



THE NSW TERTIARY PATHWAYS PROJECT: LESSONS TO DATE

Report 2018

Higher Education, External Affairs and Regulation

FOREWORD

Since 2016 the NSW Skills Board has provided funding to the NSW Department of Education (the department) to support a range of pilot courses which offer an integrated pathway from vocational education and training (VET) to higher education.

The Board's objective for the pathways pilots was to demonstrate that integrated pathways between VET and higher education are viable and to identify keys to success for future tertiary pathways which mutually benefit students, employers, industry and institutions.

The pathways pilots have been successful thanks to the extensive collaboration between multiple government departments, universities, VET providers, employers, industry groups and students. The commitment of these parties to creating meaningful and sustainable pathways was critical to overcome numerous barriers and challenges.

An important ongoing challenge is the current structural arrangements, regulatory environment and funding framework. The integration of course content is challenging because the VET and higher education sectors operate under different regulatory and funding systems and this means that a boutique solution needs to be found for each pathway, which requires extensive consultation. However, the pilots have shown that these challenges can be managed through a student-centred design approach, careful planning, collaboration and engagement with key stakeholders. This is discussed under 'Regulatory and funding challenges' in the report.

Future pathways projects looking to replicate this success should apply the following best practices and lessons learned.

Industry partnerships – employers need to be involved throughout the development of a new pathway because the views of individual employers may differ from those of their industry groups. Collaboration with individual employers assists in ensuring alignment with current and future skills needs while delivering real employment outcomes for students.

Work integrated learning – relevant work experience throughout the pathway allows students to apply the skills they are learning in real time and increases the likelihood of gaining employment within their field of study.

Meaningful entry and exit points – having clear entry and exit points along the pathway increases the options for students to engage with different levels of higher education at different points, while enabling them to leave at their chosen point with a recognised and meaningful qualification.

Student-centred pathway design – the needs of the student cohort are integral because these have wide-ranging implications for delivery mode, course structure, affordability and the type of student support offered.

Supporting students to transition – the pilots have incorporated support services to ensure students are able to successfully transition from work-integrated training to the university classroom.

Project management and governance – the effective collaboration and engagement of consortium members (higher education and VET providers, industry bodies and employers, with dedicated project management staff) was key to the success of the pilots.

The pilots have demonstrated that industry, higher education and the VET sectors can work together successfully to deliver both student and employer-focused outcomes across a range of industries and study areas. The pilots have also proved that barriers can be overcome through commitment, goodwill and persistence. The lessons learned can guide stakeholders to develop innovative solutions for the workforce needs of the future.

It is the NSW Skills Board's desire that the lessons learned from these pilots will influence broader reform and provide an important foundation for development of further pathway models.



Philip Marcus Clark, AM
Chair, NSW Skills Board



**Skills
Board**

EXECUTIVE SUMMARY

For the past eight years, through the NSW Tertiary Pathways Project, the department has driven the collaborative development of pathways to new credentials that integrate the technical strengths of vocational training with the deeper content knowledge of university degrees.

The project is a response to changes in the world of work. As lower-skill jobs are automated, demand for higher-level qualifications and stronger theoretical knowledge is rising, but employers and students find that pathways between qualifications in VET and higher education are underdeveloped.

The project aims to go beyond traditional credit transfer arrangements to develop seamless progression through VET and higher education qualifications, with entry and exit points as needed. The project has involved collaboration at all levels – across the education and training sector, with industry and between two large government departments. It has delivered four unique pathways that are already enrolling students, with another four under development.

The pilots have already created a lasting legacy by developing models which can be replicated in other industry areas, and by clearing some of the regulatory barriers to a more flexible approach to training pathways.

Of particular significance is the work done to adapt the traditional apprenticeship training model to higher level qualifications. The “degree apprenticeship” model offers a bachelor degree with an embedded apprenticeship. To enable future replication of degree apprenticeships, the

project worked with the NSW Department of Industry to simplify the State regulatory environment with a new Vocational Training Order (VTO). Another pathway offers employment and work-integrated learning that takes a student to a bachelor degree, with the option of exit to a sub-bachelor qualification along the way.

The project also developed new pathways to higher education in areas with growing demand where job roles have traditionally been VET qualified. This allows workers to step up to a bachelor degree by tailoring academic content to the needs of students transitioning from the VET learning environment, and providing academic support.

The project shows that the higher education and VET sectors can work together to address gaps and barriers and deliver student and industry focused outcomes. This paper identifies seven key lessons that can be applied to pathways work in the future. Of these, two that stand out are:

- (a) close collaboration with industry and employers through all phases of the process is critical to success, and
- (b) student-centred design is essential to ensure the pathway will be taken up and will deliver the outcomes intended.

This paper is intended to encourage the broader uptake of pathway models through improved curriculum co-design, increased recognition of the benefits of sub-bachelor qualifications and more flexible use of the apprenticeship framework.

BACKGROUND AND OVERVIEW

The NSW Tertiary Pathways Project, co-ordinated by the department, supports the collaborative development of industry focused qualifications that integrate higher education and VET.

These are quality qualifications valued by and often developed in partnership with industry groups. They respond to a growing need for qualifications which deliver both the practical aspects of VET and the deeper subject knowledge on offer in the university sector.

Tertiary pathway qualifications go beyond traditional credit transfer arrangements. They generally incorporate a clear and seamless progression through a number of qualifications in the VET and higher education sectors with appropriate entry and exit points.

The project has developed a range of pathway pilots with support from the NSW Department of Industry, the NSW Skills Board and the former Board of Vocational Education and Training. Throughout the pathway development process, the department has identified the importance of the following factors, which are explored in more detail in this paper:

1. regulatory and funding challenges
2. industry partnerships
3. work integrated learning
4. meaningful entry and exit points
5. student-centred pathway design
6. supporting students to transition
7. project management and governance

It is hoped that this paper will assist in the scaling and replication of successful pathway models by demonstrating how they can benefit employers, students and industry. This paper is also intended as a contribution to a broader conversation around how the NSW Government, industry and the tertiary education sector can work together to meet our skills needs into the future.

Why the Tertiary Pathways Project?

The future of work is rapidly changing. As lower skill jobs become increasingly automated, demand for higher level skills will grow. Employer demand is expected to increase at certificate IV level and above, with the highest growth at bachelor level and above. Despite this, participation in higher level VET is falling, and bachelor level commencements are beginning to plateau.

In most fields of study, pathways between qualifications in VET and higher education are underdeveloped. In NSW, VET as a basis of admission to undergraduate studies accounts for 13% of total commencements¹. However this varies significantly across occupational sectors and depends on how hard it is to navigate between VET and higher education in particular fields.

For example, few civil contractors become civil engineers, as there are few pathways that support this transition. Around 1% of commencing civil engineering students are admitted on the basis of a VET qualification. By contrast, many early childhood educators become early childhood teachers and this pathway is well supported by higher education institutions and employers, with 66% of commencing students admitted via a VET qualification.



Qualifications at Australian Qualification Framework (AQF) levels 5 and 6 - diplomas, advanced diplomas and associate degrees - are the key transition point between VET and higher education, but generally have looser links to occupations than VET overall and this can affect graduate outcomes. By comparison, trade apprenticeships have some of the best graduate outcomes. 81% of trade apprentices are employed full time after completion compared to 44% for other VET graduates². Trade apprenticeships also have higher completion rates than other VET qualifications (59% compared to 40%)³.

¹ Higher Education Data Mart, 2015

² NCVER VOCSTATS, Total VET Graduate Outcomes 2016

³ NCVER VET Program Completion Rates 2011-15 and Completion and Attrition Rates for Apprentices and Trainees 2016. Figures used are for 2012 student cohorts.

The NSW Tertiary Pathways Project

The NSW Tertiary Pathways Project was developed to show how integrated pathways between VET and higher education can benefit students, employers, industry and institutions.

In four separate rounds of pathway pilots since 2010, the department has issued requests for proposal on a

competitive basis. Assessment criteria included demand for the pathway from students, employers and industry, as well as innovation and the sustainability of the pilot.

Assessment also considered the ability for the pathway models to be replicated in other institutions or sectors. Each round of proposals included skill areas based on NSW Government priorities and changing skill needs in particular sectors.



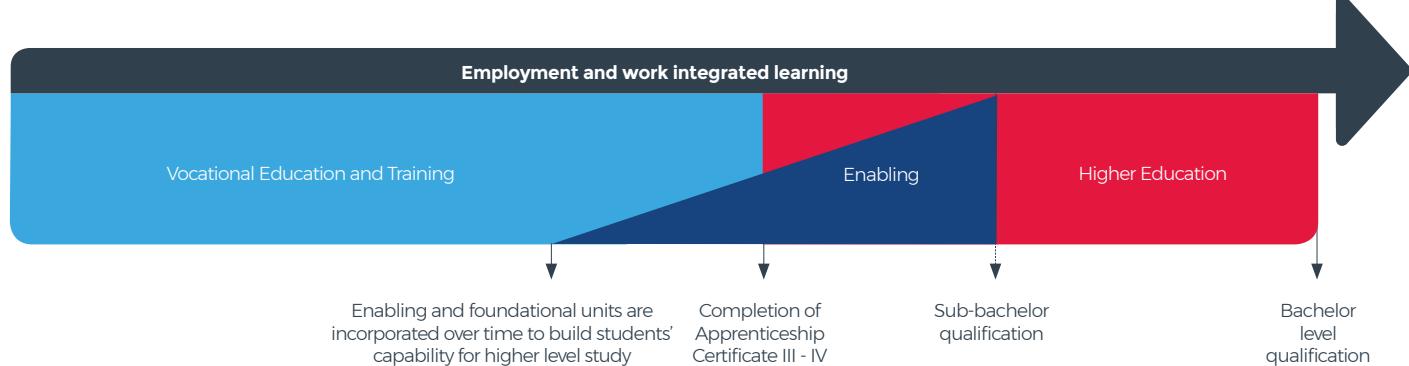
The Models

The pilots have tested three broad tertiary pathway models.

1. Higher Apprenticeships and Traineeships

This model extends traditional apprenticeships or traineeships to higher level qualifications up to a university degree. This responds to the demand for higher level and professional qualifications in traditional trade areas. For example, the construction management higher apprenticeship pilot creates a seamless pathway from apprenticeship to university with defined exit

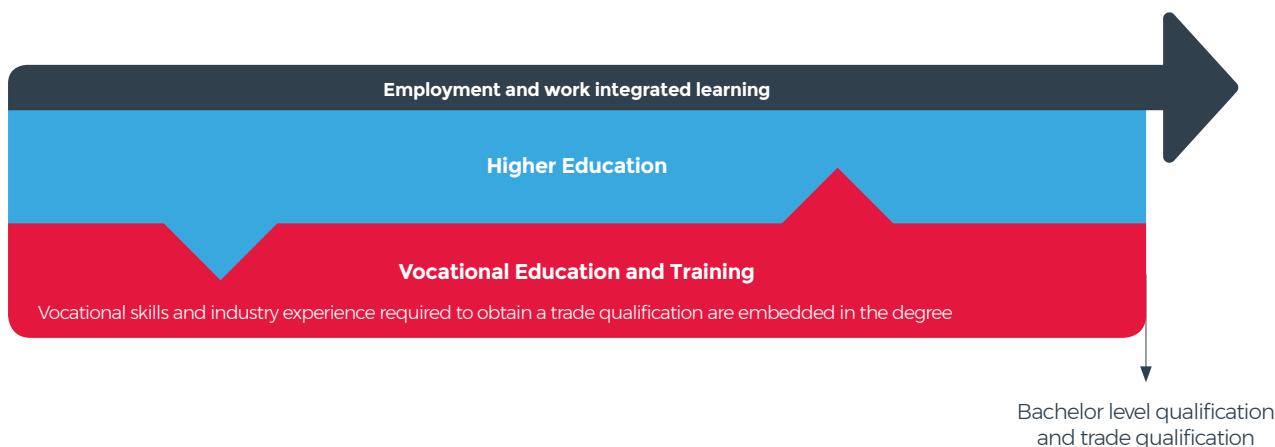
points. Students concurrently undertake an apprenticeship in carpentry and a Diploma in Project Management before articulating into the second year of a university qualification. They graduate from a bachelor degree in construction management with the practical skills they need to manage a job site.



2. Degree Apprenticeships and Traineeships

This embeds a VET qualification and an apprenticeship within a bachelor degree. The model responds to demand from employers for job-ready degree graduates with practical skills and experience. It also provides intensive work integrated learning. For example, the electrical engineering degree apprenticeship pilot

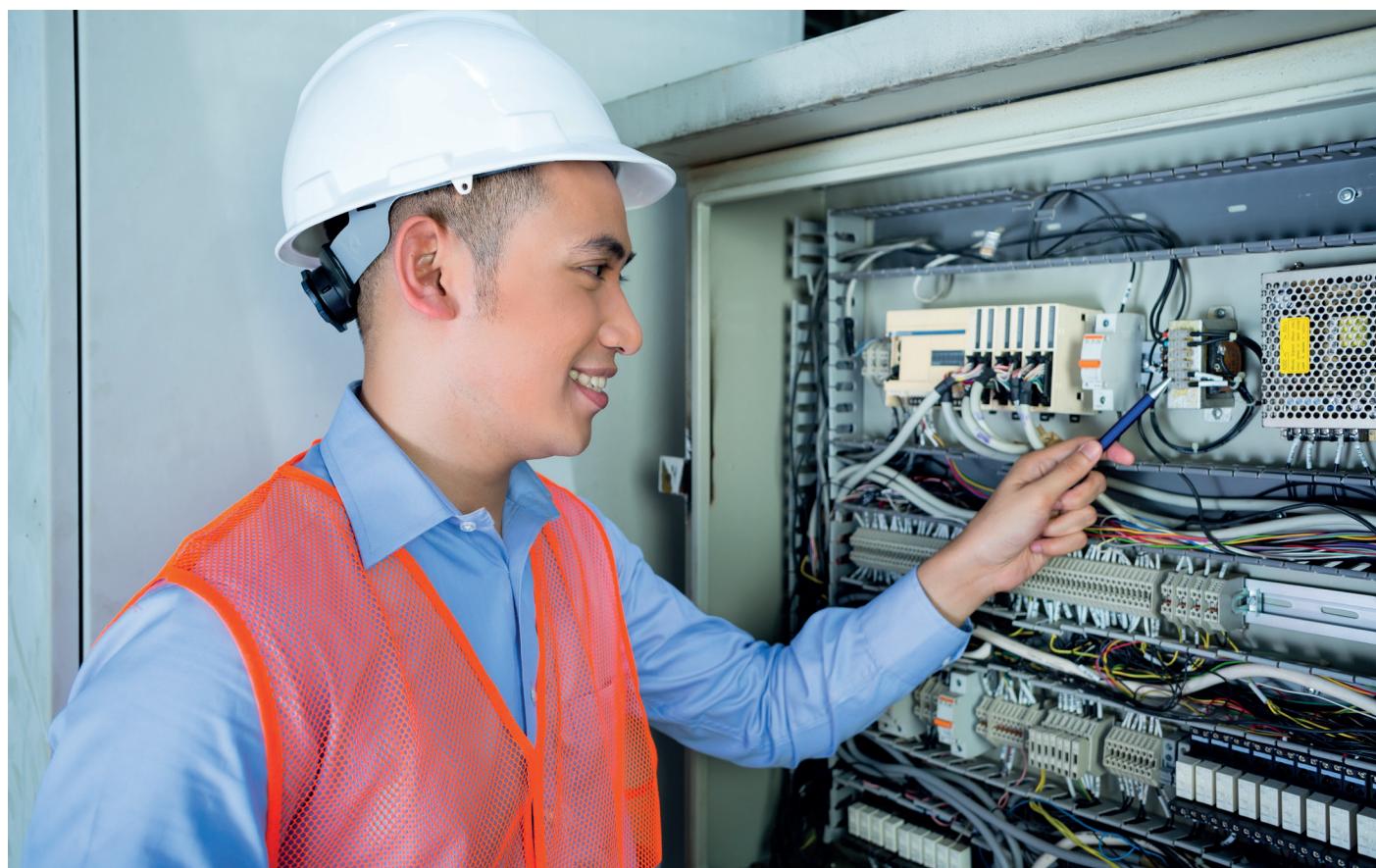
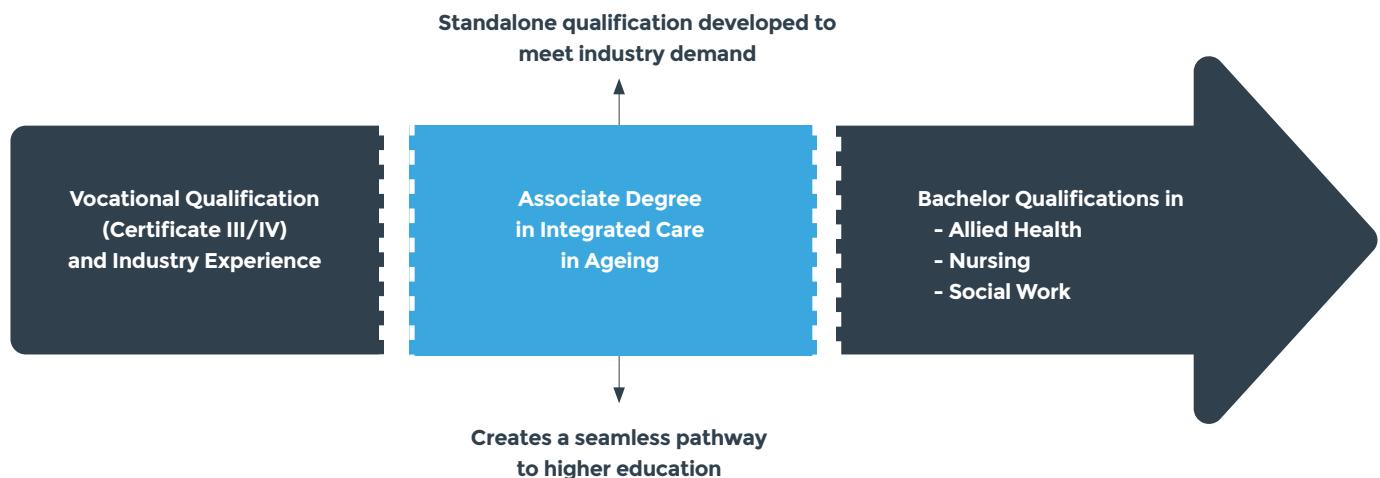
combines an electrical engineering degree with an apprenticeship in electrotechnology and the industry experience required to obtain an electrician's licence. Students graduate with a trade qualification and a bachelor degree, allowing them to design and wire their own electrical work from day one.



3. Integrated Tertiary Pathways

This model creates a seamless transition for students by co-designing new qualifications that integrate higher education and VET content for the first time. These models often make use of advanced diplomas and associate degrees as a stepping stone to higher level study. They address the difficulty students can face when transitioning from VET to higher education in areas of rapid skills growth. An example is the aged care tertiary pathway, which allows VET qualified aged care workers

to upgrade their qualifications to a new Associate Degree in Integrated Care in Ageing. The associate degree bridges the gap between the qualifications at certificate III - IV level and a bachelor degree by integrating both VET and academic teaching styles and embedding student support. The pathway prepares students for higher level study through foundational academic literacy units tailored to aged care.



KEY LESSONS FROM PATHWAY DEVELOPMENT

1. Regulatory and funding challenges

A key challenge for the NSW Tertiary Pathways Project is that the VET and higher education sectors operate independently, with different funding and regulatory systems. This can make integrating VET and higher education content challenging. However, the pilots have shown that funding and regulatory barriers can be minimised through a student-centred design approach, careful planning and engagement with key stakeholders.

The integration of higher education and VET content has implications for both course fees and institutional funding arrangements. To overcome this, the clear sequencing of qualifications becomes important to minimise the cost and burden for students.

For example, the construction management pathway was carefully designed so that students would remain eligible for Smart and Skilled funding for their VET qualifications. Automatic recognition of prior learning (RPL) arrangements were also negotiated upfront with participating universities to ensure students did not have to pay twice to repeat content.

Apprenticeship requirements presented another regulatory challenge, especially in developing the electrical engineering pathway. Strict work experience and other requirements for gaining an electrical licence had to be built into the bachelor degree. As part of the development of this pathway, Training Services NSW created a higher education apprenticeship pathways VTO. This ensures that students qualify for an electrical licence at the conclusion of the pathway and also provides a framework for fee liabilities between students and employers.

This new VTO model can now be applied to other industry sectors wishing to pursue a similar model.

Case study: electrical engineering degree apprenticeship pilot

The University of Newcastle electrical engineering degree apprenticeship integrates an electrical licence and a bachelor degree in electrical engineering. The pathway responds to industry demand for engineering graduates who have the technical skills to work in an industrial project engineering environment.

The strict requirements for gaining an electrical licence were successfully incorporated into the pathway through engagement with both industry and government.

The integration of the bachelor degree and the apprenticeship required automatic RPL arrangements across separate accrediting bodies and the division of delivery costs between institutions.

Under the terms of a formal apprenticeship, employers are responsible for funding costs directly related to the trade qualification. In this case, employers are obligated to cover all students' costs related to the certificate III training while students will be able to access subsidised fees for their university studies through the Commonwealth Grants Scheme.

2. Industry partnerships

Strong industry involvement has been central to the NSW Tertiary Pathways Project. Collaboration with industry and employers produces pathways which align with current and future skills needs while delivering real employment outcomes for students.

Tertiary pathways can meet particular needs in evolving industries where skill sets are rapidly changing and in industries where educational gaps are preventing the workforce from upskilling. For example, the department has recently partnered with Australian Industry Standards to research new pathway options in the transport and logistics sector, which is undergoing rapid technological changes, with new job roles and requirements starting to emerge.

Industry partnerships help to ensure pathways deliver the right mix of practical and theoretical skills that employers need. For example, consultations with the emerging renewable energy sector identified demand for technically competent paraprofessionals with specific experience in renewable energy technologies. To provide this unique blend of skills, industry representatives became major partners in a consortium which delivered an Associate Degree of Applied Engineering (Renewable Energy Technologies).

Industry partnerships have worked best where employers have been involved during the entire development process. It is important to consider that the needs of industry groups and employers may differ, as the case study below demonstrates.

Case Study: Early Childhood Education Pathway

This pathway was created in anticipation of an increased demand for qualified early childhood educators as new regulatory requirements came into effect. It featured the creation of an Associate Degree in Early Childhood Education, which was led and delivered by TAFE NSW Western Institute.



The associate degree combined VET and higher education content to allow students to transition seamlessly from a Certificate III to higher level study. It fully integrated the content from the Diploma of Children's Services and prepared students with the academic skills needed to enter directly into a bachelor degree.

Despite a high level of engagement and enthusiasm from sector peak bodies, employers and prospective students were unsupportive of the pathway. The associate degree is an unrecognised qualification in both the award and the regulatory framework, and neither group saw the value in upskilling to this qualification level.

Earlier contact with local employers and prospective students would have allowed for the disconnect between their needs and the aspirations of the project to be addressed.

3. Student-centred pathway design

Students need to be at the centre of pathway design. Each successful pathways pilot developed through the NSW Tertiary Pathways Project has been designed with the needs of the cohort in mind. Ensuring that the pathway meets students' needs has implications for delivery mode, course structure, affordability and the kinds of student support offered. Getting these factors right is key to their success in the pathway.

For example, in response to student feedback the Master Builders Association (MBA) altered the delivery of the diploma component of the construction management higher apprenticeship. The course was initially delivered one evening per week, but students reported that the long evening of study was too tiring after a full day on site. The training is now delivered over two shorter sessions each week, with more online learning incorporated to cut down student travel time. Cost is a similar consideration for this cohort. The MBA has found that the ability to enter directly into the second year of a university degree and earn while they learn was a key attraction for their students.

The aged care pathway cohort required different considerations. The majority of students enrolled in this course are women over 40 who are juggling family responsibilities with their work in the aged care sector. In recognition of the students' time constraints, the university chose to deliver the majority of the course content online. However, as using technology was a challenge for many of the students, additional support was required to ensure that students had the IT skills they needed to succeed.

4. Supporting students to transition between VET and higher education

Collaboration between the higher education and VET sectors allows for integrated course development and seamless student movement between the sectors.

A clear line of sight is crucial for students in making study decisions and the possibility of progressing to higher education at their own pace is a key attraction of pathways. Established RPL arrangements between VET and higher education providers is important for this. Many of the pathway pilots allow students to enter the second or even third year of a bachelor level qualification through clear articulation arrangements.

For example, the Associate Degree in Applied Engineering (Renewable Energy Technologies) provides the option of progressing to the third year of an engineering degree without the need for individual credit transfer. Similarly, the Associate Degree in Integrated Care in Ageing allows articulation with credit

into a number of related bachelor degrees, including nursing and social work.

Higher education and VET are based on different pedagogies which can affect successful transition. While VET assessment is based on competencies and technical skills, higher education focuses on capability-based assessment and critical thinking. This can be a challenge for students moving into higher education, as can the higher workload and the adjustment to self-directed learning. The attrition rate in the first year of university is currently higher for students admitted through VET than for those admitted on another basis.⁴

Successful pathways have incorporated support for students to move between the different learning environments. This support is critical in helping students to successfully complete study at a university level. For example, the associate degree developed as part of the aged care pathway contains foundational academic units to ensure students have the skills they need to complete the qualification and to transition into a bachelor level qualification if desired.

⁴ "Millman, T., Abridged too far? Credit transfer: examining the transition process from TAFE to university, Australian Journal of Adult Learning, 2013"



Case study: construction management higher apprenticeship

The higher apprenticeship in construction management developed by the MBA has three clear exit points, providing flexibility for students, employers and the sector.

After the first 18 months the apprentice can continue their trade training and elect to commence the Diploma of Project Management. After three years the apprentice will have completed the Diploma of Project Management and the certificate III, with the option of going on to complete a bachelor degree in construction management.

This allows students to exit the pathway with a meaningful qualification at different points based on preference, ability and employer requirements, and allows for a return to study at a later time.

The pilot supports and guides apprentices through the transition from VET to higher education. As part of the certificate III qualification the MBA analyses student performance through literacy and numeracy tests. This is followed by ongoing assessment as part of the Diploma in Project Management which is designed to ensure that students are equipped with the skills they need to succeed in higher education.

The MBA worked with four universities to provide students with consistent content to prepare them to enter the second year of a construction management qualification. Once students transition into the bachelor degree, they can access further support such as academic literacy workshops to develop skills such as essay writing, critical analysis, referencing, note taking and assignment preparation.

5. Work integrated learning

Work integrated learning is increasingly being incorporated into qualifications to give graduates relevant work experience and allow them to apply skills they are learning in real time. The 2015 Graduate Outlook Survey shows that 32% of employers believe that higher education providers could better prepare their graduates for the workplace by requiring students to have completed industry based experience as part of

their studies⁵. The report suggests that graduates who participate in relevant work throughout their study are more likely to gain employment within their field of study shortly after graduation. Employers are more likely to hire graduates who have participated in work experience placements, internships or vacation work within their organisation.

Work integrated learning has been a key feature of all the pathway pilots. An example is the MBA higher apprenticeship where students' job responsibilities increase in line with their level of study as they progress through the pathway. As a paid apprentice, graduates are also able to 'learn as they earn', helping to increase recruitment and retention.

Similarly, the associate degree qualification as part of the aged care pathway is entirely work-based. Assessment is work integrated and learning is applied to work-based challenges, allowing students to apply their learning directly to their workplace which further cultivates strong industry engagement. An evaluation of this pathway found that while students found adjusting to university level study challenging, the clear sense of how this was benefiting them in the workplace was a strong motivation to continue:

"I am able to implement what I have learnt with my current clients from the material and information I have already gained in the course. It has made a difference in the way I look at my clients, how I deal with them and implement the care, in a positive way. It is benefiting our clients and that is the whole reason I am doing this. Our clients are benefiting from this even though we have not graduated yet." - student from aged care pathway

6. Meaningful entry and exit points

Having clear entry and exit points along the pathway increases options for students to engage with different levels of tertiary study while enabling them to leave at their chosen point with a recognised and meaningful qualification.

The NSW Tertiary Pathways pilots have demonstrated the value of sub-bachelor qualifications (AQF level 5 and 6) for certain industries, especially in sectors where the workforce has traditionally been trained at the certificate level. These qualification levels are where VET and higher education come together and can be an important stepping stone between the sectors.

⁵ Graduate Careers Australia, 2016, Graduate Outlook 2015, The Report of the 2015 Graduate Outlook Survey: Perspectives on Graduate Recruitment

For example, industries such as health and community services are increasingly recognising an associate degree as a standalone qualification for career progression and a means to upskill their workforce. The aged care pathway established an associate degree as a meaningful, industry focused qualification which prepares graduates for higher level aged care duties and managerial roles. While the associate degree articulates into a number of related bachelor degrees, many graduates will choose to exit the pathway at this point and use the associate degree in roles requiring skills at this level.

However it is crucial that new qualifications at this level meet a genuine sector need and lead to real employment outcomes. To ensure this, engagement with industry groups and employers is important to understand sector dynamics. This is demonstrated by the early childhood education pathway model which created an associate degree, a qualification that is unrecognised in the industrial award and regulatory framework. As a result it didn't appeal to employers or prospective students.

Case study: the aged care tertiary pathway

The University of Newcastle's aged care pathway responded to changes in service models in the sector which increased the demand for employees with higher level qualifications. The university undertook extensive market assessment among aged care providers during the development process. Course content and assessments were developed through a series of strategic working groups with industry representatives.

The creation of the Associate Degree in Integrated Care in Ageing provides a new avenue of career progression for certificate III and IV qualified aged care workers. The associate degree is an employer-recognised qualification which prepares graduates for higher level roles and introduces foundational units to enable progression to university study.

Industry continues to be involved in the associate degree through an external advisory group which monitors the qualification and advises on curriculum relevance, graduate quality, industry trends and professional practice. These mechanisms ensure that the pathway will remain relevant as the aged care sector continues to change.

7. Project management and governance

Strong project management and governance arrangements have been crucial to the development of the tertiary pathway pilots. All of the pilot models have been developed by consortia including higher education and VET providers, industry bodies and employers, with dedicated project management staff. Effective collaboration and engagement of consortium members helps to drive the project forward. Where possible, projects should include a partnership between VET and higher education providers with a genuine commitment from both sectors.



BUILDING ON THE SUCCESS OF THE NSW TERTIARY PATHWAYS PROJECT

The NSW Tertiary Pathways Project has demonstrated that industry, higher education and the VET sectors can successfully work together to deliver both student and employer focused outcomes across a range of industries and study areas. The lessons learnt from the development of these models will assist VET providers, higher education institutions and industry groups to develop innovative solutions for the workforce needs of the future.

Government involvement and support has been a key driver for the NSW Tertiary Pathways Project through facilitating access to relevant agencies and providing a catalyst for pathway development. However, the

challenge will be to scale and replicate the success of existing pathway models across NSW to allow other institutions and industries to adapt tertiary pathway models for their own needs.

The department and the NSW Department of Industry have a strong interest in working with industry groups, major employers and education providers to overcome barriers to delivering new and innovative pathway models that meet the skills needs of NSW.

For more information on tertiary pathways please contact the Higher Education and Tertiary Policy Directorate at higher.education@det.nsw.edu.au.



APPENDIX – PATHWAY PILOTS

PATHWAY NAME	MODEL	KEY FEATURES OF PATHWAY	LEAD INSTITUTION	STATUS
Associate Degree of Applied Engineering (Renewable Energy Technologies)	Tertiary pathway	Paraprofessional qualification developed in response to industry demand in the renewable energy sector. Leads into a third year only bachelor degree.	TAFE NSW	Offered since Semester 1 2014.
Tertiary Pathway to Accounting	Tertiary pathway	Paraprofessional qualification developed in partnership with industry body Certified Public Accountants (CPA). Seamless articulation to partner universities.	TAFE NSW Higher Education	Offered from Semester 2 2014 but replaced by a Bachelor and Diploma of Applied Commerce from 2018.
Associate Degree of Early Childhood Education (Birth to Five)	Tertiary pathway	Integrated VET and higher education content.	TAFE NSW	Closed.
Aged Care Pathway	Tertiary pathway	Offers aged care workers a seamless transition from certificate III or IV to higher education through the Associate Degree of Integrated Care in Ageing, which articulates into a range of complementary bachelor level qualifications.	University of Newcastle	Offered from Semester 1 2017.
Construction Management	Higher apprenticeship	Integrated, three-stage apprenticeship to degree pathway from traditional trade qualifications to a Bachelor in Construction Management, bridged by a Diploma of Project Management.	Master Builders Association of NSW	Offered from the beginning of 2018.
Construction Management	Degree apprenticeship	Extension to MBA higher apprenticeship. The pathway involved a 'Construction Site Supervisor Cadetship' rather than an apprenticeship to give the graduate a broader base of construction experience.	Master Builders Association of NSW	Withdrawn after further market testing indicated a strong preference for the higher apprenticeship model.
Electrical Engineering	Degree apprenticeship	An integrated bachelor qualification that incorporates vocational education competencies, leading to a Bachelor of Electrical Engineering while also delivering an electrical licence.	University of Newcastle	Offered from the beginning of 2018.
Aboriginal Primary Health Care	Tertiary pathway	A tailored and supported pathway for Aboriginal students with certificate III or IV qualifications into a bachelor degree in community services and primary health care.	University of New England	Under development.
Civil Construction Management and Engineering	Higher apprenticeship	A sub-bachelor qualification designed for certificate III or IV qualified trades people which leads into a bachelor of engineering.	Southern Cross University	Under development.
Transport and Logistics	Research project	This project will explore options for pathway development in the transport and logistics industry.	Australian Industry Standards	Under development.
Sustainable Agriculture and Food Security	Degree traineeship	An integrated pathway from a VET diploma into WSU's Bachelor of Sustainable Agriculture and Food Security.	Western Sydney University	Under development.