

A half-open door: support document

Louise Watson
Pauline Hagel
Jenny Chesters

The Education Institute, University of Canberra

This document was produced by the authors based on their research for the report *A half-open door: pathways for VET award holders into Australian universities*, and is an added resource for further information. The report is available on NCVET's website: <http://www.ncvet.edu.au>.

The views and opinions expressed in this document are those of the authors and do not necessarily reflect the views of the Australian Government, state and territory governments or NCVET. Any errors and omissions are the responsibility of the authors.

© Commonwealth of Australia, 2013



With the exception of the Commonwealth Coat of Arms, the Department's logo, any material protected by a trade mark and where otherwise noted all material presented in this document is provided under a Creative Commons Attribution 3.0 Australia <<http://creativecommons.org/licenses/by/3.0/au>> licence.

The details of the relevant licence conditions are available on the Creative Commons website (accessible using the links provided) as is the full legal code for the CC BY 3.0 AU licence <<http://creativecommons.org/licenses/by/3.0/legalcode>>.

The Creative Commons licence conditions do not apply to all logos, graphic design, artwork and photographs. Requests and enquiries concerning other reproduction and rights should be directed to the National Centre for Vocational Education Research (NCVER).

This document should be attributed as Watson, L, Hagel, P & Chesters, J 2013, *A half-open door: support document*, NCVER, Adelaide.

This work has been produced by NCVER on behalf of the Australian Government and state and territory governments, with funding provided through the Department of Industry (formerly the Department of Industry, Innovation, Climate Change, Science, Research and Tertiary Education).

Published by NCVER, ABN 87 007 967 311

Level 11, 33 King William Street, Adelaide, SA 5000
PO Box 8288 Station Arcade, Adelaide SA 5000, Australia

P +61 8 8230 8400 F +61 8 8212 3436 E ncver@ncver.edu.au W <<http://www.ncver.edu.au>>

Contents

Tables and figures	5
Tables	5
Figures	6
Introduction	8
Data Sources and Limitations	8
VET award-holders in Australian universities	11
Differences between states and territories	11
Distribution of VET award-holders between universities	12
Rate of admission of VET award-holders by university	13
Student Characteristics	13
Qualifications pathways from vocational to higher education	15
Admission of VET award-holders by field of education	15
VET-HE pathways by university	17
Clusters of broad fields of education (FOEs)	18
Clusters of FOEs	19
Discussion	20
Secondary school admissions	22
VET-HE pathways by field of education	24
1. Management and Commerce (FOE 8)	25
Differences between sub-fields	27
Summary	31
2. Education (FOE 7)	32
VET-HE Pathways in Early Childhood and Primary Teacher Education	34
Reaching a critical mass	35
Summary	36
3. Engineering and Related Technologies (FOE 03)	37
Variation between institutions	37
Differences between sub-fields	38
Summary	47
4. Agriculture, Environmental and Related Studies (FOE 05)	49
Differences between sub-fields	50
Summary	51
Institutional policies and practices for VET-HE pathways	52
Method	52
Pathway policies and targets	52
Institutional practices to support VET-HE pathways	54
Support for VET pathway students	59
Monitoring student progression and achievement	62

References	64
A.1: University admissions on the basis of a VET award by broad Field of Education - 2010	66
A.2: University admissions on the basis of a VET Award - institutional and broad field of education clusters	67
A.3: Survey Questions	68
A.4: Clusters of broad Fields of Education (FOEs) Dendrogram	69
A.5 Proportion of undergraduate commencing students admitted on the basis of a VET award and on an "Other basis", by HE institution, Australia 2010	70
A.6 Proportion of undergraduate commencing students admitted on the basis of Secondary School completion and a VET award, by HE institution, Australia 2010	71

Tables and figures

Tables

1	Commencing domestic undergraduate students by basis of admission, 2001 and 2010, Australia	11
2	VET award-holders and all undergraduate commencements by broad field of education, Australia 2010	16
3	Institutional clusters on admission on the basis of a VET award: size and membership (2010)	18
4	Clusters of broad field of education (FOE), Australia 2010	19
5	Cluster 1 universities' rates of admission on the basis of a VET award by broad field of education (FOE) Cluster, Australia 2010	20
6	Cluster 2 universities' rates of admission on the basis of a VET award by broad field of education (FOE), Australia 2010	21
7	Cluster 3 universities rates of admission on the basis of a VET award by broad field of education (FOE), Australia 2010	22
8	VET award-holders and all undergraduate commencements in Management and Commerce, (FOE 08), by narrow sub-field, Australia 2010	25
9	VET award-holders and all undergraduate commencements in Accounting (FOE 0801), by HE provider Australia 2010	27
10	VET award-holders and all undergraduate commencements in Business and Management (FOE 0803), by the largest 16 HE providers, Australia 2010	28
11	VET award-holders and all undergraduate commencements in Sales and Marketing (FOE 0805), by the largest nine HE providers, Australia 2010	29
12	VET award-holders and all undergraduate commencements in Tourism (FOE 0807), by HE provider, Australia 2010	30
13	VET award-holders and all undergraduate commencements in Banking, Finance and Related Fields (FOE 0811), by the largest 16 HE providers, Australia 2010	30
14	VET award-holders and all undergraduate commencements in Other Management and Commerce (FOE 0899), by the largest 13 HE providers, Australia 2010	31
15	Narrow and Detailed sub-fields within the Broad Field of Education 07: Education	32
16	VET award-holders and all undergraduate commencements in Education (FOE 07), by detailed sub-field, Australia 2010	32
17	Enrolment share and admission rates of VET award-holders by institutional clusters in Engineering and Related Technologies (FOE 03), Australia 2010	38

18	VET award-holders and all undergraduate commencements in Engineering and Related Technologies (FOE 03), Australia 2010	39
19	VET award-holders and all undergraduate commencements in Other Engineering and Related Technologies (FOE 0399), by HE provider Australia 2010	40
20	VET award-holders and all undergraduate commencements in Electrical and Electronic Engineering and Technology (FOE 0305), by HE provider Australia 2010	42
21	VET award-holders and all undergraduate commencements in Mechanical and Industrial Engineering & Technology (FOE 0307), by HE provider Australia 2010	43
22	VET award-holders and all undergraduate commencements in Civil Engineering (FOE 0309), by HE provider Australia 2010	44
23	VET award-holders and all undergraduate commencements in Aerospace Engineering (FOE 0315), by HE provider Australia 2010	46
24	VET award-holders and all undergraduate commencements in Process and Resources Engineering (FOE 0303), by HE provider Australia 2010	47
25	VET award-holders and all undergraduate commencements in Agriculture, Environmental and Related Studies (FOE 05), by narrow sub-field, Australia 2010	49
26	Undergraduate commencements in Agriculture, Environmental and Related Studies, by sub-field and the largest 15 HE providers Australia 2010	51

Figures

1	Students admitted to university on the basis of a VET award and all students by jurisdiction (domestic and overseas), Australia 2010	12
2	Commencing higher education students by age and basis of admission, (domestic and overseas), Australia 2010	13
3	Number of students commencing undergraduate studies in Management and Commerce by basis of admission by university, Australia 2010	26
4	Number of students commencing undergraduate studies in Early Childhood Teacher Education who were admitted on the basis of a VET award (and VET award-holders as a proportion of all commencements, in parentheses) by HE institution, Australia 2010	33
5	Number of students commencing undergraduate studies in Primary and Early Childhood Teacher Education who were admitted on the basis of a VET award (and VET award-holders as a proportion of all commencements, in parentheses) by HE institution, Australia 2010	34
6	Number of students commencing undergraduate studies in Engineering and Related Technologies including those admitted on the basis of a VET award, by HE institution, Australia 2010	37

7	Number of students commencing undergraduate studies in Agriculture, Environmental and Related Studies by basis of admission by university, Australia 2010	50
8	Structure of Charles Sturt University Website	58

Introduction

This paper is the supporting document to the report, *The half-open door: pathways for VET-award holders into Australian Universities*.

Data Sources and Limitations

We began the study with an analysis of quantitative data to explore the patterns of admission of VET award-holders among universities. This was followed by an investigation of admission rates by field of education. The results of these analyses led us to an exploration of institutional policies and practices in more detail.

For the quantitative data analyses in this report we relied on administrative data collections, primarily the Higher Education Statistics Collection managed by the Commonwealth government.

Data were obtained from the Higher Education Statistics Collection that reported the number of students commencing higher education undergraduate programs in 2010, by basis of admission, disaggregated by ASCED fields of education.

We collected qualitative data from institutional responses to a survey (Appendix A.3) emailed to all Australian universities and further information was obtained from follow-up interviews with selected university personnel.

Graduation rates of VET award-holders

The Commonwealth government was unable to provide the research team with access to data that would have enabled us to assess the graduation rates of students admitted to higher education on the basis of a VET award. Although the number of students admitted to higher education on the basis of a VET award is increasing, previous studies suggest that once admitted to university, a VET award holder's chances of completing an undergraduate degree is relatively poor. One study found that the proportion of VET award-holders who dropped out during their first year of a bachelor's degree was twice that for all students (Long, Ferrier and Heagney 2006). A recent study in the field of engineering found that the completion rate for VET award-holders admitted to undergraduate engineering programs was less than 20 per cent compared to 65 per cent for other students (King, Dowling and Godfrey 2011; 33-34). Other studies suggest that the retention and achievement of VET award-holders admitted to university is influenced by the nature of their VET-HE pathway (Cram and Watson 2008). On the other hand, one dual-sector university which admits a relatively high proportion of students on the basis of a VET award reported that the higher education completion rates of VET award-holders are the same as for all students (Young 2007).

Our lack of access to Commonwealth-held data on student progression and attainment is an acknowledged limitation of this study.

Students admitted to higher education on an "other basis"

Another issue identified in the course of this research is the potential for students admitted on the basis of a VET award to be misclassified as students admitted on an "other basis". Commonwealth guidelines for the collection of higher education statistics are quite clear in stating that students admitted on the basis of a VET award are those admitted on the basis of partial or completed VET

studies. However several university staff members interviewed by the research team advised that students admitted on a basis other than a school completion were often categorised as “Mature Age” or “Other”, even though they held VET qualifications, because they were not actually admitted on the basis of a VET award. Staff interviewed in two universities also suggested that students admitted on the basis of a VET award were mis-classified as “Other” in their institution. In the dataset provided for this study of undergraduate commencements by basis of admission in 2010, the research team noted considerable variation between institutions in terms of the proportion of commencing undergraduates admitted on the basis of “Other”, as shown in Appendix A.5.

In the higher education statistics collection, commencing students in undergraduate, enabling and non-award courses are classified into one of seven categories:

- Higher education course (Australian or overseas equivalent; complete or incomplete)
- Secondary education
- VET award (other than a secondary education course; Australian or overseas equivalent; complete or incomplete)
- Mature age special entry provisions
- Professional qualification
- Other basis
- Unknown

Australia-wide, less than 45 per cent of undergraduate commencing students were admitted on the basis of secondary education in 2010. Some 27 per cent of all commencing undergraduates were admitted on the basis of a higher education course. Ten per cent of students were admitted on the basis of a VET award and 18 per cent were admitted on an “Other basis”.

As indicated in the chart provided in Appendix A.5, several universities which admit relatively low proportions of students on the basis of a VET award admit relatively high proportions of undergraduates on an “other basis”. Batchelor Institute, Curtin University, Macquarie University, the University of the Sunshine Coast, the University of Southern Queensland and the University of Tasmania all reported very high proportions of undergraduate students admitted on an “other basis” in 2010, with rates between 30 and 50 per cent. As several of these universities admit relatively small proportions of VET award-holders, is it possible that some VET award-holders are being mis-classified in their data collections. While it is beyond the scope of this study to investigate this issue, it should be noted that the admission rates of VET award-holders could be under-reported in some universities which report very high admission rates under “other basis”.

Students admitted to higher education on the basis of a low ATAR

One Survey respondent stated that “twice as many students with a VET qualification are admitted each year to universities than those recorded as being admitted on the basis of their VET qualification” (Respondent A). The explanation offered for this was that if an applicant has an Australian Tertiary Admission Rank (ATAR) as well as a VET qualification, they will be assessed on the basis of the ATAR first, and admitted on that basis if the ATAR is high enough. The VET qualification will only be used as a basis of admission if the ATAR is not sufficiently high to obtain entry. Another university respondent said that DEEWR required students with a “forced” offer (ie. An offer made to students with an ATAR under the published cut-off for the university) to be coded as “Other”, and that these students might otherwise have been admitted on the basis of their VET qualification (Respondent B).

This information, while plausible, is not sufficient grounds to argue that the number of students admitted to universities on the basis of a VET award is under-reported. Given that in order to obtain an ATAR, however low, students must have completed a program of senior secondary study, the fact that they could also have completed a VET-award is irrelevant. By completing the requisite senior secondary studies to obtain an ATAR, such students have a right to seek admission to university as a senior secondary school completer. VET award-holders who have not completed a senior secondary program and do not have an ATAR are therefore correctly classified as students admitted on the basis of a VET award. Indeed, if students with low ATARs are subsequently admitted on the basis of a VET award (presumably at the Certificate level) by some universities, we could infer that the number of students admitted on the basis of a VET award is over-stated in these institutions' data collections, as such students should really be treated as "forced offers" and recorded as "Other".

Students admitted on the basis of a VET award rather than those who might hold VET qualifications concurrently with an ATAR are the primary focus of this study. A common issue raised by all research on VET-HE pathways is the observation that VET awards are not necessarily the best form of preparation for higher education studies because VET studies are designed to serve a different purpose, namely, preparation for specific occupations in the workplace. Research therefore suggests that VET award-holders admitted to higher education often need additional support, usually during their first year of study, to make a successful transition to completing an undergraduate degree (Catterall & Davis, 2012). Such support can be provided through articulated VET-HE programs, mapped sequential awards, or the provision of targeted academic skills support once at university. VET award-holders may also need additional mentoring and pastoral care to make a successful transition to higher education. While students admitted to university with a low ATAR or on another basis may also struggle to meet the academic demands of an undergraduate program, the reasons for this outcome and the possible strategies to address it will be different. The tendency of some university administrators to conflate students from different pathways into a single "at risk" group, simply because they are likely to struggle during their first year of undergraduate study, suggests that the issues associated with VET-HE pathways in these universities are not well understood.

VET award-holders in Australian universities

The number of domestic students admitted to Australian universities on the basis of a VET award has increased by 75 per cent over the past decade. In 2001, only 12,916 students were admitted to undergraduate programs on the basis of a VET award, compared to 22,676 in 2010. The number of students admitted on the basis of a VET award has increased more than any other basis of admission as shown in Table 1.

Table 1 Commencing domestic undergraduate students by basis of admission, 2001 and 2010, Australia

Basis of admission	2001		2010		2001 - 2010 Change (%)
	Students	%	Students	%	
HE course	41 785	23.0	53 532	24.2	28.1
Secondary School	83 388	45.9	99 564	44.9	19.4
VET award	12 916	7.1	22 676	10.2	75.6
Other	43 555	24.0	45 799	20.7	5.2
All students	181 644	100.0	221 571	100.0	22.0

Notes: 'Commencing students includes students admitted to undergraduate, enabling and non-award programs. "Other" includes Mature age, professional qualification, other basis and unknown

Source: 'Higher Education Statistics Collection (published and unpublished data).

In total, over 30,000 students are admitted to Australian universities on the basis of holding a VET award, and one quarter of them (7,450 students) are from overseas. Students admitted on the basis of a VET award now comprise 9.5 per cent of all commencing students at the undergraduate level (both domestic and overseas).

Differences between states and territories

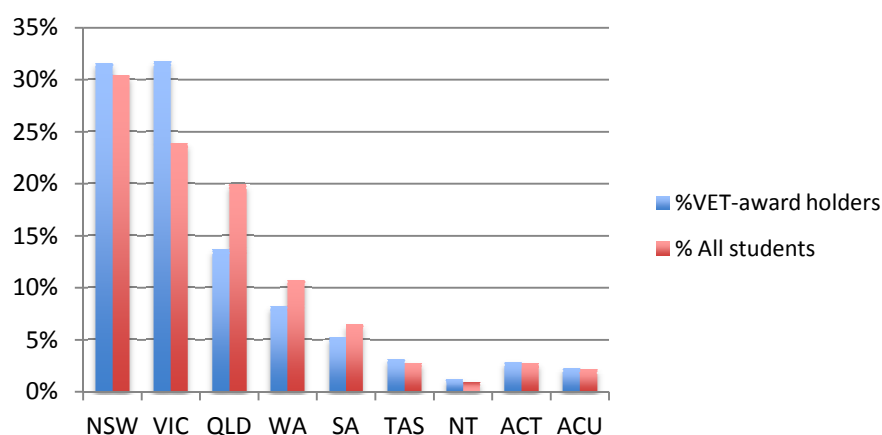
In some states a higher proportion of students are admitted to university on the basis of a VET award than in others. The rate at which students are admitted to higher education on the basis of a VET award differs between states and territories:

- In New South Wales, 10.2 per cent of 91,852 commencing students in 2010 were admitted on the basis of a VET award;
- In Victoria, 13.2 per cent of 72,203 commencing students in 2010 were admitted on the basis of a VET award;
- In Queensland, only 6.8 per cent of 60,304 commencing students in 2010 were admitted on the basis of a VET award;
- In Western Australia, only 7.6 per cent of 32,347 commencing students in 2010 were admitted on the basis of a VET award;
- In South Australia, only 8.0 per cent of 19,525 commencing students in 2010 were admitted on the basis of a VET award;

- In Tasmania, the University of Tasmania admitted 11.3 per cent of its 8,341 commencing students in 2010 on the basis of a VET award;
- In the Australian Capital Territory, 10.5 per cent of 8,149 commencing students in 2010 were admitted on the basis of a VET award;
- In the Northern Territory, 12.1 per cent of 3,055 commencing students in 2010 were admitted on the basis of a VET award; and
- Nationally, the Australian Catholic University (ACU) admitted 10.7 per cent of its 6,520 commencing students in 2010 on the basis of a VET award.

These differences in admission rates mean that the proportion of total VET award-holders admitted to higher education compared to the proportion of total higher education students varies between jurisdictions. As shown in Figure 1, Victorian universities have a higher share (32%) of all students admitted to higher education on the basis of a VET award than their share of total undergraduate commencements (24%). Queensland universities, in contrast, account for only 14 per cent of VET award-holders compared to their share of 20 per cent of all undergraduate commencements.

Figure 1 Students admitted to university on the basis of a VET award and all students by jurisdiction (domestic and overseas), Australia 2010



Source: DEEWR (2010) Higher Education Statistics Collection. Unpublished data

Distribution of VET award-holders between universities

While 37 publicly funded Australian universities¹ admit students on the basis of a VET- award, their share of VET award-holders admitted to undergraduate programs in higher education varies. For example, three institutions - Charles Sturt University, RMIT University and the University of Western Sydney- account for over 28 per cent of total undergraduate enrolments of students admitted on the basis of a VET award. Over two-thirds of VET award-holders commencing higher education courses in Australia are enrolled in 12 universities.² In other words, one third of Australian universities provide two-thirds of the pathways for VET award-holders into higher education.

¹ This study excludes Batchelor Institute of Indigenous Tertiary Education which admits no VET award-holders

² The twelve universities are: Charles Sturt University; RMIT University; University of Western Sydney; Griffith University; Deakin University; Edith Cowan University; La Trobe University; Swinburne University; Victoria University; University of South Australia; University of Newcastle; and University of Tasmania

Overseas students

The rate of admission of overseas students on the basis of a VET award varies between institutions. At RMIT University and ANU, for example, over half of the commencing students admitted on the basis of a VET award are overseas students. In 22 universities, the number of overseas students admitted on the basis of a VET award is negligible. Overall, the overseas students who make up a quarter of all students admitted to undergraduate programs on the basis of a VET award are concentrated in 15 universities.

Rate of admission of VET award-holders by university

The provision of VET-HE pathways varies between higher education institutions and by field of study. Appendix A.1 provides details of each university's rate of admission of students on the basis of a VET award across the ASCED broad fields of education (FOE) 1 to 10.³ In general, universities which admit VET award-holders at rates well above the national average, tend to admit VET award-holders at relatively high rates in most fields of study. In contrast, universities which admit lower proportions of VET award-holders exhibit a more haphazard pattern of admission rates between fields of education.

Universities such as Charles Sturt, Newcastle, UWS, Deakin, VU, Edith Cowan and Swinburne, for example, consistently admit VET award-holders at above the national average rate in all their undergraduate fields of study. RMIT and La Trobe are similarly consistent, admitting above-average proportions of VET award-holders in every field except one or two. Of the 12 largest providers, UniSA and Tasmania are the least consistent, with below-average intakes of VET award-holders in several fields. These differences are discussed in more detail in subsequent sections of this report.

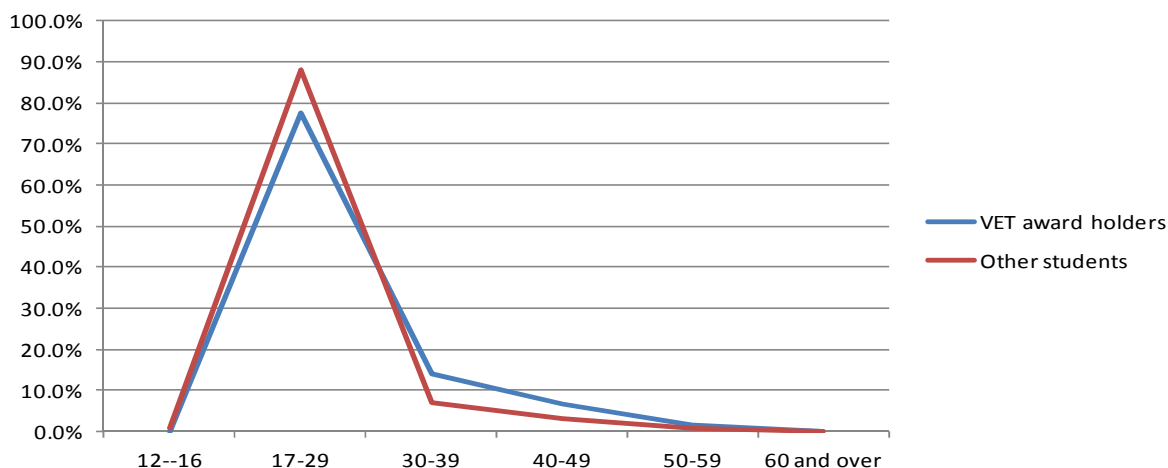
Student Characteristics

Students admitted to Australian universities on the basis of a VET award are broadly similar to students admitted on other criteria. In 2010, 57 per cent of students admitted on the basis of a VET award were female, the same proportion as students admitted on other bases.

As we might expect, VET award-holders tend to be slightly older than other commencing students in undergraduate programs. The average age of students admitted to undergraduate programs in 2010 is illustrated in Figure 2, broken down into students admitted on the basis of a VET award and students admitted on all other bases. While the majority of commencing undergraduates are aged between 17 and 29 years, the proportion of VET award-holders in this age group is ten per cent lower than other students - 78 per cent compared to 88 per cent of other students. A higher proportion of VET award-holders are in the older age brackets. For example, 14 per cent of VET award-holders are aged 30 - 39 years compared to only 7 per cent of other students. And seven per cent of VET award-holders are aged 40-49 compared to only 3 per cent of other students.

Figure 2 Commencing higher education students by age and basis of admission, (domestic and overseas), Australia 2010

³ For a list of the ASCED Broad Fields of Education (FOEs), see Table 2.



Source: DEEWR (2010) Higher Education Statistics Collection. Unpublished data

VET award-holders are less likely to be Aboriginal or Torres Strait Islanders than other undergraduate students. Students who are Aboriginal or Torres Strait Islanders comprised less than one per cent of the commencing HE student population at the undergraduate level in 2010. A slightly lower proportion of VET award-holders is Aboriginal or Torres Strait Islander (0.6%) compared to other students (0.8%). According to the Student Outcomes Survey, Aboriginal and Torres Strait Islander students comprised 3.2 per cent of the students who completed VET qualifications in 2009 however they are under-represented in the group of VET award-holders admitted to higher education in 2010.

Undergraduate students admitted on the basis of a VET award are much more likely to be studying part-time. Twenty-nine per cent of students admitted on the basis of a VET award are studying part-time compared to 18 per cent of students admitted on other bases. The part-time status of undergraduates admitted on the basis of a VET award can compound any difficulties VET award-holders might face in making a successful transition to higher education studies. VET award-holders who are employed full-time, for example, report difficulties in accessing the academic skills support services available to most undergraduate students during business hours (Watson 2006). One university which reported that it monitors the enrolment, retention and performance of all students admitted on the basis of VET studies, remarked that “the progress and retention rate of VET articulating students is below that of the school leaver cohort, perhaps reflecting that more of these students are mature age and have more competing commitments than younger students” (Respondent C)⁴.

In summary, students admitted to undergraduate programs on the basis of a VET award are on average slightly older than other students and are more likely to be studying part-time. Aboriginal and Torres Strait Islanders appear to be underrepresented in the group of VET award-holders admitted to higher education. As characteristics such as being older and having work and family responsibilities are known to have an adverse impact on completion rates for all undergraduate students, the challenges faced by many VET award-holders admitted to university could be compounded by these characteristics.

⁴ This university reported that on other measures, such as achievement, students “admitted on the basis of TAFE diplomas perform as well as school leavers with ATARs between 80 and 85” (Respondent C)

Qualifications pathways from vocational to higher education

The Australian Qualifications Framework (AQF) is a system that aims to assist learners to plan their education and training, by providing consistent national definitions of post-compulsory qualifications offered in Australia.

While AQF qualifications can be offered by education providers in any sector, traditionally the Certificate-level qualifications at AQF 1 - 4 are offered by providers in the VET sector while qualifications classified as undergraduate degrees (AQF Level 7) and above are offered in the higher education sector. Diploma and Advanced Diploma qualifications (AQF levels 5 and 6 respectively) are also more likely to be offered by VET providers as they form part of most training packages in the national training system. Associate Degrees, also at the AQF level 6, are newer qualifications that are not included in the national training system, and are now offered in small numbers by both universities and VET providers.

Diploma and Advanced Diploma qualifications are often portrayed as “bridging” qualifications between the VET and HE sector, and used as a preparation for undergraduate studies. However the overall number of students studying qualifications at this level in the national training system is relatively small. The national training system is largely focused on the delivery of training which leads to a qualification at the Certificate I-IV level (AQF levels 1-4). As the proportion of VET graduates holding Diploma-level qualifications is relatively small, completion of a higher level VET Certificate would be acceptable to many higher education institutions as a basis for admission to undergraduate studies, particularly in fields where VET Diploma-level studies are not common.

While some VET award holders admitted to higher education are enrolled in Diploma or Advanced Diploma studies rather than undergraduates degrees, Mazzachi (2009) reports that only four per cent of VET award-holders in undergraduate programs were enrolled in Associate Degrees, Advanced Diploma or Diploma courses. Over 95 per cent of VET award-holders admitted to higher education are enrolled in Bachelor degrees.

Admission of VET award-holders by field of education

The rate of admission of VET award-holders varies by field of education, as shown in Table 2.

The size of the total undergraduate student population in each field of education varies, as shown in Table 2. Large fields such as Society and Culture (FOE 09) and Management and Commerce (FOE 08), account for one-fifth each of the entire undergraduate commencing student population, whereas Information Technology accounts for only 3.6 per cent. Thus the high proportion of VET award-holders (14.2%) in a small field of study like Information Technology, represents a relatively small number of students (1,622 VET award-holders), compared to the 5,514 VET award-holders admitted to programs in the field of Society and Culture, where the admission rate is only 8.3 per cent.

Table 2 VET award-holders and all undergraduate commencements by broad field of education⁵, Australia 2010

No.	Broad Field of Education (FOE)	All undergraduates		VET award-holders	
		No.	% total	No.	% all undergraduates
01	Natural and Physical Sciences	25,522	8.0	932	3.7
02	Information Technology	11,457	3.6	1,622	14.2
03	Engineering and Related Technologies	19,786	6.2	1,469	7.4
04	Architecture and Building	6,798	2.1	694	10.2
05	Agriculture, Environmental and Related Studies	3,781	1.2	218	5.8
06	Health	40,823	12.9	4,778	11.7
07	Education	23,391	7.4	3,494	14.9
08	Management and Commerce	71,650	22.6	9,288	13.0
09	Society and Culture	66,411	20.9	5,514	8.3
10	Creative Arts	23,854	7.5	1,995	8.4
11	Food, Hospitality and Personal Services	0	0.0	0	-
12	Mixed Field Programs	6,229	2.0	217	3.5
-	Non-award	16,868	5.3	77	0.5
All Fields of Education (FOEs)		317,670	100.0	30,298	9.5

Source: DEEWR (2010) Higher Education Statistics Collection. Unpublished data

Notes: Due to the coding of some students in combined programs to two fields of education, the totals can be higher than the total number of students and the size of the difference varies between fields of education.

⁵ The Australian Standard Classification of Education (ASCED) 2001, issued by the Australian Bureau of Statistics defines twelve broad fields of education. The Commonwealth higher education collection uses ASCED definitions to classify student enrolments as well as a further category called "non-award courses".

VET-HE pathways by university

The rate of admission of VET award-holders varies considerably between fields of education and institutions. As shown in Appendix A.1, some universities admit VET award-holders at high rates in all fields of education where they offer undergraduate programs. However, in other universities, the rate of admission of VET award-holders varies considerably between fields of education. There are also some universities which have consistently low rates of admission of VET award-holders in all their undergraduate programs, regardless of field of education.

We investigate these variations by distinguishing between groups of institutions in terms of their admissions on the basis of a VET award and their pattern of admissions across fields of education, using Cluster analysis.

Method

Cluster analysis is a purely descriptive technique which classifies objects (i.e. universities) based on selected characteristics. It is used for this report to group together the universities that were most similar to each other on their percentage admissions on the basis of a VET award for all 10 broad fields of education (FOE). The data for the cluster analysis was taken from Appendix A.1.

The analysis was conducted in SPSS and conducted according to procedures recommended by Hair et al (2008) and Everitt, Landau and Leese (2001). These procedures resulted in the identification of three clusters of institutions.

First, the data were clustered using the Ward method (this is an hierarchical procedure that produces clusters where the variation within group members is minimised). This method was used primarily to identify how many clusters existed in the data. While there is no one best way of choosing the right number of clusters (Hair et al 2008), a three-cluster solution was chosen based on an examination of the agglomeration schedule. One issue in using the Ward method is that, if a case (i.e. university) has some missing data (i.e. zero VET enrolments for one or more FOEs) then it is not assigned to a cluster. Therefore, a second cluster analysis was conducted using the K-means procedure which allows for missing data. This procedure requires that the number of clusters is specified upfront. Given the Ward method indicated a three cluster solution this number of clusters was specified for the K-means procedure.

Three clusters

Details of the three clusters of institutions are provided in Table 3.

Institutions within each cluster are listed in order of their total average admissions on the basis of a VET award with total average VET admissions for each university displayed in parentheses.

Table 3 Institutional clusters on admission on the basis of a VET award: size and membership (2010)

	Cluster 1 (n = 7)	Cluster 2 (n = 16)	Cluster 3 (n = 14)
Average admission on basis of VET	19%	10%	3%
Institutions	Charles Sturt University (26%) RMIT University (21%) Swinburne University of Technology (20%) University of Western Sydney (17%) Victoria University of Technology (16%) Edith Cowan University (16%) Deakin University (16%)	La Trobe University (15%) University of Canberra (13%) Charles Darwin University (12%) University of South Australia (12%) University of Ballarat (11%) University of Tasmania (11%) Griffith University (11%) University of Wollongong (11%) Central Queensland University (11%) Murdoch University (10%) Australian Catholic University (10%) The University of Newcastle (10%) The University of New England (9%) Southern Cross University (8%) University of Technology, Sydney (8%) Queensland University of Technology (7%)	The Flinders University of South Australia (7%) University of Southern Queensland (6%) The Australian National University (5%) James Cook University (4%) University of the Sunshine Coast (4%) Monash University (4%) Macquarie University (3%) Curtin University of Technology (3%) The University of New South Wales (3%) The University of Sydney (2%) The University of Adelaide (1%) The University of Melbourne (1%) The University of Queensland (1%) The University of Western Australia (0%)

Clusters of broad fields of education (FOEs)

To take into account the variation in admission rates by field of education, we performed a further cluster analysis on the 10 broad fields of education (FOEs) in which Australian universities offer undergraduate programs, as shown in Table 4.

Table 4 Clusters of broad field of education (FOE), Australia 2010

	Broad Field of Education (FOE)	Admissions on basis of VET award
Cluster A	08 – Management and Commerce (13%)	12%
	10 – Creative Arts (8%)	
	06 – Health (12%)	
Outliers	07 – Education (15%)	15%
	02 – Information Technology (14%)	
Cluster B	03 – Engineering and Related Technologies (7%)	8%
	04 – Architecture and Building (10%)	
Cluster C	05 – Agriculture, Environmental and Related Studies (6%)	7%
	09 – Society and Culture (8%)	
	01 – Natural and Physical Sciences (4%)	

This clustering procedure grouped the 10 FOEs into three clusters of FOEs and two outliers⁶. Table 4 indicates the FOEs within each cluster and the admission rate of VET award-holders for the cluster. These are labelled ‘Cluster A’, ‘Cluster B’ and ‘Cluster C’ to avoid confusion with the institutional clusters.

Clusters of FOEs

Cluster A contains broad fields of education where the patterns of rates of admission and the proportions of VET award holders tend to be uniform (high to medium) in most universities. The three fields in this cluster are: Management and Commerce (FOE 08); Creative Arts (FOE 10); and Health (FOE 06). In this support document we analyse patterns of participation in Management and Commerce (FOE 08), to inform our understanding of the admission of VET award-holders in fields of education within Cluster A.

Two outliers were identified among broad fields of education - Education (FOE 07) and Information Technology (FOE 02). These two fields have the higher rates of admission of VET award-holders and are taught in most universities. However the admission rates of VET award-holders in these two fields of study tend to vary within the one institution (e.g. one high and one medium to low), so these two fields are identified as outliers to Cluster A. We examine patterns of participation in Education (FOE 07), to explore this issue, within this support document.

The second cluster (Cluster B) contains two fields of education which have moderate to low percentage means of students admitted on the basis of a VET award - Engineering and Related Technologies (FOE 03) and Architecture and Building (FOE 04). Several universities do not offer undergraduate courses in these fields and the admission rates vary quite significantly between universities. We therefore explore the field of Engineering and Related Technologies in this support document.

Fields of education in the third cluster (Cluster C) have the lowest rates of admission of students on the basis of a VET award. While all universities offer courses in Society and Culture (FOE 8) and Natural and Physical Sciences (FOE 01), only 22 universities offer courses in Agriculture, Environmental and Related Studies (FOE 5) as we illustrate in the analysis of this field in this support document.

⁶ The dendrogram produced through the clustering procedure is provided in Appendix A.4 of the support document.

Discussion

Combining the information about both the institutional and FOE clusters provides a clearer picture of the patterns of admission of VET award-holders within and between clusters of universities. We now present data on rates of admission of VET award holders by broad field of education for each of the universities in each institutional cluster. Within each institutional cluster, universities are listed in order of their rate of admission on the basis of a VET award. The shaded cells indicate that the university's rate of admission of VET award-holders is above the sector average. Blank cells indicate that no enrolments are recorded against this field of education.

Table 5 Cluster 1 universities' rates of admission on the basis of a VET award by broad field of education (FOE) Cluster, Australia 2010

Broad Field of Education (VET award-holders admission rate)	Field of Education Clusters										All (10%)
	Cluster A			Outliers		Cluster B		Cluster C			
	FOE08 (13%)	FOE10 (8%)	FOE06 (12%)	FOE07 (15%)	FOE02 (14%)	FOE03 (7%)	FOE04 (10%)	FOE05 (6%)	FOE09 (8%)	FOE01 (4%)	
Charles Sturt University	32%	11%	16%	21%	62%			17%	38%	16%	26%
RMIT University	24%	26%	18%	20%	9%	22%	15%	21%	21%	11%	21%
Swinburne University of Technology	28%	24%	54%		23%	11%	19%		15%	19%	20%
University of Western Sydney	23%	10%	16%	30%	26%	15%	23%		17%	10%	17%
Victoria University of Technology	13%	13%	28%	24%	23%	13%			12%	12%	16%
Edith Cowan University	28%	11%	20%	13%	33%	14%			15%	7%	16%
Deakin University	17%	11%	18%	28%	17%	20%	28%	14%	11%	6%	16%
Total Cluster 1	23%	17%	19%	21%	24%	16%	19%	17%	20%	10%	19%

Notes: Shaded areas denote instances where the percentage admission is above the sector average. Blank cells indicate the university offered no courses in this FOE. A score of 0% may indicate that total enrolments are less than 10. Table excludes non-award and mixed field.

As illustrated in Table 5, most of the universities in Cluster 1 admit VET award-holders in proportions well above the sector average in each broad field of education where they have undergraduate programs. In contrast to Cluster 1 universities, rates of admission on the basis of a VET award within the universities that comprise Cluster 2 are more variable. This is indicated by the fewer number of shaded cells for Cluster 2 universities, as shown in Table 6.

Table 6 Cluster 2 universities' rates of admission on the basis of a VET award by broad field of education (FOE), Australia 2010

Broad Field of Education (VET award-holders admission rate)	Field of Education Clusters										All (10%)
	Cluster A			Outliers		Cluster B		Cluster C			
	FOE08 (13%)	FOE10 (8%)	FOE06 (12%)	FOE07 (15%)	FOE02 (14%)	FOE03 (7%)	FOE04 (10%)	FOE05 (6%)	FOE09 (8%)	FOE01 (4%)	
La Trobe University	23%	11%	12%	19%	19%	0%		0%	12%	6%	15%
University of Canberra	19%	13%	21%	15%	19%		21%	0%	7%	7%	13%
Charles Darwin University	15%	0%	31%	12%	0%	18%	0%	0%	11%	0%	12%
University of South Australia	16%	6%	14%	10%	19%	11%	8%	0%	14%	0%	12%
University of Ballarat	7%	17%	16%	20%	6%	0%			16%	10%	11%
University of Tasmania	8%	0%	17%	28%	4%	13%	13%	22%	9%	8%	11%
Griffith University	17%	9%	11%	17%	24%	6%	6%	0%	8%	4%	11%
University of Wollongong	17%	8%	15%	17%	11%	9%		0%	9%	0%	11%
Central Queensland University	21%	7%	15%	10%	13%	12%	0%		7%	0%	11%
Murdoch University	8%	7%	18%	23%	11%	16%	15%		8%	10%	10%
Australian Catholic University	12%	11%	11%	13%			0%		8%		10%
The University of Newcastle	16%	14%	18%	10%	32%	17%	20%	0%	3%	4%	10%
The University of New England	8%	9%	19%	17%	22%	0%	0%	0%	5%	7%	9%
Southern Cross University	7%	6%	10%	7%	18%			10%	12%	0%	8%
University of Technology, Sydney	8%	3%	21%	8%	9%	10%	4%		2%	6%	8%
QLD University of Technology	8%	4%	8%	7%	16%	7%	7%		5%	4%	7%
Total Cluster 2	14%	7%	14%	14%	14%	10%	10%	4%	7%	5%	10%

Notes: Shaded areas denote instances where the percentage admission is above the sector average. Blank cells indicate the university offered no courses in this FOE. A score of 0% may indicate that total enrolments are less than 10. Table excludes non-award and mixed field.

When we compare the rates of admission of VET award-holders in Cluster 1 and Cluster 2 institutions by field of education through Table 5 and Table 6, it is clear that the provision of VET-HE pathways in Cluster 2 universities is more haphazard than in Cluster 1. Whereas Cluster 1 institutions have consistently high rates of admission of VET award-holders in most fields, Cluster 2 universities do not. In some instances, this is because Cluster 2 universities do not offer courses in those fields (which is indicated by a blank cell). It is also possible that the number of total commencements in some fields of education are quite small and therefore the data are less reliable.

The patterns of admission on the basis of a VET award for the two dual-sector institutions in Cluster 2 - Charles Darwin University and the University of Ballarat - are similarly haphazard as other universities in the cluster.

Table 7 Cluster 3 universities rates of admission on the basis of a VET award by broad field of education (FOE), Australia 2010

Broad Field of Education (FOE) (VET award-holders admission rate)	Field of Education Clusters										All (10%)
	Cluster A			Outliers		Cluster B		Cluster C			
	FOE08 (13%)	FOE10 (8%)	FOE06 (12%)	FOE07 (15%)	FOE02 (14%)	FOE03 (7%)	FOE04 (10%)	FOE05 (6%)	FOE09 (8%)	FOE01 (4%)	
Flinders University of South Australia	15%	0%	7%	5%	0%	0%		0%	9%	5%	7%
University of Southern Queensland	6%	1%	13%	12%	0%	14%			8%	4%	6%
The Australian National University	11%	0%	0%		0%	5%		0%	5%	5%	5%
James Cook University	4%	6%	5%	15%	0%	0%	0%		7%	0%	4%
University of the Sunshine Coast	7%	6%	8%	8%	0%	0%	0%	0%	9%	0%	4%
Monash University	2%	7%	10%	24%	8%	0%	0%	0%	3%	1%	4%
Macquarie University	4%	8%	0%	8%	5%	0%	0%	0%	3%	3%	4%
Curtin University of Technology	2%	2%	6%	8%	0%	2%	5%	0%	4%	4%	3%
The University of New South Wales	1%	8%	0%	3%	0%	1%	10%	0%	3%	1%	3%
The University of Sydney	2%	0%	1%	3%	9%	2%	7%	0%	2%	1%	2%
The University of Adelaide	2%	0%	0%	0%	0%	0%	0%	7%	3%	0%	1%
The University of Melbourne	1%	9%	0%			0%	0%	2%	1%	0%	1%
The University of Queensland	1%	2%	1%	4%	0%	0%	0%	3%	2%	1%	1%
The University of Western Australia	0%	0%	0%	0%	0%	0%	5%	0%	0%	0%	0%
Total Cluster 3	3%	4%	4%	9%	3%	2%	5%	3%	3%	1%	3%

Notes: Shaded areas denote instances where the percentage admission is above the sector average. Blank cells indicate the university offered no courses in this FOE. A score of 0% may indicate that total enrolments are less than 10. Table excludes non-award and mixed field.

Universities in Cluster 3 report consistently low rates of admission on the basis of a VET award in over half of all the FOEs in which they offer undergraduate programs (see Table 7). As indicated by the shaded cells, seven universities in Cluster 3 outperform the sector average in one or more broad fields of education, however the other seven universities admit VET award-holders at rates below the sector average in all fields of education.

Secondary school admissions

In response to a suggestion by an anonymous reviewer that the differences between universities in admitting students on the basis of a VET award could be due to considerations of a university's 'competitive position' in terms of being able to attract first preferences from secondary school completers, we compiled data on universities' admission rates on the basis of secondary school completion, provided in Appendix A.6.

An inverse relationship between a university's rate of admission on the basis of a VET award and its rate of admission on the basis of secondary school completion is not apparent in all universities. One third of Australian universities admit both VET award-holders and secondary school completers at similar rates - either above or below the national average for each group.

In Australia, school leavers now comprise less than one half (45%) of all students commencing undergraduate programs in publicly funded universities. The proportion of students admitted on the basis of secondary education differs between universities, as does the proportion of students admitted

on the basis of a VET award. Among the 13 universities which admit a higher proportion of secondary students than the national average (45 per cent or above), three universities (Australian Catholic University, University of South Australia and La Trobe University) also admit VET award holders in proportions above the national rate.

Among the 24 universities that admit relatively low proportions of school leavers (below 45%), seven of these institutions also admit relatively low proportions of VET award-holders to their undergraduate programs. James Cook University, the University of the Sunshine Coast, Macquarie University, Curtin University, University of Southern Queensland, Southern Cross University and the University of New England all admit both school leavers and VET award holders at rates below the national rate for each group.

The data indicate that while there is some evidence of an inverse relationship between universities' admission rates of school leavers and VET award-holders in two-thirds of Australian universities, it is not the case for all institutions. Ten universities defy this trend by having either below-average or above-average admission rates of both groups. These data are illustrated in the chart provided in Appendix A.6.

VET-HE pathways by field of education

There is considerable variation in rates of admission of VET award-holders by field of education. The following four sections provide an analysis of admission rates in four selected fields:

- Management and Commerce (FOE 08)
- Education (FOE 09)
- Engineering and Related Technologies (FOE 03)
- Agriculture, Environmental and Related Studies (FOE 05)

These four broad fields were chosen for detailed study because they represent each of the three Clusters of Fields of Education (FOEs) that emerged from the Cluster analysis detailed in the previous section. Management and Commerce is in Cluster A, Education is one of the two outliers, Engineering and Related Technologies is in Cluster B and Agriculture, Environmental and Related Studies is in Cluster C.

1. Management and Commerce (FOE 8)

Management and Commerce has the largest number of undergraduate commencements of all fields of education, with 22.9 per cent of the total student intake in 2010. As a broad field under the ASCED categorisation, Management and Commerce (FOE 8) comprises seven narrow sub-fields. Data on total commencements and the number of students admitted on the basis of a VET award is provided for six of these sub-fields in Table 8. Data for Office Studies (FOE 0809) is included in “Other Management and Commerce”.

Table 8 VET award-holders and all undergraduate commencements in Management and Commerce, (FOE 08), by narrow sub-field, Australia 2010

Narrow sub-field	VET award-holders		All undergraduate commencements		VET award-holders as a proportion of total U/G commencements
	Students	% total	Students	% total	
0801 Accounting	1 326	14.3	8 421	11.8	15.7
0803 Business and Management	4 386	47.2	35 952	50.2	12.2
0805 Sales and Marketing	993	10.7	4 385	6.1	22.6
0807 Tourism	176	1.9	609	0.8	28.9
0811 Banking, Finance & Related Fields	665	7.2	4 441	6.2	15.0
0899 Other Management and Commerce	1 784	19.2	19 918	27.8	9.0
Total Management and Commerce	9 288	100.0	71 650	100.0	13.0

Source: DEEWR (2010) Higher Education Statistics Collection. Unpublished data

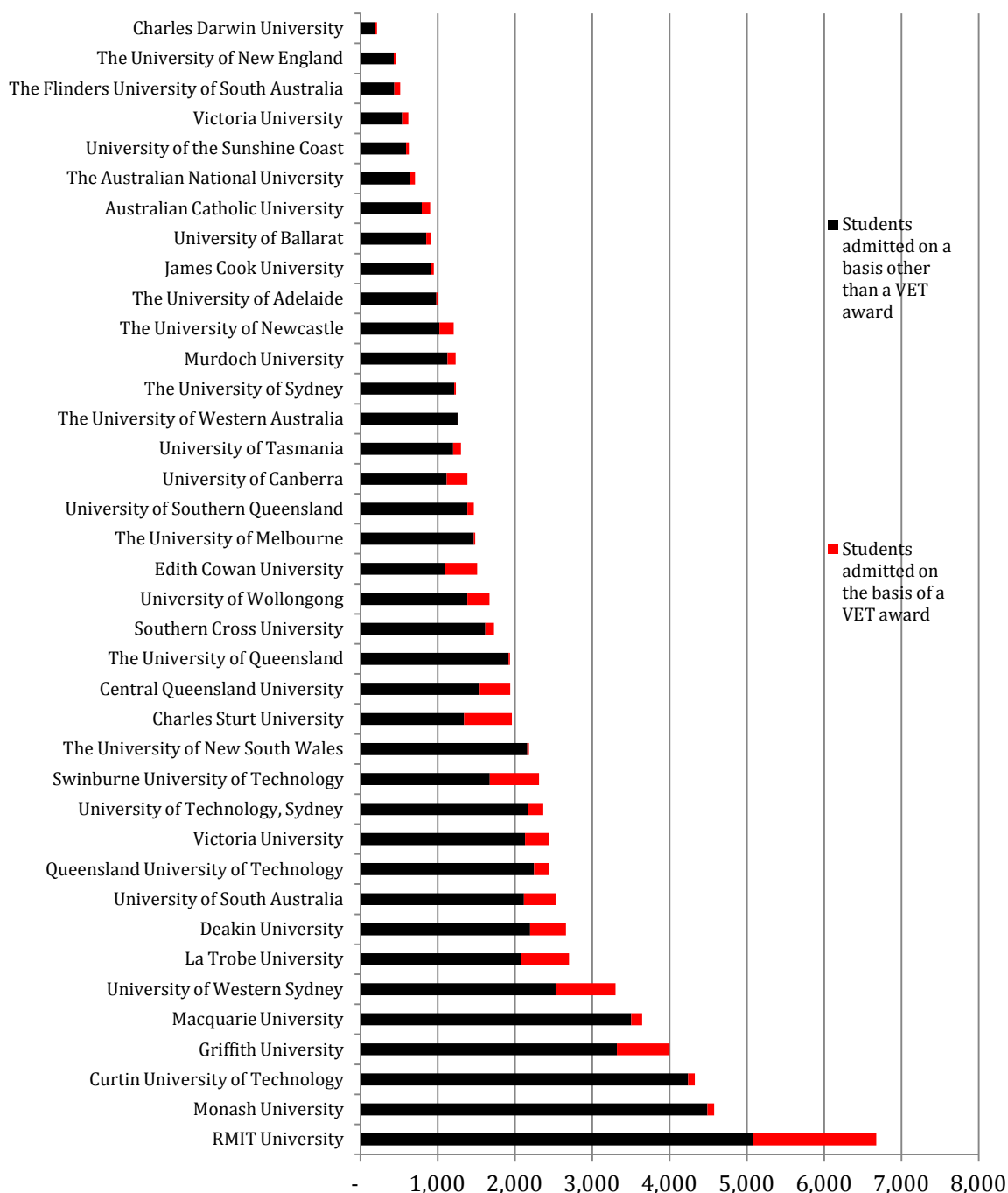
Notes: Due to the coding of some students in combined programs to two fields of education, the totals can be higher than the total number of students and the size of the difference varies between fields of education. The sub-field of “Office Studies” is excluded and reported as “Other Management and Commerce”

As shown in Table 8, half of all commencing students in Management and Commerce studies are in the sub-field of Business and Management. The next largest sub-field (apart from “Other”) is Accounting. In both of these sub-fields, VET award-holders are enrolled at above-average rates. (As reported in the main report, the average admission of VET award-holders across all broad fields of education in Australian universities is 10%).

Variation between institutions

All universities report undergraduate admissions in the field of Management and Commerce, as shown in Figure 3. Many of the large providers in this field admit VET award-holders in high proportions, such as RMIT University (24%), Griffith University (17%), University of Western Sydney (23%), La Trobe University (23%). However, several large providers also admit negligible numbers of VET award-holders: Monash University (2%), Curtin University (2%) and Macquarie University (4%).

Figure 3 Number of students commencing undergraduate studies in Management and Commerce by basis of admission by university, Australia 2010



Source: DEEWR (2010) Higher Education Statistics Collection. Unpublished data

Notes Due to the coding of some students in combined programs to two fields of education, the totals can be higher than the total number of students and the size of the difference varies between fields of education.

Nine universities admit over 400 VET award-holders each in this broad field, and together, these institutions are responsible for admitting over two-thirds (6, 219 students) of the total number of VET award-holders in the field of Management and Commerce. In contrast, the nine poorest performing universities (in terms of the proportions of students they admit on the basis of a VET award) admit a mere 5 per cent (423 students) of all VET award-holders. Both sets of universities each cater for 30 per cent of all students admitted on other bases.

Differences between sub-fields

To assess the extent to which the observed differences between universities in rates of admission of VET award-holders might be the product of discipline-mix, rather than institutional policies and practices, we examine the differences in rates of admission of VET award-holders to universities within sub-fields.

Accounting

One in ten students in the broad field of management and commerce are in the sub-field of accounting. Of the 8 421 students commencing Accounting in 2010, 1 326 or 15.7 per cent were admitted on the basis of a VET award. Twenty-one universities enrol commencing students in units of study classified as accounting, as shown in Table 9.

Table 9 VET award-holders and all undergraduate commencements in Accounting (FOE 0801), by HE provider Australia 2010

Institution (Cluster)	All undergraduate commencements		VET award-holders	
	Students	% total	Students	% U/G
Macquarie University (3)	1847	21.9	93	5.0
University of South Australia (2)	891	10.6	158	17.7
RMIT University (1)	861	10.2	247	28.7
Central Queensland University (2)	701	8.3	128	18.3
Victoria University (1)	658	7.8	79	12.0
La Trobe University (2)	621	7.4	88	14.2
Queensland University of Technology (2)	490	5.8	44	9.0
Swinburne University of Technology (1)	463	5.5	184	39.7
Charles Sturt University (1)	445	5.3	190	42.7
Monash University (3)	410	4.9	0	0.0
University of Wollongong (2)	300	3.6	85	28.3
The University of Adelaide (3)	202	2.4	0	0.0
The University of New England (2)	123	1.5	<10	n.a
The University of Newcastle (2)	95	1.1	<10	n.a
Charles Darwin University (2)	79	0.9	<10	n.a
University of the Sunshine Coast (2)	78	0.9	<10	n.a
University of Southern Queensland (3)	49	0.6	<10	n.a
University of Technology, Sydney (2)	36	0.4	0	0.0
Australian Catholic University (2)	33	0.4	0	0.0
Curtin University of Technology (3)	24	0.3	0	0.0
Murdoch University (2)	10	0.1	<10	n.a
TOTAL	8 421	100.0	1 326	15.7

Source: DEEWR (2010) Higher Education Statistics Collection. Unpublished data

Notes: Due to the coding of some students in combined programs to two fields of education, the totals can be higher than the total number of students and the size of the difference varies between fields of education.

As shown in Table 9, most of the large providers in the accounting sub-field admit relatively high proportions of students on the basis of a VET award. The exceptions are Macquarie University and the Queensland University of Technology, which admit VET award-holders at relatively low rates for this sub-field.

Business and Management

Business and Management (FOE 0803) courses account for 47.2 per cent of all undergraduate commencements in Management and Commerce (FOE 08) and the admission rate of VET award-holders in this sub-field (12.2%) influences the average admission rate of the field of Management and Commerce as a whole (13%), as shown in Table 10.

Thirty-six universities report undergraduate commencements in this sub-field, but 16 institutions account for 80 per cent of all enrolments and they are listed in Table 10.

Table 10 VET award-holders and all undergraduate commencements in Business and Management (FOE 0803), by the largest 16 HE providers, Australia 2010

Institution (Cluster)	All undergraduate commencements		VET award-holders	
	Students	% total	Students	% U/G
Curtin University of Technology (3)	1847	11.8	88	2.1
University of Western Sydney (1)	891	8.9	755	23.4
Monash University (3)	861	8.8	75	2.4
Griffith University (2)	701	7.8	498	17.6
University of Technology, Sydney (2)	658	5.9	190	9.0
RMIT University (1)	621	5.0	487	27.0
The University of Melbourne (3)	490	4.1	17	1.1
Southern Cross University (2)	463	4.1	93	6.3
Charles Sturt University (1)	445	3.5	364	29.2
Swinburne University of Technology (1)	410	3.3	298	25.1
The University of Queensland (3)	300	3.1	20	1.8
Queensland University of Technology (2)	202	3.1	101	9.1
Central Queensland University (2)	123	2.9	250	23.9
Macquarie University (3)	95	2.9	37	3.5
James Cook University (3)	79	2.6	35	3.7
University of Ballarat (2)	78	2.4	63	7.3
Other 20 universities	7 068	19.6	1 028	14.5
TOTAL	35 952	100.0	4 386	12.2

Source: DEEWR (2010) Higher Education Statistics Collection. Unpublished data

Notes: Due to the coding of some students in combined programs to two fields of education, the totals can be higher than the total number of students and the size of the difference varies between fields of education.

As shown in Table 10, there is a polarisation between the larger providers in terms of admissions on the basis of a VET award. Curtin University, for example, enrolls twice as many students as any other provider but admits only 2.1 per cent on the basis of a VET award. Several other large providers admit relatively few VET award-holders. However the majority of providers admit relatively high proportions of VET award-holders in this sub-field.

As shown in Table 10, the four Cluster 1 providers admit VET award-holders at rates over 20 per cent, while the six Cluster 3 institutions admit VET award-holders at rates below 4 per cent.

Sales and Marketing

Ten per cent of undergraduate commencements in Management and Commerce are enrolled in units classified as Sales and Marketing. The admission rates of VET award-holders to Sales and Marketing units are relatively high at 22.6 per cent.

Nineteen universities report undergraduate commencements in this sub-field, however nine of these institutions account for 83 per cent of total enrolments in the sub-field, as indicated in Table 11.

Table 11 VET award-holders and all undergraduate commencements in Sales and Marketing (FOE 0805), by the largest nine HE providers, Australia 2010

Institution (Cluster)	All undergraduate commencements		VET award-holders	
	Students	% total	Students	% U/G
RMIT University (1)	1065	20.8	518	48.6
Victoria University (1)	573	11.2	72	12.6
University of South Australia (2)	543	10.6	66	12.2
Queensland University of Technology (2)	340	6.6	28	8.2
University of Canberra (2)	304	5.9	56	18.4
University of Wollongong (2)	238	4.6	29	12.2
Swinburne University of Technology (1)	226	4.4	82	36.3
Monash University (3)	199	3.9	5	2.5
Charles Sturt University (1)	156	3.0	35	22.4
Other 10 universities	741	16.9	102	13.8
TOTAL	4 385	100.0	993	22.6

Source: DEEWR (2010) Higher Education Statistics Collection. Unpublished data

Notes: Due to the coding of some students in combined programs to two fields of education, the totals can be higher than the total number of students and the size of the difference varies between fields of education.

The sub-field of Sales and Marketing illustrates the influence of institutional cluster on VET-HE pathways. In this sub-field, which represents about 10 per cent of all commencements in Management and Commerce, 22.6 per cent of students are admitted on the basis of a VET award. While 19 institutions report undergraduate intakes in this sub-field, nine universities account for 83 per cent of total enrolments. In contrast to Business and Management, where Cluster 1 universities accounted for only five per cent of total enrolments, in Sales and Marketing, 46 per cent of all commencing students are enrolled in Cluster 1 institutions (Table 11). RMIT University is the largest provider with more than double the number of students of any other university and 48 per cent of its students are admitted on the basis of a VET award. The influence of Cluster 1 and 2 providers is largely responsible for the high admission rates of VET award-holders in the sub-field of Sales and Marketing.

Tourism

Tourism is the smallest sub-field and accounts for less than two per cent of undergraduate commencements. As shown in Table 12, two Cluster 2 institutions account for 80 per cent of enrolments in this field, and in one of these universities, over half of the commencing students are admitted on the basis of a VET award. This contributes significantly to the relatively high admission rate for VET award holders in this small sub-field.

Table 12 VET award-holders and all undergraduate commencements in Tourism (FOE 0807), by HE provider, Australia 2010

Institution (Cluster)	All undergraduate commencements		VET award-holders	
	Students	% total	Students	% U/G
La Trobe University (2)	259	39.7	146	56.4
Southern Cross University (2)	258	39.6	20	7.8
Victoria University (1)	53	8.1	15	28.3
The Flinders University of South Australia (3)	42	6.4	<10	n.a
Charles Sturt University (1)	25	3.8	<10	n.a
Murdoch University (3)	15	2.3	<10	n.a
TOTAL	609	100.0	176	28.9

Source: DEEWR (2010) Higher Education Statistics Collection. Unpublished data

Notes: Due to the coding of some students in combined programs to two fields of education, the totals can be higher than the total number of students and the size of the difference varies between fields of education.

Banking, Finance and Related Fields

Banking, Finance and Related Fields is the second largest sub-field in the broad field of Management and Commerce and has a relatively high rate of admission of VET award-holders of 15 per cent, as illustrated in Table 13.

Table 13 VET award-holders and all undergraduate commencements in Banking, Finance and Related Fields (FOE 0811), by the largest 16 HE providers, Australia 2010

Institution (Cluster)	All undergraduate commencements		VET award-holders	
	Students	% total	Students	% U/G
RMIT University (1)	754	17.0	297	39.4
Macquarie University (3)	653	14.7	<10	n.a
Victoria University (1)	541	12.2	56	10.4
Monash University (3)	415	9.3	<10	n.a
University of South Australia (2)	394	8.9	49	12.4
Swinburne University of Technology (1)	377	8.5	57	15.1
La Trobe University (2)	305	6.9	76	24.9
The University of Adelaide (3)	229	5.2	<10	n.a
The Australian National University (3)	204	4.6	29	14.2
University of Wollongong (2)	167	3.8	24	14.4
Queensland University of Technology (2)	130	2.9	18	13.8
University of Western Sydney (1)	77	1.7	17	22.1
Charles Sturt University (1)	75	1.7	22	29.3
Central Queensland University (2)	65	1.5	<10	n.a
University of the Sunshine Coast (2)	25	0.6	0	0.0
Curtin University of Technology (3)	20	0.5	0	0.0
TOTAL	4 441	100.0	655	15.0

Source: DEEWR (2010) Higher Education Statistics Collection. Unpublished data

Notes: Due to the coding of some students in combined programs to two fields of education, the totals can be higher than the total number of students and the size of the difference varies between fields of education.

As indicated in Table 13, the largest provider in this field - RMIT University - admits VET award-holders at a relatively high rate of 39.4 per cent as do the majority of the other providers. Macquarie University, Monash University and Adelaide University are exceptional in that they are large providers yet admit no students on the basis of a VET award

Other Management and Commerce

Almost 20 per cent of undergraduate commencements are classified as “Other Management and Commerce”, including the sub-field of Office Studies (0809). Twenty-nine universities enrol students in this category but 13 universities account for over 80 per cent of all enrolments, as indicated in Table 14.

Table 14 VET award-holders and all undergraduate commencements in Other Management and Commerce (FOE 0899), by the largest 13 HE providers, Australia 2010

Institution (Cluster)	All undergraduate commencements		VET award-holders	
	Students	% total	Students	% U/G
Deakin University (1)	2236	11.2	379	16.9
RMIT University (1)	2189	11.0	46	2.1
The University of New South Wales (3)	1857	9.3	14	0.8
The University of Western Australia (3)	1262	6.3	5	0.4
Edith Cowan University (1)	1206	6.1	391	32.4
Griffith University (2)	1175	5.9	183	15.6
University of Tasmania (2)	1128	5.7	67	5.9
The University of Sydney (3)	1128	5.7	20	1.8
Murdoch University (2)	1113	5.6	90	8.1
La Trobe University (2)	847	4.3	146	17.2
The University of Queensland (3)	811	4.1	0	0.0
University of Southern Queensland (3)	732	3.7	21	2.9
University of Wollongong (2)	602	3.0	66	11.0
Other 16 universities	3 632	18.2	356	9.8
TOTAL	19 918	100.0	1 784	9.0

Source: DEEWR (2010) Higher Education Statistics Collection. Unpublished data

Notes: Due to the coding of some students in combined programs to two fields of education, the totals can be higher than the total number of students and the size of the difference varies between fields of education.

As shown in Table 14, there is polarisation between the larger providers in terms of admissions on the basis of a VET award, with RMIT reporting unusually low rates of admission for VET award-holders in this sub-field. Deakin University, Edith Cowan University, Griffith University and La Trobe University admit relatively high proportions of VET award-holders in this sub-field.

Summary

All universities are involved in providing courses within the Management and Commerce field.

There is a polarised pattern of admissions on the basis of a VET award between the larger providers in this field, which is generally consistent between sub-fields. One fifth of all commencements are classified as “Other Management and Commerce” and this sub-field reports the lowest level of admission of students on the basis of a VET award in the field.

2. Education (FOE 7)

As a broad field under the ASCED categorisation, Education (FOE 7) comprises three narrow sub-fields (4-digit) and 13 detailed sub-fields (6-digit), as shown in Table 15. Some of the detailed sub-fields within the narrow field of Teacher Education (0701) will be used for analysis in this study. The detailed sub-fields of Teacher Education: Early Childhood (070101) and Teacher Education: Primary (070103) are chosen for analysis because they account for high proportions of commencing students in the broad field of education and represent specialised and differentiated professional occupations. Thus the data are presented at the six-digit ASCED level.

Table 15 Narrow and Detailed sub-fields within the Broad Field of Education 07: Education

Narrow	Detailed	Name of sub-field
0701		TEACHER EDUCATION
	070101	Teacher Education: Early Childhood
	070103	Teacher Education: Primary
	070105	Teacher Education: Secondary
	070107	Teacher -Librarianship
	070109	Teacher Education: Vocational Education and Training
	070111	Teacher Education: Higher Education
	070103	Teacher Education: Special Education
	070105	English as a Second Language Teaching
	070107	Nursing Education Teacher Training
0703		CURRICULUM AND EDUCATION STUDIES
	070301	Curriculum Studies
	070303	Education Studies
0799		OTHER EDUCATION
	079999	Education, not elsewhere classified

Source: Australian Bureau of Statistics (2001) Australian Standard Classification of Education (ASCED)

While the admission of VET award-holders in the broad field of Education is 14.9 per cent, this is influenced by the sub-field of Early Childhood Teacher Education, which enrolls VET award-holders at almost three times the rate of other sub-fields (30.5%), as shown in Table 16.

Table 16 VET award-holders and all undergraduate commencements in Education (FOE 07), by detailed sub-field, Australia 2010

Detailed Sub-field of Education	VET award-holders		All undergraduate commencements		VET award-holders as a proportion of total U/G commencements
	Students	% total	Students	% total	
Teacher Education: Early Childhood	1,252	35.8	4,097	17.4	30.6
Teacher Education: Primary	839	24.0	7,283	31.1	11.5
<i>Sub-total: EC + Primary</i>	<i>2,091</i>	<i>59.8</i>	<i>11,380</i>	<i>48.6</i>	<i>18.4</i>
Other Education sub-fields	1,403	40.2	12,011	51.4	11.7
Total Education	3,494	100.0	23,391	100.0	14.9

Source: DEEWR (2010) Higher Education Statistics Collection. Unpublished data

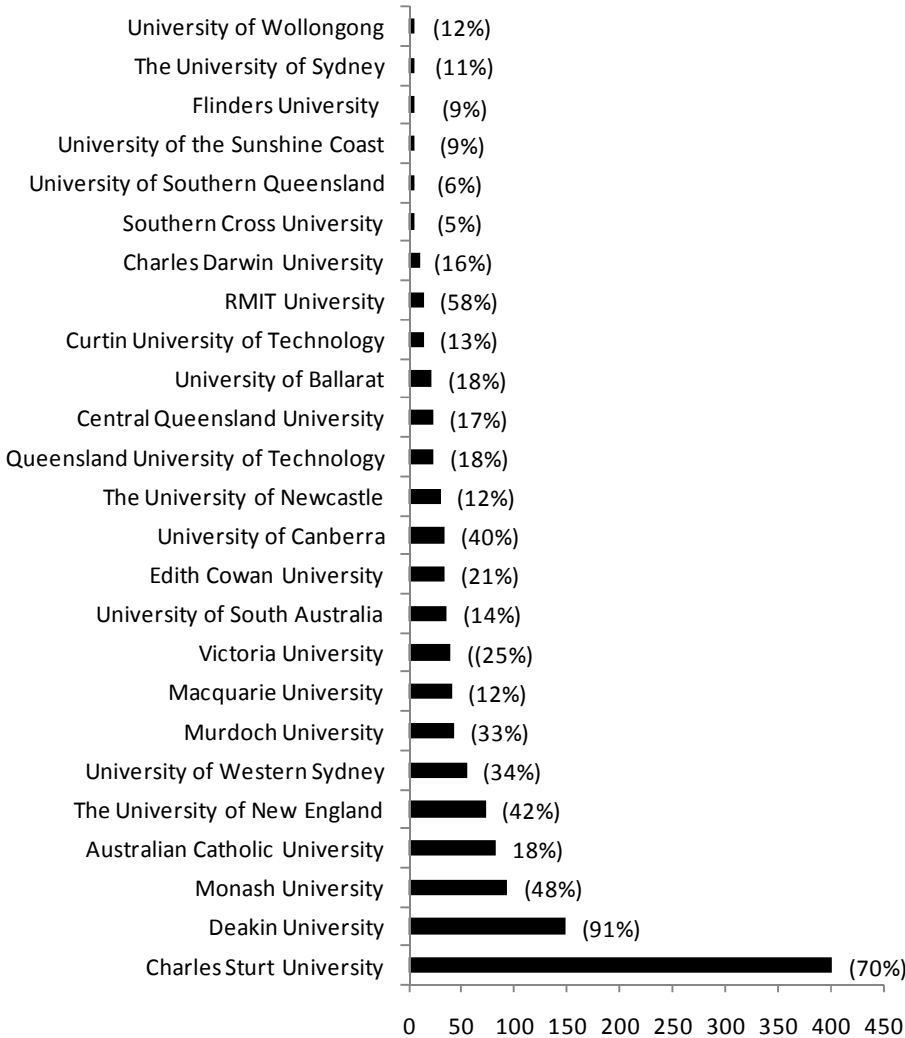
Notes: Due to the coding of some students in combined programs to two fields of education, the totals can be higher than the total number of students and the size of the difference varies between fields of education.

As shown in Table 16, Early Childhood Education accounts for over 35 per cent of VET award-holders but only 18 per cent of all undergraduate commencements within the broad Education field. Early Childhood Education and Primary Education together account for 60 per cent of VET award-holders. Therefore these two detailed sub-fields will be the focus of our analysis.

Variation between institutions

Twenty-five publicly funded universities offer undergraduate programs in early childhood teacher education, yet the distribution of VET-HE pathways between institutions is extremely uneven. Students admitted on the basis of a VET award are indicated along with VET award-holders as a proportion of total commencements by institution in Figure 4.

Figure 4 Number of students commencing undergraduate studies in Early Childhood Teacher Education who were admitted on the basis of a VET award (and VET award-holders as a proportion of all commencements, in parentheses) by HE institution, Australia 2010



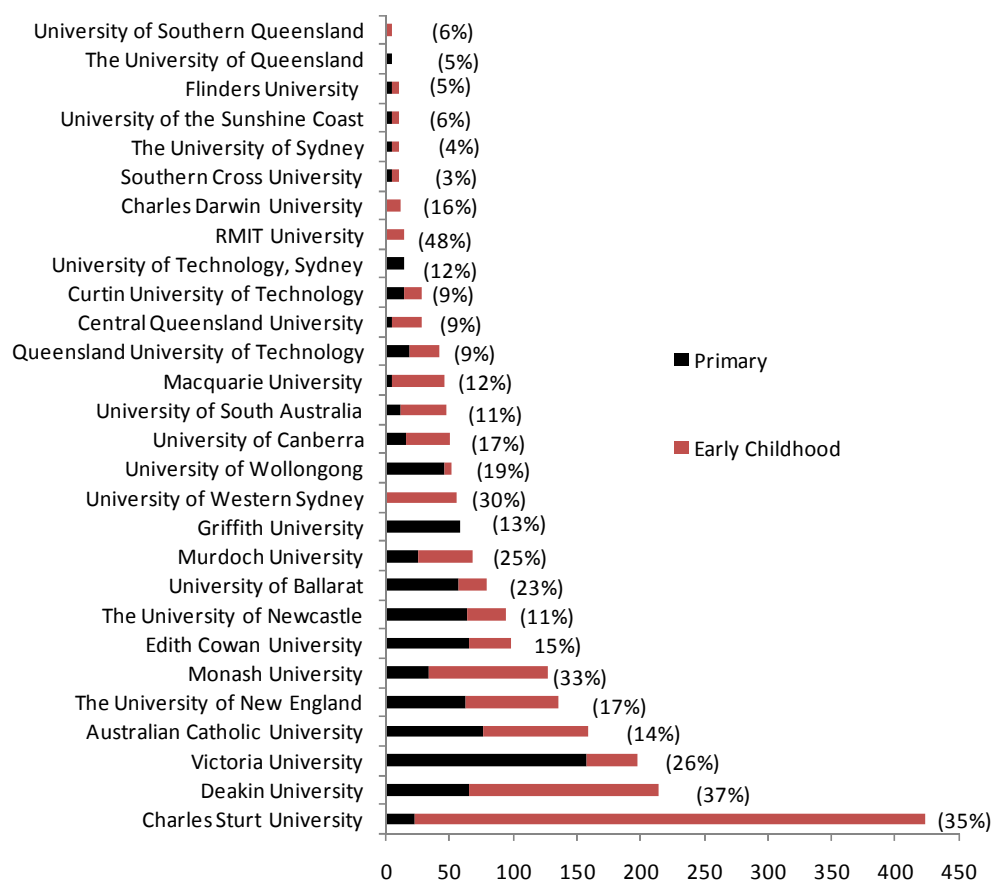
Source: DEEWR (2010) Higher Education Statistics Collection. Unpublished data
 Notes Due to the coding of some students in combined programs to two fields of education, the totals can be higher than the total number of students and the size of the difference varies between fields of education.

As shown in Figure 4, in the universities which admit the highest number of VET award-holders in Early Childhood Education, enrolments of VET award-holders also represent a high proportion of total commencements in this discipline. In Charles Sturt University, for example, 70 per cent of commencements in its Early Childhood teacher education program are admitted on the basis of a VET award. At Deakin University 149 VET award-holders represent 91 per cent of all commencements and at Monash University 94 VET award-holders account for 48 per cent of all commencements in Early Childhood programs.

Interestingly, the universities which perform well in providing pathways for VET award-holders in Early Childhood Education are not necessarily the institutions that provide consistently strong pathways for VET award-holders in all fields of study. While Charles Sturt University, Deakin University and the Australian Catholic University enrol VET award-holders in all fields at above-average rates, Monash University and the University of New England both admit VET award-holders at rates below the national average in other fields, yet contribute significantly to the provision of VET-HE pathways in Early Childhood Education.

VET-HE Pathways in Early Childhood and Primary Teacher Education

Figure 5 Number of students commencing undergraduate studies in Primary and Early Childhood Teacher Education who were admitted on the basis of a VET award (and VET award-holders as a proportion of all commencements, in parentheses) by HE institution, Australia 2010



Source: DEEWR (2010) Higher Education Statistics Collection. Unpublished data

Notes: Due to the coding of some students in combined programs to two fields of education, the totals can be higher than the total number of students and the size of the difference varies between fields of education.

In some institutions, early childhood teacher education is delivered within primary teaching programs, and together these two sub-fields account for almost half of all undergraduate commencements in the field of Education, as shown in Figure 5. When taken together, VET award-holders comprise 11.5 per cent of all primary teaching commencements in Australia and 18.4 per cent of total enrolments in Primary and Early Childhood teacher education combined (Table 16).

Figure 5 illustrates institutions' enrolments of VET award-holders in primary and early childhood teaching programs combined as well as reporting VET award-holders as a proportion of total enrolments in primary and early childhood programs (in parentheses). In six institutions - University of Southern Queensland, University of Queensland, Flinders University, University of the Sunshine Coast, University of Sydney and Southern Cross University - VET award-holders are a negligible proportion (3-6%) of the institution's total enrolments in early childhood and primary education programs. In contrast, all of the remaining 25 institutions offering undergraduate primary and/or early childhood programs enrol VET award-holders at just below (9%), above, or well above the national average rate of 10 per cent.

Reaching a critical mass

As shown in Figure 4 and Figure 5, the majority of universities have sufficiently large intakes of VET award-holders (25 + students) commencing in their primary or early childhood programs to provide a critical mass of students holding a VET award within their commencing cohort. Having relatively high numbers of VET award-holders commencing undergraduate programs in one field of study can assist course convenors to deliver customised programs of study that enhance the learning outcomes of this group. Such a customised program is offered at Monash University - the Bachelor of Early Childhood Studies - and we were advised in an interview with a course convenor that the completion rates for this course are comparable to the completion rates of students admitted to similar courses on another basis.

Multiple partners in the early childhood education and care industry, including TAFE and HE providers, and professional associations have worked together over the past decade to revise the content of VET award courses, particularly Diploma-level studies in Children's Services, to ensure that they provide a foundation for further learning as well as for competent professional practice (CRES 2011). This work appears to have resulted in a strengthened pathway from a VET Diploma Children's Services to undergraduate degree studies in Early Childhood Education.

While 25 universities offer undergraduate programs in early childhood teacher education, a few major providers dominate provision. The three largest providers are Charles Sturt University and Deakin University (both Cluster 1) and Monash University (Cluster 3). These three providers account for 23 per cent of total commencements and admit VET award-holders at rates of 70 per cent, 91 per cent and 48 per cent respectively. Cluster 1 universities enrol 30 per cent of all students and Cluster 3 universities enrol 18 per cent. However the four Cluster 3 universities (other than Monash) admit VET award-holders at rates of 9 - 13 per cent. This suggests that the field of Early Childhood Education 'lends itself' to VET-HE pathways, in such a way that the institutional barriers to the admission of VET award-holders in some Cluster 3 institutions are less relevant.

Summary

Primary and Early Childhood enrolments account for almost half of all undergraduate commencements in Education (ASCED Field of Education 07). VET-HE pathways are particularly strong in Early Childhood Education, where 30 per cent of commencing students are admitted on the basis of a VET award. Over two-thirds of HE providers now admit VET award-holders in cohorts of 25 or more students, which gives course convenors the flexibility to customise learning programs to meet the specific needs of transitioning students.

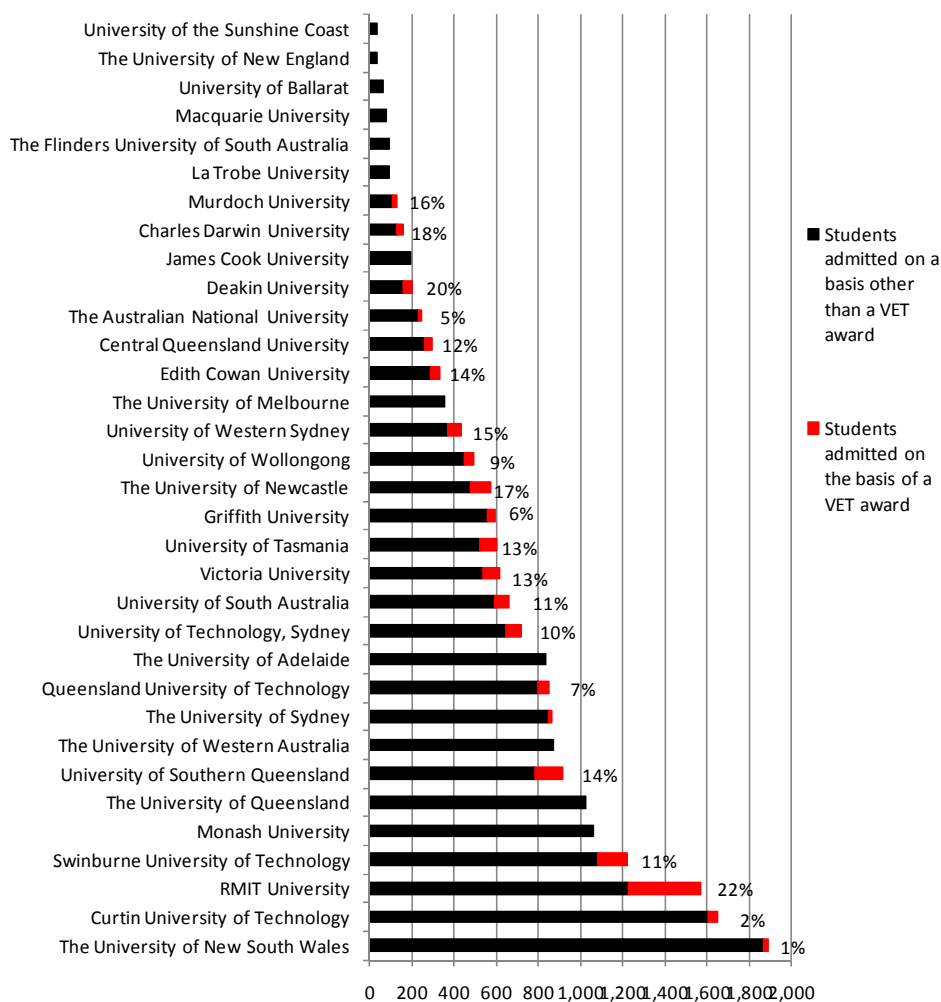
Two universities which provide strong pathways for VET award-holders in Early Childhood Education do not admit high proportions of VET award-holders in other fields of study. Monash University and the University of New England both admit VET award-holders at rates below the sector average for all fields, yet contribute significantly to the provision of VET-HE pathways in Early Childhood Education. These two universities account for over 40 per cent of undergraduate commencements in this sub-field admitted on the basis of a VET award.

3. Engineering and Related Technologies (FOE 03)

The broad field of Engineering and Related Technologies (FOE 03) has the third lowest admission rate of VET award-holders nationally (7.4%). A recent study reported less than 20 per cent of VET award-holders successfully completing a degree compared to 65 per cent for other students (King et al 2011).

Variation between institutions

Figure 6 Number of students commencing undergraduate studies in Engineering and Related Technologies including those admitted on the basis of a VET award, by HE institution, Australia 2010



Source: DEEWR (2010) Higher Education Statistics Collection. Unpublished data

Notes: Due to the coding of some students in combined programs to two fields of education, the totals can be higher than the total number of students and the size of the difference varies between fields of education.

Although there are 33 providers of courses classified as Engineering and Related Technologies, 14 universities account for over two-thirds (68%) of all undergraduate enrolments in this broad field. Analysis of the data reveals considerable variation in the admission rates of VET award-holders between institutions. The 33 universities offering undergraduate programs in Engineering and Related Technologies are listed in Figure 6, ranked according to their total undergraduate commencements in this field. The number of students admitted on the basis of a VET award is also shown.

As shown in Figure 6, with a few exceptions, the major providers of engineering programs at the undergraduate level admit very few students on the basis of a VET award, at rates of between 1 and 2 per cent. Among middle-sized providers, the admission rates of VET award-holders are considerably higher - generally above the national average. The fact that the two largest providers - Curtin University and the University of New South Wales - admit negligible numbers of students on the basis of a VET award, would contribute significantly to the overall low rate of admission of VET award-holders in the broad field of engineering.

In this field, Cluster 3 universities are the dominant providers, accounting for 54 per cent of total commencing student load, whereas Cluster 1 universities account for only 21 per cent, as shown in Table 17.

Table 17 Enrolment share and admission rates of VET award-holders by institutional clusters in Engineering and Related Technologies (FOE 03), Australia 2010

University Cluster	All undergraduates		VET award-holders	
	Students	share	Students	% of all students
Cluster 1	3556	21%	612	17.2%
Cluster 2	4288	25%	466	10.9%
Cluster 3	9050	54%	300	3.3%
Total		100.0%		7.4%

Source: DEEWR (2010) Higher Education Statistics Collection. Unpublished data

Notes: Due to the coding of some students in combined programs to two fields of education, the totals can be higher than the total number of students..

Differences between sub-fields

To assess the extent to which the observed differences between universities in rates of admission of VET award-holders might be the product of discipline-mix, rather than institutional policies and practices, we examine the differences in rates of admission of VET award-holders to universities within sub-fields. The distribution of VET award-holders and all undergraduates across the all sub-fields of Engineering is shown in Table 18.

Table 18 VET award-holders and all undergraduate commencements in Engineering and Related Technologies (FOE 03), Australia 2010

Narrow Sub-field	VET award-holders		All undergraduate commencements		VET award-holders/ U/G commencements
	Students	%	Students	% total	
0301 Manufacturing Engineering & Technology	51	3.5	185	0.9%	27.6
0303 Process and Resources Engineering	61	4.2	1 713	8.7%	3.6
0305 Automotive Engineering & Technology	18	1.2	151	0.8%	11.9
0307 Mechanical & Industrial Engineering & Technology	182	12.4	2 253	11.4%	8.1
0309 Civil Engineering	188	12.8	2 624	13.3%	7.2
0311 Geomatic Engineering	43	2.9	226	1.1%	19.0
0313 Electrical and Electronic Engineering & Technology	338	23.0	2 472	12.5%	13.7
0315 Aerospace Engineering & Technology	80	5.4	1 144	5.8%	7.0
0317 Maritime Engineering & Technology	66	4.5	254	1.3%	26.0
0399 Other Engineering and Related Technologies	442	30.1	8 764	44.3%	5.0
Total Engineering & Related Technologies	1,469	100.0	19,786	100.0%	7.4

Source: DEEWR (2010) Higher Education Statistics Collection. Unpublished data

Notes: Due to the coding of some students in combined programs to two fields of education, the totals can be higher than the total number of students and the size of the difference varies between fields of education.

As shown in Table 18, there are several large sub-fields in the broad field of engineering and a few large ones, in terms of total student enrolments.

Other Engineering and Related Technologies

Under the higher education statistics supplied for this study, 44 per cent of all undergraduate commencements in this broad field are classified under the narrow field as “Other Engineering and Related Technologies”, which means they cannot be categorised within any of the nine narrow (4-digit) sub-fields listed in Table 18.

According to the ASCED definition, the “Other Engineering and Related Technologies” category includes: Environmental Engineering; Biomedical Engineering; Fire Technology; Rail Operations; and Cleaning plus any other areas not elsewhere classified within the FOE. Some of these specialisations have seen rapid growth in recent years, which might explain the high proportion of enrolments accorded to the “Other Engineering and Related Technologies” category.

Table 19 VET award-holders and all undergraduate commencements in Other Engineering and Related Technologies (FOE 0399), by HE provider Australia 2010

Institution (Cluster)	All undergraduate commencements		VET award-holders	
	0399 Students	% total FOE 07	0399 Students	% 0399 U/G
Monash University (3)	924	87%	<10	n.a
University of Southern Queensland (3)	915	100%	130	14.2
The University of Western Australia (3)	865	99%	0	0.0
Queensland University of Technology (2)	820	96%	51	6.2
University of Technology, Sydney (2)	698	97%	73	10.5
The University of Queensland (3)	600	59%	<10	n.a
The University of New South Wales (3)	463	24%	<10	n.a
University of Western Sydney (1)	433	100%	66	15.2
Griffith University (2)	423	71%	18	4.3
The University of Melbourne (3)	349	99%	0	0.0
Victoria University (1)	283	46%	<10	n.a
Curtin University of Technology (3)	256	16%	<10	n.a
Swinburne University of Technology (1)	203	17%	26	12.8
Deakin University(1)	203	100%	40	19.7
Central Queensland University (2)	199	67%	26	13.1
James Cook University (3)	198	100%	0	0.0
University of Tasmania (2)	167	28%	<10	n.a
Charles Darwin University (2)	163	100%	29	17.8
The University of Sydney (3)	154	18%	<10	n.a
Murdoch University (2)	123	92%	21	17.1
University of Wollongong (2)	71	14%	<10	n.a
University of South Australia (2)	65	10%	<10	n.a
University of Ballarat (2)	63	100%	0	0.0
The University of Adelaide (3)	62	7%	<10	n.a
Edith Cowan University (1)	35	10%	6	17.1
The University of New England	33	100%	0	0.0
La Trobe University (2)	17	18%	<10	n.a
RMIT University (1)	14	1%	0	0.0
TOTAL	8 764	44.3	442	5.0

Source: DEEWR (2010) Higher Education Statistics Collection. Unpublished data

Notes: Due to the coding of some students in combined programs to two fields of education, the totals can be higher than the total number of students and the size of the difference varies between fields of education.

It is more likely, however, that the general introductory units of study in first-year undergraduate programs are classified as “Other” because they do not belong to any specific sub-field. As most universities would have some introductory units in their undergraduate degrees, we would expect to see some data on “Other Engineering and Related Technologies” for every institution. However the distribution of enrolments under the “Other Engineering and Related Technologies” category differs substantially between universities, as shown in Table 19.

A brief check of the web-sites of the five largest providers at the top of the list in Table 19 revealed the existence of common introductory units during the first year of all engineering programs, which could explain the reporting of almost 100 per cent of first year enrolments as “Other Engineering and Related Technologies”. It is beyond the scope of this report to investigate what the “Other

Engineering and Related Technologies” category actually represents in terms of sub-fields of study. However readers need to note that the analysis in this report of enrolments by sub-fields relates to only half of all commencing students in Engineering and Related Technologies, and that the universities which report all of their Engineering commencement data under the sub-field of “Other Engineering and Related Technologies” are thus excluded from the analysis that follows.

Small sub-fields

As shown in Table 18, admission rates of VET award-holders are highest in the relatively small fields of Manufacturing Engineering; Geomatic Engineering and Maritime Engineering, which have admission rates of VET award-holders ranging from 19 to 28 per cent. Provision in these three sub-fields appears to be confined to a small number of institutions.

In the field of Manufacturing Engineering for example, there are only three providers and one of these - RMIT University - enrolls over half of all the undergraduate students in this discipline and accounts for all 51 of the students admitted on the basis of a VET award. The other two universities have no VET award-holders reported in their programs.

In Geomatic Engineering, the study of mapping and surveying, there are seven providers in total, five of which admit small numbers of students (<10 each) on the basis of a VET award. The RMIT University is also the major provider of Geomatic Engineering, accounting for 28 per cent of all enrolments and almost half (18) of the students in this sub-field who are admitted on the basis of a VET award.

In Maritime Engineering, there is only one provider - the University of Tasmania - which admitted 66 students or 26 per cent of all commencements in this field on the basis of a VET award in 2010.

Large sub-fields

With the exception of Electrical and Electronic Engineering and Technology, all of the large sub-fields (including “Other”), report below-average rates of admission rate of students on the basis of a VET award, however the rates vary between institutions.

Electrical and Electronic Engineering & Technology

In the sub-field of Electrical and Electronic Engineering (FOE 0313), Cluster 1 universities account for 33 per cent of total enrolments and Cluster 3 has only 43 per cent, which is less than its share of 54% of the broad field. Interestingly, the admission rate of VET award-holders in this sub-field is 13.7, well above the 7.4 per cent for the broad field of Engineering and Related Technologies (FOE 03). It is one of three main sub-fields, along with Civil Engineering and Mechanical Engineering, that account for over one third (37%) of enrolments in Engineering and Related Technologies, but has the highest rate of admission of VET award-holders of the three.

Nineteen universities are reported in the higher education statistics collection as having undergraduate commencements in the sub-field of Electrical and Electronic Engineering and Technology, which accounts for 12.5 per cent of all undergraduate commencements in the broad field of Engineering and Related Technologies.

Commencing enrolments in this field appear to be concentrated among a few institutions. As shown in Table 20, four universities enrol half of all undergraduates commencing in this sub-field and ten universities account for over 80 per cent of all students.

This is the only sub-field in the broad field of Engineering and Related Technologies that reports the admission of VET award-holders at above-average rates. Some 13.7 per cent of undergraduate commencements are admitted on the basis of a VET award. However the admission of VET award holders is very inconsistent between universities. Among the four biggest providers, two institutions - RMIT University and Swinburne University of Technology - admit a very high proportion of students on the basis of a VET award - 35.5 per cent and 19 per cent respectively. In contrast, the next two largest providers - the University of New South Wales and Curtin University of Technology - admit too few VET award-holders to be counted. While ten universities account for 80 per cent of all enrolments in this sub-field, only five universities account for 80 per cent of the VET award-holders. The RMIT University, Swinburne University, the University of South Australia, the University of Wollongong and the University of Newcastle together enrol 268 of the 338 students admitted to this field on the basis of a VET award.

Table 20 VET award-holders and all undergraduate commencements in Electrical and Electronic Engineering and Technology (FOE 0305), by HE provider Australia 2010

Institution (Cluster)	All undergraduate commencements		VET award-holders	
	Students	% total	Students	% all U/G
RMIT University (1)	406	16.4	144	35.5
Swinburne University of Technology (1)	305	12.3	58	19.0
The University of New South Wales (3)	275	11.1	<10	n.a
Curtin University of Technology (3)	236	9.5	<10	n.a
University of South Australia (2)	152	6.1	13	8.6
The University of Adelaide (3)	145	5.9	0	0.0
University of Wollongong (2)	145	5.9	13	9.0
The University of Newcastle (2)	142	5.7	40	28.2
The University of Queensland (3)	133	5.4	<10	n.a
The University of Sydney (3)	98	4.0	<10	n.a
Macquarie University (3)	93	3.8	<10	n.a
La Trobe University (2)	73	3.0	<10	n.a
Edith Cowan University (1)	59	2.4	11	18.6
Victoria University (1)	55	2.2	14	25.5
The Flinders University of South Australia (3)	47	1.9	<10	n.a
Queensland University of Technology (2)	34	1.4	<10	n.a
The Australian National University (3)	34	1.4	0	0.0
Central Queensland University (2)	20	0.8	<10	n.a
Monash University (3)	10	0.4	0	0.0
TOTAL	2472	100	338	13.7%

Source: DEEWR (2010) Higher Education Statistics Collection. Unpublished data

Notes: Due to the coding of some students in combined programs to two fields of education, the totals can be higher than the total number of students and the size of the difference varies between fields of education.

As shown in Table 20, of the four biggest providers of courses in this sub-field, two Cluster 1 institutions - RMIT University and Swinburne University of Technology - admit students on the basis of a VET award at well above the national rate (ie. 35 per cent and 19 per cent respectively), whereas the next two largest providers - the University of New South Wales and Curtin University of Technology (both Cluster 3) - admit none. Nationally, provision of Electrical and Electronic Engineering is dominated by 10 universities which enrol well over three-quarters of all undergraduate commencements in this field, yet half of these universities (all Cluster 3) admit no students on the

basis of a VET award. The relatively high admission rate of VET award-holders in Electrical and Electronic Engineering of 13.7 per cent thus reflects the efforts of two Cluster 1 universities, which account for 29 per cent of all commencing students and admit VET award-holders at rates of 35.5 and 19 per cent respectively. Overall, Cluster 1 universities account for 33 per cent of total enrolments in this sub-field, compared to 43 per cent for Cluster 3.

Mechanical and Industrial Engineering & Technology

A similar pattern is evident in the sub-field of Mechanical and Industrial Engineering and Technology (0307) which admits VET award-holders at a rate of 8.1 per cent. However in this sub-field, Cluster 3 universities are more dominant, accounting for 50 per cent of total enrolments, compared to 30 per cent in Cluster 1 institutions. As in the sub-field of Electrical Engineering, Cluster 1 universities admit VET award-holders at more than double the rate for the sub-field, while Cluster 3 universities admit none. In both sub-fields, the University of Newcastle (Cluster 2) performs like a Cluster 1 institution in admitting VET award-holders at rates well over 20 per cent.

Mechanical and Industrial Engineering & Technology is another large sub-field in Engineering and Related Technologies with 2 253 undergraduate enrolments. As shown in Table 21, 15 universities report undergraduate commencements in this sub-field, but five universities cater for two-thirds of all enrolments. Around half of the 15 universities admit VET award-holders but the two largest providers - Curtin University and the University of New South Wales - are not among them, which contributes the low average admission rate of VET award-holders for the sub-field.

Table 21 VET award-holders and all undergraduate commencements in Mechanical and Industrial Engineering & Technology (FOE 0307), by HE provider Australia 2010

Institution (Cluster)	All undergraduate commencements		VET award-holders	
	Students	% total	Students	% all U/G
Curtin University of Technology (3)	367	16.3	<10	n.a
The University of New South Wales (3)	341	15.1	<10	n.a
RMIT University (1)	316	14.0	46	14.6
Swinburne University of Technology (1)	259	11.5	33	12.7
University of South Australia (2)	214	9.5	16	7.5
The University of Newcastle (2)	175	7.8	41	23.4
The University of Adelaide (3)	164	7.3	0	0.0
The University of Sydney (3)	132	5.9	0	0.0
University of Wollongong (2)	73	3.2	11	15.1
Victoria University (1)	53	2.4	15	28.3
Edith Cowan University (1)	50	2.2	<10	n.a
The University of Queensland (3)	50	2.2	0	0.0
The Flinders University of South Australia (3)	37	1.6	<10	n.a
The Australian National University (3)	17	0.8	0	0.0
The University of Western Australia (3)	5	0.2	0	0.0
TOTAL	2 253	100.0	182	8.1

Source: DEEWR (2010) Higher Education Statistics Collection. Unpublished data

Notes: Due to the coding of some students in combined programs to two fields of education, the totals can be higher than the total number of students and the size of the difference varies between fields of education.

Civil Engineering

Civil Engineering is the largest sub-field, after “Other”, with 2 624 undergraduate commencements in the field of Engineering and Related Technologies. Some 7.2 per cent of students in Civil Engineering Programs are admitted on the basis of a VET award as shown in Table 22.

Nineteen universities enrol commencing students in the sub-field of civil engineering but nine of these account for 83 per cent of all undergraduate enrolments. Seven universities admit students on the basis of a VET award but the two largest providers - the University of New South Wales and the University of Sydney - do not and the third and fifth largest providers, Swinburne University and Curtin University, admit only 4.5 per cent and 6.5 per cent respectively on the basis of a VET award.

Stronger VET-HE pathways in civil engineering appear to be provided by RMIT University (12.7%), Victoria University (20.4%), University of Wollongong (9.8%), University of South Australia (21.4%) and Edith Cowan University (over 30%).

Table 22 VET award-holders and all undergraduate commencements in Civil Engineering (FOE 0309), by HE provider Australia 2010

Institution (Cluster)	All undergraduate commencements		VET award-holders	
	Students	% total	Students	% all U/G
The University of New South Wales (3)	347	13.2	<10	n.a
The University of Sydney (3)	288	11.0	<10	n.a
Swinburne University of Technology (1)	286	10.9	13	4.5
RMIT University (1)	283	10.8	36	12.7
Curtin University of Technology (3)	262	10.0	17	6.5
The University of Adelaide (3)	227	8.7	<10	n.a
Victoria University (1)	191	7.3	39	20.4
University of Wollongong (2)	153	5.8	15	9.8
The University of Newcastle (2)	147	5.6	<10	n.a
University of South Australia (2)	84	3.2	18	21.4
The University of Queensland (3)	82	3.1	0	0.0
Central Queensland University (2)	69	2.6	0	0.0
Edith Cowan University (1)	50	1.9	15	30.0
University of the Sunshine Coast (2)	43	1.6	0	0.0
Monash University (3)	40	1.5	<10	n.a
University of Technology, Sydney (2)	22	0.8	0	0.0
University of Tasmania (2)	20	0.8	<10	n.a
Griffith University (2)	15	0.6	<10	n.a
The Flinders University of South Australia (3)	10	0.4	0	0.0
TOTAL	2 624	100.0	188	7.2

Source: DEEWR (2010) Higher Education Statistics Collection. Unpublished data

Notes: Due to the coding of some students in combined programs to two fields of education, the totals can be higher than the total number of students and the size of the difference varies between fields of education.

In Civil Engineering, Cluster 3 universities are the dominant providers accounting for 48 per cent of enrolments compared to 31 per cent for Cluster 1. However in Civil Engineering, the rates of admission of VET award-holders in Cluster 1 universities are not uniformly high. Swinburne and RMIT Universities, the third and fourth largest providers in this sub-field admit VET award-holders at rates of only 4.5 per cent and 12.7 per cent respectively. Other Cluster 1 universities perform better, with

rates above 20 per cent along with the University of South Australia (Cluster 2). Interestingly, Curtin University, which admits negligible numbers of VET award-holders in the other sub-fields, admits 6.5 per cent of students to its Civil Engineering programs on the basis of a VET award.

Civil Engineering may be a sub-field which does not 'lend itself' to VET-HE pathways because there is currently no nationally endorsed VET training package at the Advanced Diploma level that could serve as a basis for a VET-HE pathway in this sub-field (see Dowling 2010, pp5-6). Hence the pattern of admission of VET award-holders in this sub-field is more likely to reflect local arrangements.

Aerospace Engineering & Technology

The sub-field of Aerospace Engineering & Technology reported 1 114 undergraduate commencements, in 2010 of which 7 per cent are admitted on the basis of a VET award. Only ten universities report commencing undergraduate enrolments in this sub-field, and total student load appears to be shared relatively equally between them, as illustrated in Table 23.

Table 23 VET award-holders and all undergraduate commencements in Aerospace Engineering (FOE 0315), by HE provider Australia 2010

Institution (Cluster)	All undergraduate commencements		VET award-holders	
	Students	% total	Students	% all U/G
RMIT University (1)	194	17.0	27	13.9
Griffith University (2)	155	13.5	13	8.4
The University of New South Wales (3)	153	13.4	<10	n.a
Swinburne University of Technology (1)	127	11.1	<10	n.a
The University of Sydney (3)	101	8.8	<10	n.a
Edith Cowan University (1)	94	8.2	<10	n.a
The University of Adelaide (3)	89	7.8	0	0.0
Monash University (3)	86	7.5	0	0.0
University of South Australia (2)	82	7.2	20	24.4
The University of Queensland (3)	63	5.5	0	0.0
TOTAL	1 144	80	100.0	7.0

Source: DEEWR (2010) Higher Education Statistics Collection. Unpublished data

Notes: Due to the coding of some students in combined programs to two fields of education, the totals can be higher than the total number of students and the size of the difference varies between fields of education.

Only three of the providers of courses in aerospace engineering admit students on the basis of a VET award in sufficient numbers to be counted, but as two of these institutions - RMIT University and Griffith University - are the largest providers, this lifts the average for the whole sub-field.

Process and Resources Engineering

There were 1,713 commencements in the sub-field of process and resources engineering which represents 8.7 per cent of total undergraduate enrolments in the field of Engineering and Related Technologies (Table 18). This sub-field has the lowest rate of admission of VET award-holders, at 3.6 per cent.

Process and Resources Engineering is the study of systems, processes and plant machinery for locating and extracting minerals such as oil and gas, and for physically and chemically transforming raw materials to produce metals, alloys, petrochemicals, ceramics, polymers and other materials. It also relates to the industrial manufacture of foodstuffs, pharmaceuticals and bio-chemicals. Courses within the sub-field of Process and Resources Engineering include Chemical Engineering, Mining Engineering, Materials Engineering, Food Processing Technology, Fuel Technology and Pharmaceutical Manufacturing (ABS 2001).

As shown in Table 24, while 13 universities are reported as having undergraduate enrolments in this sub-field, two providers account for 45 per cent of all commencements in this sub-field, and four universities account for 65 per cent of all students. The remaining universities cater for much smaller cohorts. Among the four largest providers only the Australian National University admits VET award-holders (13 students) in numbers high enough to be reported. Thus the other three institutions which dominate provision - Curtin University of Technology, the University of New South Wales and the University of Tasmania - would be contributing to the low proportion of VET award-holders admitted to undergraduate programs in the sub-field of process and resources engineering as a whole.

Table 24 VET award-holders and all undergraduate commencements in Process and Resources Engineering (FOE 0303), by HE provider Australia 2010

Sub-field (Cluster)	All undergraduate commencements		VET award-holders	
	Students	% total	Students	% all U/G
Curtin University of Technology (3)	478	27.9%	<10	n.a
The University of New South Wales (3)	293	17.1%	<10	n.a
The Australian National University (3)	197	11.5%	13	6.6%
University of Tasmania (2)	140	8.2%	<10	n.a
The University of Adelaide (3)	129	7.5%	0	0.0%
RMIT University (1)	105	6.1%	<10	n.a
The University of Queensland (3)	94	5.5%	0	0.0%
The University of Sydney (3)	94	5.5%	0	0.0%
The University of Newcastle (2)	74	4.3%	<10	n.a
University of Wollongong (2)	51	3.0%	<10	n.a
Victoria University (1)	38	2.2%	13	34.2%
Central Queensland University (2)	10	0.6%	<10	n.a
Murdoch University (2)	10	0.6%	0	0.0%
TOTAL	1,713	100.0%	61	3.6%

Source: DEEWR (2010) Higher Education Statistics Collection. Unpublished data

Notes: Due to the coding of some students in combined programs to two fields of education, the totals can be higher than the total number of students and the size of the difference varies between fields of education.

Summary

Engineering course provision is dominated by eleven universities, seven of which admit negligible numbers of students on the basis of a VET award. Although four large providers of engineering programs admit relatively high proportions of VET award-holders, the polarisation between large providers in terms of providing VET-HE pathways brings down the average rate of admission of VET award-holders overall. This polarisation is evident in all the large sub-fields and could be contributing to low rates of admission of VET award-holders in the field of process and resources engineering, where a small number of large providers dominate the data on undergraduate commencements.

Data on commencements in sub-fields of engineering courses need to be analysed with caution, as almost half of all undergraduate commencements in the broad field of engineering and related technologies are recorded under the narrow sub-field of “Other Engineering and Related Technologies”. In some cases, this may be due to emerging fields not being accommodated in the existing classifications (e.g. environmental engineering). However it is more likely due to the fact that in many universities, commencing students in engineering courses undertake general introductory units of study in their first year that are routinely classified as “Other Engineering and Related Technologies”.

The admission rates of VET award-holders in each of the sub-fields of Engineering and Related Technologies illustrates how the enrolment share held by Cluster 3 universities appears to influence the admission rate of VET award-holders in this field. A similar pattern is evident in the sub-field of Mechanical and Industrial Engineering and Technology (0307) which admits VET award-holders at a rate of 8.1 per cent. As in the sub-field of Electrical Engineering, Cluster 1 universities admit VET award-holders at more than double the rate for the sub-field, while Cluster 3 universities admit none. In both sub-fields, the University of Newcastle (Cluster 2) performs like a Cluster 1 institution in admitting VET award-holders at rates well over 20 per cent. However in this sub-field, Cluster 3

universities account for 50 per cent of total enrolments, which influences the overall rate of admissions of VET-award-holders in this field.

4. Agriculture, Environmental and Related Studies (FOE 05)

Agriculture, Environment and Related Studies (FOE 05) is the smallest field of undergraduate education with just 3,781 students or 1.2 per cent of total undergraduate enrolments. The proportion of students admitted on the basis of a VET award to this broad field is 7.4 per cent.

As a broad field under the ASCED categorisation, Agriculture, Environment and Related Studies (FOE 05) is comprised of six narrow sub-fields. Data on total commencements and the number of students admitted on the basis of a VET award are provided for each of these sub-fields in Table 25.

Table 25 VET award-holders and all undergraduate commencements in Agriculture, Environmental and Related Studies (FOE 05), by narrow sub-field, Australia 2010

Narrow sub-field	VET award-holders		All undergraduate commencements		VET award-holders as a proportion of total U/G commencements
	Students	% total	Students	% total	%
Agriculture (0501)	45	20.8	461	12.2	9.9
Horticulture and Viticulture (0503)	17	7.6	180	4.8	9.2
Forestry Studies (0505)	<10		46	1.2	n.a
Fisheries Studies (0507)	<10		32	0.9	n.a
Environmental Studies (0509)	144	66.1	2 451	64.8	5.9
Other Agriculture, Environmental and Related Studies (0599)	13	5.9	615	16.3	2.1
Total	218	100.0	3781	100.0	5.8

Source: DEEWR (2010) Higher Education Statistics Collection. Unpublished data

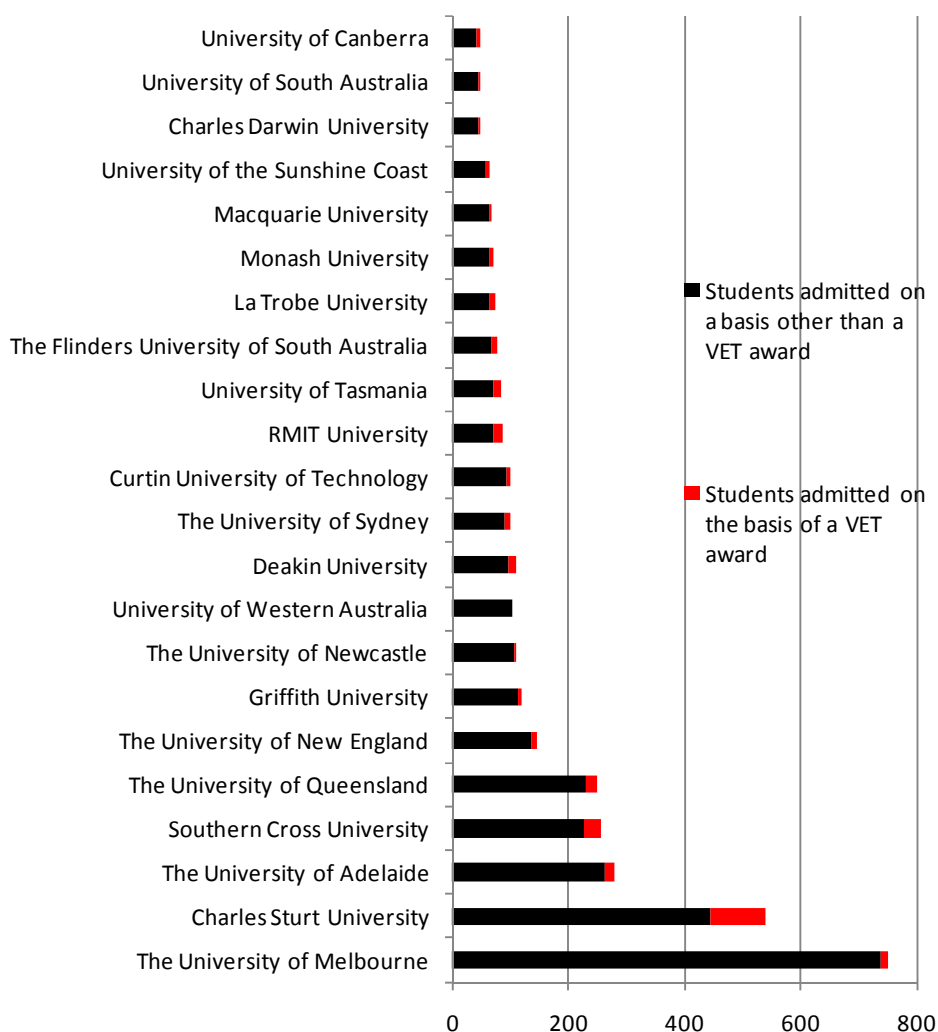
Notes: Due to the coding of some students in combined programs to two fields of education, the totals can be higher than the total number of students and the size of the difference varies between fields of education. The sub-field of "Office Studies" is excluded and reported as "Other Management and Commerce"

As shown in Table 25, almost two-thirds of all commencing students in Agriculture, Environment and Related Studies are in the sub-field of Environmental Studies, where 5.9 per cent of students are admitted on the basis of a VET award. The next largest sub-field (apart from "Other") is Agriculture, where VET award-holders represent 9.9 per cent of commencing students.

Variation between institutions

Twenty-two universities report undergraduate admissions in the field of Agriculture, Environment and Related Studies, as shown in Figure 7. While the University of Melbourne accounts for 21 per cent of total enrolments in this field, Charles Sturt University accounts for 26 per cent of students admitted on the basis of a VET award. These patterns are illustrated in Figure 7.

Figure 7 Number of students commencing undergraduate studies in Agriculture, Environmental and Related Studies by basis of admission by university, Australia 2010



Source: DEEWR (2010) Higher Education Statistics Collection. Unpublished data

Notes Due to the coding of some students in combined programs to two fields of education, the totals can be higher than the total number of students and the size of the difference varies between fields of education.

Fourteen universities account for over 80 per cent of enrolments in this field. Although the largest provider, the University of Melbourne, only admits two per cent of students on the basis of a VET award, other large providers, such as Charles Sturt University and Southern Cross University admit VET award holders at rates of 11 - 17 per cent.

Differences between sub-fields

The sub-fields within the field of Agriculture, Environmental and Related Studies are quite small. Only 13 universities admit VET award-holders in numbers sufficiently high to be reported. Twenty-two universities report undergraduate commencements in the field, but 14 institutions account for 83 per cent of all enrolments and the distribution of total enrolments between these institutions is illustrated in Table 26.

Table 26 Undergraduate commencements in Agriculture, Environmental and Related Studies, by sub-field and the largest 15 HE providers Australia 2010

Institution (Cluster)	All undergraduate commencements by Narrow Subfield (4-digit FOE)						Total	% VET
	0501	0503	0505	0507	0509	0599		
The University of Melbourne (3)	20	26	10		695		751	2.0
Charles Sturt University (1)	325	37			176		538	17.1
The University of Adelaide (3)	131	98			49		278	6.9
Southern Cross University (2)			25		230		255	10.0
The University of Queensland (3)	70	15		15	150	449	699	3.2
The University of New England (2)	104				41		145	0.0
Griffith University (2)					119		119	0.0
The University of Newcastle (2)					110		110	0.0
Deakin University (1)					110		110	14.3
The University of Western Australia (3)						104	104	0.0
The University of Sydney (3)	69				5	27	101	0.0
Curtin University of Technology (3)	10	20				69	99	0.0
RMIT University (1)					86		86	21.0
University of Tasmania (2)	29		10		25	20	84	22.4

Source: DEEWR (2010) Higher Education Statistics Collection. Unpublished data

Notes: Due to the coding of some students in combined programs to two fields of education, the totals can be higher than the total number of students and the size of the difference varies between fields of education.

As shown in Table 26, most of the large providers admit relatively high proportions of students on the basis of a VET award. The exceptions are the University of Melbourne, the University of Adelaide, Griffith University, the University of Newcastle, and Curtin University all of which admit VET award-holders at below the rate of 6 per cent. As the University of Melbourne accounts for 20 per cent of total enrolments in this field, its low rate of admission of VET award-holders contributes to the relatively low rate for the field as a whole.

Summary

Although some 30 universities are providing courses in the field of Agriculture, Environmental and Related Studies, this field is dominated by major providers in the sub-field of Environmental Studies. However the field is relatively small overall, the impact of the largest provider - the University of Melbourne - is significant as it enrolls 20 per cent of all students in this field of education, but admits the lowest proportion (2%) on the basis of a VET award.

Institutional policies and practices for VET-HE pathways

To discuss the policies and practices universities that employ in respect of attracting and supporting VET award-holders on VET-HE pathways, the research team undertook an analysis of institutional policies and practices.

Method

Data on institutional policies and pathways were collected through a survey of universities and interviews with key personnel as well as the analysis of institutional documents and websites.

The survey of institutions was administered through an email sent to Vice Chancellors of all 37 of the Australian universities in this study (see Appendix A.3) in May - June 2012. The six questions focused on: institutional policies and institutional practices in relation to VET-HE pathways; the support provided to students admitted on the basis of VET studies; and the monitoring of outcomes for these students.

A total of 20 universities (54%) provided answers to the survey questions: 18 by email and two by phone interview. This response was considered adequate because we received data from a representative number of institutions from each Cluster: three universities in Cluster 1; ten in Cluster 2; and seven universities in Cluster 3. Thus we had a response rate of 43, 62 and 50 per cent, respectively from each cluster. We chose not to follow up with institutions that did not respond as we were conscious of not over-burdening institutions with requests for data, and some institutions indicated that they needed to deal with other matters of a higher priority. For example, the three dual-sector universities in Victoria did not respond to the survey and the research team was advised by one Vice Chancellor that the Victorian dual-sector universities were not likely to be in a position to respond due to the operational upheaval resulting from recently announced state government funding decisions that impacted on the TAFE sector.

In most cases, university responses to the survey were provided by either the office of a Pro Vice-Chancellor or a member of staff whose role was to support VET-HE pathways. While some respondents noted that they were unable to convey all the activity in relation to VET-HE pathways within every faculty of the university, all responses conveyed a comprehensive corporate knowledge of their institution's policies and practices in this area, which met the purpose of the survey. Members of the research team also conducted interviews over the phone and in person with a small number of staff employed in universities in each of the three clusters.

A thematic analysis of the data is presented below.

Pathway policies and targets

In the survey, institutions were asked about any specific policy objectives, including targets that they have regarding the proportion of students admitted to undergraduate programs on the basis of VET studies. While all respondents provided details on a range of relevant policies, only three institutions said that they had targets - one in Cluster 1 and two in Cluster 3.

A more common response was to describe their university's broad mission in regard to access and diversity as well as pathways for VET award-holders. This is consistent with PhillipsKPA's (2006a) observation that, "Institutions with a strong commitment to credit transfer are likely to have missions that emphasise equity and access, student diversity, regional engagement and partnerships" (PhillipsKPA 2006a: iii). For several universities within Clusters 1 and 2, expanding VET admissions is clearly consistent with their established missions that emphasise lifelong learning, inclusiveness and student diversity. However, for other universities it seems that their interest in VET admissions and partnerships has been sparked by recent Federal Government's policies.

Influence of government policies

Institutions reported that their policies in regard to VET award holders had been influenced by Federal policy agendas, including its targets for increased participation of students from low SES and indigenous backgrounds and the availability of funding through the Government's Higher Education Participation and Partnership Program participation (HEPPP).

...[in a] project funded through the *Higher Education Participation and Partnerships Program*, [the University] is collaborating with its partner universities and three TAFE Institutes to improve and expand articulation arrangements and other pathways between TAFE and university. By targeting [city's] most disadvantaged areas, the collaboration will expand opportunities to support key equity groups to engage in and progress along VET-higher education pathways. (Respondent, Cluster 2)

Several Cluster 3 institutions reported that they were now interested in VET admissions as a means of boosting their enrolments in equity areas and increasing the diversity of their undergraduate student populations. As one respondent said:

...We have little TAFE. We are not dual sector...we haven't been in a position where we need to seek students. But we are starting to look at what is possible....arrangements for pathways for indigenous and low SES students.... there is a change here. It's motivated by funding. We are reacting to initiatives at the Government level. (Respondent, Cluster 3)

Many responses were similar in seeing VET-HE pathways as a diversity issue that will assist in increasing enrolments among students who are Indigenous and/or low-socio-economic status. Data from the NCVET (2010;7) report, *Tertiary Education and Training In Australia*, indicates that there is a higher percentage of full-time Indigenous students in VET institutions compared to higher education (3.9% and 0.9%, respectively).⁷ In addition, the percentage of domestic equivalent full-time students within the most disadvantaged quintile in the Index of Relative Socio-economic Disadvantage is higher for VET than higher education (14.5% and 9.8%, respectively). A greater proportion of VET compared to higher education students are also from outer regional, remote or very remote regions (14.8% and 4.8%, respectively).

Accordingly, institutions with traditionally low admissions on the basis of VET studies see the potential of VET-HE pathways in addressing issues of diversity and increasing enrolments of Indigenous and low-SES students, particularly through regional campuses. However, Wheelahan (2009) cautions that VET

⁷ However as discussed in Section 1, Indigenous students are under-represented among VET award-holders admitted to Australian universities.

qualifications play a modest role in facilitating pathways into higher education for low SES students because low SES students are under-represented in the higher level VET qualifications (diplomas and advanced diplomas) that are more likely to give them access to higher education courses (Wheelahan 2009). On the other hand, as shown in this report, almost twice the number of Certificate-holders as Diploma-holders study at university six months after graduating, due to the higher numbers of VET graduates with qualifications at the Certificate level (see Figure 3).

While many respondents expressed interest in increasing admissions on the basis of VET awards to increase student diversity and meet government participation targets, two universities noted additional benefits of VET-HE pathways:

[University] believes the benefits to students and the university in increasing the number of students from VET ...include: for VET students...a mix of vocational and academic skills that provides greater depth to both and is valued by employers...for HE students...An appreciation of vocational training providing underlying knowledge to academic study. (Respondent, Cluster 3).

One of the four key objectives of...[our] Education Strategic Plan is to: 'Reform and renew the curriculum to attract, challenge and retain outstanding and diverse students'. [Our] partnership with three TAFE institutes....contribute to the attainment of that objective. [Respondent, Cluster 3]

Although only three institutions had specific targets, most universities provided evidence of taking some steps to increase their admissions on the basis of VET studies. Few have specific policies about VET pathways but most said they were developing relationships with TAFE institutes. Some also said that increasing VET admissions would help fill a vacuum left by the reduced demand from school leavers for higher education and that pursuing pathways as a response to increased competition in the sector.

Many universities which admit low proportions of students on the basis of a VET award articulated a commitment to VET pathways and partnerships in terms of their citizenship role in their local communities while also noting that increasing pathways for VET graduates was important means by which they can meet Federal Government targets for higher participation by low SES and Indigenous students.

Institutional practices to support VET-HE pathways

The AQF (2009), *AQF National Policy and Guidelines on Credit Arrangements*, identified operational guidelines for credit policies and procedures. These guidelines have incorporated the MCEETYA good practice principles in relation to credit transfer and articulation and information provision previously used by universities to guide their development of practices for VET-HE pathways. Many universities mentioned that they were currently examining the ways in which they could meet the expectations of the AQF credit transfer policy and one university described itself as "AQF-compliant".

Central leadership and line management

Having dedicated, central pathway officers, or their equivalent, signals the strength of an institution's commitment to VET pathways to its faculties, potential students and TAFE partners. A central position or office also provides a focal point for faculties that require support and resources to develop their own initiatives. Central pathways staff can also help to ensure that coherent and cost-effective processes and systems are developed at a whole of institution level.

All respondents from the Cluster 1 group of universities reported a high level of central leadership in regard to VET-HE pathways through a dedicated pathway officer/articulation coordinator (or equivalent title) situated in a central division often supported by pathway or credit for prior learning officers in each faculty. For example, one Cluster 1 institution reported having:

... a senior position, the Dean of Studies, whose portfolio includes oversight of TAFE cooperation and agreements; sub-Deans in each Faculty for TAFE pathways; dedicated officers in the Division of Marketing. The Dean of Studies office includes a team of staff who manage [the University's] agreements with TAFE Institutes. (Respondent, Cluster 1)

The commitment of Cluster 1 universities to VET-HE pathways and to forging relationships that deliver them is evident in the number of central staff that these universities reported were involved in pathways and the lines of reporting associated with these positions. For responding universities in Cluster 1, central/dedicated pathway officers reported directly to positions such as the DVC (Academic); DVE (International and Regional Partnerships) and Head of Marketing.

Among Cluster 2 and Cluster 3 institutions, a smaller percentage (38 and 21%) also reported having a central person or office responsible for pathways, VET partnerships or articulation arrangements. However the line management and reporting relationships were not as clearly defined.

Pathways agreements

The survey of universities indicated considerable variation in the number and types of agreements that universities have with the VET sector, the forms of pathways they have developed, and their credit granting and admission practices. The latter in particular reflect different views within clusters of universities about the extent to which VET qualifications prepare students for success in higher education.

A number of universities in both Cluster 1 and 2 reported a comprehensive range of agreements including: state-wide agreements with institutions such as TAFE NSW, TAFE SA and TAFE QLD; international articulation pathway agreements and domestic agreements with various RTOs. In addition they may have pathways through their own RTOs, dual awards and guaranteed entry arrangements. Typically, those with their own RTOs had arrangements that enable students to exit with an associate degree or articulate into a Bachelor degree at the institution. In discussing their pathway practices, some survey respondents referred to relevant agreements. While it is not possible from the data to provide an in-depth comparison of the efficacy of these agreements, examples are provided below to illustrate the influence of these agreements at the operational level.

Admissions policies and practices

The Cluster 1 institutions who responded to the survey all have specific policies about VET admissions. For example, one university responded that it had:

.... quantitative growth targets in relation to growing first round VTAC offers for TAFE pathway students; increasing enrolments from identified low SES regions via TAFE partners; growing domestic and international students coming via TAFE partners (Respondent, Cluster 1)

Similarly, several Cluster 2 universities had some policies around VET admissions and most had partnerships with VET institutions particularly in their local region:

Given our location in [region] we engage with VET providers to design pathways for Cert. IV and diploma students for all three campuses (Respondent, Cluster 2)

One Cluster 1 institution reported guaranteed entry (with no credit granted) into many undergraduate programs on the basis of applicants having completed a Certificate IV at any TAFE, private provider or college. Another reported guaranteed entry for Diploma and Advanced Diploma TAFE graduates who have completed their TAFE qualification within the last 10 years. In both these cases, the VET qualifications did not have to be relevant to the field of education in which students seek admission.

Most other institutions offered more limited guaranteed entry provisions, to VET graduates with Certificate IV, Diploma or Advanced Diploma qualifications *from any of their partnership institutions*. Several also made the proviso that students needed to meet the pre-requisites for entry for any particular course.

Some institutions in this investigation provided feedback explaining their admission policies that emphasised the link between admission and credit granting policies and students' success in higher education. For example:

We have found, unsurprisingly, that students with higher level VET qualifications perform much better than those entering with a Certificate IV. It is one of the reasons that our dual offer scheme is targeted to Diploma and Advanced Diploma qualifications. (Respondent, Cluster 3)

Credit Transfer policies and practices

The AQF (2009; 13) suggests general credit values for AQF qualifications which universities can use to guide their determination of how much credit to grant. For example, it suggests a minimum credit value of 50 per cent for an Advanced Diploma linked to a three year Bachelor (in the same education fields). However, universities can choose credit levels greater or less than the recommended level and most present their policies in the following terms:

[The University] has a formal articulation agreement with TAFE [State]. If you completed an Australian Qualifications Framework (AQF) Diploma or Advanced Diploma within the last five years, and are enrolled in a [University] program in the same or a directly relevant discipline area, you may be eligible to receive credit towards your program. [Internal university document, Cluster 3]

Many universities, more typically those in Cluster 3, have a suite of even tighter conditions: neither admission nor credit is guaranteed; there is an expectation that the VET qualification was completed in a more recent time frame; and students must be enrolled in the same or a relevant discipline area. The universities with more restrictive admissions policies typically have maximum entry ranks or ATARs that they calculate for AQF Certificate III through to AQF Diplomas, and many require the VET award-holder to have received a graded assessment for some or all of their VET studies. The justification for restrictive credit transfer policies is usually provided in terms of the expectations of the field of study and/or not wanting to “set (VET) students up to fail”.

Many bachelor level courses at [University] require a very specialised disciplinary focus from year one, e.g. Science, Engineering, Design. This makes it difficult to match content from a VET award with the [University] award and thus give credit recognition. (Respondent, Cluster 2).

...staff are very concerned about not disadvantaging students and setting them up to fail, so they need to be sure that if students are exempted from a subject at [University] because of their VET qualification, they have acquired the knowledge in their VET studies to progress satisfactorily... (Respondent, Cluster 2)

Without access to Commonwealth-held administrative data on student completions (a limitation of this study acknowledged in the Introduction to this report), the authors are unable to assess the extent to which more restrictive admission policies towards VET award-holders contribute to improved graduation rates. However the justification for restrictive credit transfer policies in terms of the expectations of the field of study and/or not wanting to “set (VET) students up to fail” suggest that some universities still have little or no understanding of the ways in which VET-HE pathways can address such issues. Articulated programs and dual awards, for example, were mentioned by respondents from Clusters 1 and 2 in very positive terms. Dual awards (or dual offers) are arrangements whereby students receive an offer that provides a place in both of the partnership institutions’ programs, and upon successful completion of the VET award, the student is guaranteed direct entry into the University’s undergraduate program.

In the absence of structured VET-HE pathways, the default position for universities is to invite VET award-holders to apply for admission to a university on the basis of their completed VET qualification (Certificate IV and above) and to apply for credit points. This process requires some understanding of the applicant’s previous studies and can involve a resource intensive mapping of VET subjects to university courses. For the applicant, the granting of credit is not normally guaranteed and is determined on a case by case basis:

However, unless there is a specific agreement in place with the VET provider or with an identified award, each applicant is subject to scrutiny on a case by case basis to ensure that the applicant's achievements match up with knowledge embedded in core units. (Respondent, Cluster 3)

In summary, universities in Cluster 1 (non dual sector in particular) and some in Cluster 2 tend to have comprehensive set of Memoranda of Understanding (MOU) with numerous VET institutions that specify a range of articulated VET-HE pathways. Those in Cluster 3 tend to have only a few active articulation pathways although some are well-established and deliver considerable number of students in particular fields of education. There is considerable variation in the levels of VET award used in admission and the stringency of entry requirements for individual courses.

Information provision

The AQF (2009) guidelines state that universities should promote their current credit arrangements to potential students and other stakeholders. The guidelines list the key attributes of effective information provision and credit systems, such as accessibility, transparency, comprehensiveness and currency. While information provision can take several forms and be delivered through different forums, University websites are critical in communicating with students about pathways and credit arrangements and procedures. As PhillipsKPA (2006b, iv) states:

Websites play a key role in promotion and information provision to prospective students, and credit transfer arrangements need to be displayed prominently on the part of institutional websites directed towards prospective students. Web-based information about credit transfer arrangements must be supplemented by prominent and up-to-date information in all other forms of promotional material.” (PhillipsKPA, 2006b, iv)

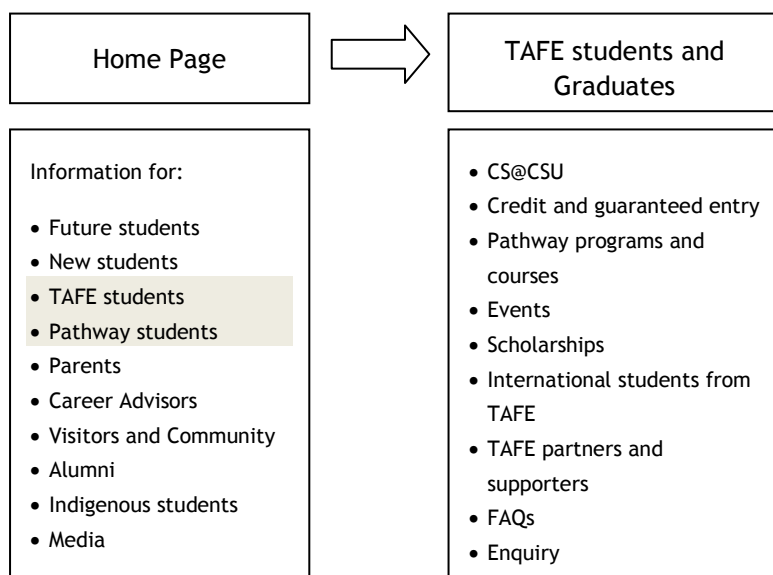
Drawing on PhillipsKPA (2006b), effective websites for communicating about VET-HE pathways and credit arrangements can be summarised as having eight key features. Effective websites are:

- readily accessible from the webpage specifically for prospective students, which in turn is accessible from the institution home page
- designed to be attractive and user-friendly to students

- free of jargon, with clear definitions and consistent use of terminology
- clear about the nature of credit which will be granted for various courses based on a range of VTE qualifications
- searchable using either a VTE course or higher education course or discipline as a starting point
- linked to application forms and details of application and admission procedures
- specific about a single contact point for further information and assistance
- current, with an explicit mechanism to maintain the website

From a scan of institutional websites, we note that most universities comply with the above criteria in making credit information available through their websites and providing information to students about application and appeals processes. However, universities in Cluster 1 tend to have websites that include more advanced features such as a searchable ‘credit precedent’ data base, online application forms, online inquiry forms and links to specific support and information for potential students for admission on the basis of VET. Further, reference to TAFE students⁸ is easily found on the home page of the university’s website and further information in one or two links from the home page. As an example, the structure of the Charles Sturt University website is outlined in Figure 8.

Figure 8 Structure of Charles Sturt University Website



In contrast to the clear and accessible style of the Charles Sturt University website illustrated in Figure 8, some universities use the term ‘mature-aged’ as an entry point for all non-school leavers. This assumes that students seeking admission on the basis of a VET award will understand the definition of ‘mature-aged’ and see themselves in this category, which is unlikely.

While some universities responded that they were ‘AQF compliant’ in terms of information provision, many responded that they needed to make improvements in the way they make credit information available to students and that their websites are ‘works in progress’. For example, one Cluster 2 university reported that it was moving to a new central website where potential students can find out

⁸ Illustrating the university’s understanding that VET graduates are more likely to identify themselves in these terms.

about credit recognition. A scan of its website indicated that, currently, prospective students can find this information only by searching individual Faculty and Course sites.

Support for VET pathway students

Research over the past decade has documented the experience of VET award-holders in higher education courses. The success of a VET-HE pathway appears to be influenced by the degree of support provided by universities to transitioning students. Academic support, careers counselling, mentoring and pastoral care are all recognised components of effective VET - HE pathways. In addition, fully articulated courses such as dual-sector awards and sequential programs of study appear to be more effective than unstructured credit transfer arrangements (Cram and Watson 2008; PhillipsKPA 2006).

Students transitioning from VET may require support because they are moving into a new learning environment with forms of teaching with which they may be unfamiliar (PhillipsKPA 2006b). They also face markedly different forms of assessment and must transition from competency-based learning focused primarily on skill development, to assessment that emphasises cognitive processes and knowledge acquisition (Smith and Bush 2006). The differences in curriculum models and learning cultures between the VET and HE sectors have a significant impact on the transition experiences of students (Wheelahan 2008). VET award-holders may become anxious and uncertain of what they need to do to meet academic standards and expectations - especially if they are returning to formal study after some time (Abbott-Chapman 2006).

The characteristics of students admitted on the basis of a VET award may also constrain their access to resources and forms of support provided by universities, particularly if they are studying part-time. Challenges faced by students navigating a VET - HE pathway include financial issues, family responsibilities, work commitments and transportation issues (Harris et al. 2006). Competence in academic literacy and numeracy also affects the level of personal self-efficacy among students engaged in VET and higher education studies (Watson 2006; 2008). Many students navigating a VET - HE pathway are not aware of the services available to assist them with academic literacy (Harris et al. 2006) or do not have the capacity to access such services due to other factors in their lives (Watson 2006).

A recent project at the Charles Sturt University and University of Western Sydney, funded by the Australian Learning and Teaching Council (ALTC) found that articulating VET students can experience considerable stress in finding heavier than expected study loads in higher education, having to balance study and work demands, learning academic conventions and negotiating new administrative processes and online learning systems (Catterall & Davis, 2012). This ALTC project identified four areas of support required for these students: academic literacy; numeracy; familiarisation with the learning environment of higher education; and general pastoral care (Catterall & Davis, 2012).

Universities need to address these issues through institutional policies and practices that focus on how the VET-HE pathway is constructed, as well as provide extensive academic and pastoral support for VET award-holders, particularly during their first year of study. Universities which take responsibility for addressing these issues may be more successful in supporting VET award-holders through to completion of a degree⁹.

⁹ The authors note that without access to Commonwealth-held data on higher education student completions, it is impossible to establish what types of support policies and programs are most successful.

Targeted support

All respondents from Cluster 1 universities identified well-developed systems to support of students, with an emphasis on structured pathways and specific transition programs for all VET award-holders as well as articulating students.

In contrast, respondents from universities in Clusters 2 and 3 were less likely to be able to identify institutional policies or practices designed specifically to support students admitted on the basis of a VET award. Typical responses from these universities emphasised VET graduates having access to the support services available to all students:

[University] does not have any specific strategies to support students who have undertaken VET studies. All student cohorts have access to a wide range of support and engagement initiatives however, and these are widely promoted. [University] has no specific learning support for a VET graduate, aside from the usual services provided to all students through Campus Wellbeing, The First Year Experience, Study Skills and Student Mentors. (Respondent, Cluster 3)

However, some Cluster 2 and 3 universities identified discipline-specific support programs offered in faculties or for particular courses in which a substantial number of VET students are admitted, for example:

Some faculties have specific transition programs for VET students, for example Nursing provides preparation classes delivered by the Library's Learning Support Advisors. (Respondent, Cluster 3)

Specific programs such as the Associate Degree in the Faculty of Science is designed to address the needs of articulating students. (Respondent, Cluster 3)

It is costly for universities to resource special support for those admitted on the basis of a VET award (or for other cohorts such as Low SES and Indigenous). However, as discussed above, VET award-holders may require additional support because of the different learning environment from which they have come. In addition, VET students are likely to be part-time students while working full-time. They may require access to university support services after hours. Many standard services may be designed with school leavers in mind and not suit the needs of many VET admissions. Further, as Abbott-Chapman (2006) found in a study of mature-aged students in UTAS, some feel uncomfortable using services such as learning development skills alongside younger students. These needs were acknowledged by one respondent from a Cluster 2 university (in reference to 'mature age' students):

Other projects specifically targeting mature age students are underway or under development at faculty level. For example, the Faculty of Engineering and Information Technology has undertaken consultation to identify the particular needs of mature age students including: difficulties associated with working full-time and having limited time on campus; timetabling (lack of flexibility); lack of social connection and sense of cohort; difficulties relating to maths competency requiring VET students to undertake the Foundation Maths course. In response to the findings from this consultation the Faculty has implemented a range of activities to provide support and integration into the university such as mentoring, academic support, and a TAFE Facebook site for IT and Engineering students run by students. (Respondent, Cluster 2)

Impact of granting credit

The way in which credit is granted can help or hinder a VET award-holder's transition to higher education (PhillipsKPA (2006b)). There was evidence of an appreciation of these issues in one response to the survey:

Academic staff in faculties report that because of the 'competencies' emphasis in VET, students coming from VET may not have the more generic skills and abilities focused upon in the first year of a [University] program, e.g. academic literacies, critical thinking, essay-writing, reflective practice. If students are given credit recognition for first year subjects when articulating from VET they can miss this generic skills focus at [University]. (Respondent, Cluster 2)

Other responses revealed a more highly developed understanding of these issues and indicated the university's approach to addressing them:

The majority of [University's] articulation arrangements include a combination of first year core and unspecified free choice electives. As a result VET students entering [University] will be enrolled in some first year classes combined with second year classes in their first year of study at University. Therefore [University's] VET students, to some extent, are helped to settle into life at University with the same support as all other first year students from First Year Advisors who direct students to all kinds of support services and assist with the development of strategies to solve academic problems. (Respondent, Cluster 2)

Customised courses

Where VET award-holders are enrolled in sufficient numbers in particular fields of education, students may be able to progress through their HE studies within a customised course for VET award-holders only, either for the whole course or just the first year of study. In such models, all forms of support, such as academic literacy; numeracy; familiarisation with the learning environment of higher education; and general pastoral care can be provided as part of the curriculum. Thus by customising a course to meet the specific needs of VET award-holders, the need to provide students with access to other forms of support is greatly reduced. One such course identified in an interview for this study is currently offered in Early Childhood Education at Monash University.¹⁰

Early intervention for students 'at risk'

Survey responses indicated that universities appreciated the challenges of admitting an increasingly diverse, undergraduate student body. In addition to traditional school leavers are those who may be international students, or indigenous Australians, mature-aged, or from low SES, rural or remote backgrounds and VET graduates. Many universities are recognising the diversity of their student population by offering an increasing array of support services, many of which will assist VET award-holders who are struggling to make a successful transition:

There are no specific programs targeted to support VET students; however, the University has a system that flags students who are struggling with their academic work. [The University] also offers students free bridging courses at the beginning of each semester and online diagnostic tools so that students can test their level of competency in key areas such as English and maths. Academic support is available to all students through the Centre for Teaching and Learning and a range of additional support services and programs can be accessed. (Respondent, Cluster 2)

¹⁰ The Bachelor of Early Childhood Studies caters specifically for VET award-holders in full-time employment and/or living in non-metropolitan areas. The course is delivered on-line with one intensive teaching weekend per unit, per semester held at the Monash City campus so that students from regional areas can attend more easily. The student retention and completion rates are comparable to similar programs taught in conventional modes on campus.

Monitoring student progression and achievement

While PhillipsKPA (2006a) found that, in most instances, institutions largely complied with the MCEETYA principles, it identified one gap in performance - that of the evaluation of credit transfer arrangements. These were found to be in the 'early stages' of development due to difficulties in obtaining systems-level data and a lack of agreement on evaluation measures (PhillipsKPA 2006a, Final Report, 22).

While the surveys conducted for this report did not specifically focus on credit transfer issues, universities reported several challenges in terms of their capacity to monitor the progression and achievement of undergraduates admitted on the basis of a VET award.

The majority of universities in all clusters reported that they had systems for monitoring the performance and progression of students and were able to identify those who are admitted on the basis of VET studies. Respondents with access to such data reported that the performance of students admitted on the basis of VET is largely comparable with school leavers.

However, several institutions in Cluster 3 reported that they performed little or no monitoring:

There has been no central monitoring. (Respondent, Cluster 2)

No. We are just moving into it now. We simply don't know enough about attrition and retention. (Respondent, Cluster 3);

There is no formal monitoring of these students. To date, they have not been identified as a cohort at risk and there have been no recurring indicators at the Academic Progress Committee. (Respondent, Cluster 3)

Resource constraints were identified by several institutions as limiting the development of more effective monitoring systems for VET pathways. However, for others, their systems were conceived as 'work in progress' with improvements being driven not only by the growth in VET admissions and articulation arrangements but also by the need to demonstrate their institutions' contribution to the Government's broader participation and performance goals for the sector.

Limitations and constraints

Several respondents were very articulate about the limitations of their existing systems in terms of effectively monitoring student pathways and evaluating the impact of particular credit transfer and articulation arrangements. These institutions were clearly interested in investigating the cost effectiveness of different approaches and therefore needed a more sophisticated data set than one which simply flags students admitted on the basis of a VET award. A key issue identified by many respondents was the difficulty in obtaining more specific details about the VET award holder's prior learning and in particular, the name of the feeder institution. This difficulty is expressed in several responses to the survey question about monitoring:

The university is currently working on a program that will provide more in-depth data that will assist with monitoring of different student cohorts and track the impacts of credit transfer, transition support etc. (Respondent, Cluster 1)

The VET basis of admission does not easily allow for identification of different VET providers i.e. TAFE therefore it is necessary for us to undertake lower level analysis and data recording to specifically highlight TAFE statistics. (Respondent, Cluster 2)

As reported by universities in more than one state, there are limitations imposed on universities wishing to monitor and evaluate the success of different VET-HE pathways due to the way state admissions bodies record the VET institution of enrolment:

The major challenge in monitoring VET articulation is inconsistent recording of the VET institution of enrolment. VET institution details are not captured in VTAC applications and only recorded in the [University] system if the student enters them. This impairs [the University's] ability to monitor the performance of students from different TAFE Institutes or Registered Training Organisations. [The University] has requested that VTAC include VET institution in the VTAC file provided to universities... (Respondent, Cluster 3)

A similar issue was identified by a university in Queensland:

The institution for which the student is articulating from is only captured at application stage, and is subject to the information entered by the student. This leads to a large part of the data to be disaggregated and not specific to a VET provider. This leads to difficulty providing feedback to individual VET organisations on which programs are effective in providing pathways for students or where there are gaps in knowledge delivery where students may be struggling academically. (Respondent, Cluster 3)

One respondent highlighted the need for a unique student identifier to track students moving between VET and higher education sectors. This respondent pointed out that a unique student code would not only enable universities to better monitor students and evaluate the effectiveness of different VET-HE pathways: it will also assist in developing reverse pathways to improve student outcomes.

This will also enable us to track students moving from university to TAFE and to identify which TAFE courses they undertake. We can use this information to offer relevant VET units as elective subjects within our degrees to assist students achieve vocational skills more quickly. (Respondent, Cluster 3)

The ability of universities to monitor the outcomes of VET-HE pathways is critical to the improvement and extension of pathways - in both directions. Further, without a sophisticated capability to monitor outcomes, institutions can find it difficult to persuade its internal stakeholders that pathways should be developed or that it is worthwhile admitting VET award students. As one respondent commented:

We generate reports annually on the progress of those admitted on the basis of VET qualifications. These reports measure performance (grade point average), grade distributions, progress and attrition rates for those admitted on the basis of VET studies compared to those admitted through other criteria.

Given that overall performance by those admitted on the basis of VET is comparable to those admitted with an ATAR of 70+, this evidence has been useful in generating cultural change within Faculties to be more supportive of students entering through this pathway. (Respondent, Cluster 3)

References

- Abbott-Chapman, J 2006, 'Moving from technical and further education to university: an Australian study of mature students, *Journal of Vocational Education & Training*, vol.58, no.1, pp. 1-17.
- Australian Government (2011), *VET Fee-Help Information Booklet. 2011 Edition*
- Australian Qualifications Framework (AQF) Council, 2009, *AQF National Policy and Guidelines on Credit Arrangements*, Final Draft, May.
- Australian Qualifications Framework (AQF) Council, 2011, *Australian Qualifications Framework*, 2011, First Edition, July.
- Bradley, D, Noonan, P, Nugent, H. & Scales, B 2008, *Review of Australian Higher Education. Final Report*. December.
http://www.deewr.gov.au/HigherEducation/Review/Documents/PDF/Higher%20Education%20Review_on_e%20document_02.pdf
- Catterall, J & Davis, J 2012, *Enhancing the student experience: transition from vocational education and training to higher education*, Final Report, Australian Teaching and Learning Council (ALTC).
- Centre for Research on Education Systems (CRES) 2011, *Preparation for Practice; A report on the effectiveness of courses leading to an early childhood qualification in preparing and developing the early childhood education and care workforce*, report prepared for the Victorian Department of Education and Early Childhood Development, August.
- Cram, B and Watson, L, 2008 'Managing Credit Transfer from TAFE to university: the case for cross-sectoral collaboration'. Paper presented to the Eleventh AVETRA Conference. Adelaide.
- Dowling, D 2010, 'A review of para-professional engineering education in Australia: exploring the VET-HE divide'. *Proceedings of the 2010 AaeE Conference*, Sydney.
- Everitt, BS, Landau, B & Leese, M 2001, *Cluster Analysis*, Oxford University Press, London.
- Hair, JF, Anderson, RE, Tatham, RL & Black, WC 1998, *Multivariate Data Analysis*, 5th Edition, Prentice Hall, Upper Saddle River.
- Harris, R, Rainey, L, and Sumner, R, 2006, *Crazy Paving or Stepping Stones? Learning Pathways within and between vocational education and training and higher education*, NCVET, Adelaide.
- Harris, R, Sumner, R, and Rainey, L, 2005, *Student Traffic: Two-way movement between vocational education and training and higher education*, NCVET, Adelaide.
- Karmel, T, 2008, *Reflections on the tertiary education sector in Australia*. Paper presented to the LH Martin Institute for Higher education Leadership and Management: Charting new terrain: creating and maintaining a diversified tertiary education sector in Australia conference, Melbourne. November. NCVET Conference Paper
- King, R, Dowling, D, and Godfrey, E, 2011, *Pathways from VET awards to engineering degrees: a higher education perspective*. Australian Council of Engineering Deans. April
- Long, M, Ferrier, F, Heagney, M, 2006, Stay, play or give it away? Students continuing, changing or leaving university study in first year, Monash University, Centre for the economics of education and training, October.
- Mazzachi, R, 2009 *Student Pathways: aspects of data collection. A report prepared for the Pathways Project*. National Centre for Vocational Education Research. Adelaide. October
- Ministerial Council on Education, Employment, Training and Youth Affairs, (MCEETYA), 2006, *Principles for good practice information provision on credit transfer and articulation from Vocational Training and Education to Higher Education*.
- NCVER, 2010, *Tertiary Education and Training in Australia*, 2010, Department of Industry Innovation, Science, Research and Tertiary Education.
- 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, Department of Education, Science and Training, June.
- PhillipsKPA, 2006b, *National Study to Improve Outcomes in Credit Transfer and Articulation from Vocational and Technical Education to Higher Education*, Stage 1 Report, Department of Education, Science and Training February.
- Smith, E & Bush, T 2006, 'The delicate dance: the assessment implications of awarding students vocational qualifications within university degrees, *Higher Education Research & Development*, vol.25, no.4, pp.387-402.

- Urban, M, Jones, E, Smith, G, Evans, C, Maclachlan, M, and Karmel, T, 1999, *Completions, undergraduate academic outcomes for 1992 commencing students*, Higher Education Division, Department of Education, Training and Youth Affairs, Occasional Paper Series No. 99-G, August.
- Walls, S and Pardy, J 2010, *Crediting vocational education and training for learner mobility*. NCVER.
- Watson L 2006, *Barriers to successful transitions from Vet to HE - a case study of student pathways in early childhood education and care*. Paper presented to Ninth AVETRA Conference. Wollongong
- Watson, L and McIntyre, J, 2011, *Scaling Up: Building engineering workforce capacity through education and training*, Australian National Engineering Taskforce. April.
- Watson, L, 2008, 'Improving the experience of TAFE award-holders in higher education,' in *International Journal of Training Research*, vol.6, no.2, pp. 40-53.
- Wheelahan, L 2009, 'Do educational pathways contribute to equity in tertiary education in Australia? *Critical Studies in education*, vol. 50, no. 3, pp.261-275.
- Wheelahan, L, 2000, *Bridging the Divide: developing the institutional structures that most effectively deliver cross-sectoral education and training*, Adelaide, SA: National Centre for Vocational Education Research.
- Wheelahan, L, 2008, *Can learning outcomes be divorced from processes of learning? Or why training packages make very bad curriculum*. Paper presented at the 11th Annual Australian Vocational Education and Training Research Association Conference, 3-4 April, 2008.
- Young, I 2007, *Building Better Pathways to Higher Education*, Paper presented to the AFR Higher Education Summit, Melbourne 3-4 April 2007.

A.1: University admissions on the basis of a VET award by broad Field of Education - 2010

	01	02	03	04	05	06	07	08	09	10	All
Charles Sturt University	16%	62%			17%	16%	21%	32%	38%	11%	26%
Macquarie University	3%	5%		0%	0%	0%	8%	4%	3%	8%	4%
Southern Cross University	0%	18%			10%	10%	7%	7%	12%	6%	8%
The University of New England	7%	22%	0%	0%	0%	19%	17%	8%	5%	9%	9%
The University of New South Wales	1%	0%	1%	10%		0%	3%	1%	3%	8%	3%
The University of Newcastle	4%	32%	17%	20%	0%	18%	10%	16%	3%	14%	10%
The University of Sydney	1%	9%	2%	7%	0%	1%	3%	2%	2%	0%	1%
University of Technology, Sydney	6%	9%	10%	4%		21%	8%	8%	2%	3%	8%
University of Western Sydney	10%	26%	15%	23%		16%	30%	23%	17%	10%	17%
University of Wollongong	0%	11%	9%			15%	17%	17%	9%	8%	11%
Deakin University	6%	17%	20%	28%	14%	18%	28%	17%	11%	11%	16%
La Trobe University	6%	19%	0%		0%	12%	19%	23%	12%	11%	15%
Monash University	1%	8%	0%	0%	0%	10%	24%	2%	3%	7%	4%
RMIT University	11%	9%	22%	15%	21%	18%	20%	24%	21%	26%	21%
Swinburne University of Technology	19%	23%	11%	19%		54%		28%	15%	24%	20%
The University of Melbourne	0%		0%	0%	2%	0%		1%	1%	9%	1%
University of Ballarat	10%	6%	0%			16%	20%	7%	16%	17%	11%
Victoria University	12%	23%	13%			28%	24%	13%	12%	13%	16%
Central Queensland University	0%	13%	12%	0%		15%	10%	21%	7%	7%	11%
Griffith University	4%	24%	6%	6%	0%	11%	17%	17%	8%	9%	11%
James Cook University	0%	0%	0%	0%		5%	15%	4%	7%	6%	4%
Queensland University of Technology	4%	16%	7%	7%		8%	7%	8%	5%	4%	7%
The University of Queensland	1%	0%	0%	0%	3%	1%	4%	1%	2%	2%	1%
University of Southern Queensland	4%	0%	14%			13%	12%	6%	8%	1%	6%
University of the Sunshine Coast	0%	0%	0%	0%	0%	8%	8%	7%	9%	6%	4%
Curtin University of Technology	4%	0%	2%	5%	0%	6%	8%	2%	4%	2%	3%
Edith Cowan University	7%	33%	14%			20%	13%	28%	15%	11%	16%
Murdoch University	10%	11%	16%	15%		18%	23%	8%	8%	7%	10%
The University of Western Australia	0%	0%	0%	5%	0%	0%	0%	0%	0%	0%	0%
The Flinders University of South Australia	5%	0%	0%		0%	7%	5%	15%	9%	0%	7%
The University of Adelaide	0%	0%	0%	0%	7%	0%	0%	2%	3%	0%	1%
University of South Australia	0%	19%	11%	8%	0%	14%	10%	16%	14%	6%	12%
University of Tasmania	8%	4%	13%	13%	22%	17%	28%	8%	9%	0%	11%
Charles Darwin University	0%	0%	18%		0%	31%	12%	15%	11%	0%	12%
The Australian National University	5%	0%	5%			0%		11%	5%	0%	5%
University of Canberra	7%	19%		21%	0%	21%	15%	19%	7%	13%	13%
Australian Catholic University				0%		11%	13%	12%	8%	11%	10%
Australia	4%	14%	7%	10%	6%	12%	15%	13%	8%	8%	10%

Notes: Blank cells mean that no activity is reported in this field of education. Calculations based on data provided on undergraduate student commencements where numbers lower than 10 were not specified, therefore "0%" can indicate that the number was lower than 10. Table excludes non-award and mixed field admissions

Source: Higher Education Statistics Collection (unpublished data)

A.2: University admissions on the basis of a VET Award - institutional and broad field of education clusters

	08	10	06	07	02	03	04	05	09	01	All
Cluster 1											
Charles Sturt University	32%	11%	16%	21%	62%			17%	38%	16%	26%
RMIT University	24%	26%	18%	20%	9%	22%	15%	21%	21%	11%	21%
Swinburne University of Technology	28%	24%	54%		23%	11%	19%		15%	19%	20%
University of Western Sydney	23%	10%	16%	30%	26%	15%	23%		17%	10%	17%
Victoria University of Technology	13%	13%	28%	24%	23%	13%			12%	12%	16%
Edith Cowan University	28%	11%	20%	13%	33%	14%			15%	7%	16%
Deakin University	17%	11%	18%	28%	17%	20%	28%	14%	11%	6%	16%
Cluster 2											
La Trobe University	23%	11%	12%	19%	19%	0%		0%	12%	6%	15%
University of Canberra	19%	13%	21%	15%	19%		21%	0%	7%	7%	13%
Charles Darwin University	15%	0%	31%	12%	0%	18%	0%	0%	11%	0%	12%
University of South Australia	16%	6%	14%	10%	19%	11%	8%	0%	14%	0%	12%
University of Ballarat	7%	17%	16%	20%	6%	0%			16%	10%	11%
University of Tasmania	8%	0%	17%	28%	4%	13%	13%	22%	9%	8%	11%
Griffith University	17%	9%	11%	17%	24%	6%	6%	0%	8%	4%	11%
University of Wollongong	17%	8%	15%	17%	11%	9%		0%	9%	0%	11%
Central Queensland University	21%	7%	15%	10%	13%	12%	0%		7%	0%	11%
Murdoch University	8%	7%	18%	23%	11%	16%	15%		8%	10%	10%
Australian Catholic University	12%	11%	11%	13%			0%		8%		10%
The University of Newcastle	16%	14%	18%	10%	32%	17%	20%	0%	3%	4%	10%
The University of New England	8%	9%	19%	17%	22%	0%	0%	0%	5%	7%	9%
Southern Cross University	7%	6%	10%	7%	18%			10%	12%	0%	8%
University of Technology, Sydney	8%	3%	21%	8%	9%	10%	4%		2%	6%	8%
Queensland University of Technology	8%	4%	8%	7%	16%	7%	7%		5%	4%	7%
Cluster 3											
Flinders University of South Australia	15%	0%	7%	5%	0%	0%		0%	9%	5%	7%
University of Southern Queensland	6%	1%	13%	12%	0%	14%			8%	4%	6%
The Australian National University	11%	0%	0%		0%	5%		0%	5%	5%	5%
James Cook University	4%	6%	5%	15%	0%	0%	0%		7%	0%	4%
University of the Sunshine Coast	7%	6%	8%	8%	0%	0%	0%	0%	9%	0%	4%
Monash University	2%	7%	10%	24%	8%	0%	0%	0%	3%	1%	4%
Macquarie University	4%	8%	0%	8%	5%	0%	0%	0%	3%	3%	4%
Curtin University of Technology	2%	2%	6%	8%	0%	2%	5%	0%	4%	4%	3%
The University of New South Wales	1%	8%	0%	3%	0%	1%	10%	0%	3%	1%	3%
The University of Sydney	2%	0%	1%	3%	9%	2%	7%	0%	2%	1%	2%
The University of Adelaide	2%	0%	0%	0%	0%	0%	0%	7%	3%	0%	1%
The University of Melbourne	1%	9%	0%			0%	0%	2%	1%	0%	1%
The University of Queensland	1%	2%	1%	4%	0%	0%	0%	3%	2%	1%	1%
The University of Western Australia	0%	0%	0%	0%	0%	0%	5%	0%	0%	0%	0%
Australia	13%	8%	12%	15%	14%	7%	10%	6%	8%	4%	10%

Shaded areas denote instances where the percentage admission is above the sector average. Blank cells indicate the university reported no enrolments in this FOE. Table excludes non-award and mixed field admissions

A.3: Survey Questions

Question 1: Does your institution have any specific policy objectives (eg. targets) regarding the proportion of students admitted to undergraduate programs on the basis of VET studies? If so, please specify?

Question 2: What central processes and practices, if any, do you have in place to encourage the admission of VET students to undergraduate programs (e.g. dedicated pathway officers, heads of agreement, marketing initiatives etc.)? Please provide details.

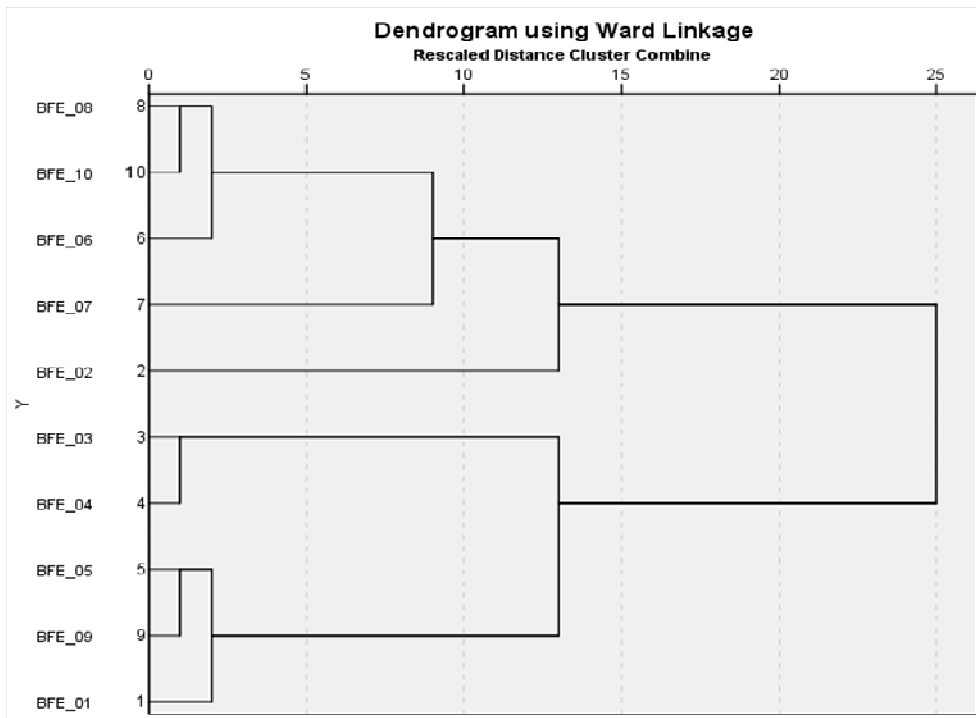
Question 3: What policies or programs do you have to support students admitted to your undergraduate programs on the basis of VET studies?

Question 4: How does your institution monitor the enrolment and/or progression rates of students admitted on the basis of VET studies?

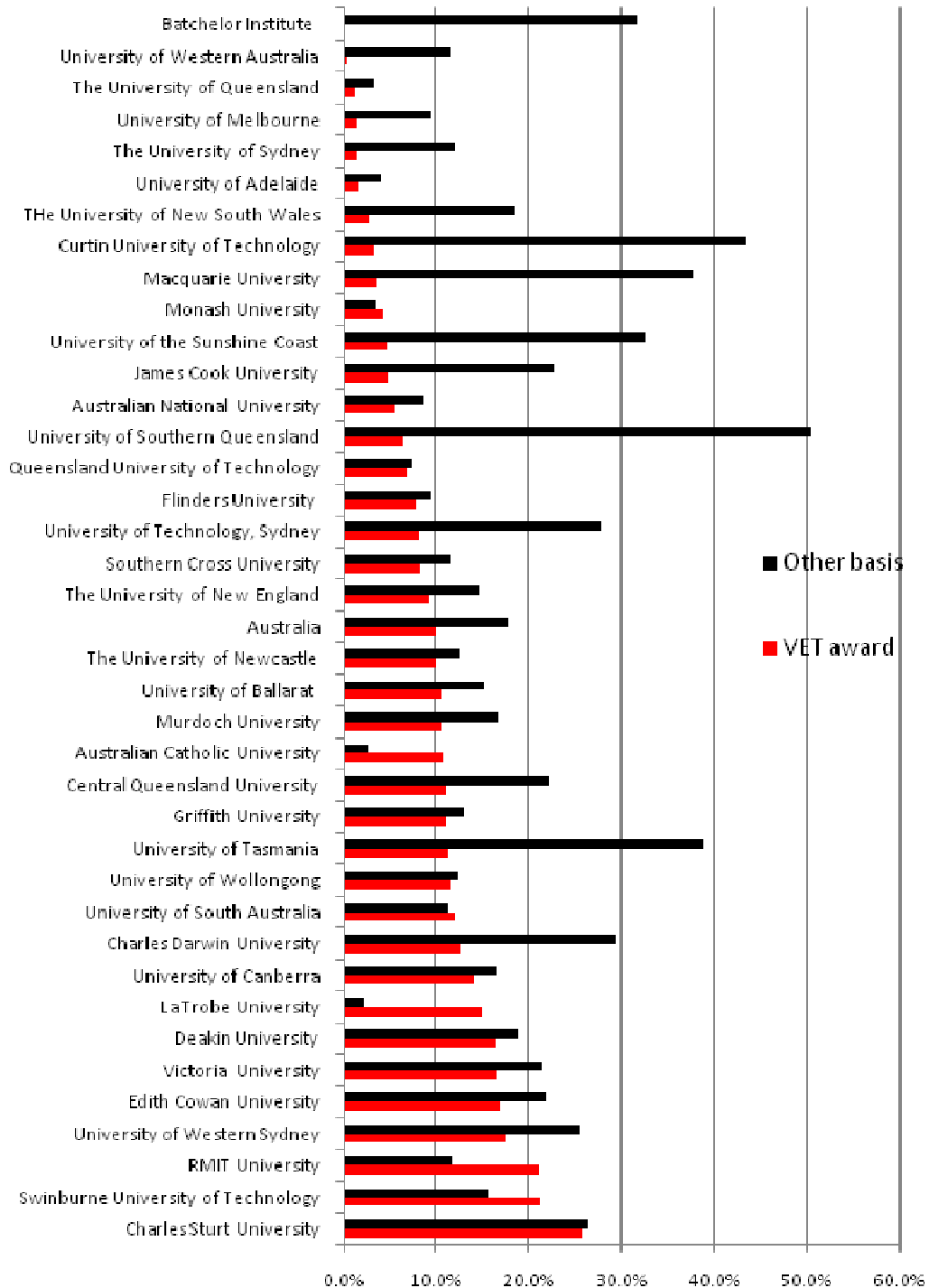
Question 5: What issues or difficulties, if any, does your institution face in monitoring the admission and progression of students admitted on the basis of VET studies?

Question 6: Is there anything else you would like to say about your institution's experience in regard to VET-HE Pathways (eg. challenge, benefits, costs)?

A.4: Clusters of broad Fields of Education (FOEs) Dendrogram

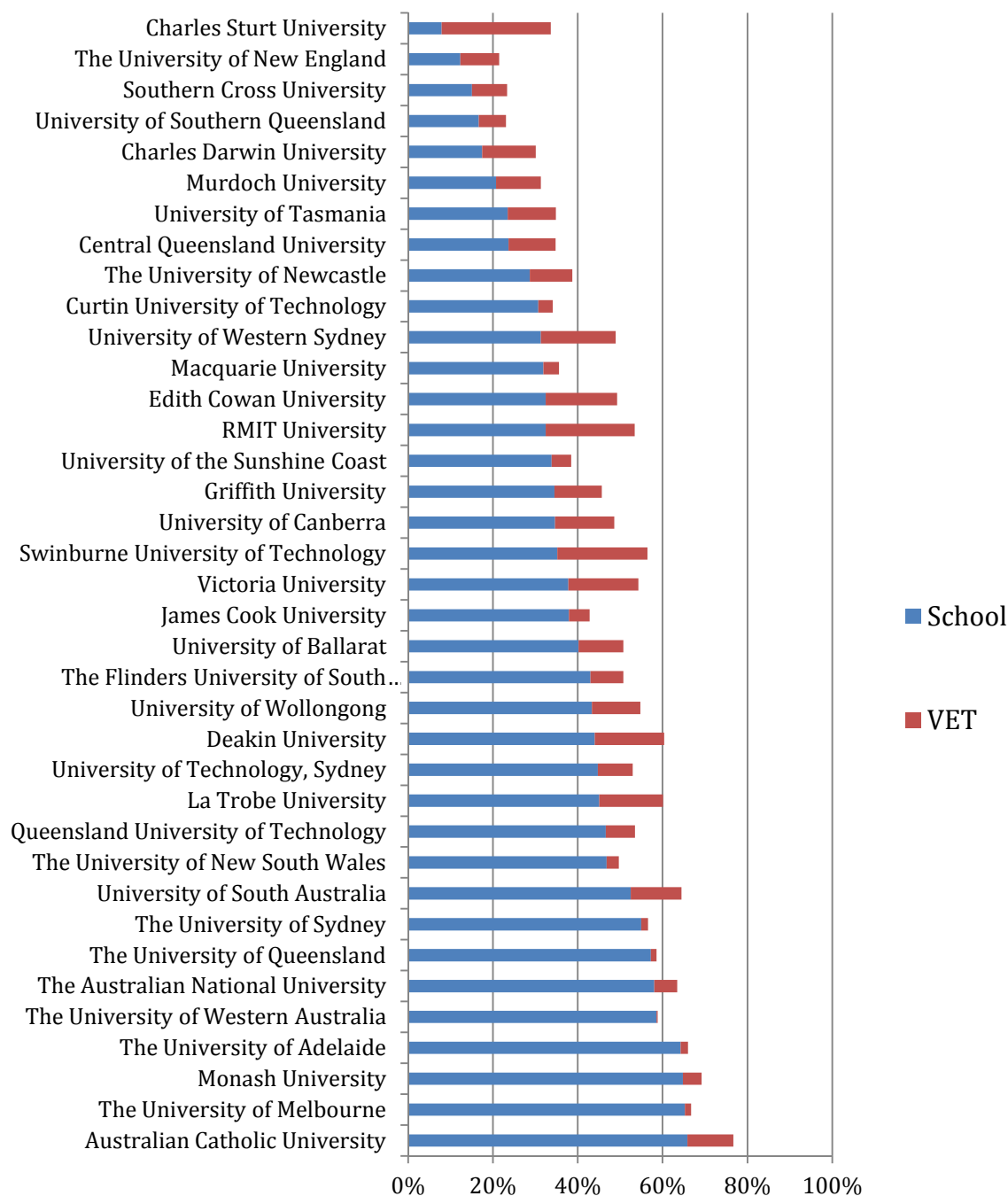


A.5 Proportion of undergraduate commencing students admitted on the basis of a VET award and on an "Other basis", by HE institution, Australia 2010



Source: DEEWR (2010) Higher Education Statistics Collection. Unpublished data

A.6 Proportion of undergraduate commencing students admitted on the basis of Secondary School completion and a VET award, by HE institution, Australia 2010



Source: DEEWR (2010) Higher Education Statistics Collection. Unpublished data