



INDUSTRY + VET + HIGHER EDUCATION

3D FOCUS ON ARTICULATION PATHWAYS

Articulation: A Clearer Picture or a New View?



Integrated Articulation and Credit Transfer (IACT) Project

Paez D, Jackson A, Byrnes J, Dwyer C, Blacker J



The Integrated Articulation and Credit Transfer Project is a Department of Education, Employment and Workplace Relations funded project, led by the University of Southern Queensland in collaboration with the Department of Education and Training Queensland, Australian Council for Private Education and Training, and Careers Australia Group.

A DEEWR Diversity and Structural Adjustment Project
© 2011

This document is available for download at
www.3Darticulation.com.au
together with other information about the IACT Project.



Table of Contents

1	Key Messages	4
1.1	Definition of Terms	7
1.2	Acronyms used in this report	8
2	Introduction	9
2.1	The Issues	9
2.2	Background to the IACT Project	11
2.3	The IACT Project	13
3	The 3D Focus on Articulation Pathways	15
3.1	Underlying Principles	15
3.1.1	Overview Of The Resources	17
3.2	Australian Industry Profits by Acquiring Employees Who Meet Skills Needs	19
3.2.1	The Workforce Driven Engagement Model	19
3.3	Tertiary Education Profits from Offering Graduate Outcomes That Meet Skills Needs	22
3.3.1	The Corporate Strategy Approach to Articulation	22
3.3.2	Articulation Pathway Models: A Visual Guide	27
3.3.3	Content Mapping for VET to He Credit Transfer	29
3.4	Graduates Profit from Gaining Qualifications That Meet Skills Needs	31
3.4.1	Student Pathway Options (Flowcharts)	31
3.4.2	Student Transition Factors	33
4	Conclusions	36
5	References	37



1. Key Messages

The Integrated Articulation and Credit Transfer (IACT) project was instigated in response to Australian Government efforts to address Australia's workforce and skills shortage issues by strengthening the connection between industry, the higher education (HE) sector and the vocational education and training (VET) sector.

Concern about the lack of connection, or 'articulation', between the VET and HE sectors has been expressed for some thirty years and arises from issues about access and equity, efficiency, views about the roles of the different sectors, and providing pathways between them (PhillipsKPA, 2006b, p. 54).

The aim of the IACT project was to find ways to remove barriers to articulation between the VET and HE education sectors, and to assist VET, HE and industry stakeholders to improve the efficiency and effectiveness (or 'seamlessness') of articulation pathways for all stakeholders.

The lack of articulation, and consequently the potential for transfer of credit for previous learning, between the VET and HE education sectors is an issue which has eluded resolution by governments, tertiary education providers and employers, proving largely resistant to attempts to overcome the many barriers between the sectors. PhillipsKPA (2006a, p. 4) comment that:

Credit transfer is a complex issue and there are no easy answers to how credit transfer outcomes might be improved.

Whilst acknowledging that the answers are not easy, the IACT Project has sought to provide some of the answers by testing and documenting practical strategies to improve credit transfer outcomes between the sectors. Using an applied approach, the project has explored the rapidly evolving world of engagement between the VET, HE and employer (industry) sectors, and what is driving this evolution.

The IACT Project has resulted in the innovative application of a three dimensional (3D) focus to what has historically been a two dimensional dynamic. Structured articulation pathways and linkages between the three key stakeholders (industry, VET and HE) are a significant factor in developing education and training solutions in line with Australian industry and economic needs.

The benefits of this methodology include:

- industry gains graduate employees with targeted skills to meet workforce planning and skills gaps;
- tertiary education providers benefit from being able to offer workforce aligned outcomes to students; and
- students benefit from workforce aligned qualifications that enhance career opportunities.



The three key messages from the IACT research are as follows.

Key Message 1:

Australian industry profits by acquiring employees who meet skills needs.

Workforce needs can be a key driver in the development of *articulation pathways* between VET and HE, because employers need graduates with the right skills and the right mix of knowledge and skills. The ideal outcome for industry, existing employees, and students in many employment areas is an articulation pathway from the lower levels of VET to the upper levels of HE, aligned to the job outcomes within each unique industry sector.

A 3D articulation pathway provides students and employers with a clear, job-oriented career track with multiple entry and exit points to career outcomes/stages. Employees are potentially *both* VET and HE qualified. Some 11% of people who obtain VET qualifications subsequently acquire a degree (Australian Bureau of Statistics, 2011). University qualified graduates may also gain VET qualifications after their degree, to obtain specific practical skills. The idea that returning to VET after HE means 'going backwards' is outmoded and irrelevant to the modern workforce. Approximately 14% of people who attain a Bachelors degree as their first qualification subsequently attain a vocational qualification (Australian Bureau of Statistics, 2011).

The development of a tertiary education culture of 3D stakeholder engagement involving VET, HE and industry is the topic of [Resource 1: The Workforce Driven Engagement Model](#).

Key Message 2:

Tertiary education profits from offering graduate outcomes that meet skills needs.

A focus on industry needs is not by itself a sufficient solution to the issues of improving articulation pathways for all stakeholders. Other interventions are also important at a range of levels.

As envisaged by PhillipsKPA (PhillipsKPA, 2006a), the IACT project has confirmed that the development of a strategic corporate approach to managing VET/HE relationships translates to improved pathways for students and increased opportunities for tertiary education providers, and in addition is more cost effective for institutions than the 'ad hoc' approach used in most institutions. In addition, developing collaborative relationships between VET and HE on a basis of mutual respect provides the structural relationship required to engage with industry and thereby meet skills shortages.

A corporate strategy approach to articulation focuses on strategic interventions recommended for educational institutions to meet the *AQF Qualifications Pathways Policy* principles on credit transfer, and to improve the efficiency and effectiveness of their 'business model' of articulation and credit transfer. The development of a corporate strategy approach within tertiary institutions is the topic of [Resource 2: The Corporate Strategy Approach to Articulation](#).

The IACT project investigated models of articulation currently in use across tertiary education organisations as a basis for articulation arrangements. There were many models in common, but there were some that showed that tertiary providers were thinking innovatively and attempting to design arrangements that benefit both students and providers. However the IACT project found that there had been no attempt to document the variations in articulation models that were available or possible. Industry collaboration in articulation and credit transfer arrangements was not commonly occurring, and the project found that by involving industry in



the development of articulation pathways, more effective outcomes and relationships could be formed. The development of *Resource 3: Articulation Pathway Models: A Visual Guide* is intended for use as a reference tool in negotiations about articulation pathway development options between all appropriate stakeholders.

IACT research found that content mapping was the basis to credit transfer and consequent articulation pathways and arrangements between organisations. The IACT project undertook an investigation of content mapping including whether internal factors influence the credit outcomes of mapping processes. It was found that organisational policies and methods of mapping can have a significant impact on the credit outcome and subsequently educational experience for students. Credit transfer potentially minimises duplication in learning and assessment, enriches the experience for students, and improves graduate outcomes for both the education provider and potential employer. However, tertiary education institutions need to look at all the factors holistically to ensure their organisation is upholding the best outcomes for students. The discussion paper resulting from this work reveals some of these factors and their impacts and poses some interesting questions for providers to consider. Ideally, with closer 3D collaboration, the requirement for mapping when developing pathways (and sometimes qualifications) may be lessened or even removed altogether. *Resource 4: Content Mapping for VET to HE Credit Transfer* is the result of this work.

Key Message 3:

Students benefit from gaining qualifications that meet skills needs.

The development and promotion of articulation pathways are collective responsibilities of all stakeholders, including adequate information resources and transition support for students. Awareness of articulation and credit transfer opportunities has an impact on decisions about choice of study pathway. If a school or VET student is aware of a career pathway and has ambition to enter HE, they are likely to arrange their VET study pathway to accommodate HE entry requirements.

Information about, and promotion of, the availability of articulation pathways need to be targeted at teachers and lecturers as well as career guidance officers and vocational counsellors, particularly in schools, in order to reach the 16-19 year age group which IACT research indicates are the age group which is least aware of pathway options.

VET to HE pathways which are depicted graphically are likely to be the most readily understood and provide the clearest means to indicate entry and exit options and career choices which provide credit transfer opportunities. *Resource 5: Student Pathway Options (flowcharts)* summarises the results of a student survey of awareness of articulation and credit transfer, and provides examples of how articulation pathways can be graphically represented for students and employers.

An increasing number of students are articulating from the VET sector to the HE sector, and vice versa, through a variety of pathways. Actively engaging with them and supporting their transition from one sector to another through proactive communication and tailored programs is an essential strategy in student recruitment and retention. *Resource 6: Student Transition Factors* presents information stakeholders (VET, HE and industry) need to consider when developing articulation pathways between VET and HE, in order to minimise the difficulties which may be encountered by students transitioning from the VET system to the HE system.



1.1 Definition of Terms

Articulation: Articulation arrangements enable students to progress from a completed qualification to another with admission and/or credit in a defined qualification pathway (Australian Qualifications Framework Council, 2011).

Credit is the value assigned for the recognition of equivalence in content and learning outcomes between different types of learning and/or qualifications. Credit reduces the amount of learning required to achieve a qualification and may be through credit transfer, articulation, recognition of prior learning or advanced standing (Australian Qualifications Framework Council, 2011).

Credit transfer is a process that provides students with agreed and consistent credit outcomes for components of a qualification based on identified equivalence in content and learning outcomes between matched qualifications (Australian Qualifications Framework Council, 2011).

Higher Education: A higher education institution is a body that is established or recognised by the Commonwealth or a state or territory government to issue qualifications in the higher education sector. It may be a university, self-accrediting institution or non-self-accrediting institution (Australian Qualifications Framework Council, 2011).

Industry is used in this paper to refer primarily to employers rather than to industry representative bodies, although it may include the latter.

Integrated is used in this paper to describe the educational product resulting from engagement between Vocational Education and Training, Higher Education and industry, and the collaborative development of articulation pathways and qualifications as a result of this three-dimensional engagement.

Paraprofessional: Paraprofessional work and/or learning are work contexts that generally support professional practice (Australian Qualifications Framework Council, 2011).

Pathways: Pathways allow students to move through qualification levels with full or partial recognition for the qualifications and/or learning outcomes they already have (Australian Qualifications Framework Council, 2011).

Recognition of prior learning is an assessment process that involves assessment of an individual's relevant prior learning (including formal, informal and non-formal learning) to determine the credit outcomes of an individual application for credit (Australian Qualifications Framework Council, 2011).

A registered training organisation is a vocational education and training organisation registered by a state or territory registering body in accordance with the Australian Quality Training Framework (AQTF) Essential Standards for Registration within a defined scope of registration (Australian Qualifications Framework Council, 2011).

Specified credit is credit granted towards particular or specific components of a qualification or program of learning (Australian Qualifications Framework Council, 2011).

Tertiary education refers to both Vocational Education and Training and Higher Education



Three dimensional, or **3D** in the context of this paper means involving VET, HE and industry (employers) as equal partners.

Unspecified credit is credit granted towards elective components of a qualification or program of learning (Australian Qualifications Framework Council, 2011).

1.2 Acronyms used in this report

ACPET:	Australian Council for Private Education and Training
AQF:	Australian Qualifications Framework
ASQA:	Australian Skills Quality Authority
CAG:	Careers Australia Group
COAG:	Council of Australian Governments
CQU:	Central Queensland University
DET:	Department of Education and Training
HE:	Higher Education
IACT:	Integrated Articulation and Credit Transfer
MOU:	Memorandum of Understanding
NCVER:	National Centre for Vocational Education Research
QTAC:	Queensland Tertiary Admissions Centre
RPL:	Recognition of Prior Learning
RTO:	Registered Training Organisation
SBIT:	Southbank Institute of Technology
SES:	Socio Economic Status
TAFE:	Technical and Further Education
TEQSA:	Tertiary Education Skills Quality Authority
USQ:	University of Southern Queensland
VET:	Vocational Education and Training
3D:	Three dimensional



2. Introduction

2.1 The issues

Record high terms of trade have given the nation a potentially huge economic advantage. Yet we risk missing out on the opportunities to unleash long-term prosperity through the resources boom unless the issue of educational attainment is addressed. The wealth and social wellbeing created by a highly skilled and educated population is indisputable.

(Skills Australia, 2011, p. 1)

Skills Australia draws attention to the benefits to Australia of raising the educational attainment level of the population. However, will increasing the overall education levels of our population be enough to achieve economic prosperity? Will an increase in qualified workers alone provide the Australian business community with the necessary skilled workforce they require to ‘unleash the long-term prosperity’ of the Australian economy?

Skills Australia (2010b, p. 6) states that Australia’s ‘long-term economic and social prosperity depends on the depth of skills in the population, and the better use of those skills, to overcome the risks of a fiscally unsustainable ageing population’.

Access Economics (2009) estimates an additional 3.6 million qualifications will be required nationally by 2020 to meet the 2008 COAG targets¹. Middle level skills in the technical, paraprofessional and trades areas are in high demand relative to supply (Australian Industry Group, 2006).

Failure to address these issues will have enormous consequences for future prosperity — not just for individuals, but for the nation as a whole. We will need to address the causes of the stubbornly persistent low educational attainment that underpins much social and economic disadvantage.

(Skills Australia, 2011, p. 31)

To address these issues, tertiary education providers need to ensure that educational programs are relevant and therefore industry must be a primary negotiator in the provision. This would seem to be common sense, but does not appear in fact to be commonly or systematically occurring. For example, the Health Care and Social Assistance industry is projected to generate the largest number of jobs over the next five years, with 323,300 new jobs in the five years to 2015-16; equating to a growth rate of 4.5% per annum, compared with the all-industry average growth of 2.1% per annum (Department of Education Employment and Workplace Relations, 2011). However, in a study of the workforce requirements of this sector, Healy and Lonnie (2010, p. 61) state that, despite the proliferation of community services courses in HE to support

¹ COAG 2008 targets:

Halve the proportion of Australians aged 20-64 without qualifications at Certificate 3 level or above between 2009 and 2020; and Double the number of higher [VET] qualification completions (Diploma and Advanced Diploma) between 2009 and 2020 (Council of Australian Governments, 2008).



the growth in jobs in recent years:

Unfortunately, this has taken place with little evidence to show that the community services sector was consulted and assisted in the identification of the required knowledge, skills and values set of graduates, or the development of course structures.... The end result appears to be a mismatch between the sector's workforce requirements for 'job ready' employees, with the ability of these programs' graduates to undertake the often complex, challenging and diverse array of functions, roles and tasks of professional practitioners in the contemporary community services.

The Australian National Engineering Taskforce (2011, p. 10) also comments:

Evidence from employers and engineering graduates suggests that there is potential to better align the engineering curriculum in higher education with the work that engineers do, moving from the traditional 'front-loaded' model of delivery to an industry-collaborative model that integrates employers and industry in all stages of course design and delivery.

Employees are one of an organisation's most important competitive advantages, and building employees' skills base is a key element of productivity growth strategies (Australian Industry Group, 2006). However employers have indicated that, in many workforce areas, both vocational and higher education skills are desirable, and that a pathway from Vocational Education and Training (VET) to Higher Education (HE) provides the requisite skill mix they need:

Some of the impetus for enhancing credit transfer arrangements comes from skill shortages and employers highlighting their need for workers to have a mix of skills that include vocational and technical elements in addition to higher levels of critical thinking and theoretical understanding.

(PhillipsKPA, 2006a, p. iii)

The desirability of many graduates having both VET and HE qualifications, via a 'seamless' articulated career pathway encompassing both sectors, has been supported by the results of [IACT research](#) (Paez D, Byrnes J, Blacker J, Dwyer C, & Jackson A, 2011). In order to achieve this, however, major structural barriers between the sectors need to be removed or significantly reduced.

For example, although the proportion of domestic undergraduate HE students admitted to HE on the basis of prior VET study has been around 10% in recent years, the proportion of students gaining *credit* for previous VET study is only about 4.3% (Bradley, Noonan, Nugent, & Scales, 2008, p. 192). Analysis of national VET and HE participation statistics by NCVER shows that over 96% of commencing domestic HE students with prior VET study did not receive credit or recognition for their VET studies in 2009 (NCVER, 2011, Table 15). Whilst this may be partly due to entering a different field of study, it also indicates that there are significant structural barriers preventing articulating students from gaining credit for VET studies when enrolling in HE studies.

A watershed in the development of seamless articulation between the VET and HE sectors was the 2006 PhillipsKPA report *Giving Credit Where Credit is Due: a national study of credit transfer and articulation between the VET and HE sectors*. The report enumerated the many impediments to VET-HE articulation, and stated that existing pathways 'do not always operate as smoothly, efficiently or effectively as they might' (PhillipsKPA, 2006a p. v). These impediments are:

- funding and accountability differences between the sectors;
- attitudes and culture of the sectors;



- administrative issues which impede articulation and credit transfer;
- curriculum and qualification design differences;
- assessment differences;
- lack of resources.

PhillipsKPA (2006a, p. 10) state that this demand from employers for new skill mixes is a driver and catalyst for articulation and credit transfer arrangements. However employers have not yet played a strong advocacy role in negotiating articulation arrangements which meet their workforce skills needs. Healy and Lonne (2010, p. 64) describe the situation as follows:

The VET programs have not had a clear enough articulation with the higher education programs and the pathways for students are inconsistent for student progression. Taken overall, there is inadequate communication and collaboration between education providers and employers on curriculum alignment, clear articulation pathways and workforce requirements. There is a discrete separation of the VET and higher education providers yet they are providing graduates to the same sector. Viewed overall, the system is characterised by an ad hoc alignment of curriculum to workforce needs.

The IACT project has addressed these problems of inconsistency, lack of collaboration between stakeholders, and separation of VET and HE, to improve the alignment of curriculum to workforce needs and articulation pathways between the sectors.

2.2 Background to the IACT Project

The 2008 *Review of Australian Higher Education*, known as the Bradley Review, set the agenda for much of the recent reform in post-secondary education. One of the terms of reference for the Bradley Review was to 'establish the place of higher education in the broader tertiary system, especially in building an integrated relationship with vocational education and training' (Bradley, et al., 2008, p. 179).

In the 2009 higher education reform agenda titled *Transforming Australia's Higher Education System*, the Australian government enumerated ten major initiatives, one of which was 'Improving Tertiary Pathways: building stronger connectivity between the higher education and vocational education and training sectors' (Australian Government, 2009, p. 9). The policy addresses pathways between VET and HE, and states that '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' (Australian Government, 2009, p. 43). As a result of this policy the Australian Government instigated a number of reforms including:

- a single Ministerial Council for Tertiary Education and Employment;
- inclusion of VET in the Education Infrastructure Fund;
- formation of the Tertiary Education Qualifications and Standards Agency (TEQSA) for HE and the Australian Skills Quality Authority (ASQA) for VET, the long-term plan being to bring them together under one agency;
- programs to promote an increase in people from lower socio-economic backgrounds in tertiary education, particularly HE;
- review of the Australian Qualifications Framework (AQF) in order to facilitate articulation between education sectors.

The revised AQF provides a 10 level structure encompassing all sectors including secondary school, VET and HE. The revised AQF diagram places qualifications in a circle, thereby graphically illustrating the connection



between the qualifications and fundamentally changing the 'old' idea of one sector being higher than the other (Australian Qualifications Framework Council, 2011, p. 19). The Framework explicitly aims to facilitate student transition across the sectors.

The AQF Qualifications Pathways Policy aims to enable integrated pathways across sectors and to facilitate articulation and credit transfer. It has the potential to allow people to use a mix of learning from the different sectors to achieve the requirements of a qualification at any particular level (Australian Qualifications Framework Council, 2011).

Figure 1: Revised AQF

Source: Australian Qualifications Framework Council, 2011, page 19.



The AQF *Qualifications Pathways Policy* sets out the operational requirements of institutions when processing articulation and credit transfer applications. The policy has a particular focus on consistency in credit arrangements both within and between educational institutions and sectors and sets out principles and procedures for good practice which should apply nationally to credit arrangements between all education and training sectors. It states that articulation decisions by institutions will:

- be evidence-based, equitable and transparent;
- be applied consistently and fairly with decisions subject to appeal and review;
- recognise learning regardless of how, when and where it was acquired, provided that the learning is relevant and current and has a relationship to the learning outcomes of the qualification;
- be academically defensible and take into account the students' ability to meet the learning outcomes of the qualification successfully;
- be decided in a timely way so that students' access to qualifications is not unnecessarily inhibited;
- allow for credit outcomes to be used to meet prerequisites or other specified requirements for entry into a program of study leading to a qualification or for the partial fulfilment of the requirements of a qualification; and
- be formally documented for the student including any reasons for not giving credit.

(Australian Qualifications Framework Council, 2011, p. 76)



The IACT project has sought at all times to apply the *AQF Qualifications Pathways Policy's* principles and procedures in the *3D Focus on Articulation* resources which follow.

2.3 The IACT project

The Integrated Articulation and Credit Transfer (IACT) project commenced in May 2009 and concludes in October 2011, funded by the Australian Government Department of Education, Employment and Workplace Relations (DEEWR) under the Diversity and Structural Adjustment (DASA) program. The IACT project is led by the University of Southern Queensland (USQ) in collaboration with the Queensland Department of Education and Training (DET), Careers Australia Group (CAG) and the Australian Council for Private Education and Training (ACPET).

The IACT project was instigated in response to Australian Government efforts to create 'stronger connectivity between the higher education and vocational education and training sectors' (Australian Government, 2009, p. 9) to address workforce and skills shortage issues. The IACT Project's aim was to develop integrated, sustainable and transferable models of articulation and credit transfer between the HE and VET sectors, which are of particular relevance to industry¹.

Whilst IACT research has found that there is a willingness by tertiary education providers to improve VET-HE articulation and credit transfer outcomes, it also found that the barriers to seamless articulation and credit transfer are considerable and include:

- lack of industry involvement in the negotiation of articulation arrangements between the VET and HE sectors, which is at odds with the importance placed on the involvement of industry in curriculum development and delivery, and in developing career pathways which are industry-relevant;
- differences in fee structures between the sectors;
- the focus of VET training packages solely on job outcomes, with no consideration of potential articulation to HE;
- a lack of information about career-oriented articulation pathways from VET to HE for students to follow;
- institutions' administrative arrangements for articulation and credit transfer which often are not 'evidence-based, equitable and transparent' nor 'applied consistently and fairly with decisions subject to appeal and review' (Australian Qualifications Framework Council, 2011); and
- lack of dedicated articulation and credit transfer facilitation/coordination units in many tertiary institutions.

(Byrnes J, Paez D, Jackson A, Dwyer C, & Blacker J, 2010, pp. 2-3)

PhillipsKPA comment that:

Credit transfer is a complex issue and there are no easy answers to how credit transfer outcomes might be improved. Significant efforts and resources are required. Importantly, these efforts must involve cross-sectoral collaboration between institutions and between government agencies and departments.

(PhillipsKPA, 2006a, p. 4)

Whilst acknowledging that 'there are no easy answers', the IACT Project has attempted to provide some of the answers. The project has formulated, tested and documented practical strategies to improve articulation and credit transfer outcomes between the three key stakeholders: VET, HE and industry, with the aim of

¹ Industry in this paper refers primarily to employers, rather than industry representative bodies, but may include the latter.



developing educational solutions that have mutual benefit to all.

Using this applied approach, the project has developed a 'toolbox' of resources, titled the *3D Focus on Articulation Pathways*, that can assist VET, HE and industry stakeholders to participate more fully in developing articulation and credit transfer pathways, processes and systems to improve the efficiency and effectiveness (or 'seamlessness') of articulation pathways for all stakeholders.

The *3D Focus on Articulation Pathways* resources were developed through a multi-faceted research approach including a review of previous studies, consultation with informants, case studies and participatory action research. Participatory action research was chosen because this approach uses an existing problem in a 'real world' setting, and the solutions are developed in collaboration with those most affected by the issues. Therefore action research not only attempts to understand the problem but also to generate practical solutions.

Instead of being research on a social setting and the people within it, it is research from inside that setting carried out either by the participants themselves or researchers working in collaboration with them. It has an immediate impact since it is an integral part of day-to-day work.

(Noffke & Somekh, 2010, p. 89)

The *3D Focus on Articulation Pathways* resources are available for anyone to use or modify to suit their particular circumstances and issues. They are available free from the following website: www.3Darticulation.com.au. The resources are briefly outlined in the later part of this paper.



3. The 3D Focus on Articulation Pathways

3.1 Underlying principles

While efforts to promote and streamline articulation and credit transfer between VET and HE have traditionally been driven by an equity or efficiency rationale, the IACT project has established that there is a new driver for integrated articulation pathways: workforce need. Articulation pathways have a key role in the workforce development and planning arena (Paez D, Jackson A, Dwyer C, Byrnes J, & Blacker J, 2010).

Recent studies on workforce planning predict a serious shortfall in appropriately qualified people in the next few years. This will have a negative impact on the growth potential of Australian industry (Australian Industry Group, 2006, 2007; Australian Industry Group and Deloitte, 2008; ElectroComms and Energy Utilities Industry Skills Council, 2010; Healy & Lonne, 2010; Skills Australia, 2010a; Training and Skills Commission, 2009).

Consultations with industry indicate that Australian employers are concerned about issues which are impacting on their ability to develop a skilled workforce. These issues include the following:

- The (lack of) quality and relevance of training provided in preparing individuals for specific jobs;
- The lack of responsiveness of education and training suppliers to industry needs;
- The need for an improved interface between industry and providers across all sectors including school, VET and HE;
- The need for *better linkages* between the education and training sectors;
- The lack of work placement opportunities for students;
- The need for increased *collaboration between stakeholders* in developing workforce planning solutions; and
- The need for clearly *articulated career paths* and career advice for school-leavers and others looking for career information as a basis for making education and training choices.

(Training and Skills Commission, 2009, pp. 33-34)

Who should be responsible for facilitating the articulation interface between education providers and industry needs? Traditionally the negotiation of articulation arrangements has been between a single registered training organisation in the VET sector, and a university in the HE sector. While there has been some movement toward agreements that cross sectors, such as a state-wide TAFE with one HE provider, agreements continue to be initiated by, and directed by, education providers.

The Bradley Review notes, however, that 'Better and shared information on future labour market needs, industry needs and demographic trends is required if integrated responses to community and workforce demands are to be met' (Bradley, et al., 2008, p. 4).

Skills Australia (2010a) calls for 'a new partnership approach to workforce development at government, industry and enterprise level' and a 'shared agenda between all of the players responsible for workforce development' including business services, industry development bodies, education providers, industry



bodies and individual enterprises. The Skills Australia 'Roadmap' (2011, p. 47) argues for a shift of funding toward subsidisation of workforce development managed by industry.

Employers have said that the education and training system needs to pay closer attention to employer requirements and enable greater flexibility and coherence in training pathways across the sectors. Graduates are entering the workplace who are inadequately prepared for the job they are supposed to be trained to do (Australian Industry Group, 2006; Rittie & Awodeyi, 2009). Not only employers, but some recent graduates themselves have stated that they are inadequately prepared for the work they are required to do (Watson L & McIntyre J, 2011).

Employers have stated that in most jobs both vocational and higher education skills are desirable, and a pathway from VET to HE provides the skill mix they need, whilst also providing a career pathway (Australian Industry Group, 2006; PhillipsKPA, 2006a; Training and Skills Commission, 2009). An industry representative involved in IACT's participatory action research project explained:

...the majority of jobs require a combination of both competency-based learning and knowledge-based learning. To favour one over the other is of no benefit to industry. It is time the two education sectors moved on past this debate, as it contributes to the skills shortage issue.

(Industry Representative, personal communication, 14/7/10)

A broad generalisation often made is that HE primarily teaches knowledge, theory and critical thinking, whilst VET is concerned with teaching practical skills for work. With acknowledgement to the limitations of this sweeping generalisation, if the demand from employers is for graduates with a mixture of theoretical and practical skills, then VET-HE articulation pathways have the potential to provide employees with the desired skill mix sought by employers, and to also provide clearer career pathways for both.

How VET-HE articulation pathways are to be achieved, however, requires consideration of a complex array of factors including:

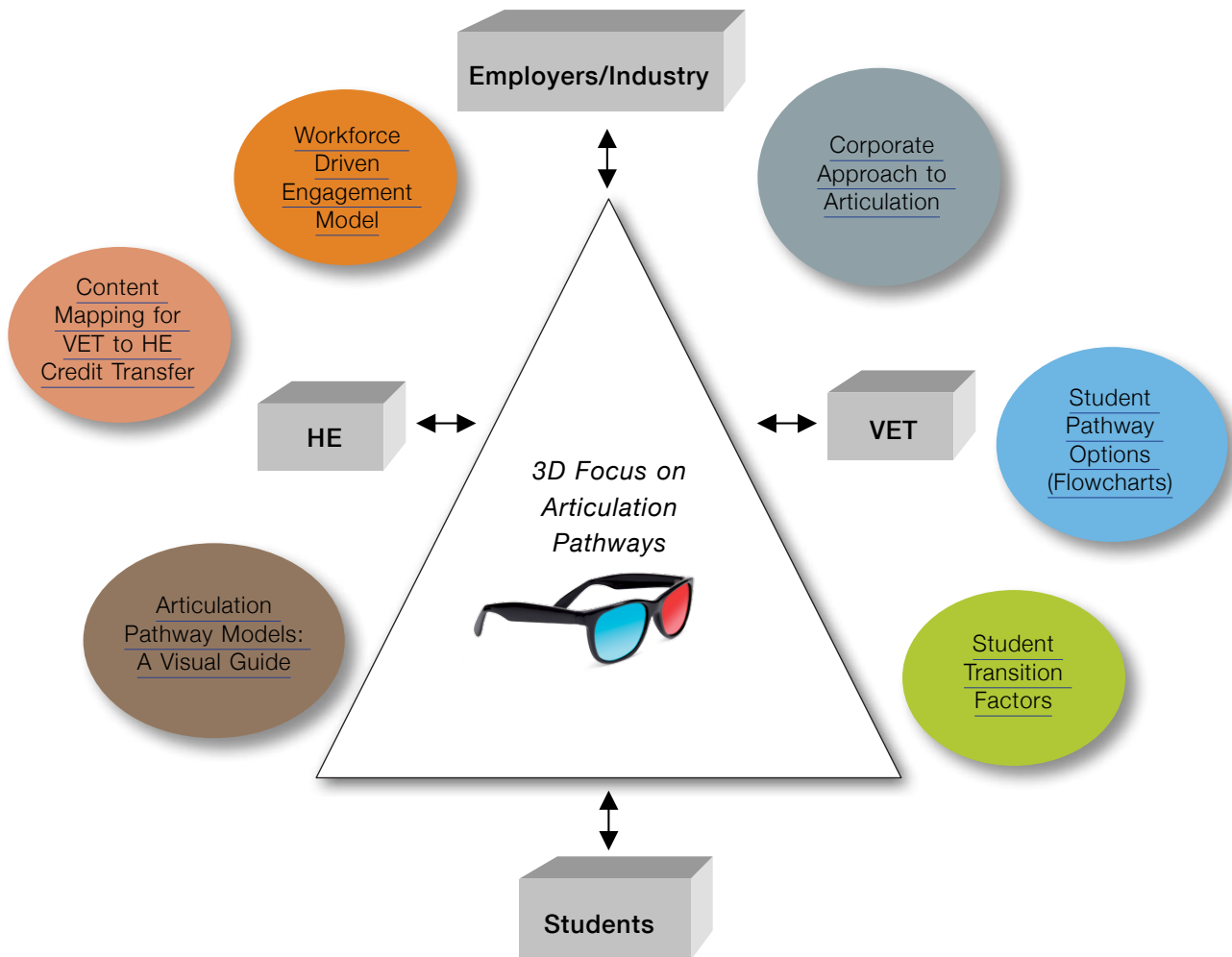
- The nature of the engagement between VET, HE and industry, which needs to be an equal partnership incorporating mutual respect, commitment and leadership in order to resolve, at the local level, the many issues which will be encountered, including funding and accountability differences between the education sectors, administrative issues, and curriculum and assessment differences;
- Improvement of tertiary education systems and procedures for student articulation and credit transfer between VET and HE, such that the AQF Qualifications Pathways Policy on credit transfer is applied, and articulation and credit transfer become part of the 'business model' of each institution;
- Consideration by all stakeholders of articulation when developing new qualifications, including innovative approaches such as integrating VET and HE qualifications into one seamless program;
- Information provision for all stakeholders, particularly school and VET students and employers, on career pathways which have a VET-HE articulation and the many advantages to students and employers of such pathways;
- Transition support programs for students moving from the VET to the HE sector, due to the considerable differences in curriculum, support, administration and teaching and learning styles between the sectors.



3.1.1 Overview of the resources

In the following section the resources that have been developed by the IACT project are briefly described. They are available free from: www.3Darticulation.com.au . Figure 2 shows the resources in relation to the 3D approach to articulation and qualifications development, which includes consideration of the needs of industry, HE, VET and students.

Fig 2: 3D Focus on Articulation Pathways





Summary of Resources

Resource 1	<u>The Corporate Strategy Approach to Articulation</u>	Discusses the strategic interventions recommended for educational institutions to meet the <i>AQF Qualifications Pathways Policy</i> principles on credit transfer, and to improve the efficiency and effectiveness of their 'business model' of articulation and credit transfer.
Resource 2	<u>The Workforce Driven Engagement Model</u>	Provides a framework for stakeholder engagement involving VET, HE and industry as equal partners from the outset to meet a specific workforce need.
Resource 3	<u>Articulation Pathway Models: A Visual Guide</u>	Provides examples of both current and innovative models of integrated articulation pathway design in a graphic form.
Resource 4	<u>Content Mapping for VET to HE Credit Transfer</u>	Discusses the impacts of the various policies, strategies and approaches to content mapping on credit outcomes for students and presents considerations for providers.
Resource 5	<u>Student Pathway Options (flowcharts)</u>	Summarises the results of the IACT survey of student awareness of articulation and credit transfer, and provides examples of how articulation pathways can be more effectively promoted and explained to students.
Resource 6	<u>Student Transition Factors</u>	Presents information that stakeholders (VET, HE and industry) need to consider when developing articulation pathways between VET and HE, in order to minimise the difficulties which may be encountered by students transitioning from the VET system to the HE system.



3.2 Australian industry profits by acquiring employees who meet skills needs

Research undertaken by IACT with tertiary education providers in the VET and HE sectors in Queensland indicates that industry involvement in the development of articulation arrangements is low in both sectors (Byrnes J, Paez D, et al., 2010). The IACT project also conducted consultations with industry and workforce planning organisations, results of which support the conclusion that there has been limited involvement of industry and employer groups in the development of articulation arrangements to date (Paez D, et al., 2010).

The IACT project found that by involving industry in the development of articulation pathways, industry gains graduate employees with the abilities needed to fulfil specific job requirements with a mix of vocational and higher education skills. This results in significant cost savings by reducing the need for industry sectors to give additional training to graduates they employ. By partnering with VET and higher education, industry plays a pivotal role in ensuring that articulation pathways are designed and geared to their human resource needs.

A 3D articulation pathway provides students and employers with a clear, job-oriented career track with multiple entry and exit points to career outcomes/stages. Employees are potentially both VET and HE qualified. Some 11% of people who obtain VET qualifications subsequently acquire a degree (Australian Bureau of Statistics, 2011). HE qualified graduates may also gain VET qualifications post-degree, to obtain specific practical skills. The idea that returning to VET after HE means 'going backwards' is outmoded and irrelevant to the modern workforce. The Australian Bureau of Statistics' Survey of Education and Training, conducted in 2009, found that approximately 14% of people aged between 25 and 64 who had attained a Bachelors degree as their first qualification subsequently attained a vocational qualification (Australian Bureau of Statistics, 2011).

3.2.1 The Workforce Driven Engagement Model

IACT research suggests that the time has come for an improved dialogue between industry stakeholders and the relevant VET and HE stakeholders. Accordingly, the IACT project conducted an action research project to explore if it was possible to develop a qualification and articulation pathway to meet a specific workforce need, if industry was involved in the negotiations from the outset. The health industry was selected for this project, as discussions with industry representatives indicated that there were identified skill shortages at the technical level but the existing qualifications supporting the industry were not suitable to meet this need.

The result of the action research project is the Workforce Driven Engagement Model (WDEM) which provides a framework for engagement between industry and the tertiary education sector. The sole aim of the WDEM is for the development of an educational solution to meet a workforce need.

The WDEM is a multi-staged process which aims to engage the right people for the right reasons at the right time for mutual benefit. It is more than consultation. The strength of the WDEM is the collaboration of all three key stakeholders: VET, HE and industry, as equal partners from the outset. The WDEM requires all partners to have an active role in the process and the success of the engagement is judged only when all partners achieve their stated objectives. We have termed this three dimensional (3D) engagement.

It is through undertaking a process of collaboration that 3D engagement can assist in solving the problems by improving significantly the connections between:

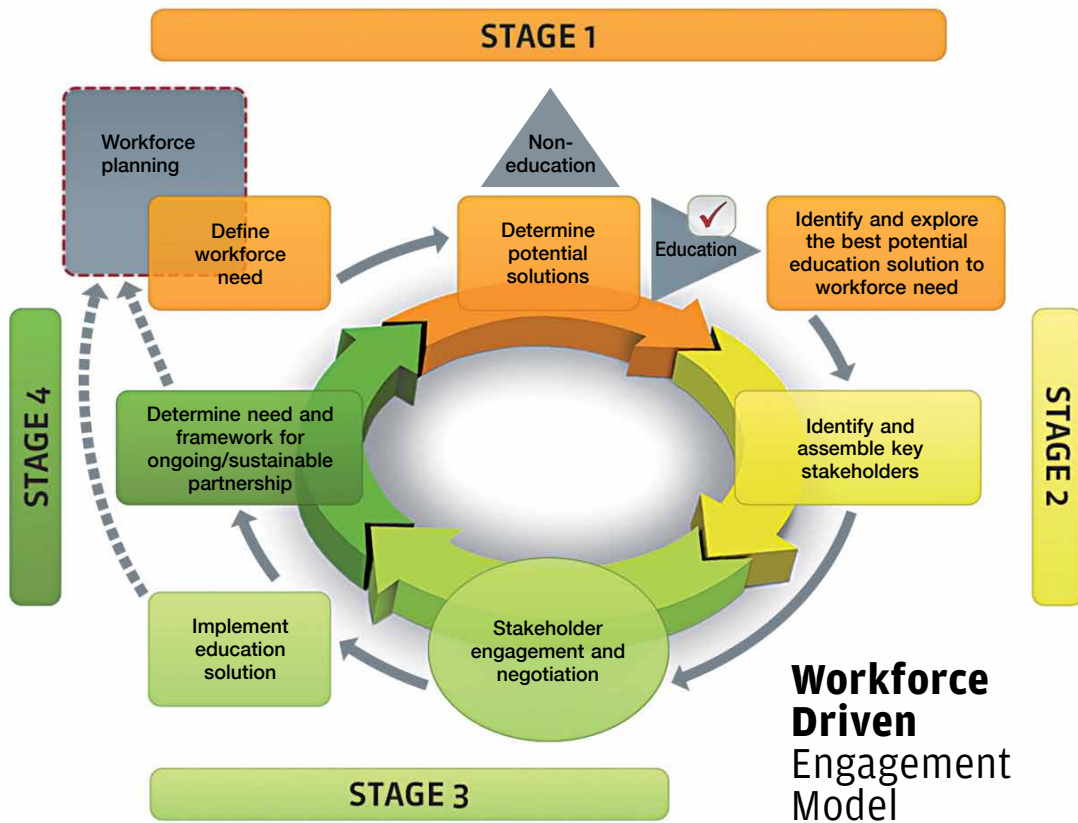
- industry and the tertiary education sector;
- workforce planning and the tertiary education sector;



- VET sector and HE sector; and
- VET qualifications and HE qualifications.

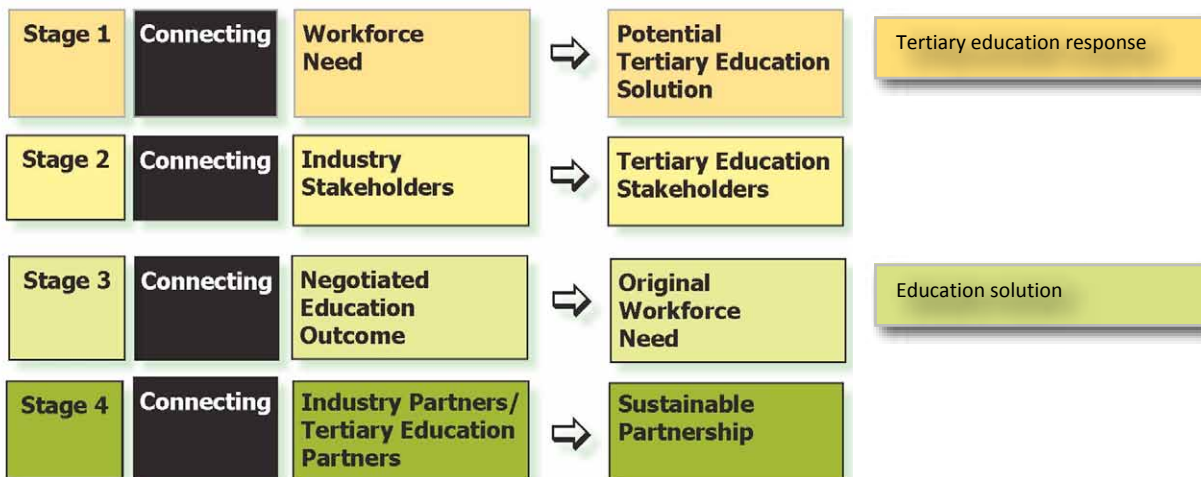
The Workforce Driven Engagement Model can be viewed in two ways. Firstly, it can be viewed as a process where there is a beginning and an end point and a number of benchmarks to measuring success along the way. Fig 3.1 shows the Process Focus of the model.

Fig 3.1 WDEM: A Process Focus



On the other hand, the model can be seen as a series of connections that must be made in order for the right type of engagement, and therefore the right outcome, to occur. The model in this case, has a Connections Focus as shown by Fig 3.2.

Fig 3.2 WDEM: A Connection Focus



**Stage 1:**

This stage requires a determination and confirmation of the workforce need, and the potential for the workforce need to be addressed through an education solution. This can only occur where focussed workforce planning has taken place so that there is a clear view of current and future workforce needs together with a good understanding of the relevant education products and pathways supporting the industry and its workforce. The initiative at this stage would usually be taken by the industry in question, bringing a holistic view of the workplace to any discussions about potential educational solutions. At this stage, connections with other (particularly tertiary education) stakeholders are initiated through investigations and discussions to establish whether there is a mandate to move forward.

Stage 2:

Once a mandate has been established, the next stage is focussed on the establishment of a formal 3D stakeholder group with representatives from industry, VET and HE to work together on the identified solution. Industry representation must include employers with additional industry representation as determined is appropriate. Industry representatives who have education and training positions within organisations, where they exist in organisations, are an excellent choice for the stakeholder group. Connecting the right people for the job with an equal commitment and determination to find the right solution is a key element to the success of the model.

Stage 3:

This stage is in depth and on-going negotiation. Both industry and education stakeholders approach this stage with a view to bringing their expertise to the table but with a flexible and open mind about the solution. Compromise is often required, but through being engaged from the beginning, both parties feel heard, understood, and part of a process that will benefit both sectors as well as students. Finding the right solution to the workforce need is the focus of this stage.

Stage 4:

This stage concerns the sustainability of the stakeholder group after the outcomes have been achieved. Whether and how this occurs must be determined individually in each case. There may be an advantage in formalising the group and determining a framework or governance model for how the relationship/partnership will be maintained, and what the focus will be, such as reviewing the outcomes of the original goals or finding solutions for other workforce needs. In some cases, having achieved a suitable outcome, there may not be an ongoing need or benefit in working together or maintaining an ongoing relationship. Determining the answers to questions such as “Where to from here?” and “How do we leverage from what we’ve learned and accomplished?” is the focus of this stage.

WDEM resource**For Consideration**

Employers who are proactive in workforce planning will be familiar with their current and future workforce requirements, and will be able to demonstrate leadership in resolving potential education solutions through a 3D engagement process.

Participation in a 3D engagement process will improve the tertiary education sector’s connection with workforce issues, enhancing their capacity to develop and sustain workforce relevant education solutions.



3.3 Tertiary education profits from offering graduate outcomes that meet skills needs

For both VET and HE, student recruitment in the domestic and international marketplaces is critical to success. Pathways that attract students with Vocational Education and Training (VET) backgrounds are becoming significant in Higher Education (HE) strategic planning and marketing. By the same token, articulation to HE is becoming a marketing tool for VET to attract both international and domestic students. By being able to offer a strong choice of streamlined articulation pathways between the sectors, which are developed in consultation with industry to provide workforce-aligned qualifications, both VET and HE institutions may achieve a competitive advantage in student recruitment. As Dalitz, Toner and Turpin (2011, p. 154) point out 'the co-evolution of skills and innovation naturally leads to the VET and higher education systems merging'.

3.3.1 The Corporate Strategy Approach to Articulation

PhillipsKPA (2006a, p. iv) identified a number of enablers of articulation and credit transfer between the sectors. These include:

- leadership to tackle the difficult issues and resolve them;
- systems to implement articulation and credit transfer;
- mutual respect and commitment between the sectors;
- information provision to students and employers;
- transition support for students moving between sectors.

PhillipsKPA (2006a p. iv) maintains that 'Articulation and credit transfer must be central to institutional vision and strategic priorities'. They recommend that this includes a person at senior management level in each (VET and HE) institution who is responsible for achieving articulation and credit transfer targets which are embedded in strategic plans. This person needs to act as a 'champion' for the cause, keeping articulation and credit transfer high on the institutional agenda, and supporting those working at the grassroots level. However there also needs to be officers at all levels with responsibility for ensuring that articulation and credit transfer policies and procedures are developed and implemented, including key academic staff.

The PhillipsKPA position is supported by other researchers (Cram B & Watson L, 2008; Hassard M, 2011; McDonald R, Fyffe J, & Goodwin S, 2010; Toohey A, 2011). These researchers state that articulation agreements which have a high level of commitment and leadership by both the VET and HE sectors and which support investment of time and resources into articulation and credit transfer are critical to successful relationships. The IACT project has coined the term 'a corporate strategy approach' to articulation, as the articulation relationship is central to strategic institutional operations. The *Corporate Strategy Approach to Articulation* resource provides guidelines for institutions wishing to develop such capability, based on best practice approaches which the IACT project has researched and documented.

In a corporate strategy approach to articulation agreements, each organisation uses Memoranda of Understanding (MOU) as a framework for the management of cross-institutional relationships. Diplomas and Advanced Diplomas provide the pathway into the same or related fields between the sectors. Each agreement is supported by a governance structure: typically joint committees or advisory groups, which support curriculum mapping and course design as a feature of successful models of articulation. The mutual respect that develops as a result of governance structures for management of articulation and credit transfer may also provide the avenue to work within a workforce driven engagement model with industry.

The MOU agreements developed using a corporate strategy approach lead to increased pathways for students. Examples include: the University of Canberra which has 170 articulation arrangements with the



Canberra Institute of Technology (Cram B & Watson L, 2008), Griffith University which has 96 MOUs and 125 local articulation arrangements (Hassard M, 2011) the University of Southern Queensland which has 3 state-wide MOUs and 212 articulation arrangements (Paez D, et al., 2011), a state-wide agreement between Australian Catholic University and TAFE NSW and TAFE SA with all the South Australian universities, while Southbank Institute of Technology has 150 agreements, with 72 students enrolled in dual awards with universities in 2005, and 560 students in 2010 (Toohey A, 2011).

The corporate strategy approach has tactical benefit to the institutions concerned. The approach utilises a 'precedent database' of previous credit transfer determinations. Precedents are created when credit is given for one specified unit of study against another specified unit, such as from part of a VET qualification to part of a HE qualification. A database of such precedents is used by staff and prospective students to quickly and objectively determine credit equivalence. Management of the corporate strategy approach is complex and requires specialised, trained staff that deal with multiple stakeholders. Examples of the corporate strategy approach are Griffith University's Credit Transfer Office (Hassard M, 2011) and Southbank Institute of Technology (SBIT) which has a similar unit (Toohey A, 2011), as do TAFE South Australia and TAFE New South Wales. However, the corporate approach is the exception rather than the norm at the present time.

In-depth interviews were conducted by the IACT team with tertiary education providers in both the VET and HE sectors in Queensland to investigate the current state of practice in articulation and credit transfer in Queensland. The research found that credit transfer in Queensland VET and HE institutions was characterised by the following:

- a predominance of ad hoc (individual or case by case) credit transfer determinations;
- lack of allowance in time allocations of staff for the considerable time and cost required to develop structured credit transfer arrangements;
- lack of dedicated corporate strategy credit transfer coordination units in most Queensland tertiary institutions (Griffith University and SBIT being the only exceptions);
- lack of credit transfer on an automated basis at the point of enrolment.

(Byrnes J, Paez D, et al., 2010, pp. 3-4)

The 'ad hoc' approach to articulation is characterised by 'case by case' determinations of credit transfer. Each student individually applies for credit and is considered by the relevant lecturer or faculty admissions officer on a case by case basis. Such decisions, by definition, cannot meet the *AQF Qualifications Pathway Policy* recommendation that credit decisions should be evidence-based, equitable, transparent, consistent, and subject to review and appeal (Australian Qualifications Framework Council, 2011, p. 76).

The corporate strategy approach is more efficient and cost-effective

Ad hoc, case by case credit transfer arrangements are inefficient and more expensive in terms of total staff time than structured credit transfer arrangements, and the corporate strategy model is the most efficient and cost effective. In a study undertaken for the British Columbia Council on Admissions and Transfer in Canada, J Jarvis & Associates (2004) attempted to assess the cost of credit transfer, based on the time taken to undertake credit transfer tasks in teaching, administration and co-ordination. The study found that the total cost of the credit transfer process for British Columbia's post-secondary institutions was 6 million Canadian dollars per year³. Most of this time was spent by teaching staff undertaking case by case credit determinations⁴. The study also concluded that it takes 3.5 times longer to assess credit transfer where there is no precedent database or structured credit pathway agreement (J Jarvis & Associates, 2004, p. 18).

³ The value of the Canadian and Australian dollar in 2004 were closely equivalent.

⁴ To enable a comparison with Australia, British Columbia province has a total population of approximately 4 million, and has 15 universities and 19 Colleges, including private providers (British Columbia Council on Admissions and Transfer, 2010). It is therefore roughly approximate to Queensland.



These findings are supported by anecdotal information gathered by the IACT project. A structured credit transfer agreement between TAFE Queensland and the University of Southern Queensland (USQ) involving credit transfer from one TAFE Advanced Diploma into one Bachelor degree, took approximately one day a month for 18 months, or approximately 3-4 working weeks total time, by one lecturer (Young G, personal communication, 29/11/2010). The lecturer's time alone equates to some \$6,000. This does not include the time of other TAFE, USQ Faculty and additional staff in meetings concerning the proposed arrangement.

A proposed agreement negotiation for a HE to VET articulation pathway by the Queensland Department of Education and Training was budgeted in 2008 at \$20,000 (Dwyer C, personal communication, 2/3/2011).

A case study undertaken by IACT sought to calculate the time taken and therefore cost of an articulation negotiation involving a variety of credit transfer pathways between one TAFE campus and one USQ Bachelor degree. The overall cost of the agreement, including both TAFE and USQ staff time, was \$13,095, not including final approvals and implementation.

Whilst the above examples involve different proponents, numbers of partners, numbers of programs and timeframes, they do indicate that the time (and therefore cost) of negotiating credit transfer agreements is considerable; perhaps more than is commonly assumed.

Organisational culture is critical to success

Mutual respect and commitment to the articulation and credit transfer partnership must be deliberately developed and nurtured by both (VET and HE) parties. Processes to strengthen relationships must be established and institutional culture addressed in terms of attitudes of staff, and particularly leaders, toward the articulation and credit transfer partners and partnership (PhillipsKPA, 2006a, p. 9). This can be hampered if the institutional culture of an organisation is hostile to cross-sectoral partnerships, and particularly if senior leadership in each partner organisation does not model positive and respectful attitudes to the other partner. PhillipsKPA (2006c) recommends that senior leadership of each institution is involved in negotiations, at least at the early stages, to signify the importance placed on a successful outcome.

Entrenched attitudes and culture of the education and training sectors continue to impact on collaboration between stakeholders and the formation of partnerships. Quantifying the extent of the impact is challenging. With this in mind, the IACT project interviewed tertiary education providers in Queensland to find out what cultural factors were integral in influencing (either positively or negatively) the formation of partnerships between the sectors. Respondents were asked to comment on the culture of their own and the other sector regarding forming partnerships.

VET sector respondents nominated their commitment to providing students with increased opportunities and promoting the ethos of continuous learning as a critical cultural factor in VET's favour. A negative cultural factor for VET was the tendency to be too attached or aligned to traditional trade based thinking and outcomes although some felt this was changing with the shift in emphasis, thanks to national targets, from lower to higher AQF level qualifications for many VET providers.

Both sectors highlighted the level of knowledge and understanding that HE providers have about VET as a significant negative cultural barrier. Specifically, the competency-based nature of VET training, how VET works as a system, and the perceived value of VET qualifications, was seen as both positive and negative by both VET and HE. VET providers were united in their impression from HE providers that they were seen as inferior and therefore not equal players in the partnership. Some respondents within HE recognised this



within their own sector, but had the view that this is only at some levels within HE and generally on the decline. PhillipsKPA (2006a, p. 12) states that:

Efforts to bridge the divide between VTE and higher education sectors continue to be hampered by cultural differences and by the attitudes held by personnel in both sectors...

There is clearly still much work to be done to break down the cultural barriers between HE and VET. One Vice-Chancellor informed the IACT project that he had tried to introduce changes to the culture of his university in VET-HE articulation, but encountered considerable resistance from different levels of staff. He realised as a result of this that change would happen much more slowly than he had envisaged (Byrnes J, Paez D, et al., 2010). Nonetheless, change in this example was initiated at the right level: as PhillipsKPA (2006a, p. 12) says ‘...the example provided by those within leadership positions are also important in shaping the attitudes of those within institutions’. The strategic nature of articulation and credit transfer can also lead to much greater engagement with industry. Through this collaboration workforce solutions to meet skills shortages can be developed as long as appropriate governance structures are implemented and senior staff have responsibility for managing the relationships.

Since PhillipsKPA in 2006, the Bradley review, the strengthening of the AQF, the development of Skills Australia and Commonwealth targets for skills development and achievement of qualifications, there is a new environment and impetus for working together. As systems improve and data is gathered on student movement and achievement, the academic achievements (and/or challenges) of articulating students can be better analysed to determine if these cultural and attitudinal factors remain a barrier.

Resources available to assist HE become more familiar with VET include:

- *Back to Basics V4.0* <http://www.tpatwork.com/Back-2-basics.aspx>
- *NCVER Did You Know – A guide to vocational education and training in Australia* <http://www.ncver.edu.au/publications/1790.html>

Articulation must be central to administrative/information systems

Rather than being a peripheral addition to existing systems, PhillipsKPA state that articulation and credit transfer must be a central and integral part of admission, enrolment and administrative systems, if articulation is to be successful.

Systems contributing to effective credit transfer arrangements include credit transfer policies and procedures, formal cross-institutional agreements, clear reporting lines, allocation of responsibilities and accountabilities, committee structures, student data collection, monitoring of student progress, administrative systems and information that leads to rapid and consistent decisions on applications for credit transfer as well as accurate and timely advice for students.

(PhillipsKPA, 2006a, p. 9).

A search of all Australian university websites for policies and procedures on articulation and credit transfer indicates that, of all thirty-nine universities, thirty provide searchable information. However, only twenty one (54%) of the universities display their precedent credit transfer databases in an easily found and accessible location. Readily available, accurate and up to date information about articulation and credit transfer is integral to providing a transparent and consistent service for students.

A move towards a corporate approach to developing formal cross-institutional articulation arrangements is



imperative if tertiary education is to move away from negotiating credit between individual organisations. Ideally, all universities in a jurisdiction negotiate concurrently with a central body located within TAFE, on the basis that the VET qualifications offered are from National Training Packages. The IACT project negotiated state-wide agreements between USQ and the Departments of Education and Training (on behalf of TAFE) in Queensland, New South Wales and South Australia. These agreements were negotiated by senior staff in each organisation supported by executive and academic staff and may be used as a model for action by other education providers.

However the inconsistency in credit given by different universities for the same National Training Package is a major barrier at the present time. For example, although there is a serious shortage of qualified staff in childcare:

In spite of articulation agreements between the VET and HE sectors, VET Diploma graduates are not guaranteed university places, the credit transfer arrangements differ between institutions and VET graduates face a range of other barriers to the successful completion of a university degree.

(Watson L, 2006, p. xv)

Furthermore, the structure of some university degrees which have professional body requirements which preclude articulation from VET, such as some psychology and law degrees, reduces the ability to provide the maximum amount of credit as outlined in the Australian Qualifications Framework guidelines on credit transfer (Australian Qualifications Framework Council, 2011).

Griffith University has established the *TAFE Queensland and Griffith University Links Committee* which meets six monthly, as does Queensland University of Technology, which uses a slightly different forum through its Deputy Vice Chancellor's office. Both committees have reporting and future planning functions and serve to enhance a greater understanding and increased mutual respect between the two sectors. These links enable these organisations to leverage mutual partnerships, for example the *Adult Learner Social Inclusion Project* funded through DEEWR which supports the widening participation agenda (Aird R, Miller E, Van Megan K, & Buys L, 2010; Social Research Team, 2010).

IACT research indicates that Australian universities are developing the capability to capture retention and progression data for transitioning VET students, although this is dependent on the HE student management system configuration. This information is important for tracking the success of students who articulate from VET to HE, in order to (a) document the retention and progression of these students and (b) implement supporting transition programs for these students if required. Ideally student management systems would also enable students to automatically receive credit for their VET qualification on enrolment at university, and for HE to VET articulating students to automatically receive credit for their HE qualification or part qualification on enrolment at a VET Registered Training Organisation.

Toohy (2011, p. 13) notes that the Queensland Tertiary Admissions Centre (QTAC):

'has recognised the strong academic performance of VET graduates in HE programs: QTAC's calculation of tertiary entrance ranks has been determined on the basis of cohort studies. That diploma graduates are granted a minimum TER of 82 out of a possible rank of 99 reflects the confidence that this organisation has in the capability of diploma graduates'.

[Corporate Strategy resource](#)



For Consideration:

As envisaged by PhillipsKPA, the IACT project has confirmed that the development of a strategic corporate approach to managing VET/HE relationships translates to improved pathways for students and increased opportunities for tertiary education providers, and in addition is more cost effective for institutions than the 'ad hoc' approach used in most institutions.

Developing collaborative relationships between VET and HE on a basis of mutual respect provides the structural relationship required to engage with industry and thereby meet skills shortages.

3.3.2 Articulation Pathway Models: a Visual Guide

Early in the IACT project, team members conducted an investigation into the various models of articulation and credit transfer pathways between VET and HE or between HE and VET. As found by PhillipsKPA (2006a), most articulation pathways were created through an individual approach of one organisation to another in the alternate sector. Usually an arrangement would be devised around a completed VET qualification and a destination HE qualification based on real or potential student demand. While there was anecdotal evidence that some organisations were developing innovative pathway models, the IACT team could not identify any publicly available resource that showed articulation pathway options in a visual format, despite there being anecdotal evidence that tertiary education providers were developing innovative ways of connecting VET and HE qualifications through articulation pathways. Innovative pathway models were often accompanied by a need to protect market edge, and complexity of administrative issues accompanying their implementation. Everyone was essentially working alone, within limited resources, with limited knowledge, and therefore each time duplicating effort (Byrnes J, Paez D, et al., 2010).

In summary:

- Organisations are working in isolation with few resources;
- Organisations are duplicating effort;
- Solutions to problems are being found but not shared;
- There is a common frustration with ongoing administrative, funding and policy barriers.

The IACT project therefore undertook to collect and synthesise pathway models currently in use, as well as new and emerging models, in order to provide benchmark information as a resource for practitioners. This investigation showed that the most recognised and commonly used model is the 'end on' model of articulation and credit transfer. Two other significant pathway model types also emerged throughout IACT research. These can be best described as 'embedded' and 'concurrent' pathways.

The main models described in the *Articulation Pathway Models: A Visual Guide* resource therefore are:

- **End-on** models connect a completed VET qualification with a higher education qualification through entry or credit transfer;
- **Embedded** models are those where a VET qualification is *integrated into* to a higher education qualification;
- **Concurrent** models allow a student to undertake study towards a VET and a HE qualification at *the same time*.

There are however a number of variations within each category and part of the research process was to determine their distinctive points of difference. Some pathways can be a combination of models e.g. One model outlined in the resource is an 'embedded' model because a Certificate III and IV are 'embedded'



within the university degree and counts for a chunk or block of the degree. However, this model can also be viewed as a concurrent model, because students study independently at TAFE to complete the VET study, and attend both VET and HE during the second year of their study.

Another essential component of this work was capturing the benefits and challenges for both organisations and students for each model listed. This is intended to assist organisations to determine whether a model is one that would work for them and their students and provide some pre-knowledge of the problems that might need to be resolved as part of the negotiations with the other sector. Nevertheless, some issues remain difficult, preventing further innovation and collaboration between the sectors in this area. However, as more institutions tackle the issues, find suitable solutions *and share their successes*, the greater the likelihood of long term change that will ultimately benefit students.

The *Articulation Pathway Models: A Visual Guide* resource is for both VET and HE providers and industry stakeholders with an interest in, and motivation to improve the seamlessness of articulation pathways for students. The resource highlights some of the options available for creating educational pathways between the sectors and provides a starting point from which organisations can visually recognise models they are using. It also provides the potential to investigate other possibilities that may not have been considered or thought viable previously. The resource might be used as:

- a negotiation tool for VET and HE providers;
- a resource for tertiary education providers and industry stakeholders to link articulation pathways to workforce skills needs;
- a reference for the various pathways that could potentially form a basis for relationships and agreements between stakeholders;
- a method of professional development for staff about articulation and credit transfer; and
- a way of improving cross-sectoral understanding about issues relating to articulation and credit transfer.

Articulation Pathways resource

For Consideration

VET, HE and industry collaboration in articulation and credit transfer may benefit from using the *Articulation Pathway Models: A Visual Guide* resource as a reference tool in negotiations about articulation pathway development options.



3.3.3 Content Mapping for VET to HE Credit Transfer

Conversations and negotiations between VET and HE about credit transfer and articulation inevitably involve a mapping process as the foundation or 'currency' in reaching decisions about the value of previous learning and therefore what credit should be granted. While the tertiary sectors often use the term 'mapping' in different ways, the process of content mapping as the basis for credit transfer is mostly understood and accepted as the preferred way to establish VET and HE unit matches. Content mapping provides evidence about the degree of 'equivalence' or 'match' between learning and assessment undertaken in the VET sector against a destination qualification in the HE sector in order for the student to avoid duplicating learning that has been assessed previously.

Research conducted by the IACT Project indicated that, of those Queensland universities who had credit transfer arrangements in place with VET providers, 100% of respondents indicated that the arrangement was based on (content) mapping. This gives strength to the assumption that mapping is considered a critical, non-negotiable, and motivational basis for any ongoing relationship or credit transfer agreement or arrangement. PhillipsKPA (2006a, p. 13) suggest this:

At the heart of most credit transfer arrangements is the need to map equivalences in course content and student outcomes.

HE practices around credit transfer and mapping are strongly influenced by opinions or perceptions about the quality of outcomes of registered training organisations (RTOs). At the basis of this is the perceived potential for HE institutions to be compromised by students articulating with too much credit and ultimately finding higher education study beyond their ability.

I do think the issue is often clouded by the HE practitioner's attitude to VET delivery and that even though on paper they should match; they don't always agree that VET can deliver appropriately. That is often from the feeling of mistrust of the sector rather than being grounded in factual experience.

(Respondent with experience in both sectors, personal communication, 28.06.2011)

However, mapping of content between the VET and HE sectors is not always a simple task. With VET sector qualifications structured by units of competency and the HE sector structured by knowledge units and outcomes, some find the task of finding 'equivalence' a daunting and difficult one.

... mapping becomes much more difficult when the way courses are designed, described and assessed in each sector is very different. It requires an understanding of the models used in both sectors....developing this understanding is possible, but only when there is a commitment of time and resources and when there is willingness to recognise the value of each sector's approach.

(PhillipsKPA, 2006a, p. 13)

This point was reiterated by a respondent from a Queensland HE provider who stated:

To gain competency is different from gaining credit or distinction level and those in the VET sector are performing to meet an expectation and that expectation may be only a threshold level, and we are trying to extend that and it is really problematic when you are trying to map things across.

(Anonymous respondent, Queensland consultations, 27.10.2009)



While the AQF (2011) now provides a clearer outline of the expectation for HE providers about credit transfer and mapping to ascertain appropriate credit, it is important for both sectors to be aware that practices applied to a content mapping process can be influenced by organisational policies on credit transfer and can negatively impact on the student and the organisation. The mapping approach taken by the HE institution or cross-sectoral partnership (and subsequent credit outcomes) can depend on:-

- a) Whether there is a policy in place that dictates:
 - i. a maximum quantum of credit;
 - ii. a specific type of credit granted (e.g. unspecified only)
 - iii. where the credit should/should not be assigned within the HE program
- b) Whether a student has approached the HE organisation independently with a completed VET qualification looking for credit into a related HE program; or
- c) Whether the mapping is undertaken to develop an articulation agreement that can be used to develop a precedent database of credit outcomes.

Mapping itself can be problematic, with organisations having variations in what is believed to be the established requirement for 'equivalence' or 'degree of match' or 'coverage of' the content of the destination qualification as a result of mapping. That is, while some work on a 100% coverage rule, others may be satisfied with 80%.

Another difficulty is the differences (and sometimes confusion) between state-based curriculum courses and training package qualifications which may appear in different formats – e.g. aligned to modules and/or subjects or units of competency. This can result in mapping being a smoother process, and therefore favoured, for some pathways than others.

Mapping that is done for students on a case by case basis can be approached differently than if mapping is done to develop an ongoing partnership or credit arrangement between tertiary organisations. For example, if a student approaches a HE provider with a completed VET qualification, the HE provider will focus mapping on all completed VET components in order to ascertain an appropriate credit amount and type. However, if the mapping is done to develop an agreement, the mapping is more likely to focus on the HE component, or start with the HE unit and work back, with the outcomes being sometimes significantly different in each case.

An ideal outcome for the student is to (a) not have to repeat learning, and (b) gain the new qualification in a shorter timeframe. By gaining only unspecified credit which is then applied to electives in the program, the student risks repeating learning (because the credit granted is not necessarily for the learning achieved) and the opportunity for new learning is reduced. This is not an ideal outcome for the student or the HE provider.

Another consideration for the HE provider should be what other HE providers are giving in credit. While it is established that more credit is not necessarily better, specified credit should always be the aim where possible. Where one HE provider offers 12 months of unspecified only credit and another offers 12 months of specified credit, this can make a significant difference to the educational outcomes of the qualification. Benchmarking credit outcomes with other comparable pathways, creates a level of certainty for students and a marketing advantage for the HE provider.

When the IACT project interviewed tertiary providers concerning whether it was possible to develop credit transfer arrangements *without* mapping, many were open to the suggestion especially where there was a shared approach to curriculum development, assessment, and human and physical resources (Byrnes



J, Paez D, et al., 2010). This is the direction many tertiary institutions are now adopting under a variety of organisational models including dual sector, franchised, and mixed sector institutions. By using a 3D approach for curriculum and pathway development, these outcomes become more achievable.

[Content Mapping resource](#)

For Consideration

Organisational policies about credit transfer and associated mapping practices should be reviewed regularly, with a view to minimising duplication in learning and assessment and enriching the experience for students, and improving graduate outcomes for both the education provider and potential employer. Ideally, with closer 3D collaboration, the requirement for mapping when developing qualifications and pathways may be lessened or even removed altogether.

3.4 Graduates profit from gaining qualifications that meet skills needs

A fundamental factor in the choice of where and what to study is the ability of the resulting qualification to provide career opportunities. For students who are aware of employers' growing indication that, in many jobs, both vocational and higher education skills are desirable, an articulation pathway from VET to HE is clearly an option to provide the skills mix they need. It also provides multiple entry and exit points and opportunities to study whilst working if desired: more choices and options for students.

3.4.1 Student Pathway Options (flowcharts)

A key factor for students wishing to move from one sector to another is the ready availability of timely, accurate and relevant information about career pathways from VET to HE or vice versa. Students may not be aware of the availability of articulation and credit transfer or Recognition of Prior Learning (RPL) and therefore may not request it (Curtis, 2009). In a series of in-depth interviews with students who had experienced learning in both sectors, Harris, Rainey and Sumner (2006) found that, rather than clear pathways, students' learning journeys were more like stepping stones, zigzags or crooked paths. Significantly, most students were not aware of career services and therefore did not seek advice.

PhillipsKPA (2006a, p. 9) state that those education providers who are providing information effectively for students have incorporated the following into their communication strategy (usually through their website):

- A searchable database showing credit for various pathways;
- An explanation of terms;
- Some contacts for further information;
- Admission and enrolment information;
- Application forms;
- Policies and procedures;
- Answers to frequently asked questions; and
- Appeal processes.

Information should not only be readily available on the providers' website, but extend to personal contact with students prior to and during their VET studies, and provision of information to parents (as applicable) and careers advisors (PhillipsKPA, 2006a, pp. 9-10). A study of 'unmet demand' for credit transfer and RPL undertaken in Queensland (Giles-Peters, 2007) found that 41% of the sample of students interviewed were completely unaware that they could apply for credit transfer or RPL. Some 27.5% of students interviewed



felt that they already had relevant knowledge or experience which was unrecognised, whilst 12% believed they already knew most or all of what they were studying in their course. A study of RPL undertaken by Smith and Clayton found that, in 2009 after many years of RPL being promoted in government policy, many people continue to be unaware of its availability. They recommend that information about RPL be provided to students before they leave school (Smith & Clayton, 2009).

Students from low socio-economic status (SES) backgrounds appear to experience the highest barriers to participation in tertiary education (Krause K, Vick M, Boon H, Bland D, & Clark J, 2009). An NCVET analysis shows that students from low SES backgrounds are more than twice as likely to be represented in VET than HE, based on 2009 national statistics (NCVER, 2011, Tables 4 and 5). Wheelahan states low SES students are concentrated in lower levels of VET, thereby limiting their ability to access HE via VET study (Wheelahan, 2009). However an NCVET study found that the level of social engagement of students at school, followed closely by the strength of school students' relationship with their teachers, has a stronger influence on later participation in post-school education and training than students' parental, cultural or socio-economic background (Semo R & Karmel T, 2011).

The IACT team undertook a Student Awareness Survey to evaluate how aware current VET and HE students are of articulation pathways and credit transfer options and opportunities, and what the best means are to promote articulation and credit transfer processes and pathways to students (Byrnes J et al., 2010). The report of this study is available in the *3D Focus on Articulation Pathways* [repository](#). A brief synopsis is provided below.

- Students in age groups over 29 were the most aware, and students in the 16-19 age group were the least aware of articulation pathways, credit transfer and RPL options and opportunities.
- Of those students who have future study plans, almost 30% of current VET students plan to enrol in a HE degree for their next qualification, suggesting that articulation and credit transfer opportunities do provide pathways from VET to HE for current students.
- Enrolment in a VET qualification was reported by 7% of HE respondents as the next planned qualification. This suggests that a significant number of HE to VET pathways are planned pathways (for career or other reasons) rather than primarily HE 'drop downs' as suggested by some researchers (such as Moodie, 2005).
- Of all students who responded, 27% stated that they were influenced in their choice of study by the potential for credit transfer or RPL. This suggests that awareness leads to greater utilisation of articulation and credit transfer opportunities, and is a significant motivating factor in choice of study.
- Of those students who are aware of articulation and credit transfer pathways and options, the most frequently stated source of information was teachers or lecturers. The internet accounted for only 21% of source of information overall, and all other sources of information, including advertising, were much less frequently reported. These results suggest that promotion strategies need to be targeted at teachers and lecturers as an important information source, as well as career guidance officers/vocational counsellors.
- There was not a significant difference between the SES background of students in lower and higher VET qualifications among Queensland-based respondents in this study, and therefore no difference in the access to HE via VET on the basis of SES background and higher VET qualifications as found by Wheelahan's (2009) analysis.
- Correlation of the awareness variables with sector indicates there is little difference in awareness by sector. Gender and SES were not found to be significant variables in awareness of articulation



and credit transfer options, nor of the participation of lower SES people in higher levels of VET in this sample.

Building on these findings, and the work undertaken by the University of Tasmania and Tasmanian Polytechnic (2010), the IACT project has developed graphical depictions of pathways from lower level qualifications to degrees. The IACT project *Student Pathway Options: Flowcharts* resource responds to the challenge to engage students, teachers/lecturers, careers advisors and employers in thinking about pathway possibilities with examples of how visual pathways between the VET and HE sectors can be more graphically shown to students. Using such a graphic pathway resource, students can easily see the entry and exit points and requirements of a career pathway from Certificate 1 in VET to (potentially) a doctorate in HE in any subject area.

[Student Pathway Options resource](#)

For Consideration:

If a school or VET student is aware of a career pathway and has ambition to enter HE, they are likely to arrange their VET study pathway to accommodate HE entry requirements.

Information about, and promotion of, the availability of articulation pathways need to be targeted at teachers and lecturers as well as career guidance officers/vocational counsellors, particularly in schools in order to reach the 16–19 year age group which IACT research indicates are the age group which is least aware of pathway options.

VET to HE pathways which are depicted graphically are likely to be the most readily understood and provide the clearest means to indicate entry and exit options and career choices which provide credit transfer opportunities.

3.4.2 Student Transition Factors

PhillipsKPA (2006a, p. 9) point out that students who are granted credit for VET studies may need assistance to adjust to different teaching, learning and assessment approaches as well as different expectations, policies and procedures. They state that transition support is most effective when the two education sectors contribute to the transition process, which ideally begins before the student completes their VET study and finishes when students have fully settled into the higher education learning environment.

Transitioning from one educational framework to another brings with it a range of issues for both the articulating students and the tertiary education providers who are trying to accommodate their needs. The increasing diversity of the student population only adds to the complexity of these issues (Wahr F, Gray K, & Radloff A, 2009).

The literature reviewed for the IACT project (Byrnes J, Paez D, Jackson A, Dwyer C, & Blacker J, 2011) indicates that students moving between sectors often experience difficulties in the transition as the sectors differ considerably in their approach, expectations and assessment. These cross-sector difficulties can be divided into two streams: institutional and non-institutional factors.

Institutional factors represent the quality of course content, class size, level of work required and quality



of teaching provided by the institution. Teaching support has been identified as a particularly significant factor in determining successful student transition and retention (Aird R, et al., 2010).

Non-institutional factors include financial and work-related issues, family commitments and personal aspects such as self-esteem. Financial hardship has been identified as the most significant non-institutional issue faced by students (Aird R, et al., 2010).

Both institutional and non-institutional factors were apparent in a study of student movement, motivations and transition issues conducted in South Australia (R Harris, Sumner, & Rainey, 2005). The study found that, of all transitioning students, VET to HE students experienced the most difficulty in transition. The cost of studying, level of work required, and class size were noted as being of particular concern.

Additionally, student aspirations and equity are important elements of successful student transition. Hayward (2008) acknowledges that articulating students are more likely than any other group to be motivated by a mixture of inherent interest in their chosen discipline and the opportunity to enhance their career prospects by undertaking a degree.

IACT consultations with Queensland tertiary education providers (Byrnes J, Paez D, et al., 2010) indicates that success in transition depends very much on the student's previous study and circumstances. Additionally, some credit arrangements mean that VET students are exempt from the first year of HE study. There may be problems with this approach in that articulating students do not receive the necessary academic 'scaffolding' – study and academic skills training – which first year university students receive, the lack of which may cause them to encounter study and academic difficulties (Harris et al 2005; Milne et al 2006 cited in Byrnes J, et al., 2011). Other areas of concern such as adjusting to the amount of work required, or forming social groups and alliances normally formed during the first year of university, were also considered significant by respondents.

'Transition shock' was also raised as an issue. Transition shock often arises due to the fact that 'culturally and administratively the sectors are quite different and can be difficult for students to navigate when transitioning from one sector to another' (Byrnes J, Paez D, et al., 2010). Many of the institutions that participated in this research indicated that they had specific programs or strategies in place to address the transition issues being faced by articulating students; however it was the responsibility of the student to access these programs. Some institutions had suggestions or proposals on how student transition could be improved but they did not always implement these proposals. Further investigation revealed that many of these programs were in fact preparatory/pathways programs to assist with entry to HE, or personal support programs to assist students after they have commenced university study. Few of these programs were specifically focused on transitioning students from study in one sector to study in another.

There are many strategies and initiatives that can be implemented to ensure a smooth and successful transition for articulating students. One such strategy identified by Watson (2006) is to offer foundation studies in academic literacy as part of undergraduate degree programs. Courses such as 'Principles of University Learning' offered at Central Queensland University (CQU) or 'Academic Literacies' offered at Charles Darwin University assist in the development of academic skills and address many of the concerns expressed by articulating students.

An orientation program that is tailored specifically for articulating students is another useful strategy in addressing transition issues and should be considered by universities. A customised orientation program



is an initiative that has been implemented at the University of Canberra (Cram, Croucher, & Lines, 2008). This modified program was designed to provide transitioning students with the best possible start to their HE studies.

While these strategies offer significant support to students, it is also important to acknowledge that early engagement with VET students is an essential element of the transition process. Expanding the initiatives and processes implemented by the organisation, in order to undertake a holistic approach to student transition ensures the best outcomes for both students and tertiary education providers. [Griffith University \(GU\)](#) and [Southbank Institute of Technology \(SBIT\)](#) both accept that this is necessary. GU surveyed their students and the feedback received indicated that universities need to proactively engage with articulating students while they are undertaking their VET studies (Hassard M, 2011).

SBIT also encourage early student engagement. This is evidenced by the transition support offered to articulating students; such as hosting information sessions specifically about transition to university, inviting HE academics from relevant disciplines to come and address the students and encouraging articulating students to attend all orientation sessions offered by the HE provider. This collaborative approach enhances successful academic outcomes for articulating students as they are supported whilst they are studying in and transitioning across both sectors (Toohey A, 2011).

Articulating students are a valued cohort and are a rich and diverse addition to HE campuses. All efforts should be made to recruit and retain these students. The full report of the *Student Transition Factors* study is available in the *3D Focus on Articulation Pathways* resources.

[Student Transition Factors resource](#)

For Consideration:

An increasing number of students are articulating from the VET sector to the HE sector, and vice versa, through a variety of pathways. Actively engaging with them and supporting their transition from one sector to another through proactive communication and tailored programs is an essential strategy in student recruitment and retention.



4. Conclusions

Both the vocational education and training (VET) and higher education (HE) sectors have distinctive missions. The resources developed by the IACT project, which are outlined in this paper, may help streamline the integration of those missions, whilst providing strong linkages to industry who employ the resulting graduates. Positive and effective connections between industry, VET and HE ensures that workforce planning and development is at the core of developing tertiary education articulation pathways.

Developing a corporate strategy approach to articulation and credit pathways for students provides the structure between VET and HE that is necessary to engage collaboratively with industry to address their workforce needs. When the relationship between VET and HE are built on mutual respect this translates into an effective three dimensional partnership with industry.

A positive aspect of the culture in partnership development is recognising and valuing the fact that all sectors have equal value and relevance: VET qualifications are aligned to industry requirements, HE qualifications are aligned to discipline-specific knowledge and conceptual thinking. By combining these strengths with the perspective of employers in a three dimensional focus on educational solutions to workforce issues, everyone benefits. By making a commitment to find common ground, the value that stakeholders bring to the education arena and the workplace in Australia is enhanced.

The protocols developed by the IACT project make these processes more effective and efficient. The investment by stakeholders of time and resources into these processes is critical to developing successful three dimensional relationships. A key facilitator is required at senior management level in both VET and HE whose role is to negotiate articulation and credit transfer arrangements, and to incorporate the voice of industry and the needs of graduates as part of the process.

The resources developed by the IACT project may assist stakeholders to improve the efficiency and effectiveness of their policies and procedures to streamline articulation and credit transfer, and make it more relevant to workforce needs, for the benefit of all players.



5. References

- Access Economics. (2009). *Economic modelling of skills demand*. Canberra: Skills Australia
- Aird R, Miller E, Van Megen K, & Buys L. (2010) *Issues for students navigating alternative pathways to higher education: barriers, access and equity*. Literature review of the Adult Learner Social Inclusion Project. Brisbane: Queensland University of Technology.
- Australian Bureau of Statistics. (2011). *Perspectives on Education and Training: Pathways in Vocational and Higher Education, 2009* [4250.0.55.002]. Canberra: Australian Bureau of Statistics.
- Australian Government. (2009). *Transforming Australia's Higher Education System*. Canberra: Commonwealth of Australia.
- Australian Industry Group. (2006). *World Class Skills for world Class Industries: Employers' perspectives on skilling in Australia*. Sydney: Australian Industry Group.
- Australian Industry Group. (2007) *Skilling the Existing Workforce: Background Research Report*. Sydney: Australian Industry Group.
- Australian Industry Group and Deloitte. (2008). *Skilling for Innovation: National CEO Survey*. Sydney: Australian Industry Group.
- Australian National Engineering Taskforce. (2011). *Engineering Skills and Workforce Capacity Executive Summary and Recommendations*. Melbourne: Australian National Engineering Taskforce Retrieved from <http://www.anet.org.au/>. 12 July 2011
- Australian Qualifications Framework Council. (2011). *Australian Qualifications Framework First Edition July 2011*. Adelaide: Australian Qualifications Framework First Edition July 2011 Retrieved from <http://www.aqf.edu.au/>. 4 July 2011
- Bradley, D., Noonan, P., Nugent, H., & Scales, B. (2008). *Review of Australian Higher Education: Final Report*. Canberra, ACT: Department of Education, Employment and Workplace Relations Retrieved from <http://www.deewr.gov.au/HigherEducation/Review/Pages/ReviewofAustralianHigherEducationReport.aspx>. 15 May 2010
- British Columbia Council on Admissions and Transfer. (2010). BCCAT Home Retrieved 1 March 2010, from <http://www.bccat.bc.ca/>
- Byrnes J, Beaumont P, Paez D, Jackson A, Blacker J, & Dwyer C. (2010) *Student Awareness of Articulation and Credit Transfer in Queensland: Results of a Web-based Survey*. Toowoomba: University of Southern Queensland. www.3Darticulation.com.au/repository



Byrnes J, Paez D, Jackson A, Dwyer C, & Blacker J. (2010) *Results of Consultations with Queensland Tertiary Education Providers: Full Report* University of Southern Queensland. <http://www.3Darticulation.com.au/repository>

Byrnes J, Paez D, Jackson A, Dwyer C, & Blacker J. (2011) *Literature Review of the Integrated Articulation and Credit Transfer Project*. University of Southern Queensland. <http://www.3Darticulation.com.au/repository>

Council of Australian Governments. (2008). *COAG Communique 29 November 2008*. Retrieved from http://www.coag.gov.au/coag_meeting_outcomes/2008-11-29/attachments.cfm 28 April 2010

Cram B, & Watson L. (2008). *Managing credit transfer from TAFE to university: the case for cross-sectoral collaboration*. Paper presented at the Australian Vocational Education and Training Research Association Conference: 11th Adelaide.

Cram, B., Croucher, V., & Lines, B. (2008). *What's it like for students? Enhancing the student experience from VET to University*. Paper presented at the Australian Vocational Education and Training Research Association Conference: 11th Adelaide.

Curtis, D. (2009). *Student Transfer at a Glance*. Adelaide: NCVET.

Dalitz R, Toner P, & Turpin T. (2011). VET and the diffusion and implementation of innovation in the mining, solar energy and computer games sectors. In Curtin P, Stanwick J & Beddie F (Eds.), *Fostering enterprise: the innovation and skills nexus – research readings* (pp. 144-157). Adelaide: NCVET.

Department of Education Employment and Workplace Relations. (2011). *SkillsInfo: DEEWR Projections in Employment Outlook for Health Care and Social Assistance*. Canberra: Australian Government. Retrieved from <http://www.skillsinfo.gov.au/skills/IndustryReportsCharts/>. 20 June 2011

ElectroComms and Energy Utilities Industry Skills Council. (2010). *2010 Environmental Scan*. Retrieved from www.ee-oz.com.au/content/view/122/56. 28 April 2010

Giles-Peters. (2007). *Credit Transfer: Who gets what and why does it matter?* Paper presented at the National VET Research Conference: 16th Alice Springs NT.

Harris, R., Rainey, L., & Sumner, R. (2006) *Crazy paving or stepping stones? Learning pathways within and between vocational education and training and higher education* Adelaide: National Centre for Vocational Education Research.

Harris, R., Sumner, R., & Rainey, L. (2005) *Student Traffic: Two-way movement between vocational education and training and higher education*.

Hassard M. (2011). Griffith University: *VET Credit Transfer and Articulation. Case Study Report for IACT Project*. Griffith University. Brisbane. <http://www.3Darticulation.com.au/repository>

Hayward, G. (2008). Degrees of Success: Learners' transition from Vocational Education and Training to Higher Education. *Teaching and Learning Research Briefing*, 42.

Healy, K., & Lonnie, B. (2010). *The social work and human services workforce: report from a national study of education, training and workforce needs*. Strawberry Hills, NSW: Australian Learning and Teaching Council.



- J Jarvis & Associates. (2004) *Articulation Costing Phase II*. Vancouver Canada <http://www.bccat.bc.ca/pubs/artcosting.pdf>
- Krause K, Vick M, Boon H, Bland D, & Clark J. (2009). *A Fair Go Beyond the School Gate? Systemic Factors Affecting Participation and Attainment in Tertiary Education by Queensland Students from LSES Backgrounds*. Brisbane: Griffith Institute for Higher Education.
- McDonald R, Fyffe J, & Goodwin S. (2010). *Pathways between VET and Higher Education: A Resource for Universities, Industry and RTOs*. Canberra: Ithaca Group for Service Skills Australia.
- Moodie, G. (2005). *Reverse transfer in Australia*. Paper presented at the 14th National VET Research Conference Wodonga TAFE, NSW.
- NCVER. (2011). *Tertiary Education and Training in Australia 2009*. Adelaide: NCVER.
- Noffke, S., & Somekh, B. (2010). Chapter 10: Action Research. In B. Somekh & C. Lewin (Eds.), *Research Methods in the Social Sciences* (pp. 89-96). London: Sage Publications Ltd.
- Paez D, Byrnes J, Blacker J, Dwyer C, & Jackson A. (2011). Engagement for sustainable communities: industry as the driver in tertiary education pathway development. *Australian Universities Community Engagement Alliance (AUCEA) E-Journal, Autumn 2011*, 90-107. <http://www.3Darticulation.com.au/repository>
- Paez D, Jackson A, Dwyer C, Byrnes J, & Blacker J. (2010, 5-7 July 2010). *Skills shortages but who's talking? The Integrated Articulation and Credit Transfer Project – A Report on Research in Progress*. Paper presented at the Australian Universities Community Engagement Alliance (AUCEA) National Conference, University of Tasmania, Launceston Campus. <http://www.3Darticulation.com.au/repository>
- PhillipsKPA. (2006a). *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 – Final Report* Canberra: Commonwealth Department of Education, Science and Training
- PhillipsKPA. (2006b). *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 – Stage 1 Report*. Canberra: Commonwealth Department of Education, Science and Training.
- PhillipsKPA. (2006c). *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 - Stage 2 Report*. Canberra Commonwealth Department of Education, Science and Training.
- Rittie, T., & Awodeyi, T. (2009). *Employers' views on improving the vocational education and training system*. Adelaide: NCVER.
- Semo R, & Karmel T. (2011). *Social capital and youth transitions: do young people's networks improve their participation in education and training?* Adelaide: NCVER.
- Skills Australia. (2010a). *Australian Workforce Futures: A National Workforce Development Strategy*. Canberra: Department of Education Employment and Workplace Relations Retrieved from http://www.skillsaustralia.gov.au/PDFs_RTFs/WWF_strategy.pdf 28 April 2010



- Skills Australia. (2010b) *Creating a future direction for Australian vocational education and training: a discussion paper on the future of the VET system*. Skills Australia. <http://www.skillsaustralia.gov.au>
- Skills Australia. (2011). *Skills for Prosperity: A roadmap for vocational education and training*. Canberra: Australian Government Retrieved from <http://www.skillsaustralia.gov.au/SkillsProsperity.shtml>. 9 May 2011
- Smith, L., & Clayton, B. (2009) *Recognising non-formal and informal learning: Participant insights and perspectives*. Adelaide.: National Centre for Vocational Education Research.
- Social Research Team. (2010). *Adult Learner Project Initial Basic Statistical Report - Experience of Learning: Survey [1]*. Brisbane: Queensland University of Technology.
- Toohey A. (2011). *Southbank Institute of Technology: A best practice model of supporting credit transfer for students from Vocational Education and Training to Higher Education*. Brisbane: Southbank Institute of Technology. <http://www.3Darticulation.com.au/repository>
- Training and Skills Commission. (2009). *Skills for Jobs: Priorities for Developing South Australia's Workforce*. Adelaide: South Australian Department of Further Education Employment Science and Technology.
- University of Tasmania, & Tasmanian Polytechnic. (2010). *The Pathways Project: Creative Arts Pathways* Retrieved 12 July 2011, from <http://www.pathways.tas.edu.au/study/courses-in-tasmania> and http://www.pathways.tas.edu.au/__data/assets/pdf_file/0010/77689/CreativeArtsPathwaysMap.pdf
- Wahr F, Gray K, & Radloff A. (2009). *Improving student transition by working with academics' conceptions of the student experience: academic development for organisational change*. Paper presented at the The Student Experience, 32nd HERDSA Annual Conference, Darwin.
- Watson, L. (2006). *Barriers to successful transition from VET to HE: A case study of student pathways in early childhood education and care*. Paper presented at the Ninth Annual Conference of the Australian Vocational Education and Training Research Association (AVETRA) Wollongong.
- Watson L. (2006). *Pathways to a Profession: Education and training in early childhood education and care, Australia*. Canberra: Department of Education Science and Training,.
- Watson L, & McIntyre J. (2011). *Scaling Up: Building engineering workforce capacity through education and training*. Canberra: University of Canberra.
- Wheelahan, L. (2009). *What kind of access does VET provide to higher education for low SES students? Not a lot. Paper presented at the Student Equity in Higher Education: What we know. What we need to know* University of South Australia.

INDUSTRY + VET + HIGHER EDUCATION

3D FOCUS ON ARTICULATION PATHWAYS



Everyone profits.

www.3Darticulation.com.au