RESEARCH PAPER

Indigenous VET to Higher Education pathways and transitions: A literature review

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The rates of Australian Indigenous participation in higher education (HE) are significantly lower than those of non-Indigenous students, with Indigenous students less likely than their non-Indigenous peers to complete Year 12. As a result, they are less likely to obtain an Australian Tertiary Admission Rank (ATAR) needed for university admission. Statistically, far more Indigenous students enrol in Vocational Education and Training (VET) than in HE. With VET to HE transition pathways remaining convoluted, it is critical to streamline those in order to increase Indigenous HE participation. This is of particular importance for rural and remote Indigenous students who have completed a VET qualification and are considering HE study. Unfortunately, only 4.9% of Indigenous students currently make this transition from VET to HE. While, as the scoping review undertaken will show, Indigenous enabling programs have received significant attention in the recent past, the potential of the VET to HE pathway to increase Indigenous HE participation remains largely unexplored. This review updates the current evidence base on trends associated with, and strategies used to support, Indigenous students transitioning from VET to HE in Australia, and identifies research gaps in relation to pathways and transitions, especially within the Indigenous experience. Some international comparisons are also undertaken.

Keywords: access, equity, Indigenous students, Vocational Education and Training, pathways, transitions

Introduction

The Bradley Review of Australian higher education (Bradley, Noonan, Nugent & Scales, 2008) strengthened interest in participation and transition of students from low SES backgrounds. In particular, the review identified the connection between Vocational Education and Training (VET) and Higher Education (HE) as important to achieving national attainment and participation goals. Building on Bradley et al.'s recommendations, the Behrendt Review of higher education access and outcomes for Indigenous students (Behrendt, Larkin, Griew & Kelly, 2012) similarly emphasised the importance of collaboration across educational sectors to enhance Indigenous student VET to HE pathways. Establishing transition pathways from VET

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to HE for Indigenous students is envisaged as one of the key strategies to not only improve Indigenous access to HE but also to contribute to Indigenous human capital and socio-economic wellbeing (Anderson, 2015). This literature review investigates relevant scholarship about VET to HE pathways and transitions for Indigenous students in Australia and compares and contrasts key relevant learnings, arriving at several recommendations.

Methodology

The focus of this review is on the literature dealing with VET to HE transition and pathway issues for Australian Indigenous students. We deliberately draw on two different, but interrelated, review methodologies that provide sufficient flexibility to explore this important widening participation topic. The first methodology is an *integrative* review which typically: identifies the key concepts; analyses and critiques the literature; and, creates new understandings of the topic through one or more forms of synthesis (Torraco, 2005). The second methodology is a scoping review which also aims to synthesise literature by examining the extent, range and nature of the issue (i.e. breadth), and the respective research gaps (Arksey & O'Malley, 2005). This combined methodology was chosen because it enabled the authors to 'scope', 'integrate' and synthesise the variety of available analyses on the given topic (Arksey & O'Malley, 2005; Torracco 2005; Pham et al. 2014). The resources considered for inclusion in this review included grey literature, especially theses, reports and conference presentations, as well as research literature from books, book chapters and peer-reviewed journal articles.

The review used several key terms to search electronic databases including: pathways, transition, vocational education and training, higher education, tertiary education, further education, Indigenous students, cross-sectoral transfer, widening participation, remote students, rural students, university access, barriers, dual-sector, and student equity. The search used a combination of keywords for example: 'VET to higher education pathways', 'Indigenous students and transition to higher education', 'cross sectoral transfer and Indigenous students'. The electronic sources for journal articles, theses, book chapters and books included the National Centre for Vocational Education and Research (NCVER), the Australian Council for Educational Research (ACER), Google Scholar, A+Education, AEI-ATSIS, EBSCOhost, Expanded Academic, INFORMIT, ProQuest Dissertations and Theses Global, Springer eJournals, and Web of Science. The articles in this review were those that researched and addressed pathways and transitions, especially within the VET, HE and Australian Indigenous contexts. The search identified 45 resources as per our criteria published from 2002 to 2017. Fifty-five percent of literature reviewed was based on empirical data, most commonly focusing on Indigenous student experiences or statistics of Indigenous participation in education. All pieces of research reviewed addressed the topic of VET to HE Indigenous transition in some capacity, whether as a primary matter of investigation or as a secondary one contextualised within Indigenous education. While the main focus of the article was on Australian context, the authors have also endeavoured to run comparisons with VET to HE transition experiences of Indigenous students in such countries as New Zealand, Canada and the US, as they share some similarities with Australia.

This paper begins by providing a brief background on the topic of VET to HE Indigenous transitions and pathways in Australia, then investigates the concepts of pathways and transitions more closely and in a mainstream sense, before taking a deeper view into these concepts in the Indigenous context. The review concludes with a synthesis of the main pathways and transitions themes and offers recommendations for improvement of VET to HE Indigenous transitions.

Background

Two significant sectors within Australian further education are higher education (HE) and vocational education and training (VET). The Australian HE sector consists of forty-three universities, including one specialist university and two overseas universities. Six of the forty-three universities are dual-sector institutions, providing both VET and HE (Good Universities Guide, 2016). Four of these are in Victoria, one in the Northern Territory and one in Queensland. The VET sector consists of fifty-seven public technical and further education (TAFE) institutes, together with a large number of registered training organisations (RTOs). In 2015, there were 4,609 RTOs in Australia, 3,440 of which were privately operated (Department of Education, 2015).

Each sector provides a set of qualifications (see Figure 1); HE qualifications range from diplomas to higher degree courses and take between three to six years to complete, while VET sector qualifications range from certificates to vocational graduate diplomas with courses usually from one to three years in length (Harris, 2009). In 1995, the Australian Qualification Framework (AQF) was introduced to provide one comprehensive framework for qualifications and deliver 'flexible pathways' for those wishing to "move more easily between education and training sectors, by providing the basis for recognition of prior learning, including credit transfer and work and life experience" (Bandias, Fuller & Pfitzner, 2011, p. 585).
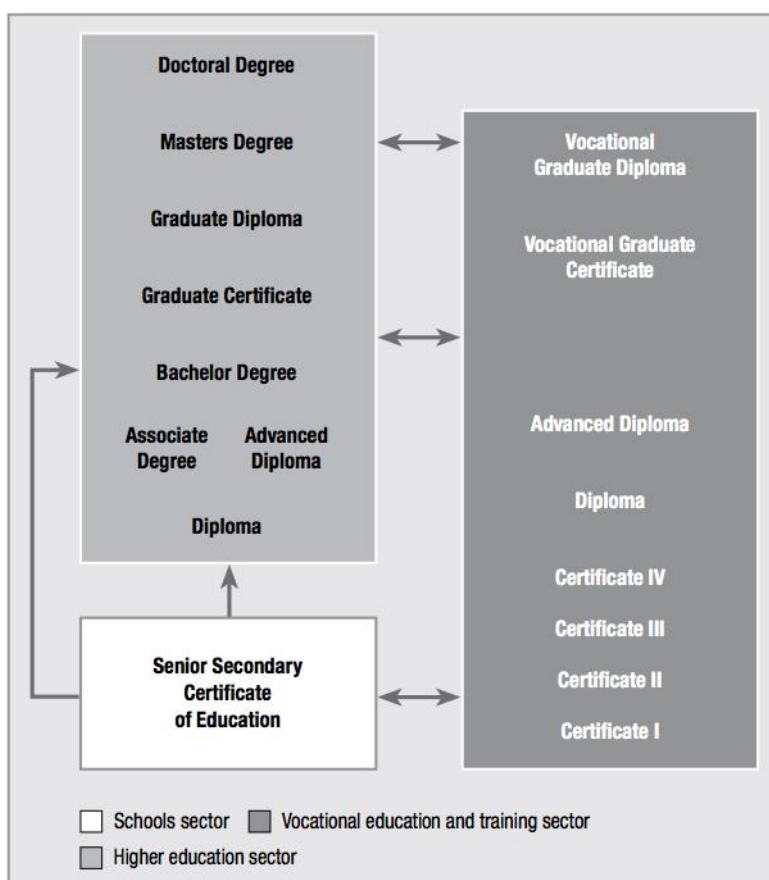

Figure 1: Cross-sectoral links (Source: Harris, 2009, p. 70)

Harris (2009) employs a metaphor of 'tectonic plates' to describe the VET and HE sectors whose:

interactions slowly form a convergent boundary, where the plates move towards one another, and either one moves beneath the other or a collision occurs. In the case of higher education and VET in Australia, there are many examples of such movement, such as the formation of five dual-sector institutions (offering both higher education and VET); institutions from different sectors sharing the same location and facilities while remaining organisationally discrete; some programmes comprising studies offered by both sectors; and individuals simultaneously enrolling in both sectors. (p. 71)

Curtis (2009) notes that usually VET to HE student movement is "student initiated, systematic in few providers, and limited despite credit transfer arrangements designed to facilitate it" (p. 22). The factors and mechanisms of this movement are complex as several stakeholders are typically involved, including "families; labour; employers; counsellors, social and community agencies; the community; education, training and lifelong learning providers; professional career centres; government; and peers and role models" (Harris, Rainey & Sumner, 2005, p. 11). As a result, the 'pathways' appear to be 'crazy paving' rather than 'orderly' (Harris, Rainey & Sumner, 2006).

Pathways

In Indigenous post-secondary education literature, the 'pathway' metaphor is commonly used to describe the inter-sectoral movement of students, usually occurring from VET to HE and, to a lesser extent, from HE to VET. Guenther, Disbray, Benveniste and Osborne (2017) believe that the:

> problem is that the [pathway] metaphor now has a life of its own, so much so that it has become part of the vernacular and has produced other metaphors like 'barriers' and 'road blocks' which even local people in remote communities use to express a concept that is just a metaphor without substance. (pp. 171-172)

Keeping the above critique in mind, it is noteworthy that no better concept has been proposed. We therefore adopt the pathways metaphor, but emphasise it should be used with caution.

There are various alternative pathways to HE programs for students who for whatever reason do not gain direct entry into a university (Andrewartha & Harvey, 2014). Kinnane, Wilks, Wilson, Hughes and Thomas (2014) provide a list of current Indigenous entry options and pathways to HE, noting that most Australian universities have at least one or more programs enabling Indigenous alternative (non-mainstream admission) access. However, these pathways are complex, "neither seamless nor consistently applied", and further complicated by "policy and institutional barriers" (Bandias et al., 2011, p. 584). While such pathway programs address some concerns about equity and social inclusion – particularly with regard to low SES groupings – they:

> can be difficult for students and their families to navigate. They are rarely linear. There can be multiple entry and exit points, and there can be many enablers and barriers that impact upon what pathways look like and how they are experienced. The centrality of pathways can depend on the sense of community within a university; access to adequate support structures; and the provision of a safe study environment in which students feel confident to learn and grow. (Frawley, Larkin & Smith, 2017, pp. 5-6)

Generally, inequality in access becomes evident long before a student transitions from secondary education to HE. Where direct school leavers are concerned, universities' low SES recruitment initiatives engage with an already reduced cohort: these are the low SES students who have successfully completed secondary school, whose attainment is at a suitable level, who understand the relevance of tertiary education and have confidence in their ability to succeed. This is a relatively narrow band of students and to focus only on these students as a way of addressing inequality is to avoid the main challenge. Many low SES students get to this point of 'choice' but are effectively lost from the 'pipeline' long before the final years of schooling (James and Johnson, 2016). And those that do make it into university via various special entry schemes more likely than not may require specialised support such as "early and consistent review of progress with their studies", academic skills assistance, "formal mentoring support from senior [I]ndigenous students", and access to tailored student events serving to create peer and mentor networking opportunities to help them plan for their academic future (Day & Nolde, 2009, p. 157). Another recent study into the VET-HE nexus, however, has dispelled some of the 'myths' surrounding VET students' academic ability: "students admitted to higher education in the basis of previous VET perform as well if not better than all other student populations" (Langworthy & Johns, 2012, p. 118). While the latter finding is of importance, many questions remain unclear: what pathways are Indigenous VET students more likely to choose when they transition into HE?; what HE disciplines and degrees are Indigenous VET students more likely to transition into and how many of them are entering 'high prestige' areas such as medicine or law?; and, whether the Indigenous performance is equally high across all VET courses. Some of these issues are explored in this review, but there is need for further research in this area.

Nevertheless, pathway programs are viewed as a mechanism to redress disadvantage because of the potential for the 'second chance' at education they provide. However, Wheelahan (2009) warns that this discourse is problematic as it "reinforces the notion that students need a second-chance because of their presumed deficits, rather than the institutional practices of universities and the extent to which they are prepared to accept such students" (p. 262). The challenge for universities is then to create socially just pathways, which include opportunities, resources and support to enable capability, build confidence, and foster belonging for students from diverse and under-represented backgrounds (Burke, Bennett, Burgess, Gray & Southgate, 2016). However, with support argued as an integral part of any parity-focused initiative (Engstrom & Tinto, 2008), it is also important to take into account students' *perceptions* of support. In particular, as the institutional provision of support occurs through a variety of channels and in different ways, students entering HE through 'traditional' (mainstream) pathways and those accessing it via alternative pathways may have different needs, and experience and engage with support differently (Pechenkina, 2015).

Transition

In their summary of several Office of Learning and Teaching (OLT) projects, Gale and Parker (2011) define 'transition' as the capacity to navigate change, including "the resources to engage with change, without having full control over and/or knowledge about what the change involves" (p. 25). They discern three distinct ways in which transition is conceived:

1. as *induction*: sequentially defined periods of adjustment involving pathways of inculcation, from one institutional and/or disciplinary context to another (*T1*);
2. as *development*: qualitatively distinct stages of maturation involving trajectories of transformation, from one student and/or career identity to another (*T2*); or

3. as *becoming*: a perpetual series of fragmented movements involving whole-of-life fluctuations in lived reality or subjective experience, from birth to death (*T3*). (Gale and Parker, 2011, p. 25 [original emphasis])

Gale and Parker's (2011) typology of student transition includes transition metaphors, types of transitional change, and the dynamics of transition (see Table 1). Examples of transition activities are also given.

Table 1: A typology of student transition (Source: Gale & Parker, 2011, p. 34)

Conceptions of student transition	Transition metaphors	Types of transitional change: from one to another	Transition dynamics	Illustrative transition activities / emphases / systems
Transition as Induction (T₁)	Pathway; Journey; Milestones	Inculcation: sequentially defined *periods* of adjustment From one institutional and/or disciplinary *context* to another	• Navigating institutional norms and procedures • Linear, chronological, progressive movement • Relatively fixed structures and systems • Crisis as culture shock (contextual familiarity)	• Orientation / familiarisation with campus (facilities etc.) and significant staff • 'Just-in-time' information re procedures, curriculum content, assessment requirements • First year seminars • 'Transition pedagogy'
Transition as Development (T₂)	Trajectory; Life stage;	Transformation: qualitatively distinct *stages* of maturation From one student and/or career *identity* to another	• Navigating sociocultural norms and expectations • Linear, cumulative, non-reversible movement • Discrete, singular, consecutive identities • Crisis as critical incident (identity forming)	• Mentoring programs • Service learning and field placements • Career and research culture development activities / emphasis • Championing narratives of student and career trajectories by successful students and staff
Transition as Becoming (T₃)	Whole of life; Rhizomatic	Fluctuation: perpetual *series* of fragmented movements Lived reality or *subjective* experience, from birth to death	• Navigating multiple narratives and subjectivities • Rhizomatic, zigzag, spiral movement • Flexible systems / fluid (ephemeral) identities • Crisis as neither period/stage specific or necessarily problematic	• Flexible student study modes, including removal of distinction between full and part-time study and min./max. course loads • Flexible student study pathways, including multiple opportunities to change course and enter, withdraw and return to study throughout life • Pedagogy that integrates learning support *within* the curriculum • Curriculum that reflects and affirms marginalised student histories and subjectivities

Jackson (2003) shows that the transition to university "represents a period of disequilibrium as students move from a familiar environment into an unfamiliar one" (p. 341), which results in 'significant life changes' and discontinuity, and can pose threats to self-identity. Ottmann (2017) concurs noting that the change processes highlighted by Gale and Parker (2011) should be recognised as being in constant flux which, in turn, echoes Frawley et al.'s (2017) definition of pathways as being nonlinear and convoluted.

Transitions into HE require students to develop the capacity to change, to have a sense of purpose, and to engage with their peers, and with university life (Naylor, Baik & James, 2013). At the same time, Gale and Parker (2011) conclude that the issue of "student transitions into HE should be cognisant of students' lived reality not just institutional and/or systemic interest" (p. 36). Clearly, there are issues relating to social inclusion and social justice in opening up HE to a wider section of society while promoting egalitarianism (Catterall, Davis & Yang, 2014), with attention to monitoring progress, supporting retention and promoting success being equally important (Catterall et al., 2014; Watson, 2008). That is, accessing a pathway is only the first step in navigating change – after all, access without support does not constitute a real opportunity (Tinto, 2008; Engstrom & Tinto, 2008).

Mainstream VET to HE pathways issues

Bradley et al. (2008) identified the connection between VET and HE as an important element to achieve desired participation and attainment goals, noting that this connection is an evolution of

dual-sector universities. While this connection has created valid and viable pathways, significant issues remain. Echoing the notions of non-linearity where pathways are concerned (Frawley et al., 2017), Harris (2009) found that VET to HE pathways can be direct (linear) or indirect, multi-stepped, inter-sectoral or intra-sectoral, or combinations of both, one-way or two-way in direction, or combinations of both, and between same or different fields of education, or combinations of both.

The policy rhetoric that emphasises 'seamless pathways' does not often match the reality as pathways are complex, involve multiple stakeholders, and are overlaid with barriers at institutional and policy levels (Bandias et al., 2011). These barriers have to do with finance, transport and work, as well as issues that students potentially face within the institution, such as inadequate or inaccurate information, recognition of prior learning, credit transfer, advanced standing or course outcomes (Harris, Rainey & Sumner, 2006). Harris (2009) concluded that:

> learning trajectories … are not as easy, seamless and linear as policy desires ... They have shown that the reality of experience for a proportion of tertiary students is quite different from the rhetoric of policy. One may well ask to what extent linear or 'traditional' pathways survive? The findings here clearly support those of other research that learning careers of young people tend to be more erratic than linear and are rarely the products of rationally determined choice. (p. 83)

Mainstream VET to HE transition issues

As the review of literature has established so far, VET to HE transition are non-linear and often complicated, and not just for those from equity groups (Griffin, 2014). Bandias et al. (2011) suggest that there are two cohorts of students who undertake the transition from VET to HE; the first consists of students who complete their VET qualifications and move into the HE sector, and the second are mature-aged learners, generally older and returning to undertake a further qualification. Nevertheless, the literature suggests that students who have completed lower-level qualifications (Certificate 1 and Certificate 2) are less likely to make the transition from VET to HE, than those who have higher-level VET qualifications (diploma and above) (Griffin, 2014). Regardless, the number of students who make the transition from VET to HE, remains small (see Table 2). Data show that a VET qualification as the basis for admission to a HE course in 2010 was 7.4%, slightly above mature aged admission at 5.3%, and well below secondary school at 32.2% and those from previous higher education courses at 41.8%.

Even though transition from VET to HE is viable, it is not used as widely as it could be. An opportunity exists for students belonging to equity groups to take advantage of VET as an entry point to the HE sector and to "forge pathways to higher-level qualifications" (Griffin, 2014, p. 7). Chesters, Watson and Hagel (2013) called for institutional policies and practices that focus on how VET to HE pathways are constructed, as well as to provide support that is both academic and pastoral, especially for VET graduates during their first year of HE study. The authors highlighted that universities that address these issues may be more successful in supporting these students through to completion of a degree. More positively, their research indicated that "many [universities] are offering an increasing array of support services that may assist VET award holders who are struggling to make a successful transition" (Watson et al., 2013, p. 61). Nevertheless, there are barriers to overcome, broadly summarised by Bandias et al. (2011) as being academic, personal and institutional. To this list can be added issues related to low levels of English language, literacy and numeracy (LLN) proficiency.

Table 2: Commencing domestic higher education students and equivalent full-time students by basis for admission to current and higher participation prior to commencement, 2010 (Source: Higher Education Statistics Collection, 2010 (NCVER, 2012))

Basis for admission to current course	Previous highest educational participation							Total	
	Complete higher education course	Incomplete higher education course	Complete VET course	Incomplete VET course	Other complete and incomplete qualifications (includes complete final year of secondary education)	No prior education	Other, including not known		
	('000)	('000)	('000)	('000)	('000)	('000)	('000)	('000)	%
Equivalent full-time students									
Higher education course	50.3	19.0	1.7	0.3	10.2	3.4	0.1	84.9	35.7
Secondary education	1.1	5.0	1.6	0.7	82.0	5.2	0.0	95.6	40.2
VET course	1.8	1.3	9.6	1.3	2.7	0.4	< 10	17.2	7.2
Mature age special entry provision	0.6	1.1	1.3	0.5	6.9	1.3	< 10	11.7	4.9
Professional qualification	0.4	0.1	0.3	0.1	0.5	0.1	< 10	1.5	0.6
Other basis, including not known	4.2	2.1	2.2	0.6	13.8	3.7	0.1	26.7	11.2
Total	**58.4**	**28.7**	**16.7**	**3.3**	**116.2**	**14.1**	**0.3**	**237.6**	**100.0**
Students									
Higher education course	91.4	25.8	2.9	0.5	13.3	6.4	0.2	140.5	41.8
Secondary education	1.6	6.6	2.1	0.9	90.5	6.3	0.1	108.2	32.2
VET course	2.9	2.0	13.8	1.7	3.9	0.6	0.0	25.0	7.4
Mature age special entry provision	1.0	1.8	2.3	0.8	9.8	2.4	< 10	18.0	5.3
Professional qualification	0.9	0.2	0.5	0.1	0.9	0.2	0.0	2.7	0.8
Other basis, including not known	7.4	3.3	3.8	1.0	18.6	7.8	0.2	42.0	12.5
Total	**105.2**	**39.6**	**25.4**	**4.9**	**137.0**	**23.8**	**0.5**	**336.4**	**100.0**

Indigenous Australian VET to HE pathways issues

In addition to the many issues described above, pathways into HE for Indigenous students can be further complicated because of the social, cultural, economic and educational challenges present (Frawley et al., 2017), and because of the practical and systematic challenges and restraints posed (Thomas, Ellis, Kirkham & Parry, 2014). Importantly, in remote communities, "[t]he 'pathway' metaphor is conceptually linked to a different set of philosophies": while these may share some ideas about 'imagined future' implied by the Western-centric interpretation of 'pathways', "it may be that for many people from remote communities, it does not resonate with what is important for them" (Guenther et al., 2017, pp. 171-172). The authors point out it is important to consider the issue of relevance of any externally imagined outcomes to communities.

Smith, Larkin, Yibarbuk and Guenther (2017) argue that the four main factors influencing Indigenous pathways to HE include:

> Redefining community engagement from Indigenous standpoints; appropriately resourcing Indigenous community engagement activities; continuing to build an evidence-base to learn from recent Indigenous community engagement investments; and the need to move beyond the rhetorical language used in many policy documents and frameworks. (p. 63)

There are developments and initiatives that address the factors named above at institutional and local levels. Smith, Larkin and Trinidad (2015) view the presence of six dual-sector institutions that offer programs from VET through to higher degrees by research, as a positive opportunity for students to undertake cross-sector skill electives, articulated pathways and dual qualifications. Kinnane et al. (2014) note that two dual-sector universities, both located in Victoria, had the highest transition of Indigenous students from VET in 2010, which indicated a stronger pathway. However, transition from VET to HE has been problematic for more than 25 years because of incompatibilities in "curriculum, pedagogy and assessment" (Bradley et al.,

2008, p. 179). The Indigenous Higher Education Review (Behrendt et al., 2012) also identifies continuing problems and limited transition options from VET, recommending clearer definition of pathways to HE (Kinnane et al., 2014).

Pitman et al. (2017) argue in favour of enabling programs as they play an important role in providing an alternative pathway to higher education for Indigenous Australians and, as such, are "central to the subsequent undergraduate participation of Indigenous students, and … indeed the most prominent means by which these students access university" (p. 146). Focusing on a heterogeneous cohort of Indigenous students in a Go8 university, Pechenkina (2014; 2015; 2016) found that students who were accepted into an undergraduate arts degree via an enabling program had the same high rates of success and low attrition as their Indigenous peers accepted through a 'mainstream' entry; with the entire Indigenous cohort at this university demonstrating a consistently higher completion rate than their non-Indigenous peers. However, the way enabling programs support and/or enhance the likelihood of pathways between VET and HE sectors remains under-researched. In addition to scholarships and tutorial assistance for Indigenous students:

> mentoring, cadetships and work experience were also suggested as mechanisms by which professional associations could increase the take-up of professions by Indigenous students. Contracts between universities and governments for raising outcomes for Indigenous Australians, which would include targets and rewards for exceeding targets, were considered to be the most effective. Evidence-based evaluation requires good data to identify critical factors explaining the higher education success of Indigenous Australians. (Karmel, Misko, Blomberg, Bednarz & Atkinson, 2014, p. 58)

Indigenous Australian VET to HE transition issues

On the surface, the importance of VET for Indigenous people is reflected in the fact that 3.7% of all students in 2014 were Indigenous (NCVER, 2014), which is above the parity rate[1], although the majority of completions are at the Certificate I and Certificate II levels (NCVER, 2012). However, whether these rates of Indigenous participation in VET imply an easy transition for all Indigenous students from VET to HE is questionable, especially for those in remote communities:

> [T]he problem is not that students do not enrol or start courses, it is rather that they do not complete. Attrition rates of 100 per cent have been observed for some training programmes in remote communities and across all remote Australia, attrition on average is about 90 per cent (Guenther & McRae-Williams, 2015). Not only is VET not working as a transition vehicle, but it also is not working as a training vehicle in remote communities, and it is not assisting people who are currently unemployed, to gain employment. One of the challenges for VET and higher education is to convince

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[1] The Office for Learning and Teaching Fact Sheet, '*Can't be what you can't see': The transition of Aboriginal and Torres Strait Islander students into higher education*, provides two explanations of population parity: "The Bradley Review of Australian Higher Education (2008) and the IHER use a population parity rate of 2.2%, reflecting the proportion of the population between 15-64 years of age that is Aboriginal and/or Torres Strait Islander (based on 2006 ABS population statistics). The Department of Education, Employment and Workplace Relations (DEEWR) used a parity rate of 3.1% to estimate the proportion of Australian students expected to be Aboriginal or Torres Strait Islander '. . . if Aboriginal and Torres Strait Islander peoples were represented according to their proportion of the higher education aged population' (Panel for the Review of Higher Education Access and Outcomes for Aboriginal and Torres Strait Islander people, 2011, p. 3)."

community members that gaining a qualification is worthwhile. This requires not only collaboration between service providers, but also, with community members. (Guenther, et al., 2017, p. 179)

Guenther et al.'s (2017) findings are supported by those of Wilks, Wilson and Kinnane (2017) who note that while numbers of rural and remote Indigenous students transitioning to HE are very low, these students access VET at high proportion. At the same time, Dockery (2009) states that the lower access to VET impacts upon Indigenous Australians with stronger cultural attachment.

Generally, however, for Indigenous students the VET to HE journey remains problematic, with only 4.9% making the transition in 2012 (Kinnane et al., 2014). Little is known about why this might be the case. One barrier may be insufficient investment in English and academic literacy programs for Indigenous students. Another set of factors focus on uneven distribution of resources and services based on students' geographical location (a situation known as spatial inequality) and an assortment of socio-technological factors, such as internet connectivity, ownership/sharing of devices, and digital literacy influencing Indigenous educational achievement (Prayaga, Rennie, Pechenkina & Hunter, 2017).

In particular, literacy and numeracy consistently feature strongly in debates and policies where secondary schooling is concerned. However, adult literacy and numeracy as an underpinning thread in lifelong learning and education is not afforded the same attention (Boughton & Durnan, 2014). In line with the Equity Blueprint produced by the national VET Equity Advisory Council, all adult learners should have the opportunity to undertake foundation skills development regardless of location, socio-economic status and any other barriers to access. This involves removing systematic barriers and designing the system to meet diverse learning needs (SCOTESE, 2012). Adult basic education is a foundation for gaining self-esteem and self-confidence to lead an independent life. Yet, the Standard Australian English oracy and literacy of the majority of Indigenous students, especially those from remote areas (particularly in the Northern Territory) has been problematic for decades in relation to full participation in further education, training and employment (Northern Territory Department of Education, 1999; Wilson, 2014). Indeed, only 24% of Indigenous people living in remote communities have access to a school that goes up to Year 12; just 29% of remote communities have a school that goes up to Year 10; and less than 36% of people in remote communities have access to a library (Indigenous Literacy Foundation, 2016).

Several recommendations from the Behrendt Review (Behrendt et al., 2012) stress the importance for collaboration between educational sectors, Indigenous organisations, and government agencies, to enhance Indigenous participation. However, inconsistencies in curriculum, pedagogy and assessment has resulted in problematic transitions and clearer definitions are urgently required. Griffin (2014) and Bandias, Fuller and Larkin (2013) distil the challenges as follows:

- while transition from VET to HE is viable, it is not used widely by all learners;
- the transition from VET to HE is more likely to occur from higher-level VET qualifications;
- transition from VET to HE can be complicated, despite such arrangements as credit transfer;
- support services for transition can make a difference, but the tension remains between providing individually tailored support and system-wide support; and,

• some students are not well prepared for the more academic environment of HE.

Synthesis

This review has highlighted the ongoing need to strengthen VET to HE pathways and transition options for Indigenous students. The need to facilitate students' post-school transitions by developing student resilience, institutional responsiveness and policy reflexivity through transformative education is required at national and sub-national levels (Abbot-Chapman, 2011). Dual-sector universities, in particular, are well positioned to take the lead in strengthening these pathways and transitions. However, greater community engagement and partnerships as well as enabling programs that develop academic preparedness and the strengthening of self-efficacy in students are still urgently needed (Pitman et al., 2016; Pitman et al., 2017; Ober, Olcay, Frawley & Smith, 2017).

National challenges

The 2015 national forum, *Engagement at the interface: Indigenous pathways and transitions into Higher Education*, facilitated by Charles Darwin University, highlighted the multiple and diverse strategies and programs aimed at fostering VET to HE transition and pathways for Indigenous students. The forum presented a crisscross of strategies and programs existing at various national and state/territory government levels, as well as multiple agencies and sectors, indicating an underlying issue:

> The lack of any centralised repository or coordination of all the different types of programs that are aiming to improve Indigenous training and employment pathways (including for states and territories) makes it a complex and overwhelming task to identify programs, funding regimes and associated evaluations or research studies. This complexity and duplication can also confuse employers, service providers and clients. It makes it difficult to set up comprehensive and robust evaluations (including the use of control groups) to come to any definitive conclusions about the things that do or do not work. Without such good information about the impact of interventions, there is the risk of continuing with programs that are not worth the funds expended on them, or cutting short programs that have the best chance of success. (Karmel et al., 2014, pp. 51-52)

There are also underlying systemic issues, primarily the challenge faced by education systems to improve educational outcomes for Indigenous students which, in turn, affects pathways into VET and HE, and VET to HE transitions and pathways. Transition outcomes are better for Indigenous students who complete Year 12 than those who do not complete secondary studies (Deloitte Access Economics, 2012). However, poor attendance and low literacy and numeracy skills combine to limit school participation and completions (Biddle & Cameron, 2012). Compounding these issues, are interrelated factors around geographic location, low SES, gender and remoteness (Curtis, 2011). Although VET plays a viable role in creating educational opportunities for Indigenous people, the structures and pathways of VET's provision need to be rethought:

> This rethinking cannot be limited to schools or to the VET sector, but must seek to integrate the roles they play into a more effective and coordinated suite of programs, which cater for the needs of all students, including the most disadvantaged, and which create consistent and clear pathways into further education, training and the world of work. (Polesel, 2010, p. 423)

Data from NCVER (reported in Notre Dame University, 2013) show that there has been a decline in the number of Indigenous students continuing on to HE from the VET system. In 2012, 33.6% of Indigenous students were enrolled in further study six months after completing their VET qualifications, down from 35.9% in 2006. According to Pitman et al. (2016), "empirical research undertaken since 2000 offers, at best, limited support for the proposition that VET represents an effective pathway into higher education for disadvantaged students" (p. 17). The reason for such a decline, it can be argued, is in the recent (that is, occurring over the past six years or so) substantial changes the VET sector has undergone as a result of funding cuts and restricting of fees (Productivity Commission, 2016). Such a continuing dismantling of the VET sector in Australia may jeopardise the potential opportunities of VET to HE Indigenous transitions.

The leading role of dual-sector universities
Because of their intra-organisational structure dual-sector universities are well-positioned to strengthen VET to HE pathways and transitions by building partnerships with industries, engaging with communities and developing internal strategies and initiatives that provide for streamlined movement between the two sectors. Effective institutional partnerships with schools, communities and industries require universities to practice the principles of commitment, coordination, interdependence and trust (Gale & Parker, 2013). Universities that create partnerships and liaise closely with schools and communities before students make the transition to HE can create opportunities for students to do better especially if they "provide induction and orientation programs at the beginning of the first year, and continuing study support throughout the degree or at least in the first year" (Abbott-Chapman, 2011, p. 64). It is essential that universities "reach back into the school years to assist school students through programs designed to boost familiarity with higher education and build confidence in aspiring to go on to higher education" (James and Johnston, 2016, p. 15).

Dual-sector universities, especially those with a reach into remote communities, need to address the issue of higher education pathways:

> Even if there was something akin to a pathway, questions remain about how students get onto the path and perhaps more importantly, if they want to get onto the path (Guenther et al., 2017, p. 182).

Guenther et al. (2017) further state that:

> if attempts to increase higher education participation are driven by the relatively simple assumptions about education pathways in urban communities, we contend ... that they will not work. Strategies must take into account the context and its assumption … (and that) … the foundational assumptions about what education is for in remote communities are not necessarily the same as we might expect in urban communities. (p. 177)

It is suggested that to develop meaningful and strong pathways, particularly with remote communities, there is a need to improve Indigenous community engagement work (Smith et al., 2017). This work must challenge simplistic assumptions about pathways and transitions, because "positioning VET as part of a continuum of learning and development opportunities that together offer some hope of transforming lives and economies in desert regions is crucial" (Young, Guenther & Boyle, 2007, p. 11).

As noted above, Indigenous students who complete higher-level VET programs are more likely to make a successful transition into HE (Griffin, 2014), but this pathway remains under-utilised because the majority of Indigenous VET completions are at the Certificate I and II levels (NCVER, 2012) which, in turn, leads to a low pool of graduates at the Certificate IV, Diploma, and Advanced Diploma levels (Bandias, Fuller & Larkin, 2014). This situation requires universities not only to explore initiatives to encourage and assist students to step-up to the next level of VET qualifications but also to consider some persisting fundamental problems between VET and HE more broadly. These issues include the competency-based focus of VET compared to the more theoretical focus of university course content; differences in approaches to teaching and learning; higher academic standards and levels of expectations at university (Griffin, 2014); and credit transfer issues (Bandias et al., 2011; Frawley, 2017). To this extent, Bandias et al. (2011) state that:

> differences in language and terminology are often used by vocational education and higher education to describe themselves and their programmes [and t]his has also been identified as an important barrier to the achievement of a closer degree of cohesion between vocational education and higher education in dual sector universities. (p. 587)

Bandias et al. (2011) believe that credit transfer, in particular, is an important factor in attracting VET qualified students into HE but because of fundamental differences with philosophy, policy, funding and administration, it also "can act as impediments to the collaborative pathway process" and that there is a clear need to "mainstream and systematise credit transfer arrangements in order to improve efficiency and transparency and to ensure its sustainability" (p. 587). Frawley (2017) asserts that tensions can be experienced in highly regulated VET and HE credit transfer policies, processes and structures, and so VET and universities need to be better aligned for a more seamless approach.

While dual-sector universities are well placed to take the lead in improving VET to HE pathways and transitions, it is critical to the effectiveness and sustainability of this mission that there is strong leadership, a comprehensive strategy which includes community work and partnerships, and an institutional buy-in (Kilpatrick & Johns, 2014, p. 16).

Enabling programs
An element of the role of universities in growing VET to HE transfers is the provision of enabling programs. Enabling programs often focus on developing academic literacy skills, critical thinking, research and time management skills. As noted above, the approach to teaching and learning between the two sectors is quite distinct: with VET's focus on individual acquisition of a multiplicity of competencies, while that of HE is on critical thinking and inquiry, and a tendency for group work. Therefore, enabling programs could be better designed to facilitate the transition between the two sectors by focusing on the HE teaching and learning issues that are particularly challenging for students transitioning from VET to HE (Blacker, Paez, Jackson, Brynes & Dwyer, 2011). Kinnane et al. (2014) believe that because the VET sector attracts proportionally more Indigenous students than HE, there needs to be a greater focus on preparing these students for transition to HE, and this could be addressed through the provision of free enabling programs within their VET studies program. It is argued that for Indigenous students, enabling programs:

> play a distinct, important and growing role in providing an alternative pathway to higher education for Indigenous students. The proportion of Indigenous

undergraduate students who utilise this pathway is larger than that of any other equity group recognised in Australian higher education policy. Furthermore, Indigenous-specific enabling programmes are almost unique in the sector in providing a tailored programme for a distinct group of students. (Pitman, et al., 2017, p. 146)

Research shows that individual motivation, commitment and aspiration (Griffin, 2014; Homel & Ryan, 2014), and individual wherewithal (Harris, 2009) serve as critical enablers for a student to become "the builder and architect of his or her own learning and self-development" (International Labour Organisation, 2002, p. 13). Homel and Ryan (2014) argue that aspirations have a substantial effect on educational outcomes and that there are:

> significant interactions between aspirations and real and relative academic performance, which suggests that high-achieving individuals are more likely to realise their aspirations. Furthermore, those who considered their performance to be average or below average were less likely to realise their aspirations than those who considered their performance to be well above average. (p. 7)

This call for building motivation, commitment and aspiration has parallels with the concepts of self-efficacy, and academic self-efficacy. The latter is defined as personal judgments of one's capability to organize and execute courses of action to attain designated types of educational performance (Schunk, 1984; Zimmerman, 1995) and confidence to perform various academic tasks (Bandura, 1997). Enabling programs that build self-efficacy and academic self-efficacy present possibilities for Indigenous students (Ober et al., 2017) to be better supported and prepared for VET to HE transitions.

VET in schools
VET in Schools (VETiS) programs provide Year 10 to Year 12 secondary school students with the option to undertake vocationally oriented subjects or a nationally recognised VET qualification from a training package or an accredited course. Shah, Long, Perkins and Brown (2015) note that:

> Although the majority of students enrolled in VET qualifications are in Years 10 to 12, VET units and full qualifications are also being undertaken by students in Year 9 or lower levels. The relevant regulatory authority plays a major role in approving VETiS 'subjects' and approving standards. Arrangements vary by jurisdiction, and continue to change, but generally, senior students may enrol in units from one or more certificates concurrently, and they may not be required to complete a full qualification to gain credits towards the relevant Year 12 school certificate. (p. 92)

Of young Australians aged 15 to 19 years participating in education and training in 2014, 14.6 % were enrolled in VETiS programs (NCVER, 2015). For 2006 Year 11 and 12 students, the uptake of VETiS was higher for Indigenous students at 54% than non-Indigenous students at 39% (ABS, 2015). In 2012, 5.5% of all enrolments in VETiS were Indigenous students, with a higher tendency to enrol in Certificate I qualifications (28.8%) than non-Indigenous students (22.8%), and a lower tendency to enrol in higher level qualifications. At Certificate III or higher, it was 12.4% for Indigenous students and 19.0% for non-Indigenous (Shah et al., 2015). Polesel (2010) concurs that although VETiS is an important curriculum reform:

> it is usually offered at the most basic qualification levels within the subject model paradigm of senior secondary certificates. Its heavy use by young people from

disadvantaged backgrounds raises concerns regarding social selection and it suffers from problems of low esteem and variable quality, with its place often questioned within the traditional academic culture of secondary schooling. (p. 415)

Other issues of concern are around the role and purpose of VETiS, the complexity of allocating credits, the lack of appropriate workplace learning in the VETiS programs, and quality issues (Shah et al., 2015, pp. 104-108). To this list Clarke (2012) adds the lack of "coherent and strong pathways to occupational outcomes" (p. 29).

While this review's key focus is on the educational pathways and transition experiences of Indigenous people in Australia, some comparisons can be made with the experiences of Indigenous peoples in other countries. In Canada, for instance, Aboriginal people are still less likely to graduate high school or access post-secondary education and are more likely to drop out of post-secondary education after enrolling compared to their non-Aboriginal peers (Kirby, 2009). The challenges and circumstances that Aboriginal Canadians have to overcome in regards to educational opportunities share a number of similarities with those of Indigenous people in Australia (Kirby, 2009). While only 4% of Canada's Aboriginal people have a university degree compared with approximately 15% of non-Aboriginal Canadians, similarly to Australian Indigenous people, Canadian Aboriginals are overrepresented in trade certificates and diplomas (Brigham & Taylor, 2006). With pathways and transitions not well signposted, various issues having to do with a lack of social cooperation and inadequate linkages between schools, trades programs and universities prevent Aboriginal Canadians from fully engaging with HE (Brigham & Taylor, 2006). Many of these issues can also be found in the experiences of Maoris in New Zealand's tertiary education (Education Counts, 2005) while Reyhner (2016) argues that in the case of Native Americans in the United States, such students find themselves funneled into vocational education by the low expectations and racial bias of their school teachers, and not being provided with the information, resources or preparation needed to enter HE.

Recommendations and further research

This review of literature has identified recommendations and research gaps in relation to VET to HE pathways and transitions pertaining to the Indigenous experience. It has underlined the continued requirement to strengthen VET to HE pathways and transitions at a national and state/territory levels. The review has also identified dual-sector universities as being well placed for addressing this matter. In Australia, at a national level, there is a call for improved coordination, while at state/territory and regional levels, the review has highlighted the requirement for improved Indigenous community engagement to meaningfully connect with both urban and remote communities.

The review has also highlighted significant gaps in existing research on the topic, including:

- the student perspective on transitioning through the tertiary education sector;
- learners' actual experiences in their educational journeys;
- the educational pathways of students moving between sectors;
- whether remoteness from providers and low SES act separately or in concert as barriers to tertiary participation;
- the pathways experience of urban Indigenous students;
- gender as a factor within the remoteness context;
- the transition from lower-level to higher-level qualifications in the VET sector; and,

- the VETiS experiences and outcomes of Indigenous students.

It is critical that further investments are made in regard to research, policy and practice contexts to better align VET to HE pathways and transitions for Indigenous students. Anecdotally, there have been many programs that have supported Indigenous VET to higher education pathways. These have usually been nested in sector-specific programs tailored to Indigenous student needs, most notably in the education sector. However, there is relatively little information and peer-reviewed evidence about the process, impact and outcome of such programs. Research on these issues will provide a more complete picture with which to inform these investments.

Acknowledgements

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