study is that student movement between HE and VET is three times higher nationally than linear movements from VET to HE. It is also significant that student “traffic” involves various combinations of complete and incomplete qualifications and concurrent enrolment. It appears students and workers are engaging in multiple entry and exit points as their lifelong learning needs dictate. This project by trialling and disseminating lifelong learning models will nationally formalise these learning pathways and provide the educational benefits these students and workers are demanding.

Research indicates that the quality of education is improved overall by an inclusive curriculum, without any loss of rigour. International studies have clearly shown that inclusive curriculum strategies have significantly improved student engagement, retention and success for all students, not just under-represented groups. (Froyd & Ohland 2005) Currently models of lifelong learning are isolated across a small number of universities and disciplines. There is little specific guidance about participations of under-represented groups for educators. This project will supply necessary strategies for embedding these lifelong learning models in discipline-specific curriculum. The project will challenge the entrenched attitudes that diversity is not achievable in specific disciplines and in so doing it will create a template for transforming all disciplines into more inclusive areas of study.

Thirdly this project sits at the core of the RMIT University mission, the lead institution. The *RMIT University Strategic Plan to 2010* details the university's commitment to providing quality education which will "ensure flexible, useful pathways and learning opportunities for students" (*RMIT Strategic Plan, Priority 4*) RMIT University, along with the partner universities in this project, recognise the critical importance of continuing to build and focus on the development of learning pathways across the education sectors both locally and internationally. To date, RMIT University has, through the use of Internal Learning and teaching Investment Fund (LTIF) grants in particular, developed effective flexible, transparent and equitable learning pathways with a particular focus in built environment areas. This meets the needs of industry in developing a qualified work force and addresses "the specific needs of learners who are disadvantaged or under-represented at the university" (*RMIT Strategic Plan, Priority 4*). As the university's mission identifies, RMIT is committed to increasing the number and effectiveness of learning pathways which are responsive to students needs and to labour workforce requirements.

Finally the partner universities – UWS, UTS and Curtin University – are all committed to research examining the cohort diversity improvements arising from the introduction of effective pathways models and have embedded in their various strategic plans, deliberate and sustained commitments to this effect. This level of support indicates both the relevance and priority of the rationale to undertake this research.

## 2.3 Project design-The DEMO matrix

The project was designed around 4 key phases over a 24 month period. Each phase lasted for approximately 6 months, although the project phases were overlapping and project dissemination was ongoing. Table 3 provides a summary of each of the phases, outlining the methods utilised at each phase and the purposes of each phase.

### 2.3.1 Phase One

Phase one of the project commenced in July 2010 and concluded in December 2010. The overall aim of this phase was to establish and expand the main themes of lifelong learning (pathways) models by developing baseline knowledge about current



pathways and articulation practices within the tertiary sector as they pertain to the built environment discipline. By developing a focus upon successful lifelong learning (pathways) models an understanding of exemplars for the development of generic and specific skills, knowledge and credentialing in the built environment discipline could be obtained. Specific knowledge was collected from interviewees about retention and support for pathways as models of lifelong learning. Two models were examined at RMIT University, Melbourne. In this first phase, the project systematically analysed successful initiatives and transparent pathways that allowed harmonised planning, increased student diversity, provided better responses to the needs of the students and industry, and allowed greater flexibility in skills/qualifications delivery. In this phase existing literature on diversity and pathways was reviewed. Also during this stage a pilot survey of the proposed national survey was administered at one university (RMIT) to ascertain effectiveness and the viability of the DEMO matrix in evaluating diversity.

### 2.3.2 Phase Two

Phase two of the project commenced in January 2011- and was completed in July 2011. The aim of this phase was to collect data by case study interview and national surveys that mapped effective learning and teaching models to achieve improved diversity.

A sector survey was administered to the 5 universities, with the largest numbers of built environment students undertaking degrees at AQF level 7. This created a picture of successful lifelong learning models which facilitated learning pathways in a systematic way and allowed documentation of both enablers and obstacles to access and participation by diverse student groups. Also in this stage, two case study sets of interviews were held at RMIT Melbourne. The two case studies were based upon differing cohorts of students: those wishing to up skill from VET to HE and those who already had unskilled from VET to HE. It was this case study data that allowed effective strategies that achieved diversity to be mapped against future case studies of partner university practices. The case study interviews were analysed using the DEMO matrix for diversity (see chapter 2.5).

Table 3: Project Phases, Methods

Project Stage	Methods and Methodology	Purpose
<b>Phase 1</b>		
Review existing models	Desktop Review of National and International Research  Conference Attendance Equity 101- Social Inclusion in Higher Education (Melbourne, 2010)	Identify known literature on pathways and diversity  Identify research Methodology used to develop DEMO Matrix
Pilot Survey	Purpose designed Likert scaled survey administered to pilot group at RMIT University (sample n=135)	Identify VET/HE Pathways and viability of DEMO Matrix as Analysis Tool

Project Stage	Methods and Methodology	Purpose
<b>Phase 2</b>		
Sector Survey	Modified survey distributed to RMIT Construction Management Students (n=790)	Established data base of numbers and characteristics of articulating (pathways students)  Apply a Diversity "lens" to pathways students to ascertain patterns of participation and continuance
Case study-One (RMIT) Schools pathway	Analysis of Database information using factor analysis	Ensure consultation about pathways experiences in educational institution  Establish data about stakeholder experiences/ concerns
Grad Certificate Construction (RDO) pathway	Interviews with key stakeholders - students - administrators Analysis of data using DEMO Matrix (Gale, 2009)	Obtain perceptions of participation in HE through pathways

### 2.3.3 Phase Three

This phase of the project lasted approximately from July 2011 to March 2012. The overall aim of this phase was to evaluate the collected data against the DEMO matrix for outreach and student equity and provide a best practice template for improved practice. This phase also involved collection of additional case study data and interviews from University Western Sydney (UWS) and UTS University of Technology Sydney (UTS). This data provided a number of additional sources of information for the project. It established quantitative data on the number and diversity and characteristics of pathways students at UWS and UTS as well as qualitative data on the characteristics of pathways (articulating) students at these institutions. This meant that existing data on characteristics of pathways and non-pathways students in construction could be refined and added to in the total data picture. Following the data trails also meant that the researchers could ensure the collected data addressed key objectives of the project, particularly to develop schema to discern and map elements of diversity best practice in each pathways model examined

An added advantage of this phase was the opportunity to ensure that consultation about pathways experiences in educational institutions was advanced and kept on the policy agenda of built environment disciplines.

Finally, this phase of the project developed exemplar lifelong learning (pathways) templates that could deliver best practice student cohort diversity. This phase led to an understanding of best practices and the overall response to the project question of achieving greater diversity of built environment cohorts in tertiary institutions.

### 2.3.4 Phase Four

This phase of the project commenced in Jan 2012 and was formally completed in July 2012, although a number of dissemination activities such as the book launch and the video presentations were ongoing into December 2012. The overall aim of this phase was to evaluate and disseminate the outcomes of the project across both the built environment sector and the wider higher education sector.

In this phase the project team repeated the national benchmarking exercise (from Phase 1) at three partner universities, UTS, Deakin and RMIT to determine changes following the understandings of Phase 3. As a result a number of recommendations arising from the project were formed. Thus the final phase of the project trialled and evaluated lifelong learning models in higher education institutions seeking to address student cohort diversity and transparent, efficient pathways.

In this phase a number of dissemination activities were commenced and completed including a summary of published project reports and conference papers to facilitate project discussion and interest.

Table 4: Project Phases ( cont)

Stage	Methods/Methodology	Purpose
<b>Phase 3</b>		
Case study Two (UWS)	Modified survey administered (n=1750)	Establish quantitative data on number and diversity and characteristics of pathways students at UWS
UWS College pathway	Interviews with key stakeholders - students - staff	Establish qualitative data on characteristics of pathways (articulating) students and staff at UWS
Analysis of Data from Surveys and two case studies	Apply DEMO Matrix (Gale, 2009) to each pathways model chart results against the equity orientation scale (NCSEHE, 2011)	Refine/add to existing data on characteristics of pathways and non-pathways and non-pathways students in construction
Case Study Three (UTS)  -Ultimo TAFE Pathway	Modified Survey distributed and administered (n=790)  Interviews with key stakeholders - students - staff (n=10)	Ensure research data addresses key objectives of the project, particularly to develop schema to discern and map elements of diversity best practice in each pathways model examined  Ensure consultation about pathways experiences in educational institutions
Analysis of surveys and case studies	Meta-analysis of survey data using DEMO Matrix  Descriptive analysis of interviews using DEMO Matrix (NCSEHE, 2010)	Ensure project objectives of identifying best practice pathways models in student diversity  Evaluating and disseminating these models across the built environment and higher education sector
<b>Phase 4</b>		
Research Dissemination	Monograph of Project Papers  Pathways Videos -Diversity in Construction -Lifelong Learning  Summary Sheet Project Outcomes	Summary of published project reports and conference papers  Facilitate project discussion and interest
Final Project Report	Analysis of all literature and data (statistical analysis, interviews, group roundtables and literature) against project objectives	Satisfies project funding contract

## 2.4 Project Methods

Three data collection methods were employed in this research: a national survey and case study interviews, along with desktop literature reviews. Both the national survey and the case studies addressed the following cohorts of under-represented groups in higher education:

- Students from rural and remote regions (RMIT, UWS, Curtin)
- Students from low socio-economic backgrounds (RMIT, UWS, UTS)
- Students who are mature aged without tertiary qualifications (RMIT)
- Students involved in VET programmes (RMIT; UTS)
- Students who are the first in their family to attend university (UWS)
- Students who do not aspire to university education (RMIT)

### 2.4.1 The national survey

The survey was conducted between March 2011 and November 2011, across five tertiary institutions:

- RMIT Melbourne
- University Technology Sydney
- University Western Sydney, NSW
- Deakin University, Victoria
- Curtin University, W.A.

These institutions between them have approximately 75% of all enrolled students in the built environment discipline in Australia. Approximately 900 surveys were distributed and 828 responses were received. The survey forms were given to each built environment course coordinator for distribution to students in class. The completed survey forms were returned anonymously into a closed box. The high response rate indicates the support from Heads of Schools and partner institutions for the project and its objectives. (see appendix A)

The survey was based on a paper-based questionnaire, which was adapted from similar studies of (Gale et al. 2010). the DEMO Matrix developed by Gale et al (2010) at the National Centre for Student Equity in Higher Education (NCSEHE, 2010). The DEMO model provides a conceptualization of the relationship between particular features of effective programs that are designed to improve equity and access of under-represented students in higher education. The survey questions and their relationship to the four DEMO strategies are demonstrated in the following table.

Table 5: Hypothesized Pathways Matrix based on DEMO (Gale, et al 2010)

Assembling Resources	Engaging learners	Working together	Building confidence
Q11.1 TAFE created opportunities for me to talk to others about the industry or further study (People Rich)	Q12.1 My education from TAFE was valued at university	Q13.1 TAFE and university work well together for students (Collaboration)	Q14.1 I had access to sufficient resources and appropriate teaching material in TAFE (Communication and information)
Q11.2 I was mentored throughout the TAFE programme (People Rich)	Q12.2 TAFE people encouraged me to undertake University (Recognition of difference)	Q13.2 I received good support when I did work in groups of peers while in TAFE. (Cohort-based)	Q14.2 There was good communication with the teachers in TAFE. (Communication and information)
Q 11.3 I was able to access funding support for my TAFE (Financial Support)	Q12.3 The TAFE programme prepared me well for University (Enhance academic curriculum)	Q13.3The other students in TAFE supported me well	Q14.3 There was good communication with the other students in TAFE. (Communication and information)
Q 11.4 The TAFE programme I did was well known and had been running for a long time.	Q12.4 TAFE was interested in my preparation for University (Research driven)		Q14.4 TAFE gave me practical experience which helped me understand the requirements of university (familiarisation)
Q 11.5 When did you become aware of the university program that you are now enrolled? (Early, long-term & sustained)			

## 2.4.2 The case studies

Case study interviews were conducted at the following institutions:

- RMIT Melbourne
- University Technology Sydney
- University Western Sydney, NSW
- Deakin University, Victoria

The interviews were recorded and conducted by one of the project team members. A total of 22 face to face interviews were conducted with students and 3 interviews were conducted with staff over an eight month period. Students selected were those who had identified themselves as being articulators from TAFE or pathways students. In all five case studies were developed from the pathways models examined. These five case studies addressed the following cohorts of under-represented groups in higher education:

- Students from rural and remote regions (RMIT, UWS)
- Students from low socio-economic backgrounds (RMIT, UWS, UTS)
- Students who are mature aged without tertiary qualifications (RMIT)
- Students involved in TAFE/VET programmes (RMIT; UTS)
- Students who are the first in their family to attend university (UWS)
- Students who do not aspire to university education (RMIT)

Case study interviews were not conducted at Curtin University as the student cohort at Curtin was used as the control group for the project, in both the national survey and in the overall number of students moving into higher education through a pathways model.

## 2.5 The DEMO model

The Design and Evaluation Matrix for Outreach (DEMO) was developed by Gale., Hattam, Comber., Tranter, Bills, Sellar,. & Parker. (2010), at the National Centre for Student Equity in Higher Education. The matrix provides a conceptualization of the relationship between particular features of effective programs that are designed to improve equity and access of under-represented students in higher education. Prompted by the *Bradley Review of Australian Higher Education (2008: 37)* and its call for “a more sophisticated approach” to outreach, the matrix draws on work by Anderson on access to higher education in Australia.

Anderson & Vervoorn (1983) identified four necessary conditions for entry: the availability of places, students’ academic achievement, the accessibility of higher education to qualified aspirants, and students’ aspirations for higher education. Anderson imagined these conditions to have causal associations: availability influencing achievement, achievement and aspiration as mutually influential, and both influencing accessibility.

The research also identified seven of these 26 programs as case studies. Drawing on the international research literature and on case study exemplars undertaken as part of NCSEHE studies, Gale et al (2010) were able to identify a number of determinants, strategies and perspectives of successful outreach models.

Their research indicates that programs that are quite likely to increase the number of disadvantaged students going on to higher education than otherwise would have been the case, exhibit at least 4 (from 10) design characteristics, 3 (from 4) implementation strategies (see figure 4). This is then translated into an equity perspective.

*Figure 4: Four strategies and ten characteristics of outreach programs*

<b>Assembling Resources</b>	<b>Engaging learners</b>	<b>Working together</b>	<b>Building Confidence</b>
People –rich	Recognition of difference	Collaboration	Communication/information
Financial support/incentives	Enhanced curriculum	Cohort-based	Familiarisation/site experiences
Early intervention/sustained	Research driven		

*Source: Gale, Sellar et al. 2010: 15*

These characteristics or determinants, strategies and perspectives form the basis of a meta-analysis, which was named the Design and Evaluation Matrix for Outreach (DEMO). The DEMO foregrounds program conceptualisation and design as significant factors contributing to the likelihood of programs making a difference for disadvantaged students. In these terms, the overall effectiveness of a program depends on the combination of depth (the number of characteristics or determinants), breadth (the number of strategies), and equity orientation (the number of equity perspectives).

The combination of characteristics or determinants with the orientation of the program provides a better abstract indicator of likely effectiveness than specifications of required program structures or checklists of required features. Yet there can be no simple formula for a sophisticated approach to outreach activities.

The DEMO was not designed to be used as the final arbiter of a program’s merit. Instead, it was intended to be used to promote discussion and debate, to inform design and to strengthen evaluations that also draw on a range of other data (Gale et al, 2010). By using the DEMO to analyse the data in this research project, the project is able to evaluate and contribute to the debate about the effectiveness of pathways models in the built environment discipline.

The DEMO Matrix emphasises the importance and value of combining or determinants and draws attention to the strengthening of pathways programs that results from synergistic relationships between different determinants and strategies.



It is an ideal tool to categorise the diverse responses given for students undertaking higher education. The DEMO matrix has been specifically developed to evaluate the likelihood of success of particular models in under-represented and disadvantaged individuals accessing higher education. By applying it in this project, it can categorise the responses and predict the likelihood of the responses as “enablers of access” to higher education or up skilling in the construction discipline.

Analysis of the national survey and the case study data was undertaken using the DEMO matrix, with emphasis on the determinants and strategies as indicators of achieving cohort diversity in built environment disciplines.

## 2.6 Summary

This chapter has outlined the key methods and methodology used to collect and interpret data in this project. It has also introduced the DEMO model of equity as an evaluative matrix. The next chapter examines existing data about pathways models and their effectiveness as access and equity models for higher education.

# Chapter 3 Literature Review

## 3.1 Introduction

One of the key objectives of this project is the development of baseline knowledge about current pathways and lifelong learning models within the higher education sector. It is important that the findings arising from the project recognise and extend the knowledge and understandings of the literature around student and qualification 'pathways' within the Australian tertiary environment as models for Lifelong Learning. This chapter reviews some of the existing information and draws upon a mix of independent academic research, government sponsored research and government policy documents, from 2006 onwards and using two previous extensive literature reviews as a base:

- *Phillips KPA (2006) Giving Credit where credit is due: A national study to improve outcomes in credit transfer and articulation from vocational and technical education to higher education*
- *Harris, Rainey & Sumner (2006) Crazy Paving or Stepping Stones Learning pathways within and between vocational education and training and higher education (2006).*

For the purposes of this review, 'pathways' are defined in accordance with the broad meaning expressed in the revised Australian Qualifications Framework, (AQF) (AQFC: 2011) as '*facilitating student movement and navigation into, between and through qualifications within the AQF, with full or partial recognition for qualifications and/or learning outcomes already possessed*'.

Pathways can take a number of different forms and shapes; some are loosely formed, others tightly knitted. In terms of scoping and organising the literature for this project, three key research themes have been identified:

- The drivers for Pathways
- Terminologies and Typologies around Pathways
- Pathways in Practice.

As with any literature review, there is a broad body of work on this subject but the project acknowledges that some authors may not be represented. The scope is also limited to the Australian context, recognising that this is an area of significant global interest and ongoing developments.

## 3.2 The literature pre 2006

The literature review for the *Giving Credit study (Phillips KPA: 2006a)* canvassed the principal research undertaken over the previous decade. It identified a strong focus on government commissioned research with its built-in requirements and directions. It also pointed out that much of the research undertaken to that point of time was

done without reference to previous research or to international studies and that it had a strong emphasis on case study methodology.

This literature review categorised the research into three types, all connected either directly or indirectly with government policy and initiatives of the period in support of pathways. The first category was academic research. Examples cited included: Teese, Gulac and O'Brien (1999); Wheelahan (2000); Robinson and Misco (2003); Harris, Sumner and Rainey (2005).

The second category was termed strategic, key examples including Lewis (1992, 1993, 1994) & NBEET (1989-1992); Golding, Bluer & Keating (1996); Carnegie (2000); Wheelahan et al (2002); ; Gillis, Bateman, Foster and Griffin (2005). This research was undertaken for a variety of government agencies including NBEET, ANTA, AQFAB, DEST and State governments.

The third category was identified as independent research, sometimes with a critical edge and included the work of Moodie (2003 & 2005).

The PhillipsKPA literature review noted the key themes driving the research of that period. These included improving access and equity, increasing efficiency of education provision; identifying the barriers and complexities involved in credit and pathways; examining the exemplars and enablers; and, building greater seamlessness between the sectors through the introduction of policy improvements based on research. It noted that lifelong learning was becoming a more recent driver.

The review also noted the difficulties of undertaking valid research, particularly in relation to data collections and the complications derived from differing understandings of the terminology in use.

The other major literature of this period was undertaken by Harris, Rainey and Sumner (2006) in their research paper for NCVER entitled *Crazy Paving or Stepping Stones? Learning pathways within and between vocational education and training and higher education*. This literature review was in two parts: the first looked at pathways at a broad level, whilst the second addressed careers education and development. The pathways section centred particularly on pathways for youth across the spectrum of school, tertiary education and work, citing Misco (1999) and McKenzie (2000), and referencing Finn (1991), to set the boundaries. This literature review focused primarily on policy related documents of the period (from the mid-1990s to 2004/5) and canvassed a range of materials from the Australian National Training Authority (ANTA), as well as key documents from the then Ministerial Council (MCEETYA), the then Commonwealth Government (DEST) and State Government. A notable omission was the joint work of ANTA and the AVCC in developing nationally agreed policies on qualifications linkages and pathways arising from Carnegie (2000).

This literature review also considered the main themes arising from the academic research of the time, which included types of pathways and patterns of student movement, alongside initiatives and barriers to pathways. Data studies referenced in the review included the work of: Teese and Watson (2001); Moodie (2003); Karmel and Nguyen (2003); and Harris et al (2006). In terms of studies on the directions of student movement, (which was the central focus of the Harris study), the work of Spiering (2001), Unwin (2003), Anderson (2003), Karmel and Nguyen (2003) Moodie (2004) and Harris, Sumner and Rainey (2005) were noted.

In relation to the twin themes of initiatives to facilitate pathways and the identification of key barriers, (particularly from VET to HE), this literature review drew on the work of Wheelahan (2001), Moodie (2003 & 4), Ticknell and Smyrnios (2004) and Harris (2004). Much of this research centred on the differences between the competency-based model of VET and curricula structure of HE learning, particularly Moodie (2003) and Anderson (2004). This research also covered the identification of related barriers, such as theory versus practical learning, teaching styles, academic standards and workloads differences.

On initiatives to facilitate pathways, this literature review focused on the main models for developing pathways - credit transfer, articulation, joint courses development and other initiatives which bring the sectors closer together.

### 3.3 The literature from 2006: the Phillips KPA Study

*The Giving Credit Study (Phillips KPA: 2006 a, b & c)* is used as the starting point for this literature review. It provided a comprehensive and thorough analysis of current practice and set out the key issues around pathways at the mid-point of the first decade of this century. It is also widely recognised within the later literature, particularly in relation to research focusing on linear pathways from VET to HE, providing a framework for other relevant research.

As set out in the project title – *A National Study to Improve Outcomes in Credit Transfer and Articulation from Vocational and Technical Education to Higher education*, this project focused specifically on vertical pathways from VET to HE. As with most government commissioned research, both the focus and project requirements were predetermined. This included analysis of current practice against the MCEETYA Good Practice Principles of 2005 (identified by the project sponsors as the benchmark for good practice).

The study led to three separate published reports. The first, Phillips KPA (2006a) set the scene of the study and addressed the need to clarify terminology and develop a new typology around pathways. This report also outlined the key drivers, barriers and current state of play in implementation of pathways using available data. The literature review (referenced above) formed part of this report, along with a brief overview of the Australian policy context and international developments. The second report, Phillips KPA (2006b) covered seven case studies on institutional partnerships and pathway arrangements with the key findings summarised as a basis for best practice. The final report, Phillips KPA (2006c) drew on all the findings to

provide a model of best practice, reporting against the MCEETYA Good Practice Principles. The report identified various recommendations for improvements, which were broadly endorsed by the Ministerial Council of the time.

Drawing on this body of work, the literature that has followed is delineated into three broad themes.

### 3.4 The drivers for pathways

A recurring theme in both the earlier and more recent literature is exploration of the drivers for developing pathways. These are identified under the following headings, noting the interconnections:

- Government policy drivers
- Improving Access and equity
- Meeting the needs of industry and the knowledge economy
- Institutional drivers
- Individuals and Lifelong learning

#### 3.4.1 Government policy drivers

The external policy context set by government has long been identified in the literature as a significant driver in promoting and guiding the development of pathways. This literature includes specific government policies on pathways in conjunction with broader policy around tertiary education impacting on pathways; the research reports underpinning these policies; and the work of academics/researchers commenting on policy directions and implications.

(Phillips KPA, 2006a) referred to this factor as part of 'system-level drivers', that are closely linked with broader policy concerns about educational opportunities, access and equity, system efficiencies and outcomes for the community in general.

This driver has historically focused on giving support to vertical and linear pathways from VET to HE. Both past and current national policy documents relating to pathways emphasise this focus, although the most recent national policy reflects an increasing recognition of the diversity of pathways needed to support student needs (AQFAB: 2002 & 2007) and (AQFC: 2011).

A new paradigm for the higher education sector emerged with the publication of the Bradley Report (2008) and subsequent broad acceptance by government of key recommended reforms including: new participation targets for both bachelor and diplomas combined with new equity targets for participation; the introduction of demand based funding of higher education; the establishment of two new regulatory agencies; and, a new Tertiary Ministerial Council. Whilst pathways were part of the reform package, they were not centre stage (Wheelahan: 2010a).

Bradley called for a 'more flexible and responsible tertiary and training system with closer links between VET and higher education' encompassing closer collaborations, shared information bases, integrated responses to workforce needs, especially in outer metropolitan and regional areas, more efficient regulatory and accountability frameworks and clearer and stronger pathways between the sectors in both directions (Australian Government, 2008).

The federal government response to Bradley recognised that VET and HE have different purposes whilst supporting improved interconnections with a continuum of delivery in both directions (Commonwealth of Australia, 2009). This position was reinforced by Skills Australia (2011) in its Roadmap to the Future policy statement.

Some commentators have argued that both the Bradley Report and the government's response has not really changed the status quo, maintaining the historical policy legacy, of sector distinction and focus, whilst seeking to support better conduits for students to move through the separate sectors of the tertiary system (Karmel, 2008; and Moodie et al, 2009).

Wheelahan (2010a) argues that pathways must become centre stage in a coherent tertiary education policy if the Bradley participation and equity targets are to be met (see also below on equity as a driver).

Other writers have commented on the blurring of the boundaries being brought about by meeting the participation targets, the new forms of combined curriculum/qualifications and changes to a more vocational/higher education system (Bridgestock, 2009; Skills Australia, 2010; Brown et al 2010).

In response to Bradley, the government commissioned the Australian Qualifications Framework Council (AQFC) to do further work on pathways. Carnegie (2009:8) in her Review of Policy and Regulation for the AQFC Pathways project noted that the multiple Commonwealth, COAG and national key policies and regulatory systems governing tertiary education supported pathways in principle but policy settings were incoherent and many failed to reference the AQF and its associated pathways policy within their policy settings. The Final Pathways Project Report to the AQFC (AQFC: 2009) suggested a range of policy reforms, which informed the new Pathways Policy within the revised Australian Qualifications Framework, (AQFC, 2011) and aspects of the revised Framework.

In this revised AQF, pathways are both integral to the framework (as set out in both the AQF Levels and qualifications descriptors) and mandatory for issuing institutions (AQFC, 2011:76). The AQF Levels creates a new set of relationships between the sectors, often implicit but now explicit (Phillips KPA, 2010).

### 3.4.2 Access and equity

Access and equity has been identified as a key and consistent driver for pathways, and made more potent by the equity participation targets for tertiary education set by the government in response to Bradley (Wheelahan, 2009c).

The importance of pathways in providing improved equity and access for higher education was noted by Phillips KPA (2006a); referring to pathways as providing 'second chance', by increasing equity groups movement to higher education and giving students more options. Curtis (2009) noted the equity focus of pathways by previous policy makers and that, in the context of Bradley, an extension to effective credit transfer arrangements would help meet these equity targets. Abbot-Chapman (2011) has referred to the higher levels of equity outcomes in regional universities, which forms part of broader policy instruments for regional development, including connections and pathways with VET.

Skills Australia (2010) identified VET as having greater equity in its student base than HE and that within VET there is a ladder of opportunity. However, Wheelahan's work suggests otherwise. Her work for the Pathways Project and (2009c) found that this ladder of opportunity was limited in terms of further study outcomes for VET students; particularly those in Certificates I & II and that, by SES profile, lower SES were dominant in Certificate level qualifications.

Wheelahan notes the diploma qualification as the key qualification for pathways to HE and, thus, potentially for equity. However, her analysis of the SES profile of diploma students showed similar backgrounds to higher education participation, concluding that VET pathways do not on the whole widen participation of low SES groups in higher education; rather they deepen participation of existing groups in HE (Wheelahan, 2010a).

Wheelahan also notes that differing social theorists see pathways as one way of resolving the tension between meritocratic principles and social justice principles in education but also reflects that this isn't necessarily what happens in practice (Wheelahan 2010a). A key issue for equity policy in both sectors is to increase the participation of low SES students, located in lower level VET qualifications into higher AQF Level VET qualifications, thus providing the benefits of higher level VET and greater access to HE. This approach, from an equity perspective, would support several Bradley targets together in a coherent tertiary policy approach to equity. From this perspective, pathways become centre stage, not something at the margins of tertiary education policy (Wheelahan 2010).

Phillips KPA (2010) also linked the participation targets to pathways, noting that alternative ways for acquiring degrees (without reducing the final requirements for a degree) will be needed to meet the targets. Aird et al (2010) also see the targets as being linked to increasing opportunities for adult learners, low SES and indigenous and rural and remote Australians.

#### 3.4.4 Meeting the needs of work and the knowledge economy

A third driver within the literature is the changing nature of work and the needs of both industry and students to have the skills and knowledge needed for current and future employment, changing careers and the needs of the knowledge economy.

Phillips KPA (2006c: 6) noted that increasingly work and career paths will require a mix of educational backgrounds and experience and that employers want work ready graduates with a mix of vocational and higher education learning outcomes. This report also noted emerging skills shortages and the role pathways can play in meeting these, such as in nursing. From the student perspective Phillips KPA identified a growing recognition that combining VET and HE will enhance employment opportunities.

At a broader level, the knowledge economy of the 21st century is demanding greater integration in which institutions of higher learning are flexible, responsive, inter-sectoral and interdisciplinary, with VET and HE institutions connected at many levels ( Abbot-Chapman, 2011), allowing many types and directions of movement within and between education sectors throughout life (Harris and Ramos, 2011).

Skills Australia (2010a) has called for a new partnership approach to workforce development with a shared agenda between all the players including business and industry bodies, enterprises, government and education providers across sectors. Healy and Leone (2010:64) argue the current approach to articulation, pathways and workforce needs is ad hoc and greater collaboration between education providers and employers on curriculum alignment, clear articulation pathways and workforce requirements is required.

The Integrated Articulation and Credit Transfer Project (IACTP) have adopted such an approach, proposing a 3D Workforce Driven Engagement Model for developing articulation pathways. This 3D model sees industry as an equal player with VET and HE institutions in developing pathways 'that are clear, job –orientated, career track with multiple entry and exit points linked to career outcomes/stages'. (Paez et al: 2011a,). This partnership model is postulated as the way forward in addressing both employer needs for immediate skills from graduates and better pathways within the tertiary sector. Such an approach has much in common with the UK *Foundation Degree approach to pathways (Higher Education Funding Council of England:2010)*. A step-by-step Guide to developing this 3D model for pathways is set out in Paez et al (2011b).

### 3.4.5 Institutional drivers

Two key institutional drivers were identified by Phillips KPA 2006c: educational mission and student recruitment.

On mission, this report noted that different VET and higher education institutions have different missions, goals and values and that some place much higher value on cross-sector collaboration and pathways developments. The case studies (Phillips KPA: 2006b) identified a range of factors that linked pathways to institutional mission including links to building equity; by legislative requirement (in the case of dual sectors); creating market presence as a pathway provider; building regional and community links; developing collaborative precincts. Where pathways formed part



of institutional mission, Phillips KPA found a roll-on effect that led to greater systemisation of pathways.

Wheelahan (2010) notes that the dual sector universities have begun to emphasise their dual sector mission as tertiary institutions, and begun to focus more directly on pathways.

On student recruitment as a driver, Phillips KPA 2006c noted the downturn in domestic student demand for HE, evident at the time, was acting as a powerful driver for supporting VET student pathways, particularly for universities in regional and outer metropolitan areas. In this context the notion of recruiting and selecting universities come into play; the selecting universities being far less likely, historically, to invest in pathways (Wheelahan:2009). Jackson et al (2010) found that the primary motivation for pathways development by the institutions involved in their study was to respond to the new tertiary policy environment; that this had become a key institutional driver.

### 3.4.6 LifeLong Learning

A further driver considered in the literature is the need to create education systems that enhance and support lifelong learning and individual mobility both to meet the needs of individuals for ongoing education across a lifetime and to enhance economic and social outcomes that flow from a continually learning society.

This driver is a particularly important in the European context with key policies and strategies of the European Union, the OECD and CEDEFOP all embracing lifelong learning as a key education concept. The EU has established a Lifelong Learning Programme that supports the EU 2020 Strategy *'to make lifelong learning a reality by implementing lifelong learning strategies and by developing qualifications frameworks and measures to enable more flexible learning pathways...notably in the context of the Lisbon process and Education and Training 2010 Work Programme, as well as the Bologna and Copenhagen processes and their successor.'* (EC, 2011p.29-30).

The OECD's concept of lifelong learning has four main features: a systemic view; centrality of the learner; motivation to learn and multiple goals of education (OECD, 2007:10). Mechanisms that link qualification systems and lifelong learning are seen as critical; qualification systems that focus on making progression (vertical and horizontal) clear, increase flexibility in future qualification routes, facilitate credit transfer extend recognition, clarify linkages between qualifications and eliminate barriers to qualifications provide such linkages (OECD, 2007p.99).

As a policy driver in Australia over the last decade, lifelong learning has not held the centre stage of European organisations, perhaps because of the stronger focus on managerial and market models of education in this country (Watson, 1999p.17). However, it is often cited as underpinning relevant policy including the AQF Pathways Policy (AQFC, 2011p.64).

## 3.5 Terminologies and Typologies

### 3.5.1 Developing a common lexicon around pathways

One of the issues raised in the Phillips KPA Report (2006c) was the lack of consistent meaning given to various common terms such as credit transfer and articulation in the literature and by those involved at the coalface in developing pathways.

Phillips KPA recommended that further research was needed on developing a common language around terminology; a further recommendation from this landmark report was to amalgamate existing disparate national policies to support consistent understanding and coherence in policy settings.

Research was undertaken for the Australian Qualifications Framework Advisory Board (AQFAB) by Carnegie (2008) and included a comprehensive overview of the terms and definitions in use, at that time, by HE and VET providers, government agencies and industry bodies. The outcome was a proposed set of national terms with definitions based on majority use and understanding by the organisations participating in the research. Carnegie's final report proposed a Credit Terminology Framework, consisting of three parts: terms to describe credit inputs (types of learning), terms to describe credit processes (credit transfer, articulation and Recognition of Prior Learning (RPL)) and the terms defining credit outputs (the forms in which credit is granted).

The Credit Terminology Framework underpinned the amalgamated policy developed and approved as an Interim Policy for the Australian Qualifications Framework Council, AQFC (2009). This Interim Policy was replaced by a new, more concise policy, forming an integral part of the revised Australian Qualifications Framework (AQF) by the AQFC (2011), with the definitions of the common terminology sitting inside a broader glossary of educational terms to support the whole AQF.

### 3.5.2 Typologies and pathways

Related to the issue of terminology, some literature also includes a focus on the development of typologies for pathways and examination of the different arrangements or development approaches to creating pathways. Such typologies give meaning to the terminology (although often conflicting) and for describing the different ways that pathways can be developed.

Phillips KPA (2006a) initially proposed two typologies for developing pathways from VET TO HE, testing these through the case studies. The final report (Phillips KPA, 2006c) proposed a single typology that commences with admission, with or without credit, and the identification of two routes into HE – credit transfer arrangements and Recognition of Prior Learning (RPL). The term 'articulation' was specifically dropped from the lexicon, whilst credit transfer was subdivided into three types - unstructured, structured or integrated cross sector awards. The advantages and disadvantages of each approach were set out in conjunction with a Guide to Good

Practice (Phillips KPA 2006c). The Study supported 'structured' arrangements over 'unstructured' because they provide more certainty and consistency and are less resource intensive and systematic.

Phillips KPA (2006) recommended that more work was needed on terminology and typologies and this was undertaken by Carnegie (2008), for the AQFAB. She took a different perspective on articulation reincorporating this term as part of a proposed Credit Terminology Framework. In this typology, credit was identified as the central focus with the inputs, processes and outputs of credit forming the architecture of the framework, wherein:

- inputs for credit represented the different forms of learning (formal, non-formal and informal)
- processes for determining credit included credit transfer, articulation and RPL
- outputs were the different forms of credit – taken as block, specified and unspecified.

Individual/unstructured credit transfer (terms used by Phillips KPA, 2006) was recast as a form of RPL, whilst integrated qualifications combining VET and HE were excluded from the typology on the basis that they do not provide a credit outcome (but constituting a separate pathways model).

As part of the AQFC Pathways Project, Carnegie (2009) delineated pathways into three system types: credit based pathways; pathways through qualifications design; and pathways for access. Each of these pathway approaches was layered within a further typology depending on the way students could use them – as a directed, self-directed or individualised pathway. Pathways created through qualifications design (involving the combining of elements of both VET and HE into new or hybrid qualifications) were identified as particularly relevant for improving the connectivity between VET and HE in a post Bradley tertiary education system. Carnegie outlined four approaches to these qualifications - integrated, interconnected and embedded qualifications, alongside a repositioned Associate Degree. Wheelahan (2009c) in a paper for the same project referred to five types of pathways from VET to HE: admission ; bonus points for a VET award towards tertiary admission; structured pathways that may be standardised or customised; enhanced pathways offering more credit through collaborative development; and guaranteed pathways, such as dual offers.

Phillips KPA (2010) undertook further research into the provision of pathways by qualifications design for NSW BVET. In this project, these were called integrated qualifications with a typology that comprised four models:

1. Simultaneous enrolments in a combined VET and HE program but with separate delivery of sectoral components
2. Embedding a VET qualification within a degree
3. Using the Associate degree as an integral part of an integrated degree with integrated curriculum and delivery by either sector
4. A new totally integrated model for rural provision with pooled funding.

Jackson et al (2011a) have developed a further typology as part of the DEEWR funded Integrated Articulation and Credit Transfer Project. This typology proposed articulation as the overarching term with three types of articulation models:

- End-on models including entry only, credit transfer from VET to HE and credit transfer from HE to VET
- Embedded VET models - involving VET embedded in HE and
- Concurrent study models – involving concurrent study at both VET and HE institutions.

In this typology both credit transfer and integrated qualification pathways become a subset of articulation, rather than separate types of pathways.

As this aspect of the literature review shows, despite all the work since 2006, there is still no agreement in the field and in policy on definitions of terms and typologies and both continue to shift in meaning and focus.

### 3.6 Pathways in Practice

The literature examining practice and implementation of pathways has followed a number of threads. For the purposes of this Literature Review these are identified as:

- Patterns of student movement and data studies on transfer
- Organisational arrangements for developing pathways
- Enablers and barriers
- Evidence of practice

#### 3.6.1 Patterns of student movement and data studies on transfer

Whilst national policy settings have traditionally focused on building linear and more seamless pathways from lower to higher qualifications, (particularly from VET to HE), studies on student movement have shown that students do not always follow this route. This was the focus of Golding's seminal work from 1993 to 2000 examining student movement from HE to VET. In summarizing this research, Golding and Vallenge (2000) suggested that 'a two-way movement model linked to the notion of lifelong learning is more useful than a one-way articulation and credit transfer model in explaining movement and recognition between the VET and higher education sectors in Australia'. The authors proposed that a wide range of factors come into play in making sense of actual student experiences and transitions in formal education over a lifetime.

New terms were created to explain these experiences including 'reverse student transfer' and 'reverse articulation' alongside 'churning' and 'swirling', which reflected the experiences of some students in moving in and between the sectors.

Buckley's study of key players in pathways development in Western Australia (2006) found that entrenched perspectives, based on sectoral and institutional containment rather than flexible student development, offers limited hope for innovative thinking about pathways beyond a 'ladder system [that] works well-enough'.

Harris et al (2008) found that patterns of student movements are quite complex, within and across different fields of study; that students move into and out of qualifications in various ways including using qualifications as 'stepping stones' or moving in zig zags or lurches ... 'the crazy paving' approach. Curtis (2009) found similar patterns, identifying three types of student transfer: step up; sidestep and new direction. Curtis identified this mosaic of student movement as being driven by employment and career needs.

Carnegie (2009: 12,13) identified the need to delineate between general student traffic and movement and transfer that occurs through the use of pathways; the former reflects students using the qualifications system broadly whereas pathways involve creating particular routes and/or signals and supports that students can use to facilitate specific transfer destinations. Guthrie et al (2011) also distinguish pathways as 'ordered with known destinations and with routes to them clearly marked out', identifying three different types of pathways: learning, occupational and career (Guthrie et al, 2011).

Karmel (2009) in analysing NCVER student data from 2007 looked at 'reverse articulation' students and found that VET students with a higher education qualification had remained fairly static, at around 5-6% of the total student pool, over the previous five year period. Even so this percentage corresponded to over 100,000 students, significantly more than the numbers moving from VET to HE. Karmel noted that those with a HE qualification were more likely to do a non-AQF program and their motivations were varied.

Wheelahan, (2009b:), quoting from Stanwick (2006) noted the importance of the Diploma as the 'pathway 'qualification for 'step-up' or vertical pathways from VET to HE, based on the percentages of students going on to higher education with this qualification. Wheelahan's study of pathway students in Victoria and NSW found that 'VET students who apply for place in a university are offered places at a similar rate to other categories of non-school leaver applicants, at least up until 2008'. (Wheelahan, 2009b) This point was also highlighted in this author's report for the AQFC Pathways Project (Wheelahan, 2009c) and in the Pathways Project Final Report (AQFC, 2009).

Wheelahan provide some interesting perspectives on who makes use of diploma to degree pathways. Looking at SES profiles, she found little difference between diploma and higher education students (both are from higher SES), thus suggesting that whilst pathways from diplomas to degrees may provide an educational ladder of opportunity they do not necessarily lead to a social ladder of opportunity(2009b:9). Quoting Stanwick (2006) she further disaggregated diploma students into three

types – under 25s with year 12; over 25s undertaking diplomas for employment purposes an over 25s without any post school qualifications. The first cohort is much more likely to go onto university (Wheelahan, 2009b:7).

Abbot-Chapman (2011) reflected that the days of a single linear education pathway and lifelong careers are over and that increasingly students, especially disadvantaged students, will experience fragmentary careers within a mosaic of study and work destinations with a smorgasbord of choices. Guthrie, Stanwick and Karmel's study (2011) of selected 2009 & 2010 data on student movement confirmed other previous studies showing student movement occurs in every direction including movement at the same levels within VET.

Harris and Ramos (2011) also reflect that in knowledge society, many other types and directions of movement within and between educational sectors is needed rather than a linear focus on pathways. Surveying students in both Australia and Singapore who had experience of both VET and HE, they used the concept of a career capital framework to better understand pathways' decisions from the perspective of individuals. They suggest a typology of student decision making based on: knowing why capital; knowing how capital; and knowing whom capital and that within a framework of lifelong learning the freedom to move across sectors and at different ages and stages is essential in accumulating the career capital needed over a working life.

A number of data studies have been undertaken, looking at both general patterns and trends on student transfer and by Field of Education or other characteristics. Most authors sound caution over the reliability and utility of some data sets.

Phillips KPA (2006a) provided a snapshot on VET to HE transfer and credit using DEST data. In a comprehensive data study for the AQFC Pathways Project, NCVET (2009) identified nine relevant data collections that provide information on pathways comprising three groups: student enrolment data collections; graduate outcome (tracker) surveys; and analytic type surveys (NCVET, 2009: 9). Analysis of this data showed: significant variations in admissions on the basis of a VET award by universities (highest in non-aligned and ATN; lowest in Group of 8) and by field of study (highest in education, nursing and management); evidence of churning in VET; variations in data on HE students in VET.

The variations in admissions between different universities from VET to HE have been noted by other authors, including Abbot-Chapman (2007 & 2011), Wheelahan (2009), Moodie (2010) and Palmer et al (2011). Abbot-Chapman (2011) notes that more TAFE students transfer to the regional and technological universities and that institutional responsiveness and degree of inter-sectoral collaboration is not uniform. Wheelahan (2009b), analysing DEST data on basis of admission by HE provider for 2005-7, refers to the 'recruiting' and 'selecting' universities and noted that the Group of 8 universities (Go8) admit 23 school leavers for every VET student.

Some studies have also looked at VET to HE student transfer and pathways by Field of Education, including Curtis (2009); Wheelahan (2009b); Moodie (2010c) & Guthrie et al (2011). Curtis (2009: 5) found that the main fields of transfer have remained fairly constant – business, education and nursing, with 40% of transfer students moving into HE in the same field as their VET studies. Wheelahan (2009b) noted that VET students are underrepresented in professional faculties such as medicine, dentistry and law... reflecting the unequal relationships between universities and VET institutions and the hierarchical structure of degree courses. Moodie (2010c) found transfers from VET to HE were most important in the fields of nursing, education and IT with management and commerce having the largest share of undergraduates admitted on the basis of a VET qualification. The fields with the lowest upwards transfers included engineering and natural and physical sciences. Moodie suggests that strategies are needed to redress these variations by field such as incentives or specific measures similar to the equity incentives to universities by the government.

Some studies have focused on examining pathways in a particular Field or Sub-Field of Education. These include:(King et al, 2011)engineering ; (Mills and McLaughlin, 2010;2011)construction management ; (IBSA, 2011)VET educators; (Kimberley-Parsons 2010)nursing; (Phillips KPA2006b)nursing; (CSHISC: 2009)mental health workers; early childhood educators (Watson, 2006).

### 3.6.2 Institutional and organisational arrangements for developing pathways

The literature considers a number of different institutional arrangements for developing pathways. Most common and long standing are the partnership arrangements between individual VET providers and universities, particularly in the context of credit transfer and/or articulation agreements. Phillips KPA (2006a, b & c) explored this model in some detail, particularly through the institutional case studies (2006b). Case studies can provide an interesting snapshot in time but rarely over time; Carnegie's (2009) updates of some of the Phillips KPA case studies provide an evolutionary perspective of growth and development.

Moodie et al (2011) refers to this model of institutional partnerships between the sectors as one that maintains differences between the sectors whilst using pathways as the conduit.

Some studies have looked at broader partnership which include other organisations working with the HE and VET partners such as schools, industry and Industry Skills Councils and local government as a mechanism to broaden pathways and support regional development. Kimberley-Parsons (2010) reflects on the need for expanding partnerships in nursing to include schools, TAFE, University and industry in the Hunter region; Skills Australia (2010) identifies a key role for Skills Councils in partnerships; Cram (2011) suggest the need for a framework for developing regional pathways and courses involving industry, shire councils, community organisations and educational institutions. This approach is echoed by the OECD (2010) in a report

proposing that Victoria develop a regional human capital development system involving tertiary hubs of stakeholders. Paez et al (2011b) suggest a new framework for engagement between industry and the tertiary education sector is needed in which industry is an equal partner in developing pathways.

The formation of state-wide agreements involving multiple providers in VET with individual universities is another type of partnership arrangement, explored by some researchers. This approach provides broader and more consistent outcomes for students (Jackson et al, 2011b).

The dual sector institutions in Victoria and the NT constitute another intra organisational model with pathways forming core business through legislative purpose, student choice, educational value, equity and efficiency grounds. Studies by Milne et al (2007) and the University of Ballarat and Swinburne University (2010) reflect both on the desire for extending pathways and collaboration against the background of internal and external challenges and the maze of dual obligations and regulatory responsibilities these organisations.

In response to the changing tertiary environment and increasing blurring of sectoral boundaries, Moodie et al (2009) have called attention to the emergence of a new institutional model, which is termed 'mixed-sector' provision, proposing a new classification system for tertiary institutions based on the mix of sectoral student load that an institution carries:

- single sector institutions (where more than 97% of load is in one sector)
- mixed sector institutions (with load of between 3-20% in a minority sector)and
- dual sector institutions ( where there is mixed load of at least 20% but less than 80% in both sectors)

Mixed sector provision has meant both the offering of some bachelor degrees in TAFE and the return to sub degree offerings by some higher education providers and establishment of their own Registered Training Organisations (RTOS). Such internal programs offer another model for pathways. As noted by the authors the blurring of boundaries is by institution, not in the program design and requirements, which remain sector differentiated.

In a further study for NCVER examining mixed sector provision, Moodie et al (2011) and Wheelahan et al (2012) contend that these changes are a response to the changing tertiary institutional landscape in the policy context of meeting the Bradley targets and a more market driven tertiary education system. They note a variety of reasons for mixed sector provision including improved vertically integrated pathways for their students and improving business opportunities and to meet industry needs. They conclude that 'mixed sector' institutions will play an important role in opening access to educational pathways and higher-level education for disadvantaged students, and that diverse institutions may offer distinctive educational opportunities, particularly in niche and specialised areas' (Wheelahan et al 2012).



### 3.6.3 Enablers and the barriers to pathways

The practice of pathways can be assisted or impeded in different contexts by different factors. As noted by Phillips KPA (2006c) what can be presented as an enabler in one context may be considered a disabler in another and a failure to implement known enablers could also be considered as an impediment.

The key enablers identified by Phillips KPA (2006c) were: people and systems; mutual respect and trust; effective information provision to staff and students; and organised transition arrangements. The push factors of increased industry backing for pathways and increasing demand by students were identified as potential enablers. More recent studies have also focused on integrated tertiary qualifications as enablers, because they lead to better pathways.

Phillips KPA categorised the 'people' enablers into four types: leaders, doers, evaluators and promoters; effective management and administration systems incorporated a number of facets - the provision of up to date institutional policies, formal agreements between partner organisations, clear delineation of institutional responsibilities and accountabilities, management committee structures, human resources to implement the policies and information, promotion and evaluation systems. (Phillips KPA: 2006b). These system elements are now embedded in the AQFC's Pathways Policy (AQFC: 2011).

Wheelahan (2009c:39) also notes the importance of teachers, 'a group that has been relatively ignored in policy and cross-sectoral research, yet they are the key to helping students to develop aspirations to go on to HE and to developing coherent and supportive pathways'.

Paez et al (2011b) in noting and agreeing with the enablers identified by Phillips KPA (2006) have recast these as a 'corporate strategy' approach to managing pathways, requiring executive leadership with authority and supported by dedicated and trained staff and systems that give effect to the new AQF pathways policy.

The building of strong relationships between staff in each sector, through shared experience in collaboration around pathways development, has been identified as the most effective approach in addressing cultural differences and attitudinal issues between VET and HE staff, by building trust and understanding (Phillips KPA:2006c), (Wheelahan, 2009c), (King et al:2011) .

The building of effective information and promotion systems was identified as a key enabler of credit transfer (pathways) in Phillips KPA 2006 a, b & c) The final report (2006c) emphasised a number of aspects around information systems including:

- the availability of Web based information that is accessible and prominent
- other promotional material that is readily available to prospective students
- a coordinated register of credit transfer arrangements and precedents
- staff that can provide information and acts as a point of contact (Phillips KPA 2006c:vi)

National Guidelines to support more effective information provision were developed by MCEETYA (2006), followed by further guidance from the AQFC (2009, 2011).

Despite the focus on information as a key enabler, limited research has been undertaken on students' knowledge of pathways. As part of the IACTP a student survey was conducted across VET and HE institutions in Queensland on this issue drawing 12815 valid responses. Analysis of the results found that 'current students are, on the whole, more aware of articulation and credit transfer opportunities than was expected.' The results also showed greater awareness by students of terms like 'credit transfer' than 'pathways', with little difference between sectors or SES in the level of awareness but some differences in age, (with younger students less aware). Significantly teachers were the most important factor in creating awareness, followed by other staff and fellow students. The web accounted for only 21% of awareness overall. The survey also found that 27% of the respondents were influenced in their choice of study by the potential for credit transfer or RPL (Byrnes J et al, 2010).

Transition arrangements are another aspect of implementation that can be identified as both barrier and enabler. The transition to university for all students including those prepared for an academic stream through school can be difficult, but the demands for those transitioning from VET can create special challenges (Brown et al: 2011). Effective transition arrangements need to be put in place which prepare students before and after they transfer, including induction and orientation programs both at the commencement and through the course of study (Abbot-Chapman: 2011), (Hassard: 2011).

One aspect of transition issues, raised by a number of authors, is the impact of block credit, which enables pathways students to move into second year, missing various orientations and, as a consequence, not gaining access to the scholarship, theoretical concepts, academic literacy and critical thinking skills that are formed as part of first year university experience (Jackson: 2010). Harris et al (2005), Milne et al (2006), Watson (2006) and Wheelahan (2009c). The need for bridging skills in these areas and in some knowledge areas, such as mathematics in engineering has been identified (King et al: 2011).

In a study on transition for the IACT Project, Blacker J et al (2011) refer to a need to encompass transition as part of articulation arrangements, founded on a cross-sectoral collaborative approach involving staff in the execution of student engagement and retention. This approach further fosters mutual respect and understanding. The authors identify three types of transition programs: preparatory/pathways (before); transition (between) and support (after).

The increasing development of cross-sectoral, integrated qualifications (as distinct from the end-on, binary divide models of credit transfer and articulation) has also been identified as a way of addressing these transition issues whilst providing a more effective pathway model in general. Bradley et al (2008) noted that employers argue for an integrated post-secondary skills environment whilst the changing nature of

work reflects a need to better combine skills and qualifications across sectors (Foley, 2007). Cram and Watson (2008) found that cross-sectoral collaboration in curriculum “pays off” for institutions and for students. Carnegie (2009) flagged the Associate Degree as the basis for creating a new ‘hybrid tertiary’ qualification, combining elements of the curricula of each sector with a guaranteed pathway to the last stages of the bachelor degree; the AQFC Pathways Project Report (2009:32) argued the need for developing purpose designed Diploma pathway qualifications, combining elements of both (that could sit alongside or in place of industry based vocational diplomas, similar to the UK’s Foundation Degrees). This model is currently being implemented at VU. Phillip KPA (2010) suggest these combined qualifications are the means to transforming the tertiary landscape, particularly in various fields where there is a symmetry between VET and HE learning outcomes, or a regulatory need for work and as a means to achieving COAG targets in both upper level VET and HE.

King et al (2011) also see blended courses as the means to strengthening pathways whilst Cram (2011) argues that such programs are essential for regional delivery and in the national interest. Paez et al (2011c) note that when faced with all the facts, many institutions realize that it is often easier to develop these programs than more traditional credit transfer pathways and the outcomes can be broader, meeting the needs of both sectors, industry and the students.

The barriers to effective pathways have also been the subject of various studies and reports. Phillips KPA (2006c) identified the following:

- sectoral differences in funding and accountabilities
- cultural differences
- curriculum, assessment and qualifications design
- administration and internal resourcing issues

More recent research has highlighted the continuation of these barriers. The failure to effectively implement policies that are seen as enablers can also be construed as a barrier.

#### 3.6.4 Sectoral differences in funding and accountabilities.

This barrier was explored in detail in one of the 2009 Pathways Projects. Brown et al (2009) analysed funding implications of pathways, categorizing funding factors into two types: the costs of developing pathways and effect of differing funding arrangements between the sectors. The authors concluded that whilst there are substantial differences ‘these in themselves do not create major structural or systemic barriers to student movement where institutions have a strategic intent.... This is not to argue that current arrangements are optimal and ...there are transaction costs... and the most significant issue in the medium to longer term is the potential for a growing disparity in the resourcing base between VET and higher education’ (Brown et al: 2009, p.24-25).

The Technical Report for the Pathways Project (AQFC, 2009) also found that the differences in funding 'do not preclude cross sector collaboration, especially where VET study is undertaken first'. However, the Report also noted that funding differences between the sectors impact on students and their ability to move on an equitable basis. These funding differences included eligibility for public funding, access to HECS-HELP, differing fees and funding between the sectors.

The differing accountability requirements between the sectors have been identified as a particular barrier for dual sector organisations and those involved at the sticky end of cross-sectoral qualifications, requiring dual quality standards and requirements, dual funding arrangements, and separate curricula requirements.

### 3.6.5 Pedagogical and cultural differences between VET and HE

The pedagogical and cultural differences between VET and HE has been cited as a barrier to pathways by a number of authors. This has been a particular theme of both Wheelahan and Moodie who both critique competency based training (CBT), in general and as a barrier to pathways, because CBT focuses (inter alia) on atomized, task based knowledge over the development of broad based theoretical and disciplinary knowledge of HE. Other authors have also identified the CBT framework of VET as a major barrier to pathways, including more recently, Skills Australia (2010), Shreeve (2010) and King et al (2011). The key elements in this discourse are that: CBT based qualifications do not provide adequate knowledge to underpin the knowledge needs of transferring students; specific competencies are too narrow and task based; non-graded assessment does not adequately sort 'good' and 'poor' students; and, the quality issues and differences between institutions in assessment are a barrier in supporting more systemic credit. IBSA (2011) refers to the different languages of VET and HE in the form of dissonant curriculum, academic discourse and teaching style while for Keating, (2008), VET addresses human capital needs of competencies and applied skills, while higher education attends to the social and cultural needs of knowledge mastery and conceptual understandings (cited in Walls and Pardy: 2010). As Walls and Pardy respond defining the equivalence between these is complicated but 'in practice it is learning equivalence that remains the point of impasse for achieving equitable credit transfer arrangements. A means for establishing equivalence is imperative to ensuring that credit is recognised and awarded without prejudice' (2010 p.8).

Brown et al (2011) provide a useful review of the literature on the pedagogical practices of VET and HE, concluding that they are different but the focus should be on the strengths of each. Harris and Ramos (2011) also found that transferring students were very aware of the key differences in the two sectors, particularly in relation to assessment, course structures and content, teaching styles and the amount of work required, but their study also found that students did not find the transition between the two systems difficult to manage.

Other authors have suggested that it is not the differences in curricula, per se, that is the key issue but problems in the design of the qualifications within Training Packages, which are too flexible and varied in content, especially those with a limited

core - Phillips KPA (2006c), Phillips KPA (2010), Paez et al (2011b). In a field such as engineering, the lack of coherence between the professional requirements of the degree and the Training Package development process is also seen as problematic, (King et al, 2011) with no discourse between the two.

The lack of knowledge about VET within HE also contributes to maintaining the cultural divide between the two sectors. As Paez et al note 'entrenched attitudes and culture of the education and training sectors continue to impact on collaboration between stakeholders and the formation of partnerships (but) quantifying the extent of the impact is challenging' (2011a p.23). In the post Bradley era there is a new environment and impetus for working together and the cultural divide is becoming more blurred as higher education has a greater vocational thrust (Bridgstock 2009) and VET at the upper levels becomes more knowledge focused (King et al) and capability focused (Wheelahan 2011).

The differing systems of administration between the sectors have also been raised in the literature as a barrier, particularly in relation to building embedded and concurrent models of integrated qualifications. These include differences in timetabling, student categories, study structures, timing of results. (Phillips KPA (2006c)

### 3.6.6 Evidence of current practice – are pathways improving?

Phillips KPA Report (2006b) included a review of current practice (for credit transfer between VET and HE), using case studies and vignettes to contribute to a broader understanding of current arrangements of the time. The authors noted that this case study approach was neither representative of all situations or practices or meant to be read as complete or comprehensive. They observed that no single factor stood out in assisting improved 'pathways', rather it is a complex interplay of factors; and, that, in all sites, progress was marked by phases of development where significant steps forward interspersed with periods of lesser activity (Phillips KPA, 2006b: 103).

Carnegie (2009) reviewed the changes within three of the original Phillips KPA case studies, including those involving a centralised statewide approach (South Australia), a strategic hub (SE QLD) and a dual sector (Swinburne University), finding that each had expanded their pathways with significant enhancements in the intervening period; in each of these organisations, there was a high commitment to building pathways at the strategic level. Hassard (2011) documented pathways development at Griffith University for the IACTP, and an overview of SBIT pathways was also undertaken as part of this project (IACTP, 2010), showcasing how these organisations were reflecting the critical people and system factors for good practice set out in Phillips KPA (2006c).

Beyond individual case studies, other reports and studies have shown significant variations in practice continue, particularly around credit transfer pathways. In a study of credit transfer in Victoria, Walls and Pardy (2010) found that the actual practice of articulation occurs on a spectrum ranging from well organised to

haphazard'. An OECD analysis, also of Victoria, (2010 p.22) found that 'while Australia and Victoria have made great improvements in developing pathways in education, articulation between TAFE Institutes and universities remains a challenge. The OECD noted the absence of state wide mechanisms found in other states and recommended that existing collaborative mechanisms needed to be scaled up. IBSA (2011) also noted that there is no consistent system for giving credit for VET qualifications; rather it is an adhoc process.

Paez et al (2010) in exploring practice in Queensland for the Integrated Articulation and Credit Transfer Project (IACTP) also found that even where partnerships have been developed with detailed credit transfer arrangements, the majority were ad-hoc, formed most commonly on a mapping basis that differs from partnership to partnership.

One of the issues in relation to practice is that whilst many 'pathways related' policies have been developed, both at government and institutional level, there has been limited 'how-to-guidance' on mapping, determining equivalence and forging collaborative models, leading to variability of both process and outcome. The AQFC Interim National Policy and Guidelines on Credit Arrangements (2009) incorporated operational guidelines to assist institutions, providing greater supports than either earlier or current policies, but most organisations have had to develop their own approaches.

One of the outcomes from the IACTP (2011) has been the development of resources to fill this gap including:

- Guides on articulation pathways (Jackson et al, 2011a)
- Mapping for credit transfer, (Jackson et al, 2011b)
- Student pathways options (Paez et al (2011c)

One of the gaps in recent literature on practice is exploration of the experiences of students in pathways, a point noted by Wheelahan (2009) who refers to the earlier work of Abbot-Chapman (2006) and Milne et al (2006). One reason postulated by Wheelahan is that some studies confirmed that TAFE students do as well as other cohorts, including school leavers. Indeed Abbot-Chapman (2006) found that despite the early challenges of transition from VET into university study, those transfer students who persisted over the three years performed academically as well as other students. Similar findings on progression and retention are documented by Phillips KPA (2006b), Carnegie (2009) and Jackson et al (2010); reasons for this success include the supports and the experiences of VET in making the transition, the greater maturity and capacity for self-directed learning and higher aspirations to succeed, and having successfully made the transfer from VET to HE.

### 3.7 The Australian Context

The National Reform Agenda proposed by the Federal Government has set diversity targets of 20% of all undergraduate enrolments in higher education being from low socio-economic backgrounds (Bradley et al, 2008). People from lower socio-

economic backgrounds, those from regional and remote Australia as well as Indigenous Australians are under-represented in higher education compared to their incidence in the general population (Bradley et al, 2008 p. 27). Improving access and equity in higher education for these groups is a high priority for the Australian Government.

Socioeconomic status (SES) is a highly abstract concept and as noted by Gale (2009), its measurement complex and controversial. There is no single, agreed measure of individual or family socio-economic status. Common measures include parental employment category, family income, parental education, postcode and geographic measures. Clearly however, Australian universities as an aggregate have poor participation rates for students from lower socio-economic backgrounds as a share of all domestic students (James, 2002). This aggregate figure however, hides the stratification between universities in Australia. Differences in access and participation rates depend heavily upon the models adopted by the particular institution (Gale, 2009). The University of Queensland and University of Adelaide's participation rates for students from lower socio-economic backgrounds are at 18.1 and 15.8 % respectively – higher than the national mean of 14.7 – while highly selective institutions such as the University of Melbourne and University of Sydney only register 7.3 and 6.3 % (James, 2002). RMIT University's participation rate is currently one of the highest at 16 % of the domestic student population.

In the broader tertiary sector the Australian vocational education and training (VET) sector has a socio-economic profile different from higher education (Bradley et al, 2008). A study by the National Centre for Vocational Research (Foley, 2007) has pointed out that the education of under-represented groups is by and large the domain of VET, with higher education students representing notably higher socio-economic levels than the VET student population. Furthermore, Curtis (2008) demonstrates that overall the vocational education and training sector performs better than higher education in attracting students from a low socio-economic background. But within the VET sector there is also evidence of high levels of stratification. The participation rate of low socio economic status students decreased as the level of the qualification increased and was only 6.8 % at diploma level or above (Foley, 2007). This closely reflects the participation rates of low socio-economic status students in universities. It is necessary to develop best practice lifelong learning and teaching models that “de-stratify” this diversity and combine the best practice diversity elements of both sectors.

Whilst evidence exists that distinct sectors are important (Bradley et al, 2008), there is a more pressing need to create better, universal and transparent pathways across tertiary education. Employers value higher-level skills and qualifications, mostly as a response to the context of globalisation, technological change, changes to the nature of work and skill shortages in selected industries. However the sector in which these qualifications are gained is of little relevance to employers. Bradley et al (2008, p.180) note that employers argue for an integrated post-secondary skills environment where the differences between the sectors does not restrict the

capacity of individuals to move between them. In many cases the mix of qualifications and skills required by the workplace spans both sectors (Foley, 2007). Dual sector (VET and HE) institutions have developed historically through mergers, re-designation of work and qualifications, or by geographic internal development. Of the dual sector institutions operating in Australia, four are located in Victoria. The dual sector institution is characterised by significant provision and commitment to both vocational and higher education. They are also significant leaders in seamless progression and reverse articulation opportunities for students (Garrod & Macfarlane, 2007).

The range of initiatives undertaken to enable lifelong learning and teaching models have mostly been concentrated within the dual sector universities (Wheelahan, 2001). These models have included articulation, credit transfer, recognition of prior learning, appointment of specialist pathways officers and the provision of enabling courses. Much of this concentration is due to the cohort attending such institutions for VET qualifications, which has driven diversity improvements in dual sector pathways models (Harris et al, 2006). The lead university for this project, RMIT, is a dual sector university and this application has teamed with three other partner institutions, UWS, UTS and Curtin University who all have significant experience in understanding the issues of pathways and diversity.

Bradley et al (2008, p.182) emphasise that while institutions will have a primary role in one sector they should still be able to offer some qualifications to meet student and industry needs effectively. Thus this project will, as part of its methodology, evaluate best practice lifelong learning models in a non-dual sector partner university, Curtin University, and target all Australian universities for dissemination and enabling procedures to achieve improved participation and diversity in tertiary education.

### 3.8 Summary

This literature Review has focused primarily on tertiary pathways research in Australia since Phillips KPA (2006a, b, c,); those Reports setting out the key literature to that point in time and also setting the scene for much of the research that has followed. As outlined in the sections above, a considerable body of work has emerged since 2006, driven by both government sponsored and independent academic research.

The focus of this literature has followed many of the key themes drawn from Phillips KPA (2006) including: the drivers for pathways; having a clearer understanding of what is meant by pathways in the Australian context (terminology, typologies, systems, organisational arrangements, models and processes for building pathways) and exploration of different aspects of pathways in practice. Some research has focused on the impediments and limitations; elsewhere, examples of good practice and guidance on developing different pathways are documented, alongside options for improvements.



Despite this rich research base, the literature demonstrates a continuing diversity of perspectives, particularly around the language and typologies for framing 'pathways'. However, a clearer picture emerges in respect of moving forward in the post Bradley era towards blurring of both institutional and curricula boundaries. Some of the key characteristics identified from this literature review include the following:

- Increasing the development of systemic arrangements for 'pathways' incorporating multiple partners/organisations built around effective leadership and management/administrative systems
- a future focus on building better pathways through integrated, collaboratively developed qualifications combining VET and HE at AQF Levels 5, 6 & 7
- the need for improved internal VET pathways from lower to higher VET issued AQF qualifications to increase pathways options for low SES students
- the need for effective transitional supports

In the context of this project these themes are addressed and expanded. By establishing a more complete understanding of the enablers of pathways and the importance of understanding or determinants of effective pathways models, the issue of "better pathways at particular AQF levels" and the movement of students both vertically and horizontally between lower and higher levels of the AQF can be addressed. This project will "arm" institutions with a template against which pathways models can be evaluated and managed for the benefit of students and all individuals contemplating lifelong learning pathways.

The outcomes of this project and the dissemination of the project findings to industry and other institutions will also assist in "increasing the development of improved systemic arrangements."

# Chapter 4 Hearing from the Stakeholders: the National Survey

## 4.1 Introduction

The construction industry is one of Australia's largest and most diverse industries. The construction industry involves a relatively large proportion of unskilled and manual tasks and it has absorbed a relatively high proportion of immigrants into its workforce (Loosemore & Chau 2002). Around 20% of all workers in the construction industry are overseas born and half of these are from non-English speaking countries (DIAC 2009). With nearly half the workforce in the Australian construction industry having no formal credentialed post-school qualifications and only a very small number of people in the industry having higher level qualifications, the industry skill levels are stubbornly skewed to the lower levels of the Australian Qualifications Framework. Significantly the building and construction industry is also well above the national labour force industry average for those 25-44 year olds who lack any formal qualification (31%) whatsoever (ABS, 2008). The diversity of the industry as a whole is well understood; yet little evidence of this diversity exists in the university students enrolled in built environment (construction management) courses.

Twenty years ago Australia was one of the first countries to enable wider participation in higher education. The results of these changes made it a leader internationally in the movement from elite to mass systems (Bradley et al. 2008) p12. With the increase in numbers has come much greater diversity in the student cohort. Yet people from lower socio-economic backgrounds, those from regional and remote areas, as well as Indigenous Australians are under-represented in higher education compared to their incidence in the general population (Bradley, 2008) p27. The Commonwealth Government has pushed for increased participation of under-represented groups to a 20% diversity target for Australian universities to address social, equity and future skill demands. This chapter outlines the results of the national survey examining the current cohort of construction students in higher education. The primary aim of the survey was to examine pathways into higher education from students who had undertaken VET (TAFE) studies. It also provided insight into the SES profiles of VET students undertaking higher education studies in construction to ascertain if VET (TAFE) pathways could improve the diversity of undergraduate construction (built environment) cohorts.

## 4.2 Survey of Construction Management Education

The research was based on a paper-based questionnaire, (See Appendix A) which contained questions adapted from the DEMO matrix. Academic staff from Deakin University, RMIT University (RMIT), University of Technology Sydney (UTS), Curtin University (Curtin), and University of Western Sydney (UWS) were contacted; each was asked if they would assist by offering a survey to their students in Construction Management courses. Students were asked to respond to questions on their personal experiences during their (prior) TAFE study.

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 spread-sheet, which was later converted in to SPSS for analysis. Each course coordinator was asked to administer the survey to all enrolled students in their courses. Students were asked to complete details about their course, year they entered the university and home post code.

There were a total of 828 students in the survey, of which 166 had attended TAFE prior to entry into university. However, there were ten cases where students did not answer all questions in the survey; for statistical purposes these students were deleted from the results.

This chapter examines these results and evaluates the capacity of tertiary education pathways to deliver more diverse students into higher education in the built environment discipline.

### 4.3 Survey Results

Table 6 examines the students who had prior VET (TAFE) experience against all students enrolled in construction. Whilst low SES is only one measure of diversity acknowledged by the Australian government in its diversity targets, the access to HE from low SES students is critical in measurement of HE diversity and was utilised in this survey to provide additional data about low SES students undertaking pathways.

Although some of the sample cohort numbers are statistically insignificant (Curtin University), the overall trend indicates that the VET (TAFE) pathways students who enrol in degrees in construction management reflect the overall averages of low SES students in this discipline. Therefore increasing the number of pathways students in this discipline would only marginally increase the number of students from low SES groups.

*Table 6: SES Breakdown of University construction management students. Those with prior TAFE qualification (shaded).*

	RMIT		Deakin		Curtin		UWS		UTS		Total	
Low SES	9	2	12	3	1	1	37	13	18	3	77	22
Med SES	14	3	59	14	4	4	106	31	51	13	234	65
High SES	77	11	53	10	9	9	88	24	124	25	351	79
Total	100	16	124	27	14	14	231	68	193	41	662	166

The results of this research show that the while TAFE to university pathways may provide some increases in the number of low SES students in construction management (built environment) degrees, the increases would not be significant. The overall average of low SES students in this discipline would remain constant.

It was interesting to note that all construction management courses in this study had smaller proportions of low SES students compared to their university average as a whole. These results may indicate that students from low SES backgrounds either do not seek out university courses in built environment - construction management or do not aspire to continue into HE from VET (TAFE). The relatively high number of students with high SES backgrounds may indicate that construction management degrees are not well promoted outside the discipline and the industry.

It is also important to recognise that there were wide differences in the proportion of low SES students between the universities, in particular UWS. This university is one of the most diverse in Australia, and has a policy of recruiting students using non-traditional means. UWS selects many of their construction management students from a formation course run by a separate organisation called University of Western Sydney College (UWSC). The college recruits students with low university entrance scores, and other diverse backgrounds who have not met traditional university examination results. UWSC students enter a UWS degree course if they obtain a credit level grade point average after one year of study.

All other universities in this study select students based on traditional “meritocracy” approach using university entrance ranks called ATAR. The students who enter from TAFE have a derived ATAR based on their previous study. The calculation of the ATAR tends to advantage school leavers with good results, and works against VET (TAFE) pathways students in this discipline.

A second part of the survey examined the experiences within the VET (TAFE) pathway that may have impacted upon the learner’s decision to undertake HE studies in this discipline. The impact of prior learning- TAFE experiences- on preparing students for participation in higher education studies in construction was the key objective of the data collection. This section commences with a brief set of descriptive statistics, and then uses Factor Analysis as the main analytical instrument.

The survey measured the students’ perceptions of their experiences. The survey comprised a series of questions based on the DEMO framework (See Appendix A). Each student was asked to agree or disagree with a series of statements on a 7-point Likert sliding scale; the results were analysed using Factor Analysis.

The results show that all scores were above 4.5 (of 7) indicating that students generally agreed with the statements. Table 7 shows the mean score of each of the questions in the survey. The results indicate that the highest score 5.52 (of 7) was Q14.3 There was good communication with the other students in TAFE. The lowest score was 4.37 and was shared by Q12.4 TAFE was interested in my preparation for University and Q13.1 TAFE and university work well together for students.

*Table 7: Responses of students enrolled with prior TAFE qualification*

Likert Score (Strongly 1 disagree) to 7 (Strongly agree)	Mean	St Dev
Q11.1 TAFE created opportunities for me to talk to others about the industry or further study (People rich)	4.94	1.59
Q11.2 I was mentored throughout the TAFE programme (People rich)	4.38	1.79
Q11.3 I was able to access funding support for my TAFE (Financial support)	4.15	2.02
Q11.4 The TAFE programme I did was well known and had been running for a long time	5.33	1.63
Q12.1 My education from TAFE was valued at university	4.51	1.96
Q12.2 TAFE people encouraged me to undertake University (Recognition of difference)	4.32	1.91
Q12.3 The TAFE programme prepared me well for University (Enhance academic curriculum)	4.84	1.82
Q12.4 TAFE was interested in my preparation for University	4.37	1.83
Q13.1 TAFE and university work well together for students	4.37	1.73
Q13.2 I received good support when I did work in groups of peers while in TAFE. (Cohort-based)	4.98	1.40
Q13.3 The other students in TAFE supported me well (collaboration)	5.19	1.45
Q14.1 I had access to sufficient resources and appropriate teaching material in TAFE (Communication and information)	5.07	1.47
Q14.2 There was good communication with the teachers in TAFE. (Communication and information)	5.40	1.54
Q14.3 There was good communication with the other students in TAFE. (Communication and information)	5.52	1.21
Q14.4 TAFE gave me practical experience which helped me understand the requirements of university (Familiarisations)	5.35	1.56

## 4.5 Describing Enabling Factors

As part of the survey students who had prior TAFE qualifications had additional questions examining their learning experience prior to university. The data was then analysed by exploratory factor analysis using SPSS v.20 so as to bring the interrelated variables together and to identify the underlying principal factors affecting TAFE educational experiences. Exploratory factor analysis was employed because it is a statistical tool useful in bringing insights into the relationship among numerous correlated, but seemingly unrelated variables in terms of a relatively few underlying factors (Overall and Klett, 1972). The tool is widely used by researchers of different disciplines to identify and interpret non-correlated clusters of variables.

Components (or factors) were extracted by Principal component analysis with Varimax rotation. This method can help achieving a simple structure by minimizing any tendency towards a “general” component in the solution (Gorsuch, 1983). The number of components extracted was based on their respective eigenvalues. As a general rule applied in most factor analysis studies, the criterion for factor extraction is eigenvalue  $\geq 1$  (Gorsuch, 1983).

To interpret the meaning of a factor, the salient variables in each component were identified and used as the indicators for explanation. These salient variables were selected by two criteria. First, their loading values should be significantly high (minimum 0.4) and second, they should only be loaded on the extracted factor (Gorsuch, 1983). As shown in Table 8, the salient variables identified for each extracted factor are in all but one case (0.392) higher than 0.4, reflecting a substantial degree of contribution of each variable to its extracted factor.

Table 8: Factor Analysis DEMO matrix

Factor Component	1	2	3
Q11.1 TAFE created opportunities for me to talk to others about the industry or further study (People rich)	.261	.063	.786
Q11.2 I was mentored throughout the TAFE programme (People rich)	.269	.275	.690
Q11.3 I was able to access funding support for my TAFE (Financial support)	-.109	.312	.657
Q11.4 The TAFE programme I did was well known and had been running for a long time	.507	-.038	.556
Q12.1 My education from TAFE was valued at university	.161	.656	-.005
Q12.2 TAFE people encouraged me to undertake University (Recognition of difference)	.230	.794	.203
Q12.3 The TAFE programme prepared me well for University (Enhance academic curriculum)	.389	.620	.364
Q12.4 TAFE was interested in my preparation for University	.229	.765	.145
Q13.1 TAFE and university work well together for students	.214	.676	.206
Q13.2 I received good support when I did work in groups of peers while in TAFE. (Cohort-based)	.775	.372	.119
Q13.3 The other students in TAFE supported me well	.781	.291	-.055
Q14.1 I had access to sufficient resources and appropriate teaching material in TAFE (Communication and information)	.748	.310	.175
Q14.2 There was good communication with the teachers in TAFE. (Communication and information)	.666	.301	.359
Q14.3 There was good communication with the other students in TAFE. (Communication and information)	.731	.133	.276
Q14.4 TAFE gave me practical experience which helped me understand the requirements of university (Familiarisation)	.392	.409	.272

The results of this analysis are presented in Table 8. Items loaded on three factors that explained 62% of the variance. An appropriate collective label was given to each extracted factor so as to reflect the correlation of all the variables within. The factors comprised:

- (1) Assembling Resources
- (2) Engaging Learners
- (3) Working & Building Confidence Together

#### 4.5.1 First Component Factor – Assembling Resources

This factor accounts for the largest amount of total variance (44.1%). It encompasses four variables: Q11.1, Q11.2, Q11.3 and Q11.4. (see Table 8). The most important mean score was 5.33 (Table 4) for Q11.4 the TAFE programme I did was well known and had been running for a long time. This suggests that the reputation and knowledge of the program is important and was considered one of the main reasons why students can navigate the pathways.

#### 4.5.2 Second Component Factor – Engaging Learners

This factor accounts for the largest amount of total variance (9.2%). It encompasses four variables: Q12.1, Q12.2, Q12.3, Q12.4. and Q13.1 (See Table 7). The most important mean score was 4.84 (Table 8) for Q12.3 The TAFE programme prepared me well for University. The results however vary between males and females, with females feeling less supported (Appendix B table ix & x). This component emphasises that a human dimension is necessary to encourage student to feel that they are ready for higher education.

#### 4.5.3 Third Component Factor – Working and Building Confidence Together

This factor accounts for the largest amount of total variance (8.7%). It encompasses four variables: Q13.2, Q14.1, Q14.2, Q14.3 and Q14.4 (See Table 8). The most important mean score was 5.52 (Table 8) for Q14.3 There was good communication with the other students in TAFE. This factor emphasises the importance of good communication and information to enable access to pathways and perhaps peer support. The next section of the paper discusses the above findings and draws some conclusions.

The study focuses on those policies and initiatives implemented in recent years designed to facilitate clear and easy pathways between technical education (TAFE) and higher education. It also addresses enablers that encourage learners to access these pathways and how learners perceive and make use of these pathways

It is likely that a number of key characteristics must be present for the pathways model to be truly effective and sustainable over time. The results of this research confirmed that the factors could be described as: Assembling Resources, Engaging Learners, and Working & Building Confidence Together.

It is clear from past research that Assembling Resources was important; this essentially meant navigating the pathways. It is complex for students who are not fully aware of the operation of the pathways. In addition, students may not be informed of the availability of articulation and credit transfer processes or RPL (Recognition of Prior Learning) and if that is the case, they may not seek credit transfer.

Past research shows that students' learning journeys have been described as more like “stepping stones, zigzags or crooked paths” (Harris, Rainey & Sumner 2006). This was due to lack of information and guidance, lack of 'fit' between courses, and inexperience. Students may not be aware of career services and therefore do not seek advice. This research mirrors the work of Harris et al (2006), showing that when students are sufficiently well informed about pathways, then they find their pathways clearer.

The reputation and knowledge of the VET (TAFE) program is important and was considered one of the main reasons why students in this research can access the pathway. This suggests that pathways are often not well understood by students and underlines the importance of guidance. This has been described in this research as Assembling Resources.

It is interesting to note that when the mean score for question 12 and 13.1 (See table 9) were analysed and compared with when the student learnt about the pathway. The average score was higher for students that had known about the pathway since school. This may indicate that student identified TAFE specifically as pathway because they believed that they need extra support prior to entering university. Students in this cohort may have decided that they were not going to enter university directly because the learning experiences at TAFE would provide them with a better foundation for HE study.

*Table 9: Tertiary enablers*

Survey Questions	High School	During TAFE	After TAFE	Total
<i>Assembling Resources</i>				
Question 12.1-My education from TAFE was valued at university	5.07	4.08	4.38	4.50
Question 12.2- TAFE people encouraged me to undertake University (Recognition of difference)	4.93	4.06	3.51	4.24
Question 12.3-The TAFE programme prepared me well for University (Enhance academic curriculum)	5.44	4.84	4.16	4.89
Question 12.4-TAFE was interested in my preparation for University (Research driven)	4.80	3.94	4.00	4.25
Question 13.1-TAFE and university work well together for students (Collaboration)	4.70	4.02	4.19	4.30

The second factor has been labelled as Engaging Learners. This component emphasises that a human dimension is necessary to encourage students to feel that they are ready for higher education. Gale et al (2010) identified the importance of raising students’ aspirations for higher education. He believes that while their academic achievements remain an important ingredient for gaining access to higher



education, students' aspirations have become central in driving student mobility within higher education.

The results of this research support Gale et al (2010) in that without sufficient support, students will not feel that they are prepared for the next level of education. It is understandable that students need to be assured that University values their efforts at TAFE; without engagement students will not access pathways even if they exist.

The third factor is Working and Building Confidence Together. This issue emphasises the significance of support within the student cohort. The teaching at TAFE needs to help the building of confidence amongst students. If this does not occur the pathway to the next step becomes more difficult. The results of this research suggest that students need to feel confident that they are performing at a level that allows them to progress.

In many ways it is not surprising that students, who enter university based on their TAFE performance, have had a positive experience of education. This is unlikely to be a chance event, instead this research supports the notion that pathways are successful when students work and build confidence together through engaging learning activities.

## 4.6 Summary

This chapter confirms that whilst TAFE to HE pathways do provide some increases in the proportion of low SES students in built environment/construction management degrees, the increases are not significant and it is unlikely that increasing pathways alone will improve diversity in this discipline. The survey has also confirmed that in order for students to move from one level of tertiary education to another, it requires their aspirations to be raised in a similar manner to what occurs in university outreach programs. The result also demonstrates that the TAFE/HE pathway can be effective if the right environment is created within TAFE that informs and builds confidence.

A further objective of this research was to investigate the characteristics that have enabled higher education students to navigate the pathway from TAFE. There is evidence that a number of key characteristics must be present for the pathways to be truly effective. One of these characteristics highlighted in the survey is appropriate communication as an enabler. The importance of appropriateness of information and communication is singled out as this enabler is often misinterpreted by HE as "availability". Students in this survey were not as concerned with the availability of information and communication as with the "personalisation" or people-rich nature of the communication. This research supports the work by Karmel, et al (2011) who in a recent review of pathways data, indicated that the issue of better approaches to providing advice to individuals is critical. They call for person-appropriate and readily available information at critical times to address the problem.

This chapter has examined the statistical data arising from the project. It has drawn a number of conclusions about the effectiveness of achieving diversity improvements through tertiary pathways in the built environment discipline. The next chapter examines the interview data arising from stakeholders in these pathways.

# Chapter 5 Hearing from the stakeholders: the case studies

## 5.1 Introduction

A number of pathways models for built environment disciplines are currently in use in Australian universities. This phase of the project examined the contributions of these models to the aim of increasing the participation of more diverse groups in higher education. In a number of cases, these models are excellent examples of a commitment to diversity and a more equitable higher education sector that represents access for all Australians. This chapter examines qualitative data selected from interviews with a number of students and staff participating in these models.

Too often these models have operated at the fringe of tertiary education access in isolation of mainstream entry and for a variety of reasons have been difficult to sustain over time. Through a detailed examination of each of the selected models and in-depth interviews with key stakeholders, it was hoped that the models would demonstrate a range of approaches that are tailored to the needs of different students in different contexts. In this way, these examples can be mirrored and lead to best practice in the tertiary education sector.

Each case study in this chapter is examined using a similar format. Firstly, the university context is briefly examined and described. This is important not only as critical background as to the origin and drivers of the examined pathways model, but as valuable comparison data against which other universities can compare, evaluate and perhaps adopt the model that best matches their context.

After the brief discussion of the university context, interviews with each of the stakeholders (educators, students, administrators) are relayed with an emphasis on addressing those key elements of diversity through pathways that are discussed in Chapter 2, in particular the emphasis on the DEMO determinants and strategies.

It is through this detailed description and consultation that a number of exemplar strategies of pathways models have emerged that address different tertiary contextual needs and which are informed by a coherent diversity orientation. The conclusion to this chapter summarises the specific perspectives of these exemplars that were derived from the case studies.

## 5.2 The Case Studies

A total of five case studies were selected for this phase of the project. The case studies were situated in built environment disciplines at three universities: RMIT, Melbourne, UTS, Sydney and UWS, Western Sydney. Each university nominated within their case study particular programmes that were deemed pathways or lifelong learning models. As a result 5 different programmes and cohorts of students

emerged from the case studies: RMIT had two models, (Construction VET in schools, Graduate Certificate in construction), UWS had two models ( TAFE articulants, UWS College articulants) and UTS had one model( TAFE articulation).

Each of these models nominated between 4 and 6 students for interview and additional interview information was obtained from staff and course and programme co-ordinators. In all a total of 22 interviews were collected from students and staff. The lifelong learning models drawn from the interviews were evaluated using Gale's (2010) Design and Evaluation Matrix for University Outreach.

### 5.2.1 Case Study 1: RMIT University

RMIT is an urban, dual-sector university located in the city precinct of Melbourne. It is one of the largest universities in Australia, with approx. 79,000 students studying at various campuses, including regional Victoria, Vietnam and at international partner institutions. As a complete tertiary institution, RMIT has vocational education and training courses along with a diverse suite of higher education undergraduate and post-graduate degrees. Programmes range from pre-apprenticeship (Certificate I &2) to Ph.D. RMIT is a member of the ATN network and the Global U8 Consortium.

RMIT has as its core value that it is an institution of learning that is useful, creative, connected, fair and passionate. In creating these values, the institution is supported by its vision of:

- Global in outlook and action, offering students and staff a global passport to learning and work
- Urban in orientation and creativity, reflecting and shaping the city in the 21<sup>st</sup> century
- The first choice provider of work-relevant learning in Australia, preparing students for the future
- One of Australia's top research universities, internationally known for applied focus and excellence in research

Two pathways models operating in built environment disciplines at the university were chosen for this project. The two models were:

- VET in Schools – Pathways to Construction
- Graduate Certificate in Construction

#### 5.2.1(i) VET in Schools – Pathways to Construction Model

RMIT University has a commitment to flexible, useful pathways and learning opportunities for students, and participates in the Victorian government VET in Schools programme. The VET in Schools programme allows senior secondary students to commence a vocational education and training qualification whilst completing their senior school certificates (VCE or VCAL). Currently over 55,000

senior secondary school students are undertaking VET in Schools programmes per annum in Victoria. Of these, approximately 400 undertake subjects at RMIT University. Political interventions to increase school completion rates, has seen new cohorts of students remaining in senior secondary schooling. More diverse groups of students are remaining at school and the consistency and standardisation of credentials has become paramount.

However the continuing need for options to cope with the student cohort diversity and the demands to link school with workplace skills has created a niche for VET programs in Australian secondary schools. The level of integration of VET in schools has meant that many VET subjects are graded and assessed and count in secondary certificates and towards university entrance scores.

The current VET in Schools programme is available to senior secondary (year 10, 11 or 12) students, and includes programmes in built environment disciplines of:

- Construction (AQF 4)
- Plumbing (AQF 3)
- Electrical (AQF 3)
- Diploma Building (AQF 5)

The VET in Schools programme aims to give students exposure to work in an industry area of interest, practical skills and information on career prospects within the industry. Students attend an RMIT campus for a full day each week and attend their own school for the remainder of the time. The students are enrolled at RMIT University and receive a Statement of Attainment for any study they complete which is part of a total qualification. Students may complete the full qualification during their final years of secondary school. Students are free to continue study within their VET qualification or industry area after they complete secondary school, however at the time of writing RMIT does not guarantee entry for any student. RMIT abides by the VET in Schools framework and complies with the AQTF Essential Standards for Registration in the documentation and delivery of this programme, including a VET Contract between the relevant parties. The RMIT University has also established a Responsibility Matrix to underpin this programme.

The “Pathways to Construction” is a VET in Schools programme in building and construction. The programme was set up in 2008 and has approximately 30 secondary school students from years 11 and 12 enrolled in both years of the model. The students attend RMIT university one day a week (Wednesday) and undertake competencies in the Certificate 4 in Building and Construction (Building) (code: C4204). Upon completion of the two year model, the students are eligible the certificate 4, which is embedded in the Diploma with one years (12 months) credit transfer.

The Pathways to Construction program is targeted towards students who are in their final two years of secondary schooling and wish to undertake one subject in practical building and construction to complete their secondary schooling. The subject contributes to the students’ final VCE and carries a loading in the calculation of the

students' ATAR. The subject is built around the Certificate IV in Building and Construction and consists of instruction and student work. As the subject is entirely based upon the Certificate IV, all assessment is competency based. The subject is completed over two years through attendance one day a week at the RMIT School of Engineering. RMIT staff conducts the subject and maintain regular communication with the students, their schools and their guardians. The VET in Schools coordinator conducts recruitment, promotion and liaison and enrolment and is the link between the university, the schools and the students.

The VET in Schools "Pathways to Construction" Model is an innovation of RMIT University, and deliberately targets secondary schools to provide access to tertiary education for students not normally represented. In 2010 after two successful intakes with 100% retention, six of the students were interviewed for this project. One of the key areas of interest to the interviewers was the reasons for enrolling in this program. The students were asked about their motivations for involvement and continuing participation. Below is a short summary of the results of that question.

The students involved in the Pathways Program represent a more diverse cohort than the traditional intake to the Certificate IV in Building and Construction. The 2009 student intake indicates 50% of the students come from low SES groups, whilst 40% of the 2010 intake comes from low SES groups<sup>1</sup>.

The high percentage of students from low SES groups may be explained by a number of factors:

- The recruitment processes used by the VET in Schools co-ordinators at RMIT
- The aspiration and enthusiasm of careers teachers in particular schools
- The appeal of the building industry as an employment destination to particular parents and school communities
- The cultural perception of the building industry as an industry of opportunity for the less academically inclined adolescents
- The central city location of the RMIT campus offering Pathways to Construction, VET in Schools

The students enrolled in this program represent the following age range detailed in the table below.

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Table 10: Student Age Profile-VET model: case study 1

Age	Percentage
15-20 Years	98%
20-25 Years	2%
25-45 Years	
45-+ Years	

All of the students are male. Their school or employment status is as follows

Table 11: Student employment profile: case study 1

Employment Status	Percentage
Study secondary school fulltime	87%
study university full-time	
Study TAFE full-time	
Work part-time, study at university part-time	
Work part-time, study at TAFE part-time	13%
Work full-time	

Of the students, 83% reside in lower SES geographical areas as the breakdown chart indicates. \*(As per definition Chapter 1)

Table 12: SES case study 1 students.

Region of Melbourne SES*	Percentage of Students Living in Region
Low	83%
Middle	13%
High	4%

The VET in Schools Pathways to Construction applications exceeds the number of places. The demand for places occurs predominantly in the northern suburbs of Melbourne and the decision to enrol is fundamental to an understanding of the success of this model in achieving a diverse cohort.

Four students were interviewed from this pathways model.

All of the students interviewed were involved in the model for themselves. They saw themselves as the main reason they were enrolled and none of the students were involved in the model for either their parents or their schools. Clearly the secondary school students were highly motivated to attend and “get a foothold” in the university. Two of the students saw this model as a good way to get into the university, an advantage over their school peers, but only one student felt he would not be able to get into RMIT if he did not do this model.

All of the students saw a very high correlation between this programme and their chances of getting employment in the industry. The qualification attached to the model (Certificate 4 in Building and Construction) was widely understood by all the students and the students saw a direct correlation between this programme, the qualification and their future employment market. Equally, all of the students recognised the value of this qualification and their career and salary prospects.

Some of the responses indicate that the students were impressed by the information they received from careers teachers:

*“The career teacher thought this would be better for me than what was offered at school”*

*“It is the career and area I want to work in”*

And from another student-

*“I went to the information night with my Dad and him and I liked it”*

All of the students saw the opportunity for tertiary pathways that this model would provide-

*“I chose this program because it offered me a chance to go to uni that is something I don’t see myself doing”*

*“This was a good opportunity for me”*

*“This program has a clear articulated pathway”*

As the reviewed literature indicates, the decision to enter tertiary education, in particular university is formed through schooling experiences, domestic backgrounds and strong education engagement. The responses of these students show that some of them saw this model as an opportunity to “get into” tertiary education, an area from which they had previously discounted themselves.

Gale et al (2010) have identified nine or determinants of effective interventions in schools to improve higher education outcomes for low SES students. These or determinants are grouped by Gale et al into four main strategies – assembling resources, engaging learners, working together and building confidence. It is within the strategy of building confidence that the Pathways to Construction model appears to have achieved the greatest success – communication and information about university life, how to get there and remain connected and familiarisation through scheduled visits. The program familiarises the students with higher education and what it means to be a student in that context.

This paradigm was tested by asking the students what they saw themselves learning through this subject. The students were asked what skills they saw themselves acquiring through this program. The importance of this question was to ascertain if the students felt that they were being prepared for a tertiary course. Comments from the student interviews endorse the premise that students see opportunities for tertiary study arising from this model:



*“I got involved in this programme because in the future I want to become a construction manager and I thought this was a great pathway to lead me onto that opportunity because after this opportunity I can do a Diploma and get me a construction manager job” (R)*

*“This is the first time I have been into RMIT or into university” (K)*

*“Well for me I like the fact that it’s opened up a doorway that I can branch off now into the Diploma and then the degree” (K)*

*“Well- I can come back next year to do the diploma and then the bachelor afterwards but I think I’ll try to get an apprenticeship. If I do I might come back in the future and continue to get my diploma” (C)*

*“This is a good opportunity. It is not like school-you get a fair bit out of it, it leads somewhere” (R)*

Their results also indicate that they see themselves as learning a mix of vocational and knowledge skills. Knowledge and communication skills along with some management skills are viewed as tertiary transition skills. Whilst the students still see themselves as acquiring basic vocational skills, it is clear they are also acquiring tertiary preparation skills.

The students were well aware of the university structures and the contexts and lifestyles arising from these structures. Their responses indicate the view that they believe participation in higher education is achievable for themselves and “everybody”. For a number of the students this perception of university as being for “everybody” was an important change to their understanding prior to entering the model.

*“If I hadn’t done this programme I wouldn’t know of the pathways now I know If I don’t get an apprenticeship I can always come back to RMIT University and try to get the diploma (then the degree)” (R)*

*“I would be the first in my family to come to uni—I tell my parents what I go through when I’m here then they know” (R)*

The students indicated a familiarity with the university setting and staff. Although they had been quite anxious at the outset and commencement of their first year, all were now at ease and felt confident in the environment; all were keen to return to the university at some stage. A few had re-aligned their career aspirations in the face of what they had encountered through this model.

An important question focused upon what the students saw themselves doing after they completed the VET in Schools subject. The table below indicates their aspirations. They could answer more than one option.

Table 13: Student Aspirations: case study 1

Aspiration	Percentage of Students
Go on to study university degree full-time	22%
Study at TAFE full-time	9%
Work part-time, study at university part-time	4%
Work part-time, study at TAFE part-time	17%
Work full-time	26%
Apprenticeship	13%
Unsure	9%

The interview results reveal that the students understand the relationship between the VET in Schools Pathways to Construction model and future opportunities.

These intentions are further explored, with most of the interviewees valuing continued study either immediately or at some stage in the future.

*“Yeah, about next year I am aware now that I can keep coming back to uni and how it helps me” (R)*

*“I will stay on now-yes I think I would have. I’m sure that a lot of people in this course probably would have (gone on)” (K)*

Staff in this model were also interviewed regarding the success of the pathways project in attracting students who would not normally be represented in the Diploma of Building cohort. One staff member comments:

*“If students do not get an ENTER score of mid-seventies, the normal thing is that they won’t get into the Diploma of Building here at RMIT because I think this year’s intake we needed an ENTER score of 74 or 73. Whereas young Donny (alias), one of our second year students I think he got 52 for his ENTER score. Now Donny is one of our best VET in Schools students and when he goes into the diploma as a second year student next year, he’ll be one of the best students in that class. He’ll run rings around all the other students because one, he’s got building skills and knowledge and two, he loves it and he works hard at it and he works at his studies because he enjoys it”.*

*“So he wouldn’t be here at RMIT if he hadn’t done the pathways?” (Interviewer)*

*“That’s exactly right; he wouldn’t be here at all. He would have gone another path similar to getting an apprenticeship, doing a four year apprenticeship, then coming in as a part time student doing a Diploma of Building part time, because his score, he wouldn’t have been accepted”.*

*“If at all?” (Interviewer)*

*“If ever, yes, and so he would have had a 10 year path in front of him to get his Diploma of Building and yet, he will be one of the best graduates we have at the end of the Certificate IV and I’m assuming when he goes through to do the diploma, he’ll also be one of our best graduates”.*

*“So the pathways really worked quite well for him because he wouldn’t have been on this track if he hadn’t been involved in the VET in Schools?” (Interviewer)*

*“That’s right, that’s exactly right”.*

The importance of the VET in Schools Pathways model as a facilitator of information about tertiary opportunities was also underscored by staff comments:

*“Do you reckon the students when they come in are aware of where this could lead or do they learn that throughout their time?” (Interviewer)*

*“They learn along the way”.*

*“How is that? Is it osmosis or are they adjusted?” (Interviewer)*

*“They ask and I try and answer as best I can”.*

Appadurai (2006) has argued that “without systematic tools for gaining relevant new knowledge, aspiration degenerates into fantasy or despair” (pp. 176-177). Students involved in VET in Schools, Pathways to Construction, have, through student/staff ratios and attendance at the university, access to people who have significant experience in university models and teaching. The students are able to gauge or benchmark their performance against the requirements of the new context. The teacher/student ratio of 15/1 produced great opportunities for interaction and discussions about the university environment.

In evaluating the model, one staff member commented:

*“So these students wouldn’t have been here at university if they were not involved in this programme?” (Interviewer)*

*“They wouldn’t have been here at all”.*

*“We would never have seen them at RMIT?” (Interviewer)*

*“No”.*

*“This is a great opportunity for them then?” (Interviewer)*

*“Well not only it’s a good opportunity for us too to get these quality students coming in because they will make fantastic graduates and that’s what’s more important. I mean the ENTER score might be fantastic, but it’s not right for building. The ENTER score is good for some stuff I don’t know what, but it’s not good for us here. I wish we could actually interview all the students rather than just rely on an ENTER score. It would be better because we can work out who really wants building, who really wants the Diploma of Building and who is just doing it because their parents told them they have to do it”.*

### 5.2.1(ii) Graduate Certificate in Construction Management (RDO ) Model

The Graduate Certificate in Construction Management (code: C0033) is part of AQF level 7. It is offered at RMIT through the School of Property, Construction and Project Management. The Graduate Certificate was offered for the first time in 2007. The model is specifically targeted at those employed in the built environment industry and aims to provide a qualification for those not formally accredited in construction. The model is advertised as a great opportunity for someone looking to make the next step in their career. The program is designed to be studied part-time over one year and attendance at the University is generally on building industry RDOs (rostered days off).

By using the industry RDO, individuals can equip themselves with advanced training in an accelerated time frame and move into a management role in the construction industry quickly. RMIT University has a close collaboration with the construction industry and relevant partners. This program gives ultimate flexibility and choice to assist in developing individual careers. Applicants are required to be currently employed in the construction industry and possess at least a Certificate IV in Building or a related trade. Additional requirements include some supervisory experience or management potential and at least three years in the construction industry.

There is an element of pathways recognition, mostly for previous study. Recognition can work in two ways. Completed or partly completed TAFE qualifications can be credited towards the Graduate certificate; likewise, partly completed degree studies may be credited to this program. Graduates completing the course, at the time of writing, had no guaranteed entry to further post-graduate studies at the university. Students may negotiate individual credit transfers and pathways with relevant program coordinators upon completion of the graduate certificate.

The majority of the intensive classes are conducted face to face. There is a small online component. The 25 students enrolled in this program represented the following age range

*Table 14: Student age range-case study 2*

<b>Age</b>	<b>Percentage</b>
15-20 Years	2%
20-25 Years	12%
25-45 Years	65%
45-+ Years	21%

Table 15: School or employment status-case study 2

Employment status	Percentage
Study secondary school fulltime	
study university full-time	
Study TAFE full-time	2%
Work part-time, study at university part-time	
Work part-time, study at TAFE part-time	98%
Work full-time	

Of the students, 22 % reside in lower SES geographical areas as the breakdown chart indicates. All but two of the students are male in the current cohort of 22 students. Their SES status is indicated in the following table:

Table 16: SES case study 2 students

Region of Melbourne SES*	Percentage of Students Living in Region
Low	22%
Middle	54%
High	24%

A key element of this pathways model is to provide people in industry with further qualifications and training to undertake post-entry level training. Although the fee level was low, and subsidised by fee-assistance, the model was not over-subscribed. The presence of individuals in the high SES bracket is indicative of the relatively high wages paid to construction workers and their aspirations to undertake further training.

All of the students are interested in further study or using this qualification to support them in their careers. All of the students saw the opportunity to undertake further study as important and a number were dissatisfied that the qualification did not have clear pathways established.

In terms of implementation, the Graduate Certificate in Construction is structured around industry availability – rostered days off – so attempts are made to facilitate its attendance success. This consultation is made with the students and to a limited extent their employers, but does not extend to the wider industry. The model does not articulate into any existing pathway and students are required to seek their own credit and pathway into further study. This was noted by staff and students alike:

*“I don’t think it’s in the wrong school. I think the structure’s incorrect. I think we shouldn’t have it as a Grad. Cert. only. I really do believe we should have it going on to a Masters”. (Student)*

*“The current Graduate Certificate being at 12 month solo currently. If they wanted to develop their skills and continue on, they’d have to enrol into, as far as RMIT goes, the Master in Project Management. And that’s probably the*

*only link we have. If they wanted to continue, they'd have to outsource it to another university, and look at going into a Diploma of Construction or a Diploma of Building". (Staff)*

Not every student in the model was financially supported:

*"No, my employer doesn't actually support me coming to this programme at all. So it is something that I do out of my own time, and effort and price". (Student)*

In relation to pathways and inclusion of the whole student, staff, employer cohort there was considerable misunderstandings. This was evidenced in the student's understanding of where the model was in terms of accreditation and on-going studies:

*"Yeah at the moment, I know that they don't, yeah, I don't know the pathways. I don't know if the Master is going to be held next year. I don't know if there's going to be another course or a Dip or whatever it is, they still haven't told us".*

*"And you're not aware of what credit you'd get if we do start the Masters?" (Interviewer)*

*"No, not yet". (student)*

An important characteristic of the DEMO model is the building of confidence amongst the learners. The interviews indicate that for the students interviewed, there was little aspiration building, and little mention of pathways to build learner confidence. As the interviews were held at the commencement of the year, it is possible that this information and confidence building was built into the second part of the year, but the importance of undertaking on-going confidence and aspiration building was lost in the first part of the year. The Graduate Certificate was treated as a post-graduate qualification by the university school, with mature aged entrants to university. However as most of the participants were 'first-time users' of the university, the importance of aspiration and confidence building should not be disregarded.

Another important characteristic that the researchers were keen to develop was the aspect of collaboration and working together. It was evident that the collaboration and cohort-based engagement of the stakeholders in the Graduate Certificate in Construction was limited, if evident at all. The various stakeholders – the students, the employers and the university were operating independently especially in regards to model design and development. As a pre-packaged competency based curriculum, the Graduate Certificate had not input from the student's employers and the students enrolled in a "take it or leave it" model. The course design conforms to national standards and alterations can only be made at the local level through teaching modifications that recognise the local differences. When asked if the Graduate Certificate needed development in this area, the staff gave the following answer:

*"The curriculum's got to be developed, and I think the curriculum's got to be fairly consistent with what the industry's requiring of construction managers,*

*which is similar to what I suppose we're doing in our undergraduates currently. And making certain that we develop that. Industry specific might be a lot more tailored towards architectural engineering issues, and starting to develop some of those skills. And that's where the void is". (Staff)*

Table 17: Student Aspirations- case study 2

Aspiration	Percentage of Students
Go on to study university degree full-time	35%
Study at TAFE full-time	2%
Work part-time, study at university part-time	24%
Work part-time, study at TAFE part-time	2%
Work full-time	22%
Unsure	15%

Both RMIT pathways models presented here have drawn on interviews with under-represented groups in higher education- low SES students and mature-aged students with no formal qualifications. Both models emphasise the importance of learner engagement, confidence building and consistent, early intervention to promote transition to higher education.

### 5.2.2 Case Study 2: University Western Sydney

The University of Western Sydney has six campuses located in Greater Western Sydney (GWS) and a mission that links its activities to the development of the region. GWS is a global centre for trade, innovation and learning with the third largest economy in Australia behind the Sydney CBD and Melbourne. Its population is the fastest growing in Australia and the multicultural community of GWS is one of the most diverse in the world with over 100 nationalities calling GWS home.

The university mission is to be a university of international standing and outlook, achieving excellence through scholarship, teaching, learning, research and service to its regional, national and international communities, beginning with the people of Greater Western Sydney

The university has a diversity strategy of: increasing the participation rate of low SES students to 24.0% by 2015. This would place UWS in the top quarter of the sector. The UWS offers a range of programmes, including a number of built environment programmes. This project examined two pathways models operating in construction management.

The two models of pathways into the construction management degree selected at UWS were the most common models and represented high percentages of enrolled students in the degree.

It is worth noting, however, prior to discussion of the models that the project leaders were continually reminded of the retention of enrolled students at UWS in construction management degrees. A significant number of students at UWS noted that, if given the opportunity, they would proceed to UTS or, in some case UNSW, to complete their construction management degree. This appeared to be a trend after first year of study, but was not limited to first years only. It is beyond the scope of this research to consider such movement, being concerned with entry to higher education of under-represented groups through existing pathways models only, but the strength of the trend was noted by staff and students alike in this case study, and warrant further research.

### 5.2.2(i) UWS TAFE articulation model.

The Bachelor of Construction Management CRICOS Code 049425D is a four year nationally accredited degree offered in the school of Computing, Engineering and Mathematics. Entry is via the state based UAC (University Admissions Centre). Students who have completed a Diploma of Building and Construction from TAFE NSW [code 19735] are eligible to apply for entry to the degree with the following conditions:

- Guaranteed entry into the Bachelor of Construction Management and 80 credit points applied to an individual's University record. This is approximately one year of full time study in credit
- or
- Guaranteed entry into the Bachelor of Housing and 80 credit points applied to an individual's University record. This is approximately one year of full time study in credit.

Agreed credit is provided to all applicants and the university promotes the pathway on its website and throughout the associated TAFE Colleges. Students apply from a number of nearby TAFE Colleges. The articulation model is well understood by students and staff in the TAFE institutes. Numbers of applicants vary on an annual basis, but nearly all qualified articulants are accepted. Students interviewed in this research indicated strong motivations to undertake the construction degree and felt that this TAFE pathway prepared them well for future study.

*"I wanted to get into construction degree, so going to Granville TAFE was the way to get there. I didn't get the entry to UWS"( UWS articulant)*

*"No-one of my parents went to uni here, or anywhere I think, so this is the first time for me"(UWS articulant)*

All learners in this model commented upon the fact they had access to sufficient, informed resources to continue their studies. The learners commented upon the knowledge and willingness of staff to answer their questions, undertake enquiries for them and provide them with support as they progressed through the programmes. All felt they had been well-resourced in their movement from TAFE to higher education. Resources such as articulation project officers, "go to people," and



knowledgeable academic staff were assembled for these students in spite of the fact many of the articulants were the first in their family to go to higher education.

*“ Like I was well prepared. The TAFE people at Nirimba gave me forms and stuff. The work is about the same, some subjects are different, but it has been mostly the same type of work. The difference is the smaller classes You could ask a question of one of the teachers at TAFE and they would straight away be there to answer you” ”(UWS articulant)*

*“No, none of my family have come here (to uni), but they wanted me to get qualified in building”*

The staff/student ratio at TAFE appeared important to these students.

*“It was easier work, like getting on with it, there weren’t sort of lectures and things like that, it was mostly just a few teachers and there were practical classes.”*

*“The number of teachers was sort of more”*

*“You were there more.....”*

The students interviewed in this study were all first in family to attend university. Their insights provide understandings of the important role of the pathways model in providing communication, information and confidence to facilitate transition to higher education.

### 5.2.2(ii) UWS College pathways model

Located in Greater Western Sydney, UWS College is a pathways college for students to Bachelor degree programs at the University of Western Sydney (UWS). UWS College is a not-for-profit company wholly owned by the University of Western Sydney (UWS). It was established by the University in 2006 from two pre-existing entities in which it had a majority interest. The main focus of UWS College’s education programs is to prepare students for UWS undergraduate and postgraduate programs by developing their academic, learning and study skills. The main intake of students is from secondary schools with a small cohort of mature-aged and international students.

Successful progression through UWS College’s suite of programs (University Foundation Studies and Diploma) offers students pathways to UWS Bachelor degrees. UWS College has an impressive record of producing graduates who perform well academically in their studies at UWS. The College describes itself as offering a small, close and culturally diverse community that understands and supports students in their challenges and aspirations and takes pride in their achievements.

Diplomas are equivalent to the first year of the corresponding degree at UWS. On successful completion of the Diploma, you will gain entry to university with one year advanced standing\*. If students achieve a Grade Point Average of 6.0 or higher in University Foundation Studies, they can be accepted into a Fast Track Diploma (two semesters/eight months). A UWS College Diploma in Fast Track mode

means students are able to complete a three-year UWS degree in only two years and eight months.

Entry to UWS degree is upon successful completion of a Diploma Program and requires a 50% pass in all subjects. Students can then proceed to the second year of the UWS Bachelor Degree having studied the equivalent of the first year. The Diploma in Construction Management provides students with the first year units included in the Bachelor of Construction Management course covering the science, building and management aspects of construction management.

Students are assumed to have studied Mathematics at senior high school level or to have passed University Foundation Studies Mathematics at UWS College. Fees are set at \$8,050 per annum (2012).

In the past three years, since the UWS College has been offering the Diploma Construction Management, the number of students undertaking this pathway has been consistently increasing.

Table 18: Number of Students entering UWS from UWS College.

<b>Year</b>	<b>Students progressing to UWS Construction Management HE</b>
2010	46
2011	73
2012	104 (est)

The increasing numbers of students using these pathways indicates its success. Students are given clear advice about credit transfer and articulation arrangements.

A key characteristic of the DEMO model is enabling resources. That is the early, long-term and sustained intervention by the university in the model. In the case of the UWS College model, there were committed resources and status to the models. Students were enrolled as “quasi” university students and afforded the status of someone who was on the way to a degree. Allocations of funding were set aside for resources that included administrative as well as academic support. The students were aware of this investment:

*“Yeah, well you know that if you go to UWS College, you are guaranteed entry to UWS, like everyone would know that.”*

The role of the UWS College in accepting under-represented groups was obvious to both the students and the wider community:

*“I knew if I got in, then I would be able to go on to university. I was able to get in”*

*“Everyone says you get more help at the UWS College. ....I knew from my school and my friends”*

That students are engaged throughout this pathway was evident in both the interviews and the high degree of understanding by the academic staff as to what preparation the students received at UWS College:

*“well the university College is HECS, but with smaller class sizes and everyone who goes there wants to get in here....they are like the ones we turn away. In first year, they had 80 students, now and very good resources and teachers.”*

*“Well at UWS College, they would recognise that the students are different and treat them like that....you know different teaching ways and different resources.....”*

Gale et al ( 2010) talk of the importance of engaging learners through the recognition of difference and the valuing of knowledge brought. UWS College has the opportunity to modify and enhance curriculum to meet student needs and then align the outcomes with the university curriculum. The advantages to students were obvious and at the time of writing the retention rate of students moving from UWS College to UWS was extremely high and anecdotal evidence indicates it was higher than the retention rate of students entering directly from TAFE to UWS.

In this pathway, students felt confident in proceeding to higher education. Enablers were the resources that were available to them to continue onto higher education and the engagement of the curriculum during their pathways experience. Each of these determinants appeared to build confidence in the students to proceed. This was particularly relevant to these students as all the interviewees were first in family to attend university.

It is likely that this model will continue to expand as, at the time of writing, it had been in operation only three years with extremely positive outcomes for under-represented groups in higher education.

### 5.2.3 Case study 3: University Technology Sydney

UTS have a singular vision, expressed in its strategic plan - to be a world-leading university of technology: “To achieve this, our leadership in learning and teaching must be coupled with international renown in research, and a world-class infrastructure that supports our vibrant intellectual environment.”

The construction management degree is offered on a four-year, full-time or six-year, part-time basis. Students may transfer between part-time and full-time attendance patterns. Part-time students attend one day and one evening a week. Full-time students may be expected to attend at any time during the week. The contact hours allocated to each subject are nominal and often involve a combination of lectures, tutorials, workshops and self-directed teaching methods. Some subjects are offered online and, according to demand, some subjects may be offered over summer session. The course program consists of 192 credit points, comprising 28 6-credit-point core subjects and four 6-credit-point electives, the latter chosen either from

within UTS: Design, Architecture and Building or from the many electives offered by other faculties throughout the University.

### 5.2.3(i) TAFE/ UTS articulation model

The numbers of students articulating to UTS construction management degrees varies on a yearly basis. A high correlation factor is the requirement to complete the UAC and obtain a tertiary entry score, which is used by the university as the main admission requirement. TAFE students are afforded a UAC score based upon results obtained in their diploma study. Direct entry is via special access schemes or Special Tertiary Admissions Test (STAT) results.

In recent years, tertiary admissions rankings (ATAR) scores have been steadily rising with the degree extremely popular with school leavers, industry entrants and articulators.

Students articulating from TAFE at UTS felt supported and were strong advocates for the efforts the individual TAFE Colleges went to ensure they were informed of their options:

*“I got to discuss with professional older people who had a lot of experience, what to do.”*

*“the teacher we had was fantastic; he had a lot of experience and things in project management, so it just got me all excited about doing the work and going on.....to UTS.”*

Students were also appreciative of the efforts made to encourage pathways entry from the university:

*“I tried to speak with someone in construction here, it was a while ago, but each time I rang they spoke saying you have to do the diploma, then they all gave me the same advice...do the diploma first”*

*“I went for a job interview and they said to ring the uni, so I did and they said to apply with the diploma” (UTS articulant)*

*TAFE is good, it helped me get here...”*

The importance of consistent, informed access to professionals is a key determinant in an individual's decision to continue in study. Gale et al (2010) found that for students from under-represented cohorts in outreach programmes, this determinant helps assemble resources needed to undertake the higher education journey.

The importance of engagement of the learners at TAFE was also consistently emphasised by the interviewees at UTS:

*“Obviously I used TAFE as a stepping stone to here, but I learnt a lot along the way. I'm much better off, I've got much more than a stepping stone.....I had one on one learning, I learnt the environment ( of tertiary education), it was*

*an adult environment. I'm more reliable on myself now thanks to TAFE."*

*"Some of the students here, lack ability to cope, they have been force -fed, but at TAFE, well it was understanding it as well"*

*"At TAFE I got to use an automatic level and a theodolite, I am not sure if the students here have used one, but it was good experience and useful too"*

UTS articulants were also able to draw confidence from the communication and consistent information they received from the university about the degree and the requirements of the course. Although apart from open days and telephone calls, none of the interviewed students had attended the university, all felt confident in transitioning to higher education. They commented:

*"at uni people just get up and walk out, at TAFE, they are involved in conversations. If I didn't go to TAFE, I would have missed that, but lucky I did, or else I would not have liked uni....it would be strange to not talk to everyone at least for the first year."*

*"I definitely think TAFE helped build my confidence to cope here...the ones straight from school are not as motivated"*

One determinant to engage learners that was noted by the interviewees was the opportunity to work collaboratively at TAFE.

*"TAFE was incredible. The things I learnt and the more of smaller groups and small focussed, plus the price was cheaper as well"*

*"There was definitely more group work, yeah, that was good"*

*"Well I don't think the uni kids want to work in groups like at TAFE....it is not organised the same way"*

All of the students interviewed in this pathways model were from under-represented groups: NESB, first in family or low SES. The interviews indicate the importance of sustained communication, assembled resources and enhanced curriculum to facilitate transition to higher education and build confidence in the learners.

One issue to arise in the study of the three NSW case studies was the calculation of ATAR scores based upon TAFE results. Academic staff noted the inconsistencies in calculations from year to year and the lack of understandings regarding the calculations. This was noted as affecting TAFE articulants and possibly under-represented cohorts unevenly. Whilst beyond the scope of this study, the review of the grading system both within TAFE and for the final ATAR calculation warrants further research.

## 5.3 Evaluation of case studies against the DEMO matrix

The DEMO matrix, discussed in detail in chapter 2, illustrates the importance of a number of or determinants in providing equitable outcomes for learners in outreach models. In this research the DEMO matrix is used to examine the equity outcomes of the pathways models and the learners involved in them. The interviews provide a number of insights into the opportunities for learners in these pathways models. These insights are examined here, grouped into the determinants of the DEMO matrix (Gale et al, 2010).

### 5.3.1 Assembling resources for learners

The RMIT VET Pathway model, the UTS articulation model along with the UWS –TAFE and UWS College model were all able to provide a strong “people-rich” component to their models. “People –rich” is the term applied by Gale et al (2010) in the analysis of outreach models. People-rich refers to resources that include people who are both knowledgeable, helpful and facilitate transition and pathways to higher education. In the case of these three models (RMIT VET pathway, the UTS articulation model and the UWS College pathway) there were a number of people-rich experiences for the learners. In these models, orientation and information rights were conducted in both university and College settings before the students commenced and relevant teachers were briefed about the models and the pathways. In one model, a coordinator was available full-time for consultation. All learners in these models felt they had access to sufficient, informed resources to continue their studies. The learners commented upon the knowledge and willingness of staff to answer their questions, undertake enquiries for them and provide them with support as they progressed through the models. Gale (2010) stresses the importance of “extended conversations” to provide resources for the learners. In the case of the RMIT Graduate Certificate learners, these resources were not available and the learners felt limited in their access to further study or pathways. It is noted that the capacity of the university to provide and train staff and others in pathways transitions to provide a people –rich experience is dependent upon resources and understandings of transitions and the importance of such models for learners.

One key characteristic of assembling and providing resources was the importance of geographical and facility orientation. Visiting the university for classes or visits was vital in establishing confidence, access and familiarity amongst the learners. In the case of RMIT and UTS, this proximity was achievable due to geography. UWS College staff had to work harder at creating this experience, and the importance of “link” people was noted. This was undertaken at UWS by staff familiar with students and the model, who conducted special orientation nights. Students were exposed to staff that had all been employed at the university for some time and were able to give casual advice about university pathways and credit transfer.

Another important part of people-rich resources is the ratio of staff to students. Where students were engaged in pathways models that had staff/student ratios deliberately capped, greater people-rich experiences were created. RMIT, VET in

schools had 15 students per class, and this was also true of the UTS TAFE students and UWS College students. If a student was absent or performing poorly, the coordinators or model leaders acted as a mentor to the student and, if necessary, the student's parents.

By comparison the RMIT Graduate Certificate in Construction was unable to provide a people-rich experience for the students. The key lecturer was also responsible for recruitment with some direct marketing provided from the university school (Flyers, website updates). The recruitment and information processes consisted of a mail-out to Victorian building companies with a number of posters displayed on Victorian commercial sites. The non-targeted nature of the marketing meant that mature-aged students with first degrees were enrolled alongside students who had completed secondary school. Some students were employed in the construction industry; others were attempting to gain entry to the industry. As the lecturing staff was employed on a contract basis, there were little "university-rich" understandings of pathways and credit transfer. The graduate certificate was not formally articulated to any other model in the school or the university at the time of writing. As the key catchment model for existing workers in the industry, the lack of a people-rich experience was stark and may have contributed to poor retention rates.

The use of mentors, tutors and peers as support resources is seen as a valuable aspect of enabling resources (Gale et al, 2010). None of the students interviewed noted these elements as important in their transition. A few of the interviewed students emphasised the importance of interested, supportive tutors, but there appeared to be little difference between the need for supportive tutors by all university students in this discipline.

The interviews indicate that students in Pathways models, who had access to people-rich resources, were more inclined to continue to higher education than students who did not have such access. Although an important enabling resource is financial support or incentives (Gale et al, 2010), none of the students in any of the pathways models had access to additional financial incentives such as scholarships or bursaries. All relied upon a fee structure set by the government and access to fee-help as per the government structures. The access to further financial incentives did not appear to affect the retention rate of the student cohort in any pathways model. Whilst the drop-out rate for the RMIT Graduate Certificate students was considerably higher than other models, the correlation between financial resources and continuance is low, given the number of middle and high SES learners in this cohort. However, without a comprehensive survey it is difficult to isolate financial factors as a contributing element to the retention rate in this model.

Another characteristic of enabling resources is early, long-term and sustained intervention by the university in the model. In the case of RMIT VET Pathways and UWS there were committed resources and status to the models. Students were enrolled as university students and afforded the same status as other students. Allocations of funding were set aside for resources. These resources included administrative as well as academic support.

The interviews emphasise the importance of the teacher as a “people rich” resource. That, along with the low staff/student ratios and the provision of access and a curriculum deliberately geared to transition, contributed to student satisfaction and continuing pathways to higher education.

### 5.3.2 Engaging Learners

The recognition of difference is premised on the perspective that students in these models bring a range of knowledge to their formal education and this should be recognised and valued. The UTS, UWS and RMIT VET models all provided RPL and recognition of learning, both formal and informal, although only the RMIT Graduate Certificate acknowledged this through formal “exemptions” from units of study. However, all Pathways staff interviewed were cognisant of underlying skills and knowledge and created opportunities for students to share their existing knowledge. All programmes were deliberate in their targeting of students – the RMIT Graduate Certificate, UWS and UTS models demanded either formal qualifications or informal work experience, whilst the RMIT VET Pathways concentrated upon motivation and interest in the industry. The UTS students were appreciative of the RPL, although a number of them did not access RPL, even after being accepted to the university programme.

None of the models enhanced the academic curriculum to sustain ongoing transition. This was seen as a by-product of the curriculum. All models rigidly adhered to the set curriculum as a tenet of the model. None of the staff interviewed felt qualified to vary the curriculum to suit the learners – changes to the curriculum were made at the margins, if at all. In all cases, the model itself was seen as the pathway, not the individual learner.

Similarly, neither RMIT VET Pathways, UTS TAFE, UWS model nor the RMIT Graduate Certificate engaged in research-driven interventions. The research capacities were not used to inform model design or implementation or evaluation. Staff in all models felt confined by the curriculum and did not steer the curriculum away from the set competencies. Evidence from the interviews with staff indicated that intervening in curriculum or model design on behalf of pathways students was not their prerogative.

Transition research did not affect either model design or evaluation in any model examined in these interviews. There was no evidence from the interviews that learners or staff felt inclined to alter programmes or models to suit learners or particular cohorts. In the case of UTS and RMIT, the numbers of learners admitted was dependent upon the ratios set by the university and the students were aware that they may not be “offered a place” The learners commented upon peers who did not “transition” to higher education, and there was general acceptance that places were limited and this was the major reason. The UWS College model interviews indicated that there was active feedback between the UWS College and the university about the performance, quality and curriculum requirements of the



various courses and the need to prepare students who would be transitioning to higher education.

The engagement of learners as “pathways students” was limited in the models examined in this research. As indicated in the project brief, these pathways models in this research have the greatest potential to deliver a more diverse cohort to universities in construction management, yet only two of the models were adequately addressing one of the key or determinants of the DEMO matrix, of engaging these learners. Staff interviewed noted that these students may have some difficulties, but there was little evidence to conclude that curriculum intervention or better feedback was being utilised. In all of the interviews, the students noted that they were given the same block credit and the same pathway courses as peers who had come directly from school or elsewhere.

In many cases staff commented that these pathways students were performing better than their peers. Sustained research-driven intervention was employed to adjust or modify curriculum. As, in general, the students transitioning to university tended to perform better than their peers, it was assumed that no intervention was needed to better engage these learners. A number of the interviewed students noted their ability to undertake work at a higher level than their non-pathways peers. UWS have undertaken initial longitudinal studies of articulating students and are currently compiling data. Initial indications are that the articulating students in their pathways models are performing at equal or above average levels by comparison to non-articulating peers, but this data is still in its collection phase. It is through the collection and publication of such data that misconceptions about pathways models can be dispelled.

Gale et al ( 2010) talks of the importance of engaging learners through the recognition of difference and the valuing of knowledge brought. There was evidence that UWS and RMIT pathways models valued the prior learning and sought out information about the learners prior to entry and post entry. Learners commented upon this in the interviews, but in general it was isolated cases of the recognition of difference and RPL. The “one size fits all” of credit transfer and RPL was mostly used with the students in this study and although the students did not feel under-valued or were not dissatisfied with the outcomes as individuals, there was uniformity in approaches to RPL, that did not indicate individual valuing of learners and their full prior experiences.

The pathways model that targeted low SES learners, the RMIT VET in School model, was the most successful in valuing individual experiences and prior learning. This was evident in the approaches taken to deal with these students when they were unable to complete work or required additional assistance: the presence of a full-time coordinator also indicated individual support for these learners. However, all students in all models had access to university facilities such as work and study centres, additional assistance with study and assignments and careers. There was considerable evidence that the students did not access this assistance without targeted guidance.

It is clear that more work needs to be done on engaging learners who transition through pathways models to university. The results of the interviews, whilst not indicating dissatisfaction amongst the learners or the staff, do indicate that it is a “one size fits all” approach to the curriculum once the students do undertake the university degree. The interviews indicate that further efforts to enhance the curriculum to match the learners and vary activities to suit articulants is needed. This is evident in comments such as:

*‘I don’t know if there is a relationship between Petersham TAFE and UTS, but I got the same credit as the others’(UTS articulant)*

There is also evidence, particularly in NSW, that both TAFE and Higher education staff are unclear as to how students receive tertiary equivalence rankings and how the results from TAFE are calculated into a final university entrance score. This confusion was also evident amongst students:

*“Well I did the entry test thing- the STATS, and then I don’t know how they decided, but I was accepted, which is good! “( UTS articulant)*

And *“some of my friends from TAFE were not accepted, but they were just as good as me” ( UTS articulant)*

There is evidence that the quality of teaching is well received by the learners in these models and that the curriculum is achievable. Additional work does need to be undertaken in research driven interventions to engage ALL learners in these models as there was a degree of pre-entry anxiety evident in some of the interviews. This comment from an articulant at UTS exemplifies this feeling:

*“definitely, it was still a worry after I got my diploma.....to try and think whether I got in or would I still get in. You apply and wait and wait and worry and then start thinking that everyone else gets in but you” (UTS articulant)*

The importance of early communication is also vital to engage and support these learners.

### 5.3.3. Working together

A key measure of working together is collaboration between stakeholders across different sectors and agencies at all stages of programme development and enactment. Evidence from the RMIT VET in Schools Pathways Project and UWS model illustrates the extent to which the whole school/department systems were involved in the model design and implementation –

*“Our teacher at X College advertised that RMIT were having an information night and I went along and heard from guys who are in second year now and they talked about what they did and I found that interesting. Then my parents and I were talking to the RMIT co-ordinator and then I had an interview and then I got in”. (Z)*

and information was further provided to the students through the university marketing in their communities –

*“A friend’s mum saw an article about these kids in her newspaper and she told my mum and my mum rang up and then we met Elise and then we came in and I had an interview”. (UWS)*

The involvement of teachers, parents and others in on-going model design was also evident –

*“My parents like the fact that I am here, but they don’t push it. We get feedback from UWS and then my parents and I talk about the future and courses”.*

*“Yeah TAFE is helpful. Like every Wednesday they let me come in here and they make me do the work, but I have to catch up other work – but they don’t make me do too much. It’s okay, they understand”. (UTS articulant)*

*“Well the school has current first years involved and they, like, know the programme so they have experience in what I have to do”. (UTS)*

Each of the stakeholders in the various pathways models was making specific accommodations to help implement the effective programmes. This was particularly true in the case of UWS College and RMIT VET–

*“There’s a double prac in the morning followed by a break and then there’s recess and then there’s one session in the computer room and then there’s lunch and then you have double prac in the afternoon. So you don’t miss out on – you only miss out on one part on a Wednesday”. (RMIT VET)*

In the course of the interviews it was obvious that all the students felt that their parents or families were in partnership with the university and TAFEs to provide a positive outcome for them. This was evident in their familiarity with the models and their implementation. None of the students reported problems course material, requirements or attendance. There was evidence that the whole of their community, including in some cases their part-time employers were both aware of their studies and actively providing motivation, support and interest in what they were learning and the outcomes of this learning. The efforts of a wide variety of stakeholders to support the learners is a key feature of a successful opportunity to retain learners throughout the pathway to higher education.

This characteristic of effective pathways having many stakeholders all working together was also evident in the role of employers. Interviewed students felt their employers were more likely to employ them if they had completed a TAFE qualification as well as commencing a degree. One student commented:

*“Oh definitely I got the job because I had a TAFE qualification. I was surprised, but the employer said he would take me ahead of just uni students you know” (UTS articulant)*

For the learners interviewed, the advantages of being an articulant or pathways student with a TAFE background far outweighed the transition problems they may have encountered. There was a sense from the interviews that the students saw the pathway as having an employment “bonus”

*“Yeah, like, I can get jobs that the other students can’t” ( UWS articulant)*

A second element of working together is developing an approach that engages with the whole cohort to change peer cultures and still supports individuals. A clear influence is the size of the cohort – how many students are involved. But the actual number is not as important as the contribution this number makes to changing peer group attitudes towards university pathways. Gale et al (2010) make the point that the operational footprint could be state wide, even by the measure of one student. Essentially it is the capacity of that one student to influence the attitudes and behaviour of peers. This aspect was not clearly addressed within the interviews. Learners from all models were very individually motivated and the sense of cohort was not experienced as either an articulant or a pathways student. One student commented about peers and the idea of being a “TAFE Cohort”

*“they had a special meeting of all the TAFE kids to explain the procedures, but that was it really. ( UWS)*

The absence of cohort and peer culture was most likely reflective of the construction and built environment disciplines and the industry itself, where peer culture is heavily structured around work tasks.

#### 5.3.4 Building Confidence

Gale et al (2010) indicate that key elements of building confidence in learners to proceed to higher education is related to the familiarisation and experiences the students have of higher education and the capacity to access information about the university. In the case of RMIT TAFE, UWS College and Ultimo TAFE, where the students were almost co-located with a university campus, the opportunities to build confidence are both multiple.

Geographic location appears important to the students interviewed in this project. A number commented, that coming to the TAFE part of the university or to a co-located campus, was the first time they had been exposed to university culture and experiences. However, very few of the models made specific attempts to involve the pathways students in university activities. UWS and RMIT, UTS held briefing meetings, but all institutions relied upon open days and external university marketing to reach pathways students. Specific activities like pathways students working with first year degree students on projects was not noted, nor were activities to visit the TAFE departments to engage learners in any aspect of curriculum. This was acknowledged by staff as a lost opportunity to build confidence.

*“If we had time, I would like to get to know the TAFE students and what they can do before they arrive, but it is too difficult....busy”( UWS)*

*“I don’t know why we do not do it, too many applicants I suspect” (UTS)*

*“ Well it is too hard to co-ordinate the two timetables I guess”( RMIT)*

At a number of the universities, interviews were conducted with potential applicants and staff did attempts to work individually with the articulators. However most of the interventions were limited to formal events such as open days and the occasional on-campus visit. It was these activities upon which pathways students had to rely upon for extended information in the models examined.

## 5.4 Summary of Case study findings

The case studies in this report provide strong examples of pathways models currently in use in Australian universities offering built environment disciplines.

In all five case studies were developed from the pathways models examined. These five case studies addressed the following cohorts of under-represented groups in higher education:

- Students from rural and remote regions (RMIT, UWS)
- Students from low socio-economic backgrounds (RMIT, UWS, UTS)
- Students who are mature aged without tertiary qualifications (RMIT)
- Students involved in TAFE/VET programmes (RMIT; UTS)
- Students who are the first in their family to attend university (UWS)
- Students who do not aspire to university education (RMIT)

The case studies indicate a number of powerful and successful pathways models with a number of common characteristics or determinants. It is not appropriate to rank or prioritise these characteristics. Particular universities will draw upon those characteristics or determinants that mirror their own specific context, their own geographical locations and their own cultural perspectives. By not prioritising the perspectives and successful characteristics or determinants from the case studies it is hoped that greater opportunities for future adoption of the models will occur.

Sellar et al (2010) have argued that the Australian higher education sector is “haunted” by the absence of change in participation rates for certain groups across the sector and over time. They argue that good models that address the under-representation of disadvantaged groups throughout the sector have operated in isolation and their effect on the sector has been minimal. It is hoped that by isolating key characteristics or determinants of successful pathways models in these case studies that the information will be utilised by the sector and a greater impact effect will occur.

It is appropriate to say in the Australian tertiary education sector that “one size does not fit all”. It is also important not to dismiss the models that were not as successful in delivering either effective pathways or sustained diverse student cohorts as these models provide examples of the challenges and complexities faced by universities in attempting to address tertiary pathways and diverse student cohorts. However, for the majority of the case studies examined, a range of successful lessons can be learnt and, it is hoped, emulated.

It is also worth noting, prior to discussing these common characteristics or determinants, that the authors of this report were impressed with the high levels of staff commitment and perseverance in quite complex situations to making the models successful and addressing the participation and access opportunities of all students. It is clear that this level of commitment has required a huge ongoing effort to secure these opportunities, often working against the entrenched nature of the university setting. This commitment was evident in all the models studied number and consisted of:

1. A clear understanding of the needs of all students and understanding of the environment of the learners.
2. The strong, sustained and expert relationships with schools, TAFES, and industry, particularly evident where individual staff maintained close relationships such as UWS and RMIT.
3. The on-going dispelling of myths by staff through targeted marketing and promotion of pathways so that there was a better understanding by all the students, other academic staff and the general public

The case studies and the models constituting the case studies indicated a number of common characteristics or determinants that demonstrate the effectiveness of pathways models in delivering a more diverse university student cohort. Whilst these common characteristics or determinants have been adopted by different universities in different contexts, they suggest a suite of orientations that can be applied in any context.

The key determinants of effective pathways models in delivering diversity and greater access for under-represented groups in built environment disciplines studied in this project are:

- The ability of pathways models to assemble resources for learners ,
- The ability of the model to engage learners and
- The ability of the model to build confidence in the learners

The assembling of resources ( Gale et al, 2010) consisted of the provision and interaction of knowledgeable staff and motivating educators at the VET/TAFE level, who were able to give consistent, long-term advice to students about future study and up skilling options. The staff was fluent in articulation arrangements and credit transfer opportunities and kept regular professional contact with other staff in higher education. They were in fact extremely knowledgeable about the built environment, career opportunities and university credit transfer arrangements and passed that knowledge onto students. The frequency of “expert, knowledgeable” staff in interviews as an “enabler” of pathways was significant. To a lesser extent this was also noted as important in the higher education institution, especially by the interview respondents but it was not seen as an essential enabler of access.

The second determinant to arise from the interviews is the ability of the pathways model to engage learners. The engagement of learners is not specific to pathways

models. Evidence exists that the engagement of learners from all backgrounds and at all levels of study is crucial to a satisfying and productive experience in higher education. But in this research it was evident that there were some particular determinants of engagement that promoted effectiveness and the aspiration to continue. Most important amongst engagement of under-represented groups was the need for recognition of difference. Interviewees regularly spoke of the understanding of the institution or the acceptance of them as “different” learners who had “different” needs to the mainstream. The effectiveness of the model was improved if staff, students and administrators undertook steps, however minor, to enhance the curriculum for these students.

Finally the ability to build confidence in learners about their ability to continue in education to achieve greater skills and knowledge beyond the existing was continually addressed in the interviews. Consistently the researchers were confronted with comments such as “I didn’t think a kid like me could go to uni.” It was the intervention of enablers such as confidence activities like visits to the university campus, examples of university work and assessment, meeting university staff etc, which built confidence and resilience into the learner and thus the pathway model, was effective in retaining under-represented students in higher education.

In all three determinants, where efforts had been made to actually incorporate and evaluate the use and impact of these determinants in the pathways model, rather than leaving it to chance, the students had a greater chance of success and the higher education institution benefitted from greater student cohort diversity.

# Chapter 6 Improving Lifelong Learning Pathways in Australian Universities

## 6.1 Introduction

Research indicates that the quality of education is improved overall by an inclusive curriculum, without any loss of rigour. International studies have clearly shown that inclusive curriculum strategies have significantly improved student engagement, retention and success for all students, not just under-represented groups (Froyd & Ohland 2005; Beraud, 2003; Fromm, 2003; Kramer-Koehler, 1995).

Currently pathways models of lifelong learning in the built environment discipline are not systematically evaluated for sustainability or effectiveness. There is little specific guidance about participation of under-represented groups for educators and academics managing these models. This project has examined strategies for embedding these lifelong learning models in the discipline-specific curriculum of the built environment. The project outcomes challenge the entrenched attitudes that diversity is not achievable in specific disciplines and in so doing creates a template through the essential or determinants of best practice models for transforming all disciplines into more inclusive areas of study.

The project reviewed existing examples of successful lifelong models in the discipline of the built environment to analyse the efficacy of these models; develop schema to discern and map elements of these models to identify best practice; and trial and evaluate performance of these best practice models. By doing so this project has contributed knowledge to both the discipline and the wider sector to develop and promote lifelong learning models.

These models will successfully enhance and facilitate participation and student cohort diversity in higher education. By isolating the key essentials for any effective and successful model, the project has designed a template by which future lifelong learning models can be evaluated.

This chapter summarises the findings and identifies in a concise way the essential elements of such models for emulation by all disciplines. It also presents key recommendations to ensure the sustainability and embedding of the project outcomes.



## 6.2 Overall Findings

The central finding of the project is that:

- Pathways models in built environment disciplines vary across Australian states and regions in effectiveness and access for under-represented cohorts.
- The key determinants of the effectiveness of a pathway model in built environment disciplines is the model's ability to adopt strategies that
  - assemble resources for learners ,
  - engage learners and
  - build confidence in learners
- Pathways models can improve diversity of student cohorts in built environment disciplines in higher education through careful targeting of these three determinants.
- The greatest opportunity to increase student cohort diversity in built environment disciplines is through increasing the participation of the existing workforce in pathways models.

Each of these is discussed below.

### 6.2.1 Pathways models vary in effectiveness and access for under-represented cohorts.

In built environment disciplines, the effectiveness and capacity of the pathways model to deliver equity of access and more diverse cohorts was found to be dependent upon a number of factors including the institution, the actual built environment school/department, the pressures acting upon the school and the university, the geographical and socio-economic positioning of the institution and the students/staff perceptions of pathways operating in the institution. One key finding is the variance in State procedures for entry to tertiary education. Whilst all states used a variety of entry tools, with the predominate tool being the ATAR, for pathways students the calculation of the ATAR varied enormously across states and the capacity of an institution to offer direct entry also varied enormously across states. In a number of cases, the interviews indicated that the staff and students were unaware of the calculation of such rankings and had no direct input to such calculations. In other states, the use of RPL and previous experience was enormously discretionary and these factors all impacted upon the capacity of students to access effective pathways.

The duration of the project resulted in a number of observations, findings and conclusions pertaining to each of the pathways models, with some of these conclusions changing over the life of the project. Whilst each of the models examined in this project have some merit and all have capacity to deliver elements of diversity and lifelong learning, the project findings were concerned with establishing a template of a model that acted as an exemplar against which other models could be measured and evaluated. The basis of the exemplar was research arising from the DEMO matrix (Gale et al, 2010), which provides insights into equity orientations of outreach models. The elements of the matrix and its rationale for use in this project is discussed in Chapter 3 of this report.

It is appropriate to say in the Australian tertiary education sector that “one size does not fit all”. It is also important not to dismiss the models that were not as successful in delivering either effective pathways or sustained diverse student cohorts as these models provide examples of the challenges and complexities faced by universities in attempting to address tertiary pathways and diverse student cohorts. However, for the majority of the models examined, a range of successful lessons can be learnt and, it is hoped, emulated.

### 6.2.2 The key determinants of the effectiveness of a pathway model in built environment

This project has established that there are three essential characteristics or determinants of effective pathways models in the built environment disciplines.

These three determinants are the model’s ability to

- assemble resources for learners
- engage learners and
- build confidence in learners

In relation to the development of the exemplar against which all lifelong learning models can be measured these three key determinants were found to be essential to achieving equity and diversity in access for built environment students.

The assembling of resources ( Gale et al, 2010) consisted of the provision and interaction of knowledgeable staff and motivating educators at the VET/TAFE level, who were able to give consistent, long-term advice to students about future study and up skilling options. The staff was fluent in articulation arrangements and credit transfer opportunities and kept regular professional contact with other staff in higher education. They were in fact extremely knowledgeable about the built environment and passed that knowledge onto students. The frequency of “expert, knowledgeable” staff in the national survey as an “enabler” of pathways was significant. To a lesser extent this was also noted as important in the higher education institution, especially by the interview respondents but it was not seen as an essential enabler of access. The engagement of learners is not specific to pathways models.

Evidence exists that the engagement of learners from all backgrounds and at all levels of study is crucial to a satisfying and productive experience in higher education. But in this research it was evident that there were some particular or determinants of engagement that promoted effectiveness and the aspiration to continue. Most important amongst engagement of under-represented groups was the need for recognition of difference. Interviewees regularly spoke of the understanding of the institution or the acceptance of them as “different “learners who had “different” needs to the mainstream. The effectiveness of the model was

improved if staff, students and administrators undertook steps, however minor, to enhance the curriculum for these students.

Engagement was seen as something that arose from a common understanding that all students did not learn in the same way and that time, effort was involved on the part of staff to adjust, even minutely, curriculum or assessment activities. Again, this finding was endorsed by the interviews, but was clearly addressed by the national survey findings.

Finally the ability to build confidence in learners about their ability to continue in education to achieve greater skills and knowledge beyond the existing was continually addressed in the interviews. Continually the researchers were confronted with comments such as “I didn’t think a kid like me could go to uni.” It was the intervention of enablers such as confidence activities like visits to the university campus, examples of university work and assessment, meeting university staff etc that built confidence and resilience into the learner and thus the pathway model.

In all three determinants, where efforts had been made to actually incorporate and evaluate the use and impact of these determinants in the pathways model, rather than leaving it to chance, the students had a greater chance of success and the higher education institution benefitted from greater student cohort diversity.

### 6.2.3 Opportunities to increase student cohort diversity in built environment disciplines.

The construction industry is extremely important to the Australian economy. The industry employs one in seven people in Australia and is the fourth largest employer with nearly one million employees. The industry contributes \$61 billion or 12% of GDP per annum (ABS, 2010) despite the economic and national significance of the industry; it has one of the least qualified workforces, (see Figure 1) with significant skill gaps at the higher levels of the AQF from Diploma level (AQF 5) upwards. Essentially the workforce that is undertaking the work lack formal qualifications and have a very low uptake of formalised training or higher education.

One of the diversity groups identified by the Australian Government as being under-represented in higher education is “those individuals who lack formal qualifications” (DEEWR, 2010) With up to 49% of the construction workforce with no formal qualifications, there is an urgent need to establish pathways models that address RPL and competency assessment. Pathways models that up skill the industry are the greatest opportunity to increase greater participation of under-represented groups in higher education. It is possible that addressing the 45% of the workforce that have AQF level 4 and below qualifications and examining pathways models for up skilling

and RPL for this cohort could increase diversity in the student cohort in higher education. This is further addressed in the project recommendations.

### 6.3 Additional Findings

There are also a number of additional key findings arising from this project:

- The built environment has one of the most diverse workforces in Australia
- The built environment has one of the least qualified workforces of all Australian industries, with 41% of the workforce not possessing a formal qualification (ABS, 2011).
- The profile of student cohorts in built environment disciplines in higher education does not match the diversity of the industry workforce.
- Over the last decade the demand for higher education qualified professionals (construction managers, estimators, quantity surveyors etc) in the built environment industry has exceeded supply and outstripped demand for VET/TAFE occupations.
- Construction and built environment degrees and qualifications are taught at 15 Australian universities/institutions yet built environment professionals make up only 10% of the sector's workforce.
- The most common pathway model is articulation from VET/TAFE institutions to Higher Education. Additional models exist, but are isolated and span equity, special access or high school extension models and are not primarily located in built environment disciplines.
- In spite of robust VET/TAFE to HE articulation arrangements and nationally agreed credit transfer for built environment discipline students, less than 16% of all eligible VET/TAFE built environment graduating students continue onto higher education in any one year
- However improvements in VET/TAFE to HE pathways in built environment disciplines will only increase student cohort diversity up to 5%.

### 6.4 Factors Affecting Project Success

This project has been an outstanding success in terms of meeting project objectives; disseminating knowledge about improved practice; changed learning and teaching performance in tertiary institutions; and industry involvement in the project and its outcomes.

The original project objectives were:

- To develop baseline knowledge about current pathways and lifelong learning and teaching practices within the higher education sector of the built environment
- To collect data that maps effective learning and teaching pathways/articulation models to achieve diversity within the higher education sector of the built environment.
- To develop robust exemplars and models that lead to best practice in student diversity improvements for the higher education sector of the built environment.
- To evaluate and disseminate the best practice exemplars across both the built environment sector and the wider higher education audience.

Each of these objectives has been achieved. The table below indicates the “project scorecard” against these objectives and the project outcomes.

One of the huge success factors in completing this project has been the support of the partner institutions in collecting relevant data, administering surveys, organising interviews and promoting the project to other staff. The partner organisations support has been exemplary. Special note must be made of the individual project team members at these institutions, whose assistance has been invaluable. The individual project team members have arranged special interview times during student swot vacs to enable information to be collected in a timely fashion. They have written news items for local university intranets and have kept their respective schools informed of project proceedings. Most importantly they have been enthusiastic supporters of the project throughout.

Visits to partner universities have been arranged to view facilities, engage in project discussion and speak directly with pathways students and staff. All of this has been undertaken by built environment academic staff that have the promotion of more diverse pathways for their students and potential students at the core of their learning and teaching activity.

Industry support for the project has overwhelmed the project leaders. Individual built environment companies, employer organisations, TAFE, other private training providers and unions have all attended at least one project forum, meeting, launch or roundtable. Outcomes have allowed further dissemination, discussion and the opportunity to network with interested industry partners to trial innovative pathways models such as Associate degrees; RPL through pathways of existing workers, or advanced diplomas in building. This has been an excellent unexpected outcome of the project.

Table 19: Project Objectives and Outcomes.

PROJECT OBJECTIVE	PROJECT ACTIVITY	OUTCOME/EVIDENCE
<p>To develop baseline knowledge about current pathways and lifelong learning and teaching practices within the higher education sector of the built environment</p>	<p><b>Literature Review</b></p> <p><b>Pilot Survey</b> (Quantitative)</p>	<p><b>Published conference paper:</b> McLaughlin, P and Mills, A (2010), "Parallel TAFE and HE Studies in Construction Management" <i>AUBEA 35 Annual Conference</i>, 2010, University of Melbourne, Melbourne</p> <p><b>Network Establishment @ EQUITY 101</b> Submission of project to website: <a href="http://www.unisa.edu.au/Research/National-Centre-for-Student-Equity-in-Higher-Education/">http://www.unisa.edu.au/Research/National-Centre-for-Student-Equity-in-Higher-Education/</a></p> <p><b>Published Journal Article:</b> McLaughlin, P. and Mills, A. (2010), "The best of both worlds-How VET can enhance university studies in <i>Research in Post Compulsory Education</i>, Vol. 15, NO 1, pp 117-126</p> <p><b>AUBEA Conference 2010 Attended</b> (Uni Melb, July 2010)</p>
<p>To collect data that maps effective learning and teaching pathways/articulation models to achieve diversity within the higher education sector of the built environment.</p>	<p><b>Sector Survey</b> (Quantitative)</p> <p><b>Case study-One</b> (RMIT) -VET in Schools pathway -Grad Cert in Construction (RDO) pathway</p>	<p><b>Published Conference paper on data collected:</b> Mills, A and McLaughlin, P. (2011), "Achieving Diversity-Pathways may be the solution" in <i>AUBEA</i>, 2011, Brisbane</p> <p><b>Case study Journal Article Published.</b> McLaughlin, P and Mills, A. (2011), "Combining vocational and higher education studies", in <i>Journal of Vocational Education and Training</i>, Vol. 63, No. 1</p> <p><b>Paper /Attendance at AVERTA</b> Conference (Melbourne, 2011) Presentation- "Pathways to Construction" (San Remo, Victoria)</p>
<p>To develop robust exemplars and models that lead to best practice in student diversity improvements for the higher education sector of the built environment.</p>	<p><b>Case study Two (UWS)</b></p> <p>UWS College pathway</p> <p>First in family pathway</p>	<p><b>Conference Keynote Presentation</b> "Social Inclusion in Higher Education" Conference (Brisbane, August 2011)</p> <p><b>International Journal published:</b> Mills, A &amp; McLaughlin, P, (2011), "Pathways to industry: work practices of undergraduate students in construction programs in Australia", <i>International Journal of Construction Education and Research</i></p>

	<p><b>Analysis of Data of Data from Surveys and two case studies</b></p> <p><b>Case Study Three (UTS)</b></p> <p>-Ultimo TAFE Pathway</p> <p>Analysis of surveys and 3 case studies</p>	<p><b>Conference Presentation</b> No Frills, Adelaide July 2012</p> <p><b>Conference paper;</b> Mills, A. McLaughlin, P. and Davis, P. 2011, 'Pathways to formally assessed work placement: Employers' perspectives on collaborative education in the Australian construction industry', in <i>15th Pacific Association of Quantity Surveyors Congress</i> Colombo, Sri Lanka, pp. 231-237</p>
<p>To evaluate and disseminate the best practice exemplars across both the built environment sector and the wider higher education audience.</p>	<p><b>Dissemination activities</b> ( Perth, Melbourne, Sydney)</p> <p><b>Final Project Report</b></p>	<p><b>Published Monograph</b> "Constructing Pathways" (December, 2011)</p> <p><b>Released public videos</b> (December, 2011, August, 2012)</p> <p><b>Industry roundtable</b> (April 2012)</p> <p><b>Conference papers:</b> Mills, A &amp; McLaughlin. P, (2012), Measuring pathways to university: Success factors in construction management education 37<sup>th</sup> Annual conference of the Australian Universities Building Education Association, UNSW, July 4-6, Sydney</p> <p>McLaughlin, P. &amp; Mills, A. (2012), Construction Pathways: Attracting the missing students and workers to University, 37<sup>th</sup> Annual conference of the Australian Universities Building Education Association, UNSW, July 4-6, Sydney</p> <p><b>Launch of monograph/summary sheet to Industry etc</b> ( Early 2012)</p> <p><b>AUBEA Conference presentation</b> (Sydney 2012)</p> <p><b>Published Final Report</b> (August, 2012)</p>

## 6.5 Recommendations

A number of recommendations are supported by the significant findings of this project. These recommendations clearly set out the next steps for achieving full impact of findings and outcomes.

- That, as a high priority, research into a model of agreed RPL and flexible delivery for the built environment workforce moving into higher education is commenced with the relevant stakeholders and industry skills councils.
- That promotion of effective pathways models to the built environment workforce be commenced with all industry stakeholders.
- That all tertiary institutions offering built environment disciplines engage in dissemination activities to raise awareness amongst programme leaders of the implications of this project for their articulating students and potential future students.
- Those institutions with built environment disciplines and a strong pathways track record in attracting diverse cohorts of built environment workers be funded by the Australian Government to commence pilot pathways projects in up skilling of the built environment workforce.

## 6.6 Dissemination

A range of activities have been undertaken to disseminate the project and in the past 6 months, the project outcomes. A number of these are detailed in the table above.

The dissemination strategy adopted in this project deliberately involved academics from partner institutions that were in a position to bring about change in teaching and learning practices at their institutions. This has been achieved through the AUBEA (Australian Building Educators Association) conferences, where members of the project team have presented learning and teaching presentations and refereed papers. The flow on from these conference presentations have established a network of interested educators in built environment disciplines, enthusiastic to implement changed practice in relation to pathways models. A regular inclusion of AUBEA conferences is now a dedicated stream on diverse learners, articulation and innovative practices.

A second essential part of the engagement strategy was the incorporation of requirements into the accreditation criteria and guidelines for built environment programs. Accreditation processes have moved in recent years to a requirement to demonstrate industry relevance including the provision of life-long learning opportunities for industry participants already engaged in work.



The project team worked with the following industry accreditation and related bodies to ensure that inclusive curriculum principles were embedded in built environment education and accreditation:

- Australian Institute of Quantity Surveyors (AIQS) (See Reference Group)
- Australian Institute of Building (AIB)
- Royal Institute of Chartered Surveyors (RICS)
- The Pacific Association of Quantity Surveyors (See Reference Group)
- The International Cost Engineering Council (See Reference Group)

The project leader is an accredited programme assessor (RICS) and has used this position to both disseminate information about pathways and ensure that all accredited programmes have successful pathways models embedded in them.

In addition, three of the accrediting bodies were represented on the project reference group and have been able to place pathways models and discussion of agreed credit and lifelong learning opportunities for under-represented individuals in tertiary education on the agenda of these organisations. All of the accrediting bodies attended project roundtables or AUBEA conferences.

Dissemination during the project development also allowed an opportunity to receive comment, to gain extra data/exemplars and the capacity to modify the project based on feedback. One key advantage of this dissemination was the opportunity to involve other stakeholders, to establish informal partners and to extend ownership. This occurred during the project at University of Newcastle in 2011, when project team members interviewed a pathway model based upon acceleration of capable students into architecture programmes. Although outside the scope of this project, the information and data collected allowed comparisons and opportunity to network with staff involved in an exemplar of sustainable pathways.

Two broad approaches to dissemination have occurred during the life of the project: Information Provision and Engagement Strategies.

### 6.6.1 Information Provision

This project has published progressive reports, interim evaluations and preliminary data analysis. There has been distribution of information in written form to universities, professional bodies and accrediting authorities. This distribution has provided a set of resources with detailed information that interested parties could use for an in-depth appreciation of the project outcomes. Having detailed information immediately on hand encouraged project adoption by tertiary institutions, The dissemination also took advantage of the ready access to existing

networks of academics in the areas in which project team members were already involved, for example AUBEA.

## 6.6.2 Engagement Strategies

Project information in the written form was also distributed at other universities to promote acceptance and adoption of the project outcomes. Essentially it was about enabling others and promoting awareness through practical activity. Stakeholders were identified as university schools offering built environment programs. The dissemination initiatives that were implemented included:

Workshops sessions: These promoted awareness, engaged potential users, gathered exemplars, provided advice and training in implementing initiatives within programs and reported on progress. The workshops provided an opportunity to showcase by example what project outcomes had been achieved at each stage and how best they should be utilised. They were also an opportunity to additional data and gather feedback.

Educators Networks: This has been loosely established and will be formally established over the next 6 months as the project winds up. Once formally established, the database of information will make it possible to distribute such things as newsletters and reports and advise of potential conferences and relevant publications. In many respects, the network will become a force that will advocate change towards improving pathways and articulation practices based on evidence and innovative exemplars for the long-term.

Conferences: Project participants have presented at relevant conferences and reported project findings and provided evidence to support improved diversity and life-long learning models. See Table above.

## 6.7 Deliverables and Outcomes

There were a number of project deliverables:

### 6.7.1 The Project Deliverables

- Multi-mode resources (teaching exemplars, learning resources) for use by all disciplines.
- Workshops with industry bodies, partner universities and industry seminars.
- Academic publications.
- Final project report.

All of the project deliverables were met.

Multimode resources included videos (2) and video clips, published templates of pathways exemplars and support materials such as course information, web links and the project monograph. (see Table 19 above)

Workshops with industry bodies, partner universities and industry seminars were held progressively throughout the project (see Table 19 above).

## 6.7.2 Project Outcomes

The project short and long term outcomes are expected to be:

- Improved diversity rates for built environment disciplines.
- Improved diversity rates for other higher education disciplines.
- Increased awareness of participation of under-represented groups in higher education in built environment disciplines.
- Enhanced practice in the use of lifelong learning (pathways) models to achieve student diversity.
- Closer co-operation of tertiary sectors on lifelong learning models and diversity issues.
- Embedding of lifelong learning models into discipline performance and accreditation criteria

The impact of the project will continue beyond the project funding period. The following chart sets out the timeline for impact (table 20).

*Table 20: Project outcomes and dissemination timeline.*

PROJECT OUTCOME	TIMELINE	COMMENT
Improved diversity rates for built environment disciplines.	1year-5years	As competitive, targeted funding models impact upon universities, ratios will improve As industry becomes more aware of need to up skill, ratios will improve.
Improved diversity rates for other higher education disciplines.	1year-5years	As competitive, targeted funding models impact upon universities, ratios will improve
Increased awareness of participation of under-represented groups in higher education in built environment disciplines.	Present /achieved and ongoing	Project dissemination and impact
Enhanced practice in the use of lifelong learning (pathways) models to achieve student diversity.	1year - 5years	If project recommendations are adopted
Closer co-operation of tertiary sectors on lifelong learning models and diversity issues	Present /achieved and ongoing	Tertiary sector models starting to develop with informed research such as this project.
Embedding of lifelong learning models into discipline performance and accreditation criteria	1year - 5years	If project recommendations are adopted

## 6.8 Areas for Further Study and Development

The project recommendations clearly set out the next steps in achieving full impact of this project findings and outcomes. Broadly these three areas are:

- Continued dissemination of project findings
- National RPL models for Built Environment industry
- Industry promotion of pathways/upskilling
- Pathways models built into accreditation

The matching recommendations are:

*Table 21: Recommendations and development areas.*

CONTINUED DISSEMINATION OF PROJECT FINDINGS	<ul style="list-style-type: none"> <li>• That all tertiary institutions offering built environment disciplines engage in dissemination activities to raise awareness amongst programme leaders of the implications of this project for their articulating students and potential future students.</li> </ul>
NATIONAL RPL MODELS FOR BUILT ENVIRONMENT INDUSTRY WORKERS	<ul style="list-style-type: none"> <li>• That, as a high priority, research into a model of agreed RPL for the built environment workforce moving into higher education be commenced with the relevant stakeholders and industry skills councils.</li> </ul>
INDUSTRY PROMOTION OF PATHWAYS/ UPSKILLING	<ul style="list-style-type: none"> <li>• That negotiations with the relevant industry Skills Councils and stakeholders be undertaken to commence industry promotion of effective pathways models to the built environment workforce.</li> <li>• Those universities with built environment disciplines and a strong pathways track record in attracting diverse cohorts of built environment workers be funded by the Australian Government to commence pilot pathways projects in up skilling of the built environment workforce.</li> </ul>
PATHWAYS MODELS BUILT INTO ACCREDITATION	<ul style="list-style-type: none"> <li>• That the project outcomes be disseminated to each of the built environment professional accreditation bodies for discussion, endorsement and immediate accreditation action</li> </ul>

## 6.9 Concluding Comments

Participation rates in post compulsory education reflect complex intersecting, cultural, social, political and economic factors. As the literature confirms, Australian rates of access to, and successful uptake in, higher education and training amongst particular cohorts fall well below OECD targets with students from low SES backgrounds a significant proportion of those individuals currently under represented. This project has sought to understand and disseminate enablers of pathways models that contribute to lifelong learning for those employed in the built environment industry.

The social, economic and cultural benefits were constantly visible to the project team, but it was only through the experiences of the project, data collection methods and the interviews that the team became aware of the enormous impact pathways models can have on individuals. This sentiment is best summed up by one of the young Pathways to Construction students who commented:

**“Before I started this pathway, I never thought a kid like me could ever go to university.” ( Daniel, 2010)**

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# Appendix A

## Survey Questions (derived from the DEMO matrix)

Assembling Resources	Engaging learners	Working together	Building confidence
Q11.1 TAFE created opportunities for me to talk to others about the industry or further study (People Rich)	Q12.1 My education from TAFE was valued at university	Q13.1 TAFE and university work well together for students (Collaboration)	Q14.1 I had access to sufficient resources and appropriate teaching material in TAFE (Communication and information)
Q11.2 I was mentored throughout the TAFE programme (People Rich)	Q12.2 TAFE people encouraged me to undertake University (Recognition of difference)	Q13.2 I received good support when I did work in groups of peers while in TAFE. (Cohort-based)	Q14.2 There was good communication with the teachers in TAFE. (Communication and information)
Q 11.3 I was able to access funding support for my TAFE (Financial Support)	Q12.3 The TAFE programme prepared me well for University (Enhance academic curriculum)	Q13.3The other students in TAFE supported me well	Q14.3 There was good communication with the other students in TAFE. (Communication and information)
Q 11.4 The TAFE programme I did was well known and had been running for a long time.	Q12.4 TAFE was interested in my preparation for University (Research driven)		Q14.4 TAFE gave me practical experience which helped me understand the requirements of university (Familiarisation)
Q 11.5 When did you become aware of the university program that you are now enrolled? (Early, long-term & sustained)			

## **Case study Interview questions**

### Interview Guide Questions

Thank you for attending the interview today. This research is being conducted by Prof Anthony Mills and Dr Patricia McLaughlin to gather research on building and construction students and their pathways to university. Participation is voluntary. The data will be used to improve pathways for students.

- Have you signed the ethics clearances and permission form?
- Do you understand that we will be recording your responses and you will receive a written copy of what you say?
- If you do not wish anything to be recorded, you can delete those statements from the written copy.

Q1. What is your home post code or Suburb?

Q2. What VET programme or uni degree are you currently undertaking?

Q3. What year are you currently undertaking?

Q 4. Have you ever worked in or been exposed to the construction industry

Q 5. Why/ (Why not) did you enrol into the university degree course?

Q 6. Was there anyone in particular who helped you get involved?

Q 7. Do you know of credit for previous studies and how it works?

How much credit will you obtain in your degree by doing this program? (Know which courses?)

Q 8. Do you feel that you were well-prepared for university courses (If not why?)

Q 9. If in VET: Do you want to continue construction studies at bachelor's degree level in the future? Why or why not?

Q 10. When were you first made aware of the program in Construction Management at university?

Q 11. How did you become aware of these programs at Uni?

Q 12. Did this current VET program or one you undertook previously help you to make the decision to study construction management?

Q 13. If this VET program did not exist, would you have been interested in gaining access to a construction degree?

Q 14. If you do not take a place in the construction management degree at Uni what else would you do?

Q 15. If you decided to go to another university, which one and what course would you seek?

Q 16. Was the work undertaken in your VET studies helpful to this course?  
How/why?

Q 17. If you did not go onto uni, where do you see yourself going with your current VET qualification?

Q 18. Any other comments?

## Appendix B

Table i) Frequency count of survey respondents by university

University	No of students	%	Valid %	Cumulative %
RMIT	18	10.2	10.2	10.2
Deakin	29	16.5	16.5	26.7
Curtin	15	8.5	8.5	35.2
UWS	73	41.5	41.5	76.7
UTS	41	23.3	23.3	100.0
Total	176	100.0	100.0	

Table ii) Average survey score by university

	RMIT	Deakin	Curtin	UWS	UTS	Overall average
Question 11.1-TAFE created opportunities for me to talk to others about the industry or further study (People Rich)	4.83	4.68	4.57	4.85	5.26	4.89
Question 11.2-I was mentored throughout the TAFE programme (People Rich)	4.44	4.11	4.29	4.35	4.42	4.33
Question 11.3-I was able to access funding support for my TAFE (Financial Support)	4.39	4.54	2.93	4.24	3.87	4.11
Question 11.4-The TAFE programme I did was well known and had been running for a long time	5.44	5.04	6.00	5.11	5.32	5.26
Question 12.1-My education from TAFE was valued at university	4.50	4.57	4.71	4.32	4.50	4.46
Question 12.2- TAFE people encouraged me to undertake University (Recognition of difference)	4.78	4.07	4.21	4.11	4.18	4.20
Question 12.3-The TAFE programme prepared me well for University (Enhance academic curriculum)	5.22	4.96	5.00	4.52	5.03	4.83
Question 12.4-TAFE was interested in my preparation for University (Research driven)	4.67	4.04	3.86	4.32	4.24	4.25
Question 13.1-TAFE and university work well together for students (Collaboration)	4.11	4.61	4.14	4.26	4.37	4.32

Question 13.2-I received good support when I did work in groups of peers while in TAFE. (Cohort-based)	5.44	4.68	5.43	4.70	5.00	4.91
Question 13.3-The other students in TAFE supported me well	5.39	5.04	5.21	4.97	5.18	5.10
Question 14.1-I had access to sufficient resources and appropriate teaching material in TAFE (Communication and information)	5.44	4.82	5.43	4.71	5.11	4.96
Question 14.2-There was good communication with the teachers in TAFE. (Communication and information)	5.67	5.29	5.57	5.11	5.34	5.29
Question 14.3-There was good communication with the other students in TAFE. (Communication and information)	5.39	5.54	5.86	5.33	5.50	5.46
Question 14.4-TAFE gave me practical experience which helped me understand the requirements of university (Familiarisation)	5.44	5.43	5.14	5.02	5.32	5.21

Average Score

Table iii) Frequency count of survey respondents by TAFE course

Question 9.1-TAFE course	Frequency	%	Valid %	Cumulative %
Dip of Bldg (RMIT)	34	19.3	20.6	20.6
Dip of Bldg (Other)	18	10.2	10.9	31.5
Other Diploma	34	19.3	20.6	52.1
Valid Other Adv Diploma	15	8.5	9.1	61.2
Other TAFE Qualification	19	10.8	11.5	72.7
Other	45	25.6	27.3	100.0
Total	165	93.8	100.0	
Missing System	11	6.3		
Total	176	100.0		

Table iv) Average survey score by TAFE course

	Dip of Bldg (RMIT)	Dip of Bldg (Other)	Other Diploma	Other Adv Diploma	Other TAFE Qualification	Other	Total
Question 11.1-TAFE created opportunities for me to talk to others about the industry or further study (People Rich)	5.29	5.17	5.18	4.33	5.05	4.56	4.94
Question 11.2-I was mentored throughout the TAFE programme (People Rich)	4.70	4.50	4.44	3.93	4.84	3.91	4.35
Question 11.3-I was able to access funding support for my TAFE (Financial Support)	4.70	3.89	4.09	3.93	3.72	3.77	4.05
Question 11.4-The TAFE programme I did was well known and had been running for a long time	5.65	5.78	5.29	5.73	4.89	4.91	5.31
Question 12.1-My education from TAFE was valued at university	4.56	5.22	4.45	4.47	4.11	3.93	4.38

Question 12.2- TAFE people encouraged me to undertake University (Recognition of difference)	4.78	4.39	4.55	3.67	3.63	3.86	4.20
Question 12.3-The TAFE programme prepared me well for University (Enhance academic curriculum)	5.56	5.24	4.91	4.64	4.58	4.43	4.88
Question 12.4-TAFE was interested in my preparation for University (Research driven)	4.72	4.17	4.21	3.87	4.32	4.02	4.24
Question 13.1-TAFE and university work well together for students (Collaboration)	4.69	4.00	4.52	4.40	3.95	4.36	4.37
Question 13.2-I received good support when I did work in groups of peers while in TAFE. (Cohort-based)	5.28	5.00	4.91	4.80	4.58	4.91	4.94
Question 13.3-The other students in TAFE supported me well	5.78	4.94	4.94	4.80	4.89	4.98	5.10
Question 14.1-I had access to sufficient resources and appropriate teaching material in TAFE (Communication and information)	5.25	5.28	5.18	4.53	4.89	4.77	5.00
Question 14.2-There was good communication with the teachers in TAFE. (Communication and information)	5.53	5.72	5.58	4.73	5.26	5.05	5.32

Question 14.3-There was good communication with the other students in TAFE. (Communication and information)	6.16	5.78	5.79	4.80	4.74	5.21	5.49
Question 14.4-TAFE gave me practical experience which helped me understand the requirements of university (Familiarisation)	5.81	5.22	5.58	4.60	4.89	4.98	5.25

Average Score

Table v) Survey respondents by year of degree

Question 2.1-Yr of Degree	Frequency	%	Valid %	Cumulative %
1	37	21.0	21.0	21.0
2	57	32.4	32.4	53.4
3	51	29.0	29.0	82.4
4	24	13.6	13.6	96.0
5	7	4.0	4.0	100.0
Total	176	100.0	100.0	

Table vi) Average survey score by year of degree

	1	2	3	4	5	Total
Question 11.1-TAFE created opportunities for me to talk to others about the industry or further study (People Rich)	4.71	4.75	5.09	5.04	5.00	4.89
Question 11.2-I was mentored throughout the TAFE programme (People Rich)	3.89	4.21	4.51	4.83	4.60	4.33
Question 11.3-I was able to access funding support for my TAFE (Financial Support)	3.63	4.30	4.30	3.79	5.20	4.11
Question 11.4-The TAFE programme I did was well known and had been running for a long time	5.11	4.79	5.64	5.71	5.40	5.26
Question 12.1-My education from TAFE was valued at university	4.46	4.32	4.53	4.67	4.20	4.46
Question 12.2- TAFE people encouraged me to undertake University (Recognition of difference)	4.49	4.23	4.00	4.29	3.40	4.20
Question 12.3-The TAFE programme prepared me well for University (Enhance academic curriculum)	4.43	4.58	5.04	5.58	4.60	4.83
Question 12.4-TAFE was interested in my preparation for University (Research driven)	4.20	4.30	4.00	4.79	3.80	4.25
Question 13.1-TAFE and university work well together for students (Collaboration)	4.34	4.21	4.64	4.08	3.40	4.32
Question 13.2-I received good support when I did work in groups of peers while in TAFE. (Cohort-based)	5.00	4.87	4.68	5.25	5.20	4.91
Question 13.3-The other students in TAFE supported me well	4.89	5.06	5.19	5.25	5.40	5.10
Question 14.1-I had access to sufficient resources and appropriate teaching material in TAFE (Communication and information)	5.11	4.70	4.98	5.29	5.00	4.96
Question 14.2-There was good communication with the teachers in TAFE. (Communication and information)	5.31	5.08	5.38	5.62	5.00	5.29



Question 14.3-There was good communication with the other students in TAFE. (Communication and information)	5.43	5.38	5.64	5.42	5.00	5.46
Question 14.4-TAFE gave me practical experience which helped me understand the requirements of university (Familiarisation)	4.77	5.08	5.47	5.63	5.40	5.21

Average Score

Table vii) Survey respondents by Socioeconomic Status

SES_Aust Ranked	No of students	per cent	Valid per cent	Cumulative per cent
Valid Low SES	22	12.5	13.3	13.3
Valid Medium SES	65	36.9	39.2	52.4
Valid High SES	79	44.9	47.6	100.0
Total	166	94.3	100.0	
Missing System	10	5.7		
Total	176	100.0		

Table viii) Average survey score by Socioeconomic Status (SES)

	SES_Aust Ranked			
	Low SES	Medium SES	High SES	Overall average
Question 11.1-TAFE created opportunities for me to talk to others about the industry or further study (People Rich)	5.50	5.03	4.51	4.84
Question 11.2-I was mentored throughout the TAFE programme (People Rich)	4.83	4.61	3.80	4.25
Question 11.3-I was able to access funding support for my TAFE (Financial Support)	5.00	4.05	3.84	4.06
Question 11.4-The TAFE programme I did was well known and had been running for a long time	5.61	5.13	5.27	5.25
Question 12.1-My education from TAFE was valued at university	4.00	4.56	4.36	4.40
Question 12.2- TAFE people encouraged me to undertake University (Recognition of difference)	4.44	4.29	4.00	4.17
Question 12.3-The TAFE programme prepared me well for University (Enhance academic curriculum)	5.06	5.13	4.47	4.81
Question 12.4-TAFE was interested in my preparation for University (Research driven)	4.44	4.53	3.91	4.22
Question 13.1-TAFE and university work well together for students (Collaboration)	4.56	4.40	4.20	4.32
Question 13.2-I received good support when I did work in groups of peers while in TAFE. (Cohort-based)	5.28	5.08	4.66	4.90
Question 13.3-The other students in TAFE supported me well	5.61	5.21	4.85	5.08
Question 14.1-I had access to sufficient resources and appropriate teaching material in TAFE (Communication and information)	5.11	5.08	4.85	4.97
Question 14.2-There was good communication with the teachers in TAFE. (Communication and information)	5.50	5.47	5.08	5.29

Question 14.3-There was good communication with the other students in TAFE. (Communication and information)	5.89	5.47	5.26	5.42
Question 14.4-TAFE gave me practical experience which helped me understand the requirements of university (Familiarisation)	5.28	5.39	5.04	5.21

Average Score

Table ix) Frequency count of survey respondents by gender

Question 5-Gender	Frequency	per cent	Valid per cent	Cumulative Per cent
Male	146	83.0	83.0	83.0
Valid Female	30	17.0	17.0	100.0
Total	176	100.0	100.0	

Table x) Average survey score by gender

	Question 5-Gender		
	Male	Female	Total
Question 11.1-TAFE created opportunities for me to talk to others about the industry or further study (People Rich)	4.91	4.79	4.89
Question 11.2-I was mentored throughout the TAFE programme (People Rich)	4.43	3.82	4.33
Question 11.3-I was able to access funding support for my TAFE (Financial Support)	4.17	3.82	4.11
Question 11.4-The TAFE programme I did was well known and had been running for a long time	5.23	5.39	5.26
Question 12.1-My education from TAFE was valued at university	4.54	4.04	4.46
Question 12.2- TAFE people encouraged me to undertake University (Recognition of difference)	4.32	3.61	4.20
Question 12.3-The TAFE programme prepared me well for University (Enhance academic curriculum)	4.93	4.32	4.83
Question 12.4-TAFE was interested in my preparation for University (Research driven)	4.42	3.43	4.25
Question 13.1-TAFE and university work well together for students (Collaboration)	4.33	4.25	4.32
Question 13.2-I received good support when I did work in groups of peers while in TAFE. (Cohort-based)	4.96	4.64	4.91
Question 13.3-The other students in TAFE supported me well	5.24	4.39	5.10
Question 14.1-I had access to sufficient resources and appropriate teaching material in TAFE (Communication and information)	5.01	4.71	4.96
Question 14.2-There was good communication with the teachers in TAFE. (Communication and information)	5.37	4.93	5.29
Question 14.3-There was good communication with the other students in TAFE. (Communication and information)	5.56	4.96	5.46
Question 14.4-TAFE gave me practical experience which helped me understand the requirements of university (Familiarisation)	5.29	4.86	5.21

Average Score

*Table xi) Frequency count of survey respondents by the student become aware of the university program*

Q 11.5-When did you become aware of the university program that you are now enrolled?		Frequency	%	Valid %	Cumulative %
Valid	High School	57	32.4	35.0	35.0
	During TAFE	64	36.4	39.3	74.2
	After TAFE	42	23.9	25.8	100.0
	Total	163	92.6	100.0	
Missing	System	13	7.4		
Total		176	100.0		

*Table xii) Average survey score by Q11.5 When did you become aware of the university program?*

	High School	During TAFE	After TAFE	Total
Question 11.1-TAFE created opportunities for me to talk to others about the industry or further study (People Rich)	5.15	5.00	4.57	4.95
Question 11.2-I was mentored throughout the TAFE programme (People Rich)	4.41	4.53	4.05	4.37
Question 11.3-I was able to access funding support for my TAFE (Financial Support)	4.31	4.26	3.43	4.08
Question 11.4-The TAFE programme I did was well known and had been running for a long time	5.31	5.27	5.41	5.32
Question 12.1-My education from TAFE was valued at university	5.07	4.08	4.38	4.50
Question 12.2- TAFE people encouraged me to undertake University (Recognition of difference)	4.93	4.06	3.51	4.24
Question 12.3-The TAFE programme prepared me well for University (Enhance academic curriculum)	5.44	4.84	4.16	4.89
Question 12.4-TAFE was interested in my preparation for University (Research driven)	4.80	3.94	4.00	4.25
Question 13.1-TAFE and university work well together for students (Collaboration)	4.70	4.02	4.19	4.30
Question 13.2-I received good support when I did work in groups of peers while in TAFE. (Cohort-based)	5.33	4.84	4.57	4.95
Question 13.3-The other students in TAFE supported me well	5.50	5.11	4.68	5.14
Question 14.1-I had access to sufficient resources and appropriate teaching material in TAFE (Communication and information)	5.30	4.81	5.00	5.03
Question 14.2-There was good communication with the teachers in TAFE. (Communication and information)	5.57	5.15	5.32	5.34
Question 14.3-There was good communication with the other students in TAFE. (Communication and information)	5.74	5.47	5.32	5.53
Question 14.4-TAFE gave me practical experience which helped me understand the requirements of university (Familiarisation)	5.67	5.13	5.03	5.29

# Appendix C

## Full Year 2010 data for 2012 payments under the Higher Education Participation and Partnerships Program

Institution	Number of Domestic Undergraduates * with Home Address, Full year Australian	Number of undergraduates* Undergraduates* on selected in lowest SEIFA Index of payments Education and Occupation	Centrelink	Low SES Interim Indicator 2010 - (2xSEIFA student Numbers + Centrelink) / 3 September 2010 Institution's% students per Low	
				SES Indicator Centrelink data****	Percentage
	Number	Number	Number	Number	Percentage
Australian Catholic University	11,877	1,526	1,574	1,542	1.86%
Batchelor Institute of Indigenous Tertiary Education	344	176	403*****	252	0.30%
Central Queensland University	8,033	2,940	708	2,196	2.65%
Charles Darwin University	4,899	935	336	735	0.89%
Charles Sturt University	22,341	5,283	1,883	4,150	5.00%
Curtin University of Technology	19,193	2,207	1,765	2,060	2.48%
Deakin University	21,339	2,715	2,653	2,694	3.25%
Edith Cowan University	15,345	2,210	1,566	1,995	2.41%
Griffith University	24,473	3,333	3,142	3,269	3.94%
James Cook University	10,595	2,627	1,249	2,168	2.61%
La Trobe University	18,683	3,276	2,964	3,172	3.82%
Macquarie University	16,605	1,123	1,600	1,282	1.55%
Monash University	28,073	3,170	3,041	3,127	3.77%
Murdoch University	10,011	1,696	1,034	1,475	1.78%
Queensland University of Technology	27,313	3,128	2,685	2,980	3.59%
RMIT University	17,556	2,541	2,810	2,631	3.17%
Southern Cross University	9,435	2,518	1,589	2,208	2.66%
Swinburne University of Technology	9,827	1,050	1,188	1,096	1.32%
The Australian National University	7,772	296	541	378	0.46%
The Flinders University of South Australia	10,564	2,115	1,504	1,911	2.30%
The University of Adelaide	12,895	1,742	1,432	1,639	1.98%
The University of Melbourne	19,984	1,460	2,275	1,732	2.09%
The University of New England	11,054	2,726	1,111	2,188	2.64%
The University of New South Wales	23,363	1,851	2,756	2,153	2.60%
The University of Newcastle	18,966	4,487	2,509	3,828	4.61%
The University of Queensland	25,541	2,769	2,302	2,613	3.15%
The University of Sydney	25,899	1,827	2,994	2,216	2.67%
The University of Western Australia	13,762	721	887	776	0.94%
University of Ballarat	4,458	978	772	909	1.10%
University of Canberra	8,004	521	693	578	0.70%
University of South Australia	18,210	4,230	2,402	3,621	4.37%
University of Southern Queensland	12,796	3,904	1,212	3,007	3.62%
University of Tasmania	13,160	3,394	1,727	2,838	3.42%
University of Technology, Sydney	17,151	1,792	2,038	1,874	2.26%
University of the Sunshine Coast	5,851	1,094	971	1,053	1.27%
University of Western Sydney	28,050	6,203	4,527	5,644	6.80%
University of Wollongong	12,840	2,085	1,555	1,908	2.30%
Victoria University	14,110	3,308	2,527	3,048	3.67%
<b>Total</b>	<b>580,372</b>	<b>89,957</b>	<b>68,925</b>	<b>82,946</b>	<b>100.00%</b>

\* - Undergraduate courses include Bachelor, Associate Degree, Advanced Diploma, Diploma and Associate Diploma courses.

\*\* - includes undergraduates with valid SES codes as well as those with invalid SES codes. Full Year data extracted on 14 July 2011.

\*\*\* - Students who are enrolled in undergraduate courses and are identified as low SES (bottom quartile) based on the SEIFA Education and Occupation index score for their Census Collection District (CD) of home address or Postcode where CD not available.

\*\*\*\* - includes dependent Youth Allowance (full-time students) with parental income under \$43,500; ABSTUDY (Living Allowance) dependents with parental income under \$43,500 as well as independents who qualify on criteria other than workforce; Austudy; Pensioner Education Supplement; ABSTUDY Pensioner Education Supplement; and ABSTUDY Away from Base as at 24 September 2010.