2016

Learning preferences of Enrolled Nursing students: Educational preparation and training for workplace readiness

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Raghunathan, K., Allen, S., & Jacob, E. (2016). Learning preferences of Enrolled Nursing students: Educational preparation and training for workplace readiness. In *Proceedings of the 24th National Vocational Educational and Training Research Conference* (pp. 33-44). Syndey, NSW.

24th NATIONAL VOCATIONAL EDUCATION AND TRAINING RESEARCH CONFERENCE

NO FRILLS

6-8 July 2015
Sydney, New South Wales

Youth ▪ Pathways ▪ Skills

Refereed papers

Edited by

Laura Jackson
NCVER

Presented by

NCVER

Co-hosted by

University of Western Sydney

TAFE NSW Western Sydney Institute

WSI

TAFE NSW SWSi
South Western Sydney Institute

Supported by

Australian Government
Department of Education and Training

Through the National Vocational Education and Training Research Program

INFORMING POLICY AND PRACTICE
IN AUSTRALIA'S TRAINING SYSTEM

This document should be attributed as Jackson, L (ed.) 2016, *24th National Vocational Education and Training Research Conference 'No Frills': refereed papers,* NCVER, Adelaide.

COVER IMAGE: GETTY IMAGES/iStock

ISBN 978 1 925173 46 8
TD/TNC 123.02

Published by NCVER, ABN 87 007 967 311

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About the research

The 24th National Vocational Education and Training Research Conference 'No Frills': refereed papers

NCVER

The 24th National Vocational Education and Training Research Conference, colloquially known as 'No Frills', was held in July 2015.

The conference highlighted research across three major themes:

- *youth:* engaging, inspiring and supporting students to realise their potential
- *pathways:* transitioning through education and training into the workforce
- *skills:* working with industry and employers to improve education and training.

The presentations provided delegates with diverse insights from government, academic and employer perspectives on the key issues confronting the vocational education and training (VET) sector. A select few speakers at the conference were also offered the opportunity to have their papers peer-reviewed, and these five refereed papers have been compiled to make up this book of conference proceedings.

The papers examine: the diversity of VET providers and the needs of students; initiatives designed to improve the capabilities of VET practitioners; how skills contribute to innovation, and the implications of this in terms of return on investment; the impact of VET students transitioning directly into second-year university and how these students can best be supported; and the learning preferences of VET students (specifically enrolled nurses), how they differ by comparison with university students and the consequent implications.

It is hoped these papers will provide an insight into the array of topics presented at the No Frills conferences and generate interest in attending future conferences.

Dr Craig Fowler
Managing Director, NCVER

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Introduction

The 24th National Vocational Education and Training Research Conference was held in Sydney from 6 to 8 July 2015. This annual conference, colloquially known as 'No Frills', enables discussion and knowledge sharing on the key issues confronting the vocational education and training (VET) sector.

By bringing together industry, policy-makers, training providers, and researchers to share their experience and knowledge, the 24th No Frills conference provided NCVER with an opportunity to continue to be a leader in facilitating and disseminating VET research and learnings. The conference is a key deliverable under the federal National Vocational Education and Training Research (NVETR) program and receives funding support from the Commonwealth Department of Education and Training.

The 2015 conference was co-hosted by the National Centre for Vocational Education Research (NCVER), the University of Western Sydney (UWS) and TAFE NSW — Western Sydney Institute and South Western Sydney Institute.

Through informative, relevant and thought-provoking presentations on a wide range of VET-related research the conference explored key issues in the VET sector, with a focus on three major themes, namely:

- *youth:* engaging, inspiring and supporting students to realise their potential
- *pathways:* transitioning through education and training into the workforce
- *skills:* working with industry and employers to improve education and training.

The conference was complimented by four pre-conference workshops which provided an opportunity for professional development in key subject areas of interest. The workshops focussed on industry engagement with the VET system and establishing effective industry partnerships; an introduction to new features of the VOCEDplus database; methods to measure the impact of research; and an introduction to NCVER's new Total VET activity data collection and its associated resources.

Three keynote speakers set the scene for the conference, focusing on practical challenges and opportunities for the VET sector:

- Professor Peter Shergold, Chancellor of UWS and Chair of the NCVER Board, provided insight into the opportunities that total VET activity (TVA) data will provide to the VET sector and policy makers
- Senator the Hon. Simon Birmingham, Minister for Education and Training (previously Assistant Minister for Education and Training) shared his vision for NCVER — a 'one stop shop for data collection in the training and vocational education sector right around Australia and as the clearing house which would facilitate the data sharing needs of a wide range of stakeholders'
- Nicholas Wyman presented on the key role of partnerships — between employers, communities and educators — in bridging skills gaps and that a successful skills generation was about people finding the right education at the right time through a range of avenues including VET, workplace training, or university studies.

The 24th No Frills Conference featured 52 parallel sessions along with two poster sessions, and brought together 307 delegates from Australia, New Zealand, Singapore, China, Ireland and the United Kingdom with backgrounds in government, research, industry, training and consultancy were in attendance, which led to valuable networking opportunities for delegates.

Five of the 52 presentations were subsequently submitted as research papers for peer review and are presented in this compendium. Each of these papers contributes to policy and practice in the VET sector.

The first paper, prepared by Peter Bentley, Leo Goedegebuure and Ruth Schubert provides an in-depth analysis of the institutional diversity of Australian universities along five dimensions: teaching and learning, student profile, research involvement, knowledge exchange, and international orientation.

The second of these papers, by Mark Symmons, Paul Kremer and Alvin Rendell, considers the needs of VET students transitioning to second-year university, and examines the disruptive impact of transitioning from one institution to another.

The third paper, which also focuses on the theme of 'pathways' was prepared by Kalpana Raghunathan, Sonia Allen and Elisabeth Jacob and considers different pathways into nursing employment. In particular, this research sought to identify the learning preferences of Enrolled Nursing students studying in VET institutions, and how this differs to the preferences of Registered Nurses studying at a university.

The fourth paper, by Anne Dening, considers the outcomes of a workforce training and development initiative implemented at TAFE SA Regional Institute from early 2010 to late 2012. The aim of the initiative being to improve the professional capabilities of VET practitioners at the institute.

The final paper, also focusing on the 'skills' theme, was prepared by Michael Walsh and sought to understand how skills contribute to innovation and the implications of this in terms of return on investment for VET.

Overall, the 2015 No Frills conference highlights the important role research plays in understanding the three themes of youth, pathways, and skills. The research presented at the conference highlighted ways to engage and inspire students to participate in education; ways to support them in their transitions through education and training and into the workforce; and considered best-practice methods for working with employers to ensure training is appropriate and graduates have the skills required to meed industry needs.

These proceedings highlight the importance of ongoing research in sustaining and improving Australia's tertiary education and training system. The conference guide and links to the individual presentations can be found at the VOCED plus website <http://www.voced.edu.au/content/ngv68904>.

Profiling the institutional diversity of VET providers in Australia, across four broad dimensions

Peter Bentley
Leo Goedegebuure
Ruth Schubert

LH Martin Institute, University of Melbourne

This paper contains the first results of a research project whose aim is to portray the diversity of providers in the Australian vocational education and training (VET) sector in a novel and transparent way. Adapting an approach used to profile the diversity of Australian universities, the research has produced results that appear promising, in that they highlight the significant diversity across an initial 25 providers sampled from the 100 largest VET providers in Australia. The top 100 providers of publicly-funded VET cover 75% of providers, from a total of almost 5000 providers. Although the project is ongoing and the empirical phase still needs to be completed, there is little doubt that the results generated through this approach have the capacity to provide rich input into federal, state and institutional policy and strategy processes.

Introduction

In 2013 the LH Martin Institute, in collaboration with the Australian Council for Educational Research (ACER), published a research briefing, *Profiling diversity of Australian universities* (Coates et al. 2013). The intention of this briefing was to move the discussion on diversity to a different and more nuanced level. In the past, much of the debate on diversity in the university sector was focused on emphasising that all institutions are comprehensive research universities, given that this is the legal basis for carrying the title of 'university' in Australia. Status perceptions and aspirations undoubtedly played a prominent role in this; but equally, empirical research has not been forthcoming in actually pinpointing the degree of institutional diversity in the university sector (Codling & Meek 2006; Goedegebuure, Lysons & Meek 1993; Huisman 2000; Marginson 1999; Meek 1991; Meek & O'Neill 1996; Meek & Wood 1998). Adapting an approach developed in Europe (van Vught 2009) through the so-called U-Map project, the briefing attempted to elicit a more fine-grained perspective of institutional diversity by profiling Australian universities along five dimensions: teaching and learning; student profile; research involvement; knowledge exchange; and international orientation.

Using publicly available data to populate these dimensions, the briefing identified six distinct groups of universities. The ensuing discussion highlighted both the strengths and weaknesses of the approach. Profiling along these dimensions indeed enabled a more nuanced discussion on distinctive missions and strategy, and the subsequent graphic representation through 'sunburst charts' strongly enhanced the understanding of institutional differences. Equally it highlighted data limitations, in particular for the knowledge exchange dimension, and it raised questions of interpretation where groupings did not make intuitive sense. The briefing concluded with a discussion on possible ways to further refine this methodology, with one of the recommendations being to extend the project to the vocational

education sector. The 'VET profiling' project commenced in 2014 and this paper contains the initial outcomes. In the following sections the approach and methodology for the project are outlined, as well as the extent to which these were different from the 'university profiling' project, and the reasons for this. The paper begins by articulating the rationale for the project, with an explanation of why diversity matters and why mapping institutional profiles may be useful from a policy and strategy perspective.

Why diversity matters[1]

Among both policy-makers and tertiary education researchers, there is agreement that overall, diversity is a desirable element in a tertiary education system with three key arguments supporting this (van Vught 2008). In the first place more diverse systems better meet the differing needs of students. With a move to universal participation (Trow 2005), the student body, by definition, becomes more diverse. The chances of successful completion are enhanced with a wide range of institutions offering students the opportunity to select one that best reflects their preferences and abilities.

In the second place, more diverse tertiary education systems enhance social mobility, in that they provide different access points and articulation pathways by comparison with the traditionally small, elite higher education systems prevailing before the Second World War, which almost exclusively catered for the social elite. Diverse tertiary education systems thus allow for the increased participation of various equity groups.

In the third place, more diverse tertiary education systems better meet the needs of the labour market. Fragmentation and differentiation are increasingly observed in labour markets, signifying the need for different types of graduates. More diverse systems will produce this diversity in graduates.

Why transparency matters

Accepting that diversity is a good thing, the question also arises of how to assist policy-makers and institutional leaders, who may not be able to understand the overall picture. High degrees of institutional diversity can lead to confusion, as it becomes less clear what the real differentiators are, preventing institutional leaders from developing distinct market niches and key stakeholders from understanding who is doing what in the system. Governments, both federal and state, are numbered among these important stakeholders; without their recognition of the nature and degree of diversity across the system, effective policy-making may be inhibited, resulting in the 'one size fits all' approach, which increasingly appears to be applied. Examples here are the current policy debate on deregulation in higher education and the moves to contestable markets in a number of states. A better understanding of who is doing what across the system allows for better targeted policies, which in turn will further enhance diversity rather than impede it.

Transparency thus becomes a necessary condition — the institutional profiles at the heart of this project serve as transparency instruments. They allow internal and external stakeholders to see what the institution stands for and what it does and, related to this, its priorities and needs.

[1] This section draws substantially on Coates et al. (2013, p.6).

Approach and methodology used

In adapting the original profiling approach to the VET sector, the project has been guided by a steering committee, comprised of experienced institutional leaders from both the public and private VET providers, as well as experts with a long history in VET policy-making in Australia. The primary issue addressed by the steering committee was the relevance of the dimensions of the university profiling project in a VET context and the viability of the underlying indicators chosen. In terms of the principal dimensions, it quickly became clear that the research involvement dimension, as used in the university context, would have little use in a VET context because of its emphasis on basic research activities. Therefore, it was decided to create a new dimension, 'applied research, industry collaborations and partnerships', to reflect the specific nature of VET in the area of knowledge exchange and engagement. This reduced the number of dimensions from five to four. It was also argued that context matters, in the sense that operating and regulatory conditions vary between states and type of providers (public/private). While this could not (yet) be captured in a dimension, the steering committee strongly advised that this be taken into account in the analysis, and that relevant data for this be collected.

In terms of the underlying indicators, the VET project differs significantly from the university project. In an attempt to arrive at an approach that combines relevance with parsimony, a new set of indicators was constructed. In table 1 this set is presented and juxtaposed with the university set, to highlight the similarities and differences.

Table 1 Dimensions and indicators adopted in the university and VET profiling projects

Dimension	University profiling	VET profiling
Teaching and learning	# Fields of education	# Fields of education
	Learning and teaching citations	Levels of education
	Teaching awards	AQF 7 and above, independent
	% Casuals	AQF 7 and above, partnership
	Staff-student ratio	Diversity of teaching modes
	Retention	Pass rate
	% Academic staff	% Teaching at diploma or above
Student profile	# Students	# Students
	# Undergraduates	
	# Postgraduates	% Without prior higher education
	% Mature age	% Mature age
	% Part-time	% Part-time
	% External	% Indigenous
	% Low SES	% Low SES
	% Regional	% Regional
Research involvement	# Research publications	Applied research
	Publications per academic staff	Industry collaboration and partnerships
	# Research fields	# Agreements external organisations
	% RFields world class	# Agreements education services
	% Research students	# Agreements other services
	% Graduates into study	% Revenue fee-for-service
Knowledge exchange	$'000 Royalties, patents	
	% Funds from industry	
	% Graduates in full-time work	
	# Research collaborations	
	Staff per collaboration	
International orientation	# International students	# International students
	% International students	% International students
	International research including % of all	# Offshore campuses
	# OS collaborations	# International agreements
	OS collaborations as % of all	% Revenue dedicated to internationalisation
	% Staff with OS qual	% Revenue from internationalisation

The strongest similarities across the indicators are on the dimension of the student profile. Some similarity is found in the dimensions of teaching and learning and international orientation, with the research involvement and knowledge exchange dimensions reflecting strong differences.

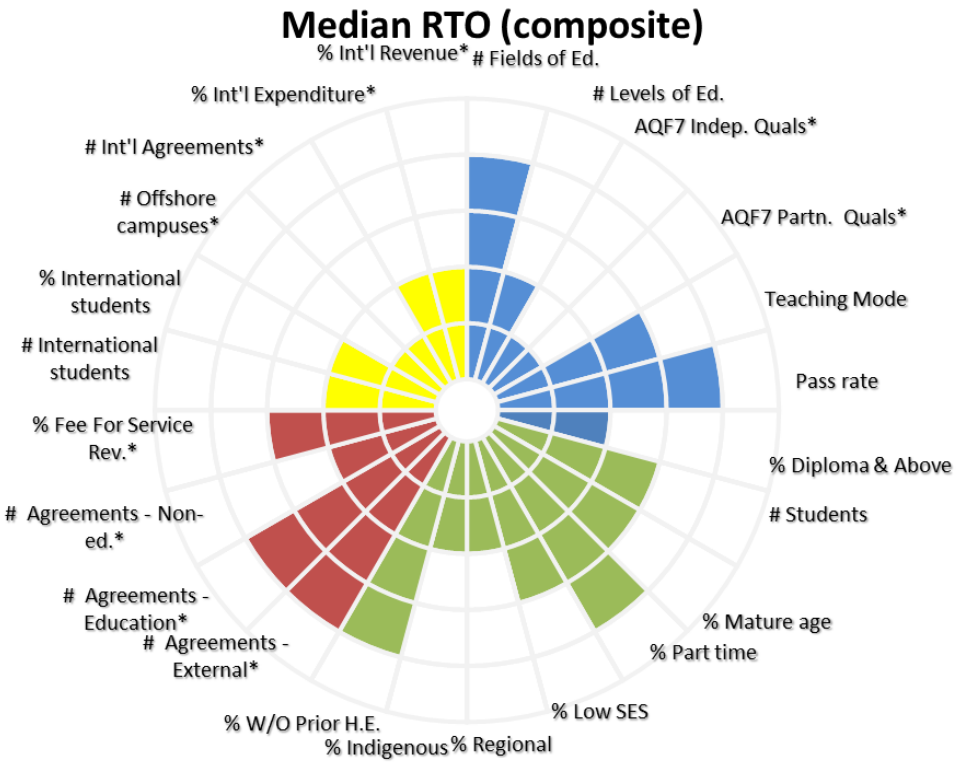
In terms of data collection, to keep the project manageable, it was decided, in consultation with the steering committee, to focus on the 100 largest VET providers across both the public and private sectors. A partnership with the National Centre for Vocational Education Research (NCVER) was established to gain access to the publicly available data to populate the dimensions. While NCVER collects a substantive amount of data for VET sector reporting, significant gaps were identified for the international orientation dimension, and the applied research and industry collaboration and partnership indicators within the research involvement dimension. Given the importance of these dimensions for the overall profiling exercise, it was decided to collect these data through a separate questionnaire (appendix A). Ethics approval for this was obtained from the University of Melbourne's Graduate School of Education, and the 100 largest VET providers were invited to participate, with the active support of both TAFE Directors Australia (TDA) and the Australian Council for Private Education

and Training (ACPET). A total of ten indicators have been populated through the questionnaire (appendix B), with the response at the time of writing this paper being 25. It is expected that this number will increase significantly for the final project report. Appendix B also contains the information on the actual operationalisation of the indicators and their cut-offs; this information was used to generate the starburst graphics that constitute the institutional profile (figure 1).

Findings and discussion

Figure 1 presents the institutional profile of the median VET provider in Australia.

Figure 1 Institutional profile of median Australian VET provider



The median VET provider is a composite of the 25 full profiles completed to date, and is reasonably comprehensive in the fields it covers. It is primarily focused on providing qualifications below the bachelor level, with a relatively balanced teaching mode, including classroom, online and employment-based teaching and a reasonable pass rate. The institution caters for some 14 000 students, who can best be characterised as mature-aged, part-time and from a low socioeconomic status (SES) background. It is not predominantly a regional institution and hence its students are neither regional nor Indigenous and they don't have significant higher education backgrounds. The institution is quite active in terms of partnerships and generates significant income from fee-for-service activities. It also is primarily a local institution with limited international exposure.

However, as can be seen from the three profiles representing the three initial categories in appendix C, the model of 'median registered training organisation' hides the significant diversity that exists across the Australian VET system, even when taking into account the relatively limited response to the survey to date.

The most obvious distinction is between the public TAFE (technical and further education) institutions, which by and large show fairly comprehensive profiles, and the far more specialised and contained private registered training organisations (RTOs), which appear to operate in specific niche markets. Complementing this is the clear distinction in international orientation, with the vast majority of relatively small private training organisations also being distinctly national (or local) in orientation, compared with a number of TAFE institutions, which show a significant international profile. Similar differences exist in the applied research/industry collaboration and partnership dimension indicators. With respect to the student profile dimension, again significant differences can be found across the sector in terms of the types of students serviced by these providers.

Given the purposes of this study, the results are promising from a number of perspectives. Clearly, as with the university profiling project, the methodology appears to work. The resulting profiles highlight the diversity across the sector and as such deliver the intended results. The data provided by NCVER provide a solid basis for inter-institutional comparisons, while the questionnaire data so far have not generated negative responses from participants. Consultation with the steering group in the development of the questionnaire has also helped to generate a series of relevant and unambiguous questions.

Full profiles for 25 institutions have now been added to the database, and the steering group has considered the extent to which the outcomes can be used to generate 'types of profiles', which make sense from an informed insider perspective. This process indicates that, among the profiles completed, at least three clear categories are evident, summarised in table 2.

Table 2 Categories of providers

	Local/domestic	**International**
Specialised/niche	Specialised – domestic (privates, high in mature age and part-time)	Specialised – International (none to date fit this category
Comprehensive	Comprehensive – Domestic (regionals)	Comprehensive – International (metro)

To supplement this, further research will incorporate a cluster analysis to generate an empirically driven typology. The third step will be to organise a workshop with institutional executives and state and federal policy-makers. The workshop-style consultations with these personnel will further examine the relevance of the research approach and its outcomes; discuss the validity of the dimensions and indicators; and assess their ability to generate meaningful strategic debate. This debate will address the desired profiles from a government perspective in relation to implicit or explicit policy development, while at the institutional level the discussion will focus on strategic positioning in the context of the activities of other institutions.

Following this, a full research briefing will be prepared and distributed across the VET sector to further stimulate the debate on diversity in the VET sector, the profiling of the sector and considerations of the sector's ongoing viability, as well as the contributions it can make to the further development of a well-educated workforce and a strong engagement with industry and public sector partners.

Conclusions

The objective of this research was to examine and report on the institutional diversity of the top 100 VET providers across Australia. The volume of publicly-funded VET provided by the TAFE sector varies between the states, largely due to the different degrees of marketisation of VET, and also the

different policies adopted by the various state and territory governments in relation to TAFE's role as the public provider. Given the recent significant changes in market share from public to private provision, the steering committee for this research considered it important to include both public and private providers, as clearly the large public TAFE providers no longer deliver the 'lion's share' of publicly-funded VET across Australia.

The preliminary analysis indicates considerable diversity among the VET providers. The profiles between the TAFE institutions vary markedly, with significant differences in the international orientation dimension, applied research indicator, industry collaborations and partnerships indicator, and student profile dimensions. The final report will also examine the institutional context of the TAFE sector, as the states have taken a very different view on the autonomy of their respective TAFE systems. What remains for consideration is the extent to which the level of autonomy has impacted on the institutional profile and orientation.

A clear distinction can be drawn between those TAFE institutions operating in regional Australia and those in the major capital cities, with the regional TAFEs showing a student profile with a significantly higher participation of those from low socioeconomic status backgrounds and a reduced focus on international activity.

The comparison between the public and private providers is equally clear in terms of differences, with the profile of the private providers being more focused on either qualification areas or levels, with less activity across the whole spectrum of the sunburst charts. These differences may indicate a business model more focused on a market niche or demographic, with less need or requirement to address state government priorities.

The findings above are preliminary conclusions; the participating providers are yet to consider the initial sunburst graphs. It is also expected that, as additional providers complete the survey process, the research findings will show more nuanced differences and commonalities between providers across Australia.

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Appendix A: Questionnaire

Research Project – Profiling diversity of providers in the Australian Vocational Education and Training Sector

The Research Project — Profiling diversity of providers in the Australian Vocational Education and Training Sector seeks to map diversity within the VET sector by collecting data across five broad dimensions:

- teaching and learning
- student profile
- applied research, industry collaboration, partnerships
- international orientation
- context.

The National Centre for Vocational Education Research (NCVER) is a partner in this project and has supplied data for the top 100 VET providers. However, data for three dimensions is largely outside its scope, in particular: Applied research, industry collaboration, partnerships; international orientation; and context. Therefore, we are seeking supplementary institutional data on the above dimensions from each participating institution.

The project has been approved by the University of Melbourne's Human Research Ethics Committee (Program ref. 1443316.1). Further details about the project and how the data provided will be used by the project team are available HERE.

The focus of this research is on nationally registered training organisations that deliver vocational education and training. If the RTO in question is only part of a larger organisational structure (i.e. university or company), then the questions below are only in relation to the RTO section. The questions refer to a full year of activity, this can be a financial year or calendar year whichever is most appropriate for the RTO. While actual numbers are preferred, estimates are also acceptable. The raw data will be confidential, however completion of any question is optional.

Please complete the online questionnaire at http://vet-profiling.questionpro.com

Research Project – Profiling diversity of providers in the Australian Vocational Education and Training Sector

Background

Question 1. What is the name of your Registered Training Organisation?

Question 2. What is your organisation's approximate total staffing FTE?
Note - Refers to all employment categories (i.e. permanent, contract, hourly paid Instructors) for the past whole year financial reporting period.

Teaching and Learning

Question 3. How many higher education qualifications (AQF Level 7 and above) does your organisation offer in its own right?

Question 4. How many higher education qualifications (AQF Level 7 and above) does your organisation offer in partnership with another university/non university HE provider?

Applied Research, Industry Collaborations and Partnerships

Question 5. Please estimate the number of current documented agreements (contracts, exchange of letters, MOUs) your organisation has with:

Note - Agreements may or may not involve financial transactions between the parties. Domestic and international organisations include government, enterprises and not for profit organisations.

	A. Educational services?	B. Provision of other related services (i.e. employment services, consultancies)?	C. Other?
Domestic organisation			
International organisations			

Question 6. For your RTO's total revenue, what is the approximate % breakdown from:

	%
1. State Government	
2. Federal Government	
3. Student Fees	
4. Fee for Service (excluding State and Federal Government contestable funds)	
5. International onshore	
6. International offshore	
7. Other revenue sources	

International Orientation

Question 7. Number of international students enrolled for the previous full financial year:

	#
Onshore	
Offshore	

Question 8. How many current overseas campuses and/or delivery sites does your organisation have?

Question 9. Approximately what % of total expenditure is committed to VET international engagement and international marketing?

Context

Question 10. Choose one of the following which best describes your organisational governance structure.

***Public Providers*:**

- ○ a. Institution operating within a government department (with or without an advisory board).
- ○ b. Institution/business unit within a state-wide network under a statutory authority with a government appointed board.
- ○ c. Statutory authority with government appointed board at the Institution level.
- ○ d. VET provider within a dual sector university.

***Non-Government Providers*:**

- ○ e. Not for Profit Association or company with an elected board.
- ○ f. RTO unit within an enterprise i.e. Enterprise RTO
- ○ g. Public company listed on the share market, with a shareholder elected board.
- ○ h. Privately owned and not publicly listed company.

Question 11. Choose one of the following that best describes your organisation assets ownership.

- a. Assets are owned and managed by the State Government.
- b. Assets are vested in the Institution (and disposal of assets may require State Government approval).
- c. Fully owned or leased assets are held by the company or association
- d. A combination of the above

Question 12. Choose one of the following that best describes the majority employment status of employees.

- a. State government employees.
- b. Employees of the Statutory Authority, with uniform state government conditions.
- c. Employees covered under an enterprise agreement.
- d. Employees with individual agreements.

Question 13. Choose one of the following that best describes the annual financial reporting requirements of the Institution or organisation.

- a. Financial report and audit through the State Department.
- b. Financial report and audit as individual entity.
- c. Not for Profit Company/Association, independent audit tabled at AGM.
- d. Publicly listed company, public annual report to shareholders.
- e. Privately owned company, no public reporting of annual financial result.

Final Comments

Question 14. Do you have any comments, feedback or clarifications to information provided on the above questions?

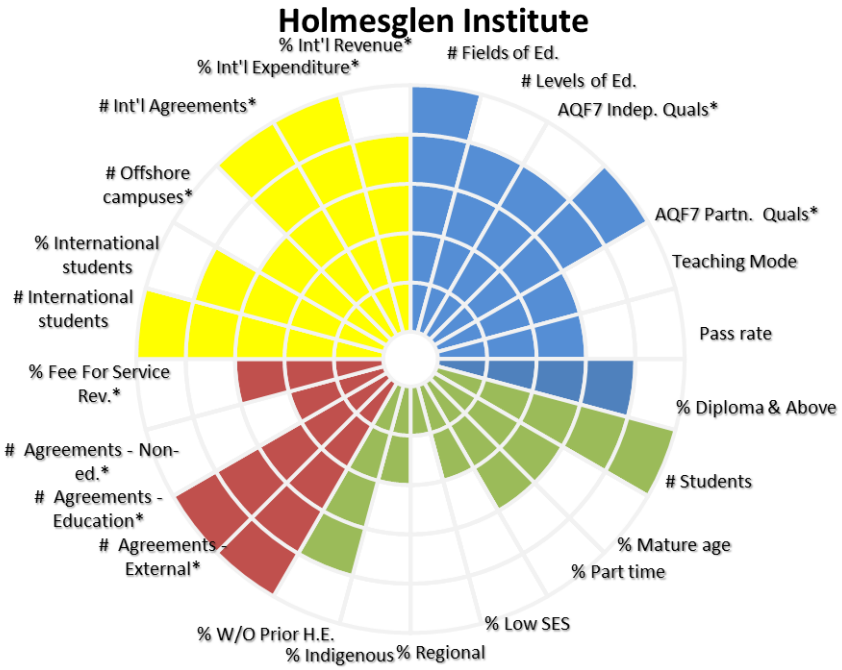
Appendix B: Operationalisation of Indicators

Indicator label	Source	Cut-offs					Distribution					Descriptives				
		1st	2nd	3rd	4th	5th	Q1	Q2	Q3	Q4	Q5	Mean	Med.	Min	Max	n
# Fields of education	NCVER – COUNTCOURSEFOES	1–2	3–5	6–8	9–11	12	6	17	16	25	36	8.96	11	1	12	100
# Levels of education	NCVER – COUNTCOURSELOES	1–4	5–8	9–12	13–17	18	28	30	37	5	0	7.48	8	2	15	100
# AQF7 and above, independent qualifications	RTO survey – Q3	0	1–2	3–5	6–9	10+	18	1	4	1	1	2.4	0	0	34	25
# AQF7 and above, partnership qualifications	RTO survey – Q4	0	1–2	3–5	6–9	10+	17	4	1	2	1	1.3	0	0	12	25
Diversity of teaching modes	NVCER – CLASSROOM_PERC	* See note					35	13	17	21	14	59.9	63	0	100	100
Pass rate	NVCVER – LPR	>60	60 to <70	70 to <80	80 to <90	90+	2	5	22	39	26	84.2	83.7	56.3	100	95
% of teaching at diploma and above	NCVER – HIGHERLEVEL	0–10	>10 to 20	>20 to 30	>30 to 40	>40	36	25	18	8	13	20.3	15.7	0	97.6	100
# Students	NCVER – STUDEnrolled NurseTS	0–3000	3000–6000	6000–14000	14000–23000	23000+	17	20	24	21	18	14080	8531	2419	94030	100
% Mature age	NCVER – OVER30S	0 to 1	>1 to 25	>25 to 50	>50 to 75	>75	6	6	56	30	2	42.9	45.6	0	80.8	100
% Part time	NCVER – PARTTIMESTUDEnrolled NurseTS	<60	60 to <70	70 to <80	80 to <90	>90	6	5	20	35	34	83.7	85.8	36.3	100	100
% Low SES	NCVER – SEIFA	0–20	>20 to 40	>40 to 60	>60 to 80	>80	6	32	39	17	6	48.1	46.7	5.7	98.2	100
% Regional	NCVER – AREAMAJOR	0–20	>20 to 40	>40 to 60	>60 to 80	>80	40	19	8	5	28	43.1	26.7	3.2	99.5	100
% Indigenous	NCVER – INDIG	0–1	>1 to 5	>5 to 15	>15 to 30	>30	21	52	18	6	3	5.8	2.5	0	92.7	100
% Without prior higher education	NCVER – DEGREEORHIGHERPRIORED	<80	80 to <85	85 to <90	90 to <95	95+	0	4	13	37	46	94.2	94.6	71.1	98.6	100
# of Agreements with external organisations	RTO survey – Q5	0	1–10	11–20	21–50	51+	2	6	1	4	12	102	40	0	553	25
# of Agreements for educational services	RTO survey – Q5	0	1–5	6–10	11–25	26+	4	5	2	2	12	75.5	25	0	549	25
# of Agreements for other services	RTO survey – Q5	0	1–5	6–10	11–25	26+	9	4	3	3	6	26.6	5	0	348	25
% of revenue from fee for service	RTO survey – Q6.4	None	>0 to 5	>5 to 10	>10 to 25	>25	1	6	8	8	2	11.4	9.6	0	35	25
# International students	NCVER – INTERNATIONALSTUDEnrolled NurseTS	0	1–100	100–1000	1000–2000	2000+	47	17	27	6	3	308	3	0	4960	100
% International students	NCVER – INTERNATIONALSTUDEnrolled NurseTS	None	>0 to 5	>5 to 10	>10 to 20	>20	48	43	7	1	1	1.9	0.03	0	74.5	100
# Offshore campuses	RTO survey – Q8	0	1–2	3–5	6–9	10+	18	3	1	2	1	1.5	0	0	14	25
# International agreements	RTO survey – Q5	0	1–5	6–10	11–25	26+	16	4	0	1	4	31.6	0	0	505	25
% of expenditure on internationalisation	RTO survey – Q9	None	>0 to 1	>1 to 2	>2 to 5	>5	12	7	4	1	1	0.76	0.2	0	6.5	25
% of revenue from international activities	RTO survey – Q6.5 & Q6.6	None	>0 to 5	>5 to 10	>10 to 20	>20	10	9	3	3	0	3.2	0.5	0	16.8	25

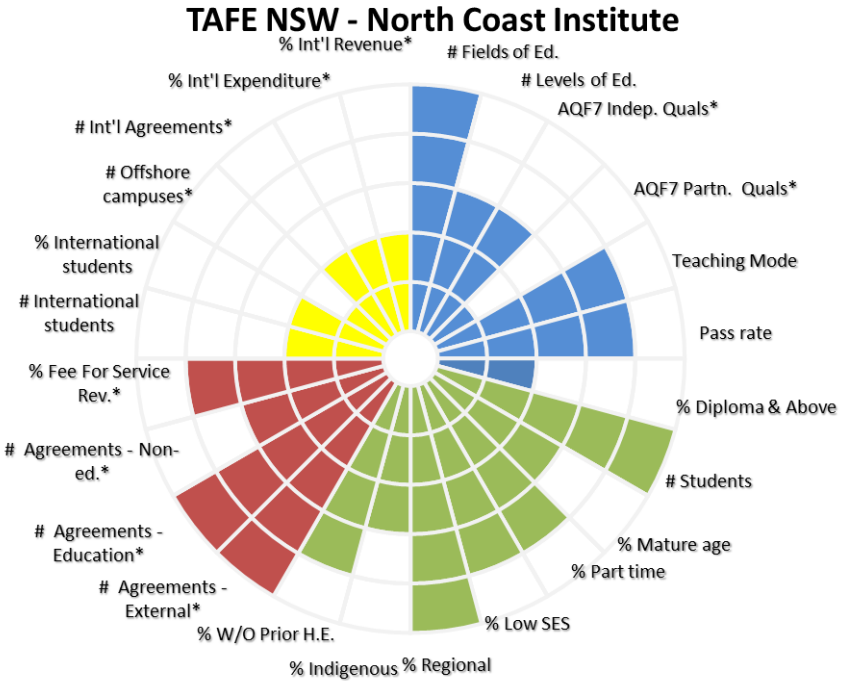
*Note: Registered training organisations with 45–55% of their teaching as classroom-based (versus other non-classroom forms) = [5] (i.e. a roughly equal balance between classroom and non-classroom teaching); 35–45% or 55–65% classroom-based = [4], 25–35% or 65–75% = [3], 15–25% or 75–85% = [2]; and RTOs with 0–15% or 85–100% classroom-based teaching = [1] (i.e. highly reliant on one form of teaching).

Appendix C: Institutional profiles of VET providers

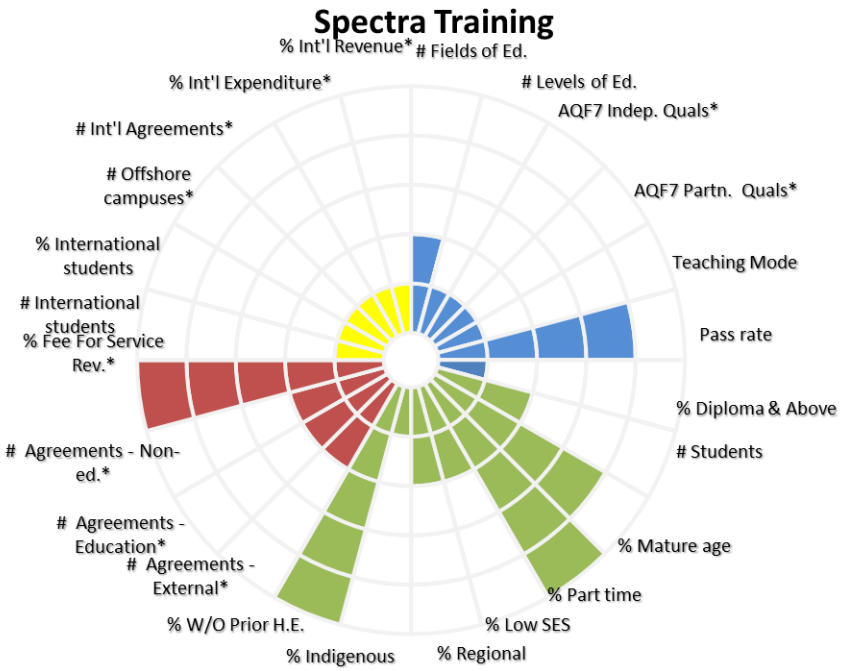
Category 1 – Comprehensive, international



Category 2 – Comprehensive, domestic



Category 3 – Small, niche



Understanding the needs of VET students articulating to second-year university

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Generally negotiated by course, an increasing number of pathways are being opened to enable vocational education and training (VET) students to transition directly into second-year university with blanket credit for first-year content. Such arrangements exist for disciplines such as nursing, teaching, business, and applied science. It could be argued that these 'advanced standing' VET students, having completed a bachelor course at a VET institute, should have an advantage over their university peers: they have completed more post-secondary education, they will have amassed significant discipline-relevant practical experience from substantial field placements, and they are likely to be more committed to the course. Yet anecdotal reports from a number of university academics who deal with these students indicate that they often struggle. These sentiments are supported by an analysis of student performance data that indicates that the advanced standing students average lower marks. There is a lack of programs aimed at assisting and supporting second-year students, whether they have progressed from first year or entered second year directly. This paper foreshadows a larger project which aims to develop and trial a second-year transition course.

Introduction

According to data provided by Watson, Hagel and Chesters (2013), the number of students commencing in Australian university courses increased by 22% in the decade 2001—10. Around 45% of these students come from secondary school, a cohort that increased by 19% across the decade. In 2010 only 10% of commencing undergraduate students entered university on the basis of a VET qualification, but this group exhibited the greatest growth. The absolute number of VET students transitioning to university increased by 75%, from just under 13 000 to 22 676 in 2010. This group, which represents both a challenge and opportunity for universities, is likely to continue to grow. One of the areas of growth is entry with advanced standing — VET students completing courses that earn them credit for the entire first year of a university bachelor degree begin their university studies at second year.

In an increasingly competitive marketplace, university departments looking to create transition pipelines are mapping VET courses against university courses to maximise credit and create a marketing advantage. Courses related to nursing, business, applied science, and counselling/welfare have been early adopters, but others are following suit. In some cases, VET students completing

specific courses are guaranteed entry to particular university degrees at second year, particularly if that course was a bachelor degree completed in the higher education department of a TAFE (technical and further education) institute.

These advanced standing students should fare well, and indeed could enjoy an advantage compared with their peers who have come from secondary school into first-year university before going on to second-year studies. Their VET course will have already provided them with two to three years of rigorous discipline-specific knowledge, including upper-level content, versus only one year of content for those who have advanced from first-year university. The VET students are also likely to have the advantage of significant work experience and completed fieldwork placements across multiple years, providing them with a solid applied underpinning for the theories and concepts they have and will explore. By contrast, many university vocationally-oriented courses have no fieldwork in first year at all.

VET students going on to university tend to be older, on average, than the cohort transitioning from secondary school (Watson, Hagel & Chesters 2013), and are more likely to have existing family and employment obligations, often forcing them to study part-time. In order to cope with these commitments during their VET course, they will have already had multiple years to have honed their study skills and be optimally efficient in their study practices, and may be more mature in their approach and outlook. Furthermore, given the extra time they have put into pursuing their chosen career — completing one course and embarking on another — and the tendency for many VET students to have come from the industry in the first place and be seeking to upskill or improve their credentials, they are likely to be more committed and thus more highly motivated, both intrinsically and extrinsically.

Maturity, motivation, commitment, autonomy, knowledge, practice, and independence should provide advanced standing students with potential advantages compared with their colleagues who have progressed through first year after completing secondary school. At the very least, it should not put them at any particular disadvantage, especially given that completing a bachelor degree at a TAFE institute should provide an approximation of studying at university. However, the reality may not match the theory, regardless of the logic. Anecdotal reports from university staff, including academics, suggest that many advanced standing students do not perform at the level expected and that they often struggle compared to their colleagues who have progressed from first year.

In Australia an estimated 20% of all domestic students drop out of university before commencing second-year studies (Tinto 1999). Student attrition is costly (Penn-Edwards & Donnison 2011) in financial terms for institutions, students and the government, and lost opportunity costs the individual student (and family) and the broader economy. Unless the student has opted out for a 'better' path, they stand to potentially disadvantage themselves through lost career opportunities and reduced overall financial benefits, and possibly missed a potentially better quality of life (Harvey, Drew & Smith 2006) for themselves and any offspring. Thus, there is recognition in the sector that retention is important, especially as many institutions lower barriers to entry in a deregulated system.

Accordingly, most (or all) universities offer transition programs for first-year students with both social and academic components (McKavanagh & Purnell 2007). In the ordinary scheme of things advanced standing students will not participate in these first-year programs, despite the fact that beginning at second year is their first year of university. Advanced standing students *could* participate in first-year orientation, but this is an unlikely scenario. The mere fact that they have been accepted at an advanced level, with credit for first year, is likely to instil in them a high level of confidence — they

do not need to bother with orientation. By the time they discover that this level of self-confidence might be misplaced or over-inflated, they may already have suffered psychologically and academically (and missed the schedule of first-year orientation anyway). Thus, a specific transition program for advanced standing students may be warranted.

This paper seeks to make a contribution via two avenues in order to set the groundwork for the development of a new support mechanism for advanced standing VET students entering university at second year. The first element is an analysis of data from a large non-dual sector university already accepting students directly into second year from TAFE, and the second element surveys the transition programs on offer nationally in order to investigate common content and methods.

A statistical comparison in second-year outcomes

The fully de-identified data analysed for this study were extracted from a larger database of student records held by a large Group of Eight university. Human ethics approval was granted for the analysis and reporting. The focus was the student's semester score, which was the average mark across all of the subjects each student had undertaken in each of the two semesters of the second year of their course. Two years of data (2013 and 2014) were analysed. The larger database from which these data are drawn is used to track students and manage (re)enrolment and was not immediately ready for analysis. Several rounds of 'cleaning' were applied to weed out anomalies and the students who did not fit the definitions of interest.

The data comprised 30 024 records, representing 13 361 students enrolled in second-year courses throughout 2013 and 2014 on a full-time and part-time basis. The overall sample was 58% female and 42% male. Student age was denoted in the database by ranges rather than actual age so it was not possible to determine means and standard deviations. Those ranges were 19 years and under (71% of the sample), 20—24 years (20%), 25—29 years (3%), 30—39 years (3%), 40—49 years (1%), 50—59 years and 60 years and over (fewer than 1% of the student sample each).

The student records data were broadly categorised into three groups:

- 'Transition: standard' students who had completed first-year at this university before undertaking second year
- 'Transition: HE' (higher education) students who had completed first year at another university and entered the current university as a second-year student with credit
- 'Transition: VET' students who had completed a TAFE qualification and entered the current university as a second year student with credit.

A relatively small number of students received credit into second-year on the basis of industry experience or other mechanisms. There were too few of these students for a useful analysis, and so they were removed from the dataset before further analysis.

The means and standard deviations for each of the three groups of students are contained in table 1. The semester score data violated the assumptions for normality, and so non-parametric analyses were conducted. The data were split by year level and the average grades were ordered by rank before conducting a Mann-Whitney U test to explore the difference between each pair of student types. Transition: VET students achieved significantly lower grades than Transition: standard for both 2013 (U = 168 924 Z = -5.13 p = .001, r = .05) and 2014 (U = 578 757, Z = -3.74 p = .001, r = 0.5). A second set of Mann-Whitney analyses was conducted for students admitted into second year with credit for

prior learning from another university (Transition: HE). The results indicate that Transition: HE students also scored significantly lower grades when compared with the Transition: standard group in both 2013 (U = 11 651 945, Z = -6.25 p = .001, r = .06) and 2014 (U = 3 283 503, Z = -5.50 p = .001, r = 0.07). Thus, the students who progressed to second year after completing first year at the same university outperformed other students directly entering second year to a statistically significant level.

Table 1 Descriptive statistics for the average semester scores for the three student transition groups, including the mean, SD and range (0–100).

	Transition type		
	Standard	HE	VET
		2013	
Mean average score	66.47	64.11	62.49
Standard deviation	13.28	15.86	16.04
Range	0-97	0-95	0-89
Average grade below 50%	845	328	66
N	10,032	2,526	397
		2014	
Mean average score	65.84	62.79	62.44
Standard deviation	13.45	17.04	15.45
Range	0-96	0-93	0-87
Average grade below 50%	512	203	35
N	5,452	1,333	247

Due to the manner by which the data were analysed, a third set of Mann-Whitney U tests was not undertaken for the less pertinent comparison between the Transition: VET group (2013, n = 397; 2014, n = 247) and the Transition: HE group (2013, n = 2526; 2014, n = 1333). In this case a two-tail z-score hypothesis test was conducted using Howell's (1987) formula, the result being that there was no statistically significant difference in grades for 2013 (z = 0.46, p > .05) or 2014 (z = 1.02, p >.05).

Survey of transition courses

Most (if not all) Australian universities have first-year transition programs of some description. A Google search was conducted using a range of appropriate search terms to identify local initiatives. This method is severely limited in scope because in many cases university orientation programs are a mix of central, faculty, and school/department activities, which have evolved over time (or in some cases, perhaps not evolved further for some time). They are documented locally or held as institutional knowledge by the person upon whom the task falls year after year to form a committee, apply for internal funding and make the arrangements. As such, they are not likely to be detailed on the institution's website. Other institutions however have made particular efforts to develop specific offerings; it is these initiatives that are more likely to be advertised as part of the marketing efforts to draw students to specific courses and institutions. It is mostly these offerings that were identified in the search (summarised in table 2).

An analysis of the publicly accessible details for the transition programs indicates that they focus on one or more of the following broad domains: student experience, student socialisation, study preparedness, and student support. These findings align with the recommendations made by Nelson et al. (2011), that to successfully retain students, universities need to engage them through embedded institutional programs that focus on: student engagement in the learning environment; timely

accessibility to support services; and fostering a sense of ‘belonging’ to peer groups, to various roles within the institution, and toward the professional environment.

Table 2 Review of Online Transition Programs

Institution	Primary program type	Specific focus	Features
Macquarie University	Mentor (ambassadors)	International students	Opt-in program with a code of ethics; based on core values of the university
University of Western Australia	Multifaceted		Conversation groups, social events, study groups. Meet other first-year students, visit study areas, get to know the campus, study skills advice, learn about life as a university student from senior students, participate in fun social activities
Central Queensland University	Multifaceted	International students	Student readiness questionnaire (compulsory), mentor program, online orientation, community network (student support)
Charles Sturt University	Multifaceted		STAR program: academic leads and lecturers assist with identification of course-based triggers that indicate when students are at risk of disengagement
Deakin University	Mentor (ambassadors)		Meet new people and establish connections, awareness of support services, understand expectations and requirements of life as a university student
University of Queensland	Academic program		Jumpstart Academic Preparation Program (JSAPP)
University of Tasmania	Online orientation	Separate orientation for on-campus vs off-campus	Online learning program with modules for practical issues, such as 'Getting organised'; ‘Building connections at UTAS’ provides details of forums, Facebook, information about advisors and a community and friends network program
Sydney University	Multifaceted	Science Faculty	Transition workshop before semester begins, ongoing SLAM lunches (Science Link-up and Mentoring) to meet senior students, tutors, demonstrators, research staff, other science students
Flinders University	Multifaceted		Help students to understand what is required of them at university; expectations; work-integrated learning (WIL) in first year for better appreciation of discipline; integrated into curriculum
University of Western Sydney	Online chat, Q&A service		Support services such as time management, exam stress, financial issues, accommodation quandaries, personal counselling, disability support
Australian Catholic University	Advice		Advice rather than specific intervention.

General discussion

The statistical analysis of student performance corresponds with the anecdotal data and indicates that advanced standing students entering university courses at second year do not perform as well as those transitioning to second year from first year. Interestingly, students directly entering second

year after completing first year at another institution also performed statistically less well than those who completed first year at the 'home' institution, but are statistically equivalent to those transitioning from vocational education and training.

This finding may emphasise that the fundamental issue is not that the advanced standing students are somehow deficient due to their VET background; rather, it is the disruptive impact of the transition itself that causes the deficit. Further, this impact may be compounded by these students having bypassed the orientation and other introductory activities offered to new students at the particular institution during first year. That the students transitioning from another university are likely to have participated in first-year orientation at their original university but still suffered a deficit suggests that it may be critical that the orientation relates to the specific institution (for example, an introduction to specific support resources and services), or that there is an important social element, such that students become part of a social network with other students also going through the transition experience.

While the data were sourced from a large database, they relate to a single institution. Analyses of data from other institutions are needed to determine whether this result is unique to this particular university. Anecdotal reporting from other institutions suggests that it is not. Elsewhere Heirdsfield, Walker and Walsh (2005) found that advanced standing students in early childhood education performed less well academically and had higher attrition rates than their colleagues who had progressed through the first year of university.

According to Wheelahan (2008), little published research exists for transition programs aimed at assisting advanced standing students. While Wheelahan's claim is somewhat dated, a more recent survey of the literature for the current project indicates that the situation is little changed. No specific transition courses for students entering second year from outside the university were unearthed with the, admittedly high-level, simplistic search conducted for this paper. That does not mean that efforts are not being made — as part of a larger project the authors are assembling a database of programs and initiatives aimed at identifying best practice — but little of it has been published thus far. Programs exist, but they are often ad hoc, and run in isolation at course or school/departmental level. The current environment in this regard is probably akin to that observed by Kift (2009) in her overview of first-year transition programs. She describes the situation as 'pockets of excellence in individual institutions, and in discrete programs … piecemeal approach … rarely, if ever, linked across the institution' (p.1), let alone the sector.

The question arises, should such a program be any different in content and aims from those that exist to ease the transition of first-year students? Heirdsfield, Walker and Walsh's (2005) advanced standing students reported challenges dealing with workload, technology, academic orientation and application, and feelings of isolation and uncertainty; such issues would also apply to students starting first year (and skills that first-year students would be expected to hone across the first semester of their first year). Ambrose et al. (2013) argue that the VET learning environment differs from that of university, in that it is highly structured, closely scaffolded, vocationally orientated, and competency-based, whereas university is a less directive learning environment, is theoretically orientated and involves considerable amounts of reading, critique and assessment writing. Arguably, the differences are fewer for VET students completing a bachelor degree, and fewer still when the students are transitioning into vocationally oriented university courses, which have an application focus and include placement or fieldwork experiences. However, ensuring that students properly understand the university environment, regardless of where they have come from, is likely to be important.

McKavanagh and Purnell (2007) interviewed 1100 students from an Australian university who were not making satisfactory academic progress and found three recurring themes: lack of motivation; having unrealistic expectations about the work required; and a reluctance to seek assistance or support when in need. Clearly it is not enough to make resources and assistance available; the bigger challenge may be to get students to use them. Even though McKavanagh and Purnell's respondents were aware that they were not performing at expected levels, the majority of them believed they had the aptitude to succeed, expressed a desire to complete their degree, and felt that the content was not difficult. These views would likely dissuade students experiencing difficulties from seeking assistance, and this effect might be heightened for advanced standing students because they have been denoted as 'advanced'.

The profile of McKavanagh and Purnell's (2007) interviewees does resemble the typically older and more highly loaded student transitioning from the VET sector (Watson, Hagel and Chesters 2013). More than 50% of them worked at least 30 hours per week while taking at least three subjects per semester, in addition to studying in off-campus mode (in many cases, presumably because work commitments did not allow attendance at classes). Hobsons (2014) also noted that work pressures, driven by a need to finance studies, a social life and family underscored the hallmark characteristics of students who discontinue their course. That is not to say that paid work is not compatible with study, or that studying off campus is problematic in and of itself. McKavanagh and Purnell only interviewed at-risk students. A case-control type study would be needed to better understand whether the additional commitments themselves are a risk factor or whether students matching a particular profile are ill advised to load themselves in this way, especially in the formative first year at university (regardless of whether a student's first year *is* the first year of the course or second year, if that is the point of entry).

McKavanagh and Purnell's finding of a reluctance to seek help amongst at-risk students was pervasive, with only ten per cent of respondents reporting that they had sought assistance or support once they had become aware of a problem with their studies, even after they had received notification of a failed grade. Thus, setting expectations and dispelling a reluctance to seek help must be an explicit component of any transition program; informing students of what services are available and how to access them is clearly insufficient on its own.

Scott (2005) also emphasised the importance of managing student expectations, as did Tinto (2003), who suggested that (first-year) transition programs should be aimed at promoting and developing 'student persistence', which could be achieved by setting realistic expectations, providing support when needed, and ensuring adequate and appropriate feedback aimed at ensuring student engagement and thus learning. It also seems important to ensure that the operationalisation of such engagement does not rely on the initiative of students themselves, unless that initiative can be instilled early on.

An alternative approach might be to provide continuous support. Stuart (2007) argues that the focus on orientation and transition in first year serves to 'front-load' students who are then left feeling lost and unsupported as they move on to second year and beyond. Richardson (2004) interviewed second-year students to find they thought that first year had been too easy and had not prepared them for the challenges of second year. In this sense, first year created a false sense of security and students were surprised by the increased workload of second year. Overall, many students suggested that the experience of transitioning to second year was as challenging as beginning university. The advanced standing students of concern to the current project might have a similar experience — expecting second-year university to be consistent with the second and third years of their VET course.

MacDonald and Gibson (2011) suggest that efforts should focus on the second-year experience. They claim that longitudinal and coordinated approaches that centre on the identified gaps (academic, personal and institutional) are required to support second-year students.

The development of a multifaceted program tailored for students entering the second year of bachelor courses is required, a program that should perhaps be available for all second-year students, or mandated for those who have scraped through first year or are on academic probation. While academic and social elements probably should be included, the focus should be on encouraging the student to recognise when existing university services and support are needed; a self-understanding and willingness to overcome whatever barriers currently stop students of availing themselves of what is on offer.

The analysis presented here indicates that students who undertake second-year university without first completing first year at that university (having either progressed direct from a VET institution or transferred from another university) perform less well in terms of grades than those who did first complete first year at the same university. A large slice of data across a wide field of disciplines was analysed; however, the lack of additional variables made a more sensitive and sophisticated analysis impossible. For instance, it is not known whether students transferring from another university were doing so for academic reasons. Also, it is quite possible that the VET cohort differs from the university cohort in terms of factors such as age and economic background; it is also possible that the VET cohort is more likely to be studying part-time and off campus due to employment and family commitments. The data do not provide the opportunity to explore these issues. Other work is being pursued by the authors to explore social considerations: students who have progressed from first year did so with a large cohort in the same boat, whereas those transitioning from outside the university may find it harder to break into established social networks. A comprehensive examination of the issues that make transition to university difficult would also be well served with the inclusion of exit data, with the aim of exploring the reasons for students dropping out.

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Learning preferences of Enrolled Nursing students: educational preparation and training for workplace readiness

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In Australia there are two entry levels in nursing: the Registered Nurse (RN) and the Enrolled Nurse (EN). Nursing education research is predominately focused on higher education for Registered Nurses and postgraduate nursing students; as a result, the educational preferences of Enrolled Nursing students in the vocational education and training (VET) setting have not been identified. Enrolled Nursing students have some distinct educational needs as they transition through education into the workforce due to their diversity in learner characteristics and backgrounds. As the role of this group continues to expand in the workplace to meet the demands of the health workforce, attention to the educational preparation of this cohort of learners is relevant and timely. This requires identifying targeted educational strategies to support learner preferences for the planning and delivery of education to these students.

A qualitative research study using focus groups was undertaken to identify specific learner preferences for teaching modalities among Enrolled Nursing students in a Diploma of Nursing program. A thematic analysis of the data identified the following five main themes: a variety of teaching and assessment methods; educator-directed or guided learning; practical application and simulated learning; face-to-face learning; and closer integration of theory to clinical practicum. The main focus of these learners was preparation for workplace settings. The findings have implications for education strategies in the diploma program, in terms of planning the program structure and its delivery; teaching and learning methods; educator development; development of practical and clinical skills; experiential learning; and the promotion of skills for independent and lifelong learning, the latter being essential preparation for professional nursing practice.

Introduction

In Australia, nursing education leading to formal qualifications is provided in two different education settings. Baccalaureate programs lead to a Registered Nurse qualification, with further postgraduate RN qualifications generally undertaken in higher education setting, at universities. Enrolled Nurse qualifications are undertaken in the VET sector at registered training organisations (RTOs) (Australian Nursing and Midwifery Accreditation Council 2012; Department of Education, Science and Training 2002; Department of Education, Training and Youth Affairs 2001; Ryan 2009). Enrolled Nurses are described as a regulated body of health professionals who contribute to the delivery of healthcare

across a variety of Australian healthcare settings and clinical environments while functioning under the supervision of a Registered Nurse (Community Services and Health Industry Skills Council (CSHISC) 2011). Enrolled Nurses contribute to the delivery of healthcare in varied healthcare settings, and account for around 18% of the total nursing workforce (Australian Institute of Health and Welfare 2012). Ninety per cent of Enrolled Nurses are female and most are employed in the aged care sector (Australian Institute of Health and Welfare 2010, 2012; Bull & Hickey, 2012). Currently there is little information in the educational literature pertaining to Enrolled Nurse learner preferences. The term 'learner preferences' is used in this paper to mean students favouring one particular mode of teaching or learning over another. The term 'teaching modalities' includes the different instructional methods used to deliver information in the learning environment.

Learner differences in VET and higher education

Differences are found in learner characteristics, backgrounds and knowledge transfer between the learners in the VET and university sectors (Harris, Simons & Bone 2006). The differences include social and cultural backgrounds, motivation level, learning styles, generational mix, literacy levels and employment learning needs (Mitchell et al. 2006; Smith & Blake 2005; Smith & Dalton 2005). The methods of learning also differ, with learners in VET mainly undertaking instructor-directed face-to-face learning, whereas higher education students are encouraged to become self-directed learners (Mitchell et al. 2006; Mullen 2009). VET students' learning capabilities differ due to their diverse backgrounds (Mitchell et al. 2006; NCVER 2012). Tougher entry requirements to universities suggest that there is a higher level of academic capability among higher education students (Jacob, Chapman & Birks 2011). Such noted learner differences demonstrates that VET learners have learning needs, expectations and approaches to learning that differ from those of university students. While these differences exist for the VET sector generally, little is known about Enrolled Nurse student learners as a specific group.

While literature is available in relation to higher education learning, specific information about education practices for Enrolled Nursing students is not available. A small body of VET literature draws attention to the importance of learner-focused education and the use of training methods appropriate to the diverse learning styles and characteristics of VET learners (Brennan 2003; Callan 2005; Faraday, Overton & Cooper 2011; Harris, Simons & Bone 2006; Knight & Mlotkowski 2009; Mitchell et al. 2006; Smith & Blake 2005; Smith & Dalton 2005). This literature is generalised to all VET learners and does not accommodate the specific needs of Enrolled Nursing students. As learner-centred teaching focuses on the learning needs and preferences of students, it is important to identify the specific preferences of Enrolled Nursing students in the VET environment to provide education that addresses their needs.

Methodology

Design

This study used an exploratory descriptive research design to identify the specific learner preferences of Enrolled Nursing students in a Diploma of Nursing program. The research question was 'What are the learner preferences for teaching methods among enrolled nursing students?' Ethics approval was obtained from the university's Human Research Ethics Committee and the educational institution's board of management. This was a small study and therefore there are limitations in terms of the broad generalisation of findings and the transferability.

Sample and data collection

The research was undertaken at a registered training organisation in Victoria, Australia. The program was full-time and conducted via a face-to-face mode. The study used convenience sampling (Polit & Beck 2010) and included ten participants from a target population of 96 students studying in one term of the program (table 1). The data collection involved two focus group discussions of approximately one hour each, conducted four weeks apart.

Table 1 Background of participants

Background of focus group participants (n = 10)	
Characteristics	*Number of participants*
Previous university experience (completed and incomplete)	4
Undertaken other qualifications/studies (previous to nursing)	5
Currently working in health-related employment	5
Working non-health-related jobs	5
Caucasian background	5
Non-Caucasian background	5

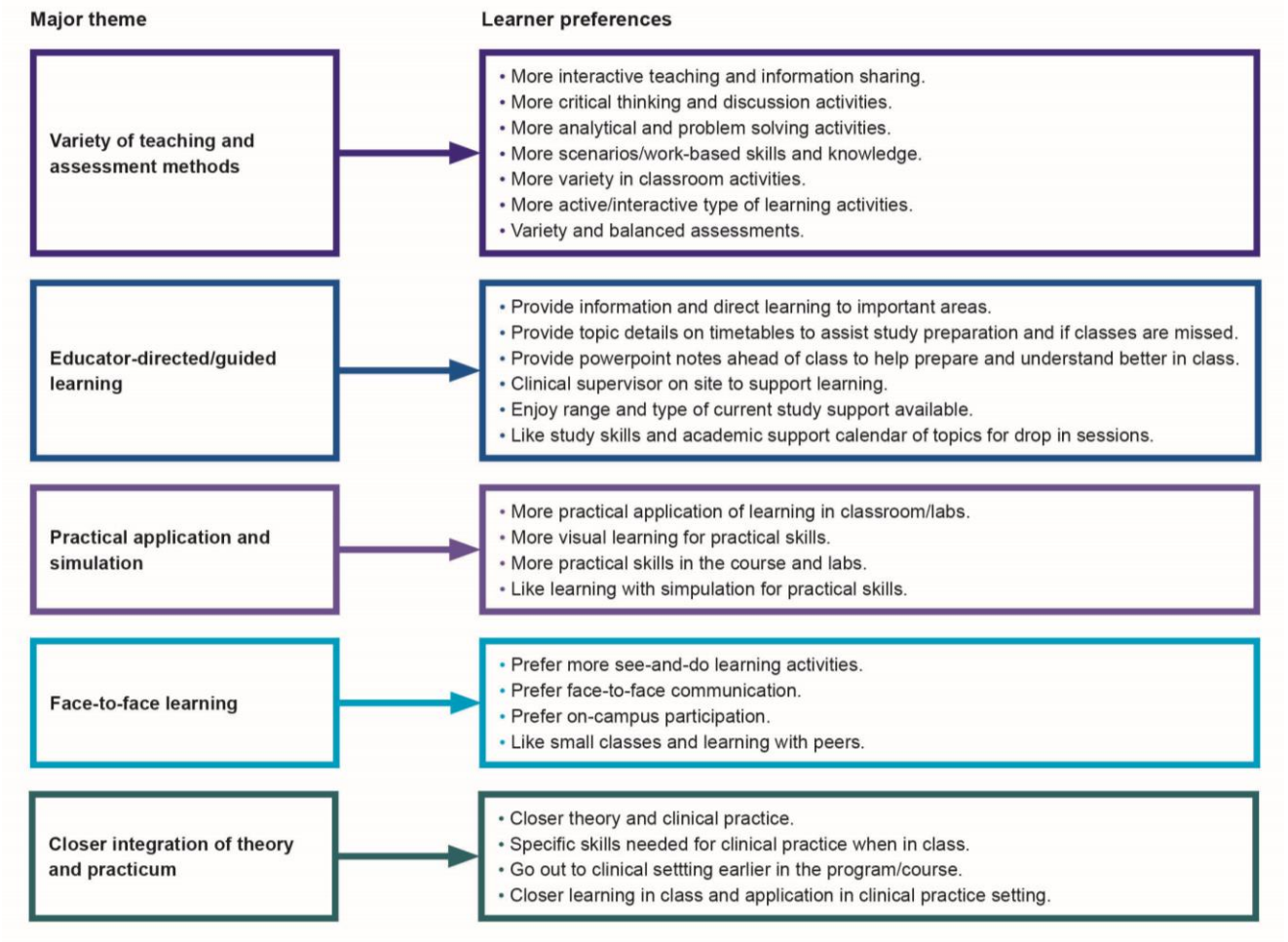
Data analysis

Audio-recordings of the focus groups were transcribed verbatim and thematically analysed, with member-checking used to ensure data credibility. The participants reviewed a copy of the discussion summaries to enable them to verify the data, ensuring accuracy. The data analysis was informed by Ritchie and Spencer's (1994) framework analysis approach, which enabled the emergent data from the focus groups to be sorted into major and minor themes. The independent thematic analysis of the transcripts was undertaken by the researchers to enhance the credibility of the findings and ensure rigour in the research.

Findings

The thematic analysis of the data provided five major themes: preferences for variety of teaching methods; educator-directed or guided learning; practical application and simulation; face-to-face learning; and closer integration of theory and practicum.

Figure 2 Emerging themes showing the major and minor themes in learner preferences



Variety of teaching and assessment methods

Overall, the participants preferred the use of a variety of teaching methods in the program and they wanted interactive and diverse teaching modalities.

What was considered valuable was problem-based learning, critical-thinking exercises, case studies, videos, simulations and activities for work-based skills and knowledge development. Participants described their current learning as passive and teacher-centred with few opportunties to actively participate. Lectures and powerpoints were accepted as necessary to cover large amounts of curriculum content, but sole use of this approach was disliked. The participants requested more opportunities to engage in class, as expressed by one participant:

> I think we could do more discussion in classes. You feel more involved and it's engaging. We also get a chance to talk and discuss … bring more equipment and practical learning into the classroom … we can do more case studies and problem solving type of things. (Focus group 2)

Particpants felt there were too many assessments. Some types of assessments were seen as more conducive to learning than others. The preference for assessment types centred on preparing for clinical work, including activities such as short answers, tests, exams, laboratory practicals, case studies, problem-based tasks, and clinical placements.

As described by one participant:

> I prefer short answers and tests to essays. They are quick and easy to do. With essays I know we have to do it but just one is okay. Not have so many essay type assessments. The Florence one was okay. Useful. But for other topics not really. I think we can have bigger assessments, but fewer … I find there is a lot of work to do. (Focus group 1)

Educator-directed/guided learning

Participants appreciated guidance and direction from educators. They relied on educators to provide information and direct their learning to important skills and knowledge. Participants also stressed that they did not like self-directed learning. Some of the participants commented that they had dropped out of university bacculaureate programs previously because of the self-directed aspect of learning in the higher education setting. They commented that this required a great deal of effort in regulating individual time and study strategies, as expressed below:

> You are on campus with hundreds of people and there is no one really to teach you … and the personal maturity, how ready are you at this point in life … in Uni it is sort of up to you. We even had to choose our own classes … and we had to go for our tests and that was all very much self-driven … I just became overwhelmed there … needed someone to sort of help you out. (Focus group 2)

Guided learning in the clinical practice setting was also seen as important. Participants preferred having clinical educators allocated to them from the education provider, who supported their learning in the clinical environment, enabling more effective learning. Feeling more valued and respected by facility staff was the comment of one participant:

> There should be a clinical facilitator just for us for the whole shift to support us. Sometimes we find it difficult and we need someone to go talk to. In some placements the facilitator is not just for us … in aged care we had someone all the time just for us and it helped a lot. We feel more responsible and even staff respect us because there is someone there … we can then ask them for help. (Focus group 1)

Participants felt their level of learning on clinical placement would not be supported adequately if paired with a person with a lesser qualification than them (for example, a personal care assistant). Participants also valued the guidance and support of learning support teachers, who provided assistance with assignments, study skills, literacy and numeracy, and preparation for International English Language Testing System.

Practical application and simulation

Participants valued learning in practical nursing skills, expressing a desire for more activities which involved learning with simulation equipment to practise skills. It was considered a more interesting and realistic way to learn and helped with psychomotor skills, as observed by one participant:

> I can get it if I see it as well when it is being taught. At first when [the teacher] was telling us about analyse health topic I didn't get it. Then [the teacher] brought it [anatomical part] to class I got it. When we see it, it is easier to remember. (Focus group 1)

Maximum exposure to clinical nursing skills prior to undertaking clinical placements was seen as vital, with participants valuing opportunities to practise in the simulated environment under guidance

before actually engaging with patients. Participants felt they would benefit more if learning the theory associated with clinical skills also involved practical nursing laboratory sessions, where skills could be applied and demonstrated, as noted below:

> If we have some theory and some practical. Break it up. In a week do some theory classes and then at the end of the week do practicals. Makes it easier to remember. We go over the theory again … at least we should have one lab per week even if it is for 15 minutes a week … just small or short times. But we should do it continuously. So we don't forget. (Focus group 1)

Face-to-face learning

Participants preferred face-to-face learning as the main mode of knowledge delivery, indicating that they had selected this course because it offered face-to-face learning experiences and facilitated communication with educators and peers. They liked learning with their peers and face-to-face learning encounters, as noted below by one participant:

> Like coming and meeting the other people in class and discuss[ing] things and see[ing] what we are learning … it's like a classroom and you do get one-on-one time with our teachers, which is a really good thing. (Focus group 2)

Small class sizes were also valued by participants as they assisted students' learning by enabling their participation in the classroom. One participant described a previous experience of university studying as:

> It is intimidating and it's overwhelming and you are in big halls with hundreds of people and you [are] on a campus with hundreds of people and there's no one really to teach you, to form a bond with, or to talk to. Here it is good, we have small classes. At uni, they are very large groups. (Focus group 2)

No participant rejected online learning, with some exposure to online learning acknowledged as useful by participants, but seen as only an optional extra to face-to-face teaching. They did not want to use online mediums for reading or accessing educational resources. Participants expressed that they would not have selected the program if it had been offered online, as noted below:

> I would not have picked the course if it was online. I would just procrastinate everything and keep putting it off. I would not do it. (Focus group 1)

Closer integration of theory and practicum

All participants agreed that the course prepared them for clinical practice. However, participants felt they would have benefited more from a closer integration between the theoretical and practical components of the program. They considered that the timing of the theoretical and clinical components was not helpful for their learning and that they had needed to relearn the relevant theory because the theoretical classes were not closely aligned with clinical exposure, requiring them to review their knowledge and skills in preparation for clinical placements. Their preference was to undertake clinical placements earlier in the program to facilitate skills consolidation related to this aspect of theory, thus progressively building on their skills as expressed by one group member:

> I think the clinicals should be earlier in the course too … like for us, we didn't go out to placement till stage 3. We forgot everything and had read up so much again. (Focus group 2)

Overall, there was an emphasis on the desirability of the learning being focused on the skills required and specfic to the clinical contexts of the professional placements, enabling the students to become more work-ready on completion of the course.

Discussion

Preference for variety of teaching and assessment methods

The preference for variety in the educational experience was consistent with what is known about contemporary learners and is expected in the VET setting (Harris, Simons & Bone 2006; Mitchell et al. 2006; Smith & Blake 2005; Smith & Dalton 2005). Observations from higher education show that nursing education employs lectures as a main teaching method due to the extensive curricula content, large numbers of students and the limited time for teaching (Cannon 2012; Oermann 2007; Schaefer & Zygmont 2003). Oermann (2007) suggests that important learning, such as critical thinking, problem-solving and communication, requires more analytical and problem-based learning activities and advocates that classroom teaching modes integrate varied teaching methods to help nursing students to meet the objectives of the course.

Active participation is seen to help students to internalise the learning and apply theoretical concepts in practice (Brown et al. 2009a; Schaefer & Zygmont 2003; Stanley & Dougherty 2010). The Enrolled Nursing program is an adult learning environment and the preference for active teaching strategies was consistent with adult learning principles (Kitchie 2011; Quinn & Hughes 2007; Valiga 2012). A key finding of the study was that the type of interactive and collaborative classroom activities identified by this cohort of learners is relevant to the background and focus of Enrolled Nursing education. The Enrolled Nurse qualification is underpinned by the emphasis on employability, work-based knowledge and skills acquisition (Jacob, Sellick & McKenna, 2012). The use of active learning in mastering skill acquisition is vital, making this a key consideration for the future planning of classroom teaching strategies and educator development in the Enrolled Nursing program. A further implication is the need for the development of teaching and learning stratgeies appropriate to vocational education (Faraday, Overton & Cooper 2011). This includes developing a teaching model and educator skills specific to the context of the diploma qualification.

Preference for educator-directed/guided learning

This cohort of learners expected educator-directed learning. Quinn and Hughes (2007) suggest that, even though self-direction and autonomy are associated with adult learners, many adult students find it difficult to relinquish their dependence on educators and they take time to develop independent learning. VET students tend to vary significantly in the degree to which they are willing to engage in self-directed learning, with most being dependent learners (Smith & Blake 2005). They require guidance and clear understanding of what is expected of them in the learning process (Smith & Dalton 2005). Self-directed learning readiness is an educational maturation process and varies among learners (Kocaman, Dicle & Ugur 2009; Mullen, 2009; Quinn & Hughes 2007; Smedley 2007). The idea of having to regulate their learning was one of the reasons cited by some participants for their not choosing or continuing in a university baccalaureate program. In the higher education setting there is an expectation for students to acquire a significant amount of their knowledge through self-regulated learning from the curriculum, knowledge which is essential preparation for nursing practice development (Mullen 2009). This was an important study finding and demonstrates a significant point of difference between the methods applied in the two nursing education settings (VET and higher

education). Skills for independent and lifelong learning are essential requirements for professional nursing practice at all levels. The implications for the diploma program are therefore that, while educators will continue to play an important role in providing explicit instructions to facilitate learning, skills for independent and lifelong learning will need to be actively promoted in the education strategy.

Preference for practical application and simulated learning

Participants expressed the desire to optimise learning through practical exposure to enable them to be work-ready. This finding was aligned with the expectations of the practical and employment-focused learning associated with the VET sector (Community Services and Health Industry Skills Council (CSHISC) 2004; Haukka 2011; Kilpatrick et al. 2007; Knight & Mlotowski 2009). Practical skills-based learning preferences can be linked to the skill-focused role of Enrolled Nurses in the work environment and the educational requirements of the diploma-level qualification (Jacob et al. 2013; Jacob, Sellick & Mckenna 2012). Experiential learning and simulation in clinical skill laboratories are recognised as important preparation for students across all health professions (McKenna & Stockhausen 2013). Simulation uses artificial or hypothetical experiences to reflect real-life conditions. Experiential learning is undertaken in nursing to avoid the risks associated with actual patients (Fitzgerald 2011). In the higher education literature, experiential learning is recommended for nursing education at all levels to enable greater exposure to clinical skills in safe environments and to better prepare nursing students for real-life clinical encounters (Australian Nursing and Midwifery Accreditation Council 2012; Miller & Boswell 2012; Ryan 2009; Taper & Johnson-Russell 2011). In the Enrolled Nursing program the teaching and learning activities will need to ensure adequate practice development and experiential learning through more exposure to practical skills and simulated learning.

Preference for face-to-face learning

A preference for face-to-face campus-based learning was consistent amongst respondents. VET learners, mature-aged and non-traditional learners in general prefer face-to-face educational experiences (Bankert & Kozel 2005; Bastable & Dart 2011; Callan 2005; Hermann 2008; Mitchell et al. 2006; Quinn & Hughes 2007; Robert, Pomarico & Nolan 2011). This preference was found to be an important factor in influencing choice of educational setting (VET or higher education) for some participants. The higher education setting employs self-directed (Mullen 2009) and blended or web-based delivery for many programs (Bradley & Cosper 2011; O'Neil 2009; Sopczyk, Doyle & Jacobs 2011; Stanley & Dougherty 2010). Respondents did not want off-campus education or an online learning environment to replace their present face-to-face classroom-based learning. The low student preference for blended modes of delivery (a combination of face-to-face and online modes) demonstrates that not everyone wants to participate in web-based learning environments (Fabry 2009; Irani et al. 2003). The differences in approach to learning, readiness and attitude to web-based learning also influence the uptake of blended or online learning (Appana 2008; Bonk & Zhang 2006; Brown et al. 2009b). This may be associated with educational maturation and the need for directional guidance, including social relationships.

Campus-based learning offers a real-life (social) presence, which students felt could not be achieved in the online environment. Replicating a similar social presence in blended learning can be challenging in ensuring the educational success of online experiences (Garrison 2007, cited in Phillips, Forbes & Duke 2013, p.147). This is an important difference between nursing students in the VET and

higher education sectors, in terms of planning for the online components of learning in the Enrolled Nurse program. Educational planning must ensure well-formulated instructions for learning in the blended learning environment, including enhanced support in study skills and information technology, to facilitate retention and the uptake of learning in the online component.

Preference for closer integration of theory and practicum

Respondents expressed a preference for closer integration between the theoretical and clinical components. All health professional education programs contain both elements and incorporate clinical education and the acquisition of skills in clinical (professional) settings (McKenna & Stockhausen 2013; National Health Workforce Taskforce 2008). Clinical practicums take place in a range of health settings to consolidate learning and prepare for professional practice (National Health Workforce Taskforce 2008). The preference for the close integration of theory and practical aspects is similar to higher education nursing students, who also want the theoretical component and the clinical practical application closely connected for effective educational outcomes (Robert, Pomario & Nolan 2011). It is a recommended pedagogy in nursing education to align theoretical instruction and practice closely when new skills are being learnt — this assists students to retain new information (Braungart, Braungart & Gramet 2011; Fitzgerald 2011). The implication here for Enrolled Nurse program planning is that adequate and timely clinical placements should follow the theoretical component of the curriculum and this issue will need to be addressed in the diploma program. In this way better learning outcomes for this cohort of learners will be achieved and their educational preferences addressed.

Conclusions

This research has identified the learning preferences of Enrolled Nursing students, the aim being to ensure teaching methods appropriate to this cohort. The findings have implications for designing, planning and delivering appropriate teaching strategies in Enrolled Nursing programs for the future. This study is also important as it seeks recognition of the unique learning environment of Enrolled Nursing students in the broader arena of educational preparation of different levels of nurses. The findings indicated that the participants in this study reflected the diversity, characteristics, educational capabilities and learning attributes associated with VET learners. Preferences for face-to-face educator-guided learning, with practical and application-based learning, mirrored the educational preferences associated with learners in VET by comparison with higher education learners. A preference for more experiential learning and closer integration between theory and practice in educational preparation is similar to higher education nursing students.

This was a limited study and additional research is necessary to further explore the differences in the educational aspects of the two settings (VET and higher education) to enable the establishment of an evidence base for targeted teaching strategies in Enrolled Nurse education.

Acknowledgements

This study was undertaken for a Master of Nursing (Education) research thesis.

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Improving VET teachers' skills and their approach to professional learning

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This paper outlines a workforce development approach applied from early 2010 to late 2012 at TAFE SA Regional Institute, and discusses the strategies and developmental activities in place during this period that may have contributed to improving professional capabilities among a large group of vocational education and training (VET) practitioners at the institute. It forms the background to a doctoral study, which builds on a range of studies about VET practitioners from the previous decade, including Mitchell and Ward (2010) and Wheelahan (2010). In June 2010 the institute staff participated in two self-rating surveys: VETCAT®, which measures 58 teaching skills of VET practitioners; and CURCAT®, which measures their use of 27 strategies to remain current with their industry. The surveys were repeated in late 2012 and showed an increase in ratings of around five per cent across most items. In both cases the quantitative data generated from the survey were complemented by qualitative data gained from institute staff, particularly from professional conversations and group discussions designed to reveal staff stories and experiences.

Approximately 400 lecturers responded to the surveys in 2010, and 250 from the same cohort responded again in 2012. This paper will outline the professional learning strategies which were implemented and were effective in improving the skills and currency of VET practitioners over that period. These strategies included a mix of deliberate interventions by the organisation, by faculties and individuals.

Introduction

In early 2010, Regional TAFE SA staff participated in a workforce development initiative that shaped future policy regarding continuous professional development. This initiative was undertaken because the institute was established through a recent amalgamation of the whole or parts of five different institutes and there were contrasting cultures regarding professional development. It was also necessary to understand the skill sets of the teaching staff across the organisation. The institute wished to use an evidence-based approach and engage staff in planning targeted professional learning strategies. As highlighted by Skills Australia:

> Lifting the quality of VET outcomes goes beyond the issue of compliance to the skills of the VET practitioner. Consideration is needed of the essential requirements for professional practice, as well as the types of mechanisms that will better support ongoing professional development, leadership and excellence. (2010, p.5)

Methodology

The JMA Analytics model of VET Practice was developed as a result of a national online survey with over 2000 respondents in 2009. JMA Analytics found that VET teaching practice is comprised of nine

skill sets; five of these are foundation skill sets, two are specialist skill sets; and generic skills and educational research underpin both foundation and advanced practice (table 1).

Table 1 JMA Analytics model of VET Practice

Foundation practice		Skill sets
Novice	Not yet proficient in five foundation skill sets	
Established	Proficient in foundation skill sets	Learning styles Learning theories Foundation learning facilitation Foundation assessment Course organisation and student management
Specialist practice commercial	Foundation skills sets plus additional skill sets	Commercial skills including customising training for workplace learning Managing training and industry relationships
Learning and assessment	Foundation skill sets plus additional skill sets	Advanced learning facilitation and assessment skills including flexible delivery, off-shore delivery, online delivery
Advanced VET practitioner		Competent in all skill sets.

Source: Mitchell and Ward (2010).

In early 2010, institute teaching staff participated in these self-assessed online surveys developed by JMA Analytics. Because VET teachers are 'dual' professionals, requiring both current vocational skills and teaching skills, the institute undertook both VETCAT® and CURCAT®. As well as teaching skills, VETCAT® assessed teachers' motivation for professional development in these skill sets. CURCAT® provided data about the teachers' assessment of their level of industry currency and the strategies they used for maintaining this currency. Reports were provided at three levels: organisational, team and individual.

Prior to the surveys the institute embarked on a strong promotional campaign to engage as many staff as possible in the exercise, in order to ensure effective data collection. Staff were assured that the survey results would be used to ensure skills gaps were addressed, that their personal reports were private to them, and that, while there was a finite budget for professional development, the available budget would be used to target the skills gaps that were identified in the survey.

Paunonen and O'Neill (2010) stated that 'self-reports have been trusted by psychologists and others as the basis of typical performance since the invention of the personality test item and before' (Paunonen & O'Neill 2010, p.203). They also state that self-assessment tools are useful for learning about people's 'beliefs, intentions, aspirations, attitudes' (Paunonen & O'Neill, cited in JMA Analytics 2012, p.1). However, it is appropriate to challenge the validity of self-assessment, particularly in the areas of error and bias. The JMA Analytics surveys took these factors into account and used strategies that mitigated both error and bias. The two primary methods included 'ensuring a large sample size and ensuring that respondents see it in their best interests to provide an accurate self-rating' (JMA Analytics 2012b, p.1). In 2010, of the 456 lecturing staff, both full-time and part time, 92% undertook both VETCAT® and CURCAT®. Institute senior management were extremely pleased with the response rate and believed that it reflected the trust that staff had showed in the process. A fewer number of the same cohort undertook the survey in 2012 (approximately 63%).

Following the analysis of the results of the surveys by the author and other senior managers, a comprehensive professional development plan was implemented in 2010. This plan aimed to ameliorate the skills gaps identified at the generic or institute level, provide faculty managers with support to address specific faculty issues, and assist individuals with support to develop personal professional development plans.

Findings and discussion

This section reviews the results from the 2010 surveys, the professional learning strategies implemented as a result of the survey analysis, and results from the repeat surveys in late 2012.

VETCAT® results 2010

One of the other key findings from the survey related to both the educational and vocational qualifications of the staff. Mitchell and Ward (2010) found in their national survey that only about 14% of respondents held a Certificate IV in Training and Assessment (TAE) as their highest educational qualification. In contrast, about half the teaching staff in Regional TAFE SA held this as their highest educational qualification.

The 2010 VETCAT® institute report showed that there were substantial knowledge and skills gaps in individual teaching skills: in learning styles and learning theories; in delivery and monitoring training and assessment programs; in diagnostic assessment; in recognition of prior learning; in research and evaluation; and in the area of advanced learning and assessment. Advanced learning and assessment skills included facilitating distance learning, flexible learning programs and online learning and assessment — essential skills for the regional institute. There were also skills gaps in the understanding and documentation for the quality system (JMA Analytics 2010b).

Staff believed that they had 80% of the professional skills required for their job and that the available professional learning options met 63% of their needs. While this rating of available learning options obviously needed a response, it was still higher than the national figure of 55% (Mitchell & Ward 2010, pp.17—18). The institute staff profile is presented in table 2.

Table 2 Staff profile 2010

Category	2010
Foundation novice practitioners	8%
Foundation established	59%
Learning and assessment specialists	2%
Commercial specialists	26%
Advanced VET practitioners	5%

Source: JMA Analytics (2010b).

This profile indicates a large proportion with foundation established skills; it was believed that this group could be provided with opportunities to gain skills either as learning and assessment or commercial specialists, or to mentor novices or part-time instructors. The very small proportion of learning and assessment specialists presented the institute with a challenge in terms of skill development and succession planning (JMA Analytics 2010b, p.3). There were also some very positive results in the VETCAT® reports and it was important to acknowledge these. For instance, the data pointed to a significant group of commercial specialists who had expertise that proved invaluable in

developing the institute partnerships with industry, in maintaining strong fee-for-service revenue and in mentoring others to develop programs for workplace delivery.

CURCAT® results 2010

The CURCAT® survey results indicated that staff believed they had an average industry currency rating of just under 70% of optimal level, a clear indication of the need for improvement. They also rated the institute negatively on four key areas of organisational support, as indicated in table 3.

Table 3 Organisational support for vocational currency

2010	Category
Cultural support within the institute for maintenance of industry currency	51%
Policy and procedural support within the institute for maintenance of industry currency	48%
Level of institute assistance for maintenance of industry currency	46%
Industry body assistance for maintenance of industry currency	40%

Source: JMA Analytics (2010a, p.15).

The CURCAT® results showed that practitioners had only a medium level of use of structured training as a strategy for maintaining currency, whereas there was a high level of use of active enquiry strategies such as using industry publications, conducting internet research and reading general business magazines and government publications. Staff ranked 14 barriers to their maintenance of vocational currency, including budget constraints, lack of support for lecturer absence and limited opportunities for real industry release (JMA Analytics 2010a, p.14).

Clayton et al. (2013, p.8) found that 'employers did suggest … that the strategies they used themselves to keep current were equally appropriate for VET trainers and assessors.' The suggested strategies included trade events, industry-specific journals, online research and industry networks. Clayton et al. (2013, p.8) also noted that 'from the perspective of those in knowledge-based organisations it was evident that effective updating was dependent on a healthy organisational climate.' The CURCAT® data gave insights into staff employment patterns in industry and the institute, as well as the length of time staff had been employed outside their industry.

After the analysis: what then?

In a changing workplace, employees' skills must adapt and develop; as new ways of working emerge, new skills need to be learnt. These rapid changes are the reason that Billett (2002) proposes that every workplace needs to have 'robust, strongly empirical and conceptual bases for how learning at work should best proceed — a pedagogy for the workplace' (Billett 2002, p.28). He claims that 'reciprocal participatory practices are central to understanding learning for and in the workplace' (Billett 2002, p.29). He proposes three bases for workplace pedagogy:

- the intentional and indirect guidance that can be accessed as part of everyday work activities
- how workplaces afford opportunities to participate in work activities and access guidance
- how individuals elect to engage in workplace learning (Billett 2002, pp.29—30).

A wide range of options was made available to staff, including workplace learning options, accredited training and work-based projects. All professional learning opportunities were promoted to staff as a response to the VETCAT® and CURCAT® data.

The policy initiatives implemented as part of the project included:

- a compulsory induction to a teaching and learning program for all new staff
- a formal mentor program for staff who were new or completing the Certificate IV in Training and Assessment
- 30 hours of professional development per annum negotiated and planned with team managers.

Professional learning strategies

Professional learning strategies were customised for individuals whose profile identified them as novices, established or specialists.

For novices:

- compulsory induction to teaching and learning program
- requirement for a formal teaching and learning mentor; training was provided for both the mentor and the mentee
- customised Certificate IV in Training and Assessment via videoconference for ease of access for all staff.

For foundation established and specialist practitioners:

- funded places for the Diploma of VET qualification
- financial support to complete the degree program at the University of South Australia
- several annual scholarships for master's programs
- workshops and seminars in assessment, educational leadership and mentoring.

At the team or faculty level the professional learning options included:

- workshops to address skill gaps in online pedagogy and meet team strategic plans for more online learning options for students
- mentor programs for advanced VET practitioners who were responsible for mentoring novices in assessment or online pedagogies
- work-based projects that enabled teaching staff to participate in industry seminars or industry release, or to test more innovative ways of connecting with industry groups.

Other learning strategies included releasing staff to complete further higher-level vocational qualifications or to formalise many of the informal linkages that teams had with industry partners. The institute's capacity-building budget supported small-scale projects that focused on industry currency and these were publicised through videoconferencing sessions, which senior executive members encouraged and attended.

The institute response to the VETCAT® and CURCAT® data, therefore, included some practical on-job training opportunities and access to accredited training, underpinning policy initiatives and training programs for educational managers. The mentor program not only assisted new staff to gain teaching skills but also gave many of the learning and assessment specialists the opportunity to share their skills and experience. A formal training program for both mentors and mentees articulated clearly the expectations that each could have of the other, including the introduction of a limited practicum, as the mentor was required to observe the practice of the new staff member and provide feedback.

Staff were assured that, while their personal report was confidential, they were encouraged to use the general findings as a basis for discussion with their manager on their personal professional development plan. Training workshops for managers ensured that using the individual report as a tool for personal development was consistently applied across all faculties. These training sessions also ensured consistent implementation of the new policy requiring all staff to have annually reviewed personal learning plans.

One of the strategies that was important in maintaining staff trust in the process was ensuring that professional learning opportunities were a demonstrated response to the skills gaps identified in the 2010 surveys, and that they were focused on assisting staff to gain and maintain further skills. There was an increase in registrations and enrolments in accredited units and in the number of action learning projects available to staff. Professional learning was seen as everyone's business and responsibility.

Repeat of VETCAT® and CURCAT® in 2012

In late 2012, the organisation repeated the VETCAT® and CURCAT® surveys to gauge whether the targeted professional learning program had been successful and to further analyse skills gaps, and perhaps adopt new strategies to assist staff to gain further skills.

Changes in institute profile and skills

The analysis of the whole-of-organisation and faculty reports for 2012 showed a significant change in the profile of the staff. While the largest number of staff had previously been assessed as foundation established, many of these staff had now upskilled to the next level of commercial specialists or advanced VET practitioners. Qualitative evidence collected in 2012 showed that this increase in skills had a significant impact in faculties, with staff willingly stepping into mentor roles, leadership roles in assessment and online learning, and development roles in online programs.

Table 4 Comparison of the Regional Institute's VETCAT® results 2010—12

Category	2010	2012
Foundation novice practitioners	8%	7%
Foundation established	59%	18%
Learning and assessment specialists	2%	2%
Commercial specialists	26%	49%
Advanced VET practitioners	5%	24%

Source: JMA Analytics (2010a, 2010b, 2012a, 2012b).

The levels of qualifications in both education and vocational areas had increased, and staff now assessed their skills to perform their job at a higher level. Their assessment of the professional development program in 2012 was that it met their needs more closely; it had been rated at 63% in 2010. Their assessment in 2012 was that it met 73% of their needs. While this is a significant improvement, there is still work to be done to improve the value of professional development.

The following table outlines the changes in the level of foundation teaching skills from 2010 to 2012. Foundation skills are extremely important — it is not possible to build quality flexible learning or online learning pedagogies without them.

Table 5 Changes in the level of foundation skills 2010–12

Foundation skills	2010	2012
Learning facilitation	77%	81%
Course organisation and student management	77%	79%
Learning styles	73%	78%
Assessment	77%	81%
Learning theories	71%	76%

Source: JMA Analytics (2010a, 2010b, 2012a, 2012b).

Individual staff used their CURCAT® report as part of the performance development interview process to negotiate for further study opportunities or for industry release. One of the most significant results was that the staff assessed their overall level of industry currency as improving from 70% in 2010 to 79% in 2012. Table 6 explains this improvement.

Table 6 Staff profile in terms of recent paid employment

Measure of % of employees	2010	2012
Undertook paid employment over past year	11%	33%
Last undertook paid employment 10 years ago	52%	22%
Last undertook paid employment from 1–2 years ago	6%	9%

Source: JMA Analytics (2010a, 2010b, 2012a, 2012b).

Other significant statistics in 2012 included: 27% of the staff were concurrently employed by TAFE and within their industry specialisation (for example, nursing, children's services, viticulture and agriculture lecturers), and 35% were involved in an industry licensing or registration scheme, which involved compulsory annual professional development managed by the industry (particularly trades areas, information technology, accounting).

Qualitative data collected from staff after the surveys — from structured professional conversations and group discussions — complemented the quantitative data, and this use of two types of data helped to confirm that improvements had occurred by late 2012. The usefulness of the 2012 data was evaluated independently by the Psychometrics Institute at the Australian Council for Educational Research (ACER).

Conclusions

There were several positive outcomes from this workforce development project:

- Teaching staff had a common language for describing VET teaching practice.
- The use of an evidence-based and planned approach to professional development had assisted in targeting skills gaps within the organisation.
- It was acknowledged that the responsibility for learning and improvement was multilayered.

Guthrie (2010) maintains that the processes that are central to the skills, knowledge and support of VET teachers 'at its simplest' are:

- a foundational set of teaching and assessment skills
- strong initial development including good induction, and then ongoing support and professional development

- a willingness by the sector's teachers and trainers … to engage in ongoing professional development (Guthrie 2010, p.13).

VETCAT® and CURCAT® enabled the institute to develop a strategic framework for the delivery of professional development for all teaching staff. Professional learning was seen as essential, available equitably to everyone and everyone's business. Staff understood that the responsibility for learning and improvement was organisational, faculty-based and individual.

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Skills needed for innovation: a review

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A review of the literature covering the terms ‘skill’ and ‘innovation’ shows they have been defined imprecisely, resulting in a range of inconsistent and contested meanings. In addition, there has been little explicit empirical research or theoretical writing on how skills contribute to innovation. While there are researchers working and writing in both areas, there appears to be limited research and literature linking the two, and little communication between them. This paper argues that there is a need for greater clarity and consistency in the definition of the key concepts of ‘skill’ and ‘innovation’, together with an integrated approach to investigating how skills contribute to successful innovation in organisations. It also outlines the implications of these observations for vocational education and training (VET).

Introduction

There has been little explicit empirical research or theoretical writing on how skills contribute to innovation. To a large degree, it appears that links between skills/skill formation and innovation have been overlooked. Tether et al. (2005), as well as Toner (2011a), have noted the lack of an explicit focus on skills and skill formation in the ‘innovation studies’ literature. Despite an increasing amount of literature in both of these areas, there appears to be little interaction between the two groups (Tether et al. 2005, p.111).

The first section of the paper deals with the meaning of skill and the types that have been identified. This discussion highlights the need for a more robust and versatile definition and a better categorisation of the types of skill. The second section examines the definition and types of innovation, the review indicating that there is also a need for further work in this area. The section that follows focuses on the skills needed for innovation. Here too, the literature offers little information on the skills needed, suggesting further research is required. The final section outlines the implications of these observations for vocational education and training (VET), arguing that additional investment in VET would enable it to improve skill levels, including the ability to innovate.

Defining skill

Skill has been defined as ‘an ability or proficiency at a task that is normally acquired or developed through education, training and/or experience’ (Tether et al. 2005, p.11). A simpler definition is that skills are ‘productive assets of the workforce that are acquired through learning activities’ (Toner 2011a, p.11). Green, Jones and Miles (2007, p.7) draw attention to the economic importance of skills, arguing that they ‘can be viewed as the abilities of people … for which there is a demand within the formal economy’. Esposto (2008, p.103) places skills in a labour market context, defining them as the ‘generalisable attributes of individuals that confer advantage in the labour market’. Another definition places skill in a ‘work’ context, defining it as ‘knowledge, applied effectively under conditions of discretion, in a work context’ (Hurrell, Scholarios & Thompson 2013, p.166).

Labour process theorists define skill in terms of three dimensions: skill that resides in the worker; skill demanded by the job; and socially constructed skill or the 'political definition of skill' (Cockburn 1983, p.113). An important element of the skills of the worker is task complexity, while for the skill requirements of a particular job it is the level of autonomy and discretion given to the worker. In the social construction of skill, it is the economic actors who 'utilise power resources to define skill content and determine outcomes' (Hurrell, Scholarios & Thompson 2013, p.165).

In the past, skill tended to be equated mainly with the cognitive ability and manual dexterity of the craft worker (Oliver & Turton 1982, p.195; Keep & Payne 2004, p.53). More recently, broader definitions of skill have been favoured. What most people previously would have regarded as personal characteristics, such as attributes, attitudes, character traits, dispositions, values and behaviours, are now being defined as skills (Tether et al. 2005, p.19; Grugulis, Warhurst & Keep 2004, p.6; Keep & Payne 2004, p.54).

The review of the literature shows that skill is a contested term and difficult to define (Lafer 2004, p.118), with no agreed robust definition. However, skill develops over time with practice, involves cognitive processes and the appropriate manipulation and application of knowledge. It normally involves education and training, and includes an element of autonomy or discretion that allows performance with economy of effort in a workplace and societal context (Hurrell, Scholarios & Thompson 2013, pp.165—6, and 176). This highlights the need for an integrated approach to defining skill (Grugulis & Lloyd 2010, p.103), one that includes complexity and autonomy/discretion in a workplace and societal context.

Types of skill

Not only are there difficulties in defining skill, there is no agreed classification of the types of skills observed. Grugulis and Lloyd (2010, p.99) point out that there has been a 'dramatic increase in the lexicon of skills', while Thompson (2007, p.1364) comments that the 'palette of skills' has been widened 'without normally deepening them'. The earlier focus on technical skills has been broadened to include soft or social skills (Lloyd & Payne 2009; Keep & Payne 2004; Grugulis, Warhurst & Keep 2004).

Lloyd and Payne (2009, p.631) argue that skill should have a 'clear link to technical competence and knowledge'. However, Hurrell, Scholarios and Thompson (2013, p.164) claim that the concept of 'technical skill is too wedded to the experience of trades with defined bodies of knowledge', and that other types of skill need to be included in order to 'handle contemporary questions of skill and skill formation in a largely service-based economy'. These have been described as soft or social skills.

Soft skills, frequently referred to collectively as social skills, include self-confidence, attitudes, communications, dispositions, problem-solving and appearance (Hurrell, Scholarios & Thompson 2013, p.165). Hurrell, Scholarios and Thompson (2013, p.179) claim that in certain situations soft skills can be 'real' skills, and not just qualities and abilities. There is little consensus about this, some writers arguing that extending the meaning may have a number of negative effects. These include contributing to declining discretion and pushing 'the responsibility for their formation and application onto the individual worker and the education and training system' (Grugulis & Lloyd 2010, p.102). In addition, it could encourage 'hollow claims' to be made about general upskilling in a knowledge economy (Hurrell, Scholarios & Thompson 2013, p.164). That is to say, if there are seemingly meaningless extensions of the notion of skill to include personal characteristics or capacities (soft

skills), this may have a number of negative effects, including encouraging the unfounded claim of increased skill levels (upskilling) in a country.

Laffer (2004, p.118) argues that if attitude and discipline, for example, are redefined as 'skills', then 'skill means nothing more than whatever employers want'; or, as the evidence of the research of Oliver and Turton (1982, p.198) implied, '"skill" is a "humpty-dumpty word"; it means just what the user wants it to mean.'

There are two 'new' conceptual frameworks for thinking about skill: generic skills and competence (Grugulis, Warhurst & Keep 2004, p.9). Generic skills are also called key, core, basic, transferable or employability skills. Some generic skills are 'hard' and 'technical'; for example, information technology and numeracy, while others are 'soft', such as teamwork. One of the contentious issues regarding generic skills is that they are transferable across different occupations and are therefore context-independent (Keep & Payne 2004, p.58). An example would be problem-solving, which is quite different when the problems to be solved are complex, rather than when they are fairly routine (Grugulis & Lloyd 2010, p.100), or where an understanding of a particular context for each situation is required (Wheelahan, Buchanan & Yu 2015, p.6). More generally, the reason why generic skills are often contested is that there are several typologies and categorisations, some of which tend to be mutually irreconcilable (Grugulis, Warhurst & Keep 2004, p.14).

There is a belief that competencies are held by the individual, and are independent of context and environment. However, it has also been argued that competencies can be held collectively, for example, by a work team, and that they are 'created and sustained by particular work environments' (Grugulis, Warhurst & Keep 2004, p.15), and therefore 'context-dependent' (Guthrie 2009, p.22). The competence approach has been criticised as being inclined to neglect the importance of underpinning theory and knowledge (Grugulis, Warhurst & Keep 2004, p.9) and for the idea that competence can be 'graded' into different levels. A common assumption in competency assessment is that a person is either competent or not yet competent. The grading of competence has been a contested issue since the introduction of the approach (Guthrie 2009, p.25).

Vocational education and training (VET) is well placed to develop both technical (especially trades and related skills) and generic skills. The VET sector, rather than the universities, has the most to offer in these areas. Dalitz, Toner and Turpin (2011, p.154) argue that VET 'should focus on providing people with the core skills for their particular vocation' (as well as the ability to learn and adapt).

As in the case of the definition of skills, the categorisation of skills into various types is also contested and has shortcomings, in that the types identified are not discrete and lack comprehensiveness. Here too, there is a need for further research. As Keep and Payne (2004, p.71) point out, there are 'many consequences, contradictions and conflicts that remain buried at the heart of skill'. Although it does not address the categorisation problem, a useful suggestion by the Organisation for Economic Co-operation and Development (OECD) is that 'empirical studies linking data on stocks and flows of skills at the country and industry level to innovation indicators would provide valuable evidence to complement more theoretical discussions of skills for innovation' (OECD 2011, p.11). However, as acknowledged by the OECD, further work needs to be done 'to improve the data, better identify relationships and explore their strength and direction' (2011, p.11). Another promising development is new research on 'capabilities' and 'vocational streams' (Wheelahan, Buchanan & Yu 2015).

Innovation

Definition and types of innovation

At a general level, innovation can be defined as the successful exploitation or application of new ideas (Tether et al. 2005, p.5; Dodgson 2013), or, more simply, as 'ideas successfully applied' (Dodgson & Gann 2010, p.13). However, 'success' is ambiguous because a technical success may be a commercial disaster (Green, Jones & Miles 2007, p.8). These general definitions are too simplistic, as innovation cannot be defined as 'invention plus commercialisation'. Like skill, it is a contested, slippery and fuzzy concept.

The OECD, in the third edition of the Oslo Manual, defines an innovation as 'the implementation of a new or significantly improved product (good or service) or process, a new marketing method, or a new organisational method in business practices, workplace organisation or external relations' (OECD 2005, p.46). The manual defines four types of innovations:

- product innovations: introduction of significant changes in the capabilities of goods or services
- process innovations: implementation of significant changes in production or delivery methods
- organisational innovations: implementation of new organisational methods
- marketing innovations: implementation of new marketing methods.

The minimum requirement for an innovation is that it must be 'new (or significantly improved) to the firm' (OECD 2005, p.46). The manual distinguishes incremental from radical or disruptive innovation. Incremental innovation involves continuous small changes, while radical innovation involves breakthrough inventions: it is 'an innovation that has a significant impact on a market and on the economic activity of firms' (OECD 2005, p.58). However, innovation can comprise a single significant change or a series of incremental changes, which, taken together, involve a significant change (OECD 2005, pp.40, 47). Hanel (2008, p.28) argues that the large 'fit all' definition in the Oslo Manual has resulted in the survey questionnaire used in the process being 'too blunt a tool' to fully answer key questions about innovation.

It has been argued that the 'fuzziness' in the definition of innovation, is due to the following:

- It is defined and measured either as a product or as an activity (Godin 2002, p.25).
- Survey respondents find it difficult to determine whether an innovation is new to the firm, the market or the world (OECD 2005, p.57).
- The manual defines innovative firms as those that develop new products and those that adopt new processes. Godin (2002, p.26) claims that these are two phenomena and probably cannot be integrated into a single measure.
- It is not clear whether the definition is based on the collection of data on the innovative activities of the firm, or the collection of data about specific innovations (OECD 2005, pp.20—1).

In summary, innovation is a fuzzy concept because, depending on the authority cited, it is defined and measured either as an output (product) or as an activity. Another side of the fuzziness is whether it is new to the firm, the market or the world. It has also been argued that survey respondents 'do not yet have a consistent understanding of the concept of innovation, which varies from one industrial sector

to another' (Guellec & Pattinson, cited in Godin 2002, p.26). This inconsistency throws doubt on the validity of comparisons of the findings of research undertaken in disparate industries.

Innovation, management and work organisation

Many governments and organisations encourage greater efficiency and therefore short-term productivity. This is prompted by capital market short-termism, where analysts and investors demand quick financial rewards. They prefer organisations that cut short-term costs to increase short-run productivity, rather than those that invest in innovation. This fails to recognise the importance of 'organisational slack', the time and space to experiment and achieve innovation (Tether et al. 2005, p.106). An organisation working at full capacity, and therefore highly efficient, may lack the ability to innovate and the capacity to adapt to change (Tether et al. 2005, p.95).

Some of the world's most innovative companies actively seek to make time for radical innovation. For example, the company 3M introduced the practice of 'organisational slack' to allow their engineers and scientists to spend 15% of their time on personal projects (Finkle 2011, p.879). This resulted in staff producing a number of inventions such as Post-it notes, Scotch tape, Scotchgard and masking tape (Studt 2003, p.22). Researchers could also request funding to get their projects off the ground. In addition, 3M 'explicitly encouraged risk and tolerated failure' (Hindo 2007, p.2). Dodgson and Gann (2010, p.136) have suggested that toleration of failure and job security are 'crucial' for innovation.

Similarly, at Google, staff were able to work 80% of their hours on regular work and the other 20% on non-core projects, resulting in the development of ten to 12 new offerings every three months from the teams involved (Finkle 2011, p.882). Examples include Google News and Gmail. The approach adopted by innovative companies like 3M and Google not only increases innovation, but also encourages employee commitment, motivation and loyalty.

Although its benefits have long been recognised, at any point in time a majority of organisations are not actively engaged in innovation. For example, in Australia over the period 2001—03, only 34.8% of organisations were innovating (Toner 2011a, p.17). In 2012—13 the proportion of businesses that undertook any innovative activity was 42% (Department of Industry 2014, p.33). Green, Jones and Miles (2007) claim that most organisations, particularly small- to medium-size enterprises (SMEs), 'do not put much effort into thinking about innovation, and thus they do not have articulated views about their skill needs for innovation' (Miles 2007, p.14). However, there is some evidence that the more innovative SMEs tend to focus on developing the skills of their current workforce, rather than on seeking to obtain them from outside the organisation (Green, Jones & Miles 2007, p.14). Hall (2011) argues that, in Australia, employers prefer to recruit skilled workers rather than develop the skills of their existing staff.

In summary, innovation 'involves new combinations of ideas, knowledge, skills, and resources' (Dodgson & Gann 2010, p.11). The review shows that there are problems with current definitions, including the one in the Oslo Manual, described as a large 'fit all' definition, and that innovation is 'complex, nuanced and contested' (Green, Jones & Miles 2007, p.7). This suggests a need for further work in developing a coherent definition of innovation, together with further research into how it occurs.

Skills needed for innovation

Workforce skills are a necessary, but not a sufficient, condition for successful innovation. The particular work organisation methods adopted by organisations are the major determinants of the extent of its workforce actively engaging in innovation (Toner 2011a, p.3). These include aspects such as 'authority and hierarchy within workplaces, autonomy and responsibility of labour and the allocation of skills and tasks across occupations'. Toner concludes that work organisation 'highlights the social construction of skill' (Toner 2011a, p.11). According to the OECD, there is a 'need to put the organisation of work more centrally in the analysis of innovation' (cited in Stanwick 2011, p.7).

Tether et al. (2005) argue that innovation is becoming more 'distributed' or 'democratic', the broader workforce engaging with innovation, and not leaving it to research and development specialists and innovation departments. In this environment, all levels of workforce skill are seen as being significant, together with a sound basic education (Tether et al. 2005, p.77). Adaptable workers are needed at all levels, as innovation involves the skills of the whole workforce. In their research, which examined the mining, solar energy and computer games sectors, Dalitz, Toner and Turpin (2011) noted that they did not find any evidence of generic 'innovation skills'. They conclude that, while the skills used in innovation by workers were generally learnt on the job, they were based on what was learnt through formal courses, including vocational education.

While the skills needed for innovation are broad-based, there is also a need for a mix of skills (Stanwick & Beddie 2011, p.31). Skills identified as important for innovation include: management and leadership skills, technical and scientific skills, interpersonal skills and consumer feedback skills (Tether et al. 2005; Green, Jones & Miles 2010). Other skills required for innovation include the ability to learn, creativity and design (OECD 2011). Due to the changes in the workplace resulting from innovation, Dalitz, Toner and Turpin (2011, p.154) state 'it is the ability to learn in each vocation and profession that is vital.'

Management and leadership skills

Managers determine whether or not an organisation engages in innovation, and they perform a key role in coordinating the innovation process (Tether et al. 2005, pp.100, 111). Dodgson and Gann (2010, pp.132—3) argue that skills in the management of innovation, which help organisations to make choices with regard to the skills they use and the resources they invest in innovative opportunities, will 'become amongst the most prized by business.' Firms also need their managers to 'create a supportive culture where staff are encouraged to try new things, and are not discouraged when they fail' (Dodgson & Gann 2010, pp.109—10).

Tether et al. (2005, pp.77—8) argue that, while most firms still 'go it alone', a large part of innovation requires firms to engage in collaborative partnerships with other firms and organisations. This suggests there will be an increasing need for leadership skills in forming and sustaining collaborative arrangements with external organisations. There appears to have been limited research into how managers learn to manage innovation, including whether formal training improves performance (Tether et al. 2005, p.113). Further work needs to be done in this area.

Technical and scientific skills

High-level scientific and technical skills are important for radical innovation. On the other hand, intermediate technical skills are reported as being significant in incremental innovation and the diffusion of innovation. This is especially the case in manufacturing (Tether et al. 2005).

Interpersonal skills

Also referred to as 'soft' skills, these include communication, team work, problem-solving, self-confidence and customer service, and are especially important for organisational innovation in the area of services (Tether et al. 2005). However, interpersonal skills have often been undervalued in terms of pay and other benefits. This has had a negative impact on the quality of the applicants for jobs involving interpersonal skills (Tether et al. 2005, p.113). The OECD (2011, p.52) notes that interpersonal skills, like communication and teamwork, may increase in importance due to a greater demand for knowledge sharing and learning.

Consumer feedback skills

Referred to by Tether et al. (2005) as 'consumption' skills, these can improve innovation performance if the collection and analysis of feedback from consumers are enhanced (Tether et al. 2005). An advantage of accessing consumer feedback is that an organisation 'can utilize the deep knowledge that users have accumulated' (Antorini & Muniz 2013, p.27). Research at the Lego Group that examined the influence of customer feedback on innovation found that by tapping into the knowledge and enthusiasm of customers or user communities, Lego was able to improve its product offerings without increasing long-term fixed costs. It provided the company with 'exposure to new ideas, new technologies and new business partnerships' (Antorini, Muniz & Askildsen 2012, p.73), as well as access to creativity. The importance of creativity in the computer games sector has been highlighted by Dalitz, Toner and Turpin (2011).

However, there are also disadvantages — there can be problems with the ownership of intellectual property rights of the resulting innovations (Antorini & Muniz 2013). Also, there are potential problems in dealing with groups and organisations with a different culture. Antorini and Muniz (2013, p.28) argue that it is 'one of the new competencies firms will have to develop to successfully interact with committed, informed, and active consumers'. Laursen (2011, p.722) has observed that the use of customer feedback is often more effective when combined with other sources of innovation.

Implications for VET

The VET sector is well placed to teach the trades and related skills that are important in the innovation process. In addition, there is a role for the sector in developing soft skills, although this is a contested area with universities (Stanwick & Beddie 2011, p.34). In other words, universities do not want VET encroaching on their 'academic' domain, including in areas such as financial management, marketing and business management. However, some TAFE institutions are offering their own 'practical and career-focused' degree/associate degree programs in areas such as information technology and accounting, for example, North Sydney Institute.

An alternative might be to 'promote partnerships between VET providers and universities such that VET graduates are also eligible to enter university programs with the maximum amount of credit for their VET learning' (Misko & Nechvoglod 2011, p.77). A number of universities, including Charles Sturt University (CSU), have such partnerships. VET could also offer university bachelor degrees, for example, the partnerships between Charles Sturt and the Canberra Institute of Technology, North Sydney Institute and Holmesglen TAFE. These partnerships allow students to follow a pathway to a Charles Sturt University degree program from a diploma/advanced diploma. Another possibility is partnerships between VET providers and professional bodies such as the Australian Human Resources

Institute, the Association of Certified Practising Accountants and the Institute of Chartered Accountants.

The provision of short courses by the VET sector, including ongoing and top-up training, could also assist innovation (Stanwick 2011; Misko & Nechvoglod 2011). This is an important area, given the need for workers to continually upgrade their skills throughout their working lives because of the rapid changes resulting from the pace of innovation (OECD 2011). A problem here is for VET providers to keep up to date, especially in terms of new technology and industry practice. Due to resource limitations, especially in TAFE, Dalitz, Toner and Turpin (2011, p.157) have argued that 'an additional stream of funding explicitly to provide up-to-date materials and intelligence on industry and technology would greatly assist in keeping the VET system current.'

Some implications for VET delivery include more flexibility and collaboration. A good example of this is TAFE Queensland SkillsTech, a registered training organisation (RTO) formed from an amalgamation of six TAFE institutes around Brisbane in 2006 (see case study in Department of Industry 2014, p.152–4). The case study demonstrates that a high degree of collaboration among training providers, employers, regulators, universities and industry skills councils, together with flexible delivery methods and tailored training solutions, as well as innovative approaches to identifying new trends in industries, are vital where industry needs constantly change. The partnership approach 'allows TAFE Queensland SkillsTech to constantly refine systemic training packages to take into account the latest innovation in industry and gives students hands-on experience' (Department of Industry 2014, p.152).

VET has been the main means for diffusing/transferring knowledge and skills due to its historical connections with industry and pre-eminent role in industry training, which provide a mechanism for introducing 'new products, new knowledge and innovative practices' (Ferrier, Trood & Whittingham 2003). The VET sector can also be seen as important in contributing to knowledge creation. There is, however, some criticism of VET, especially the perception that it gives 'priority to practical competencies over theoretical understanding' (Toner 2011b, p.127). This means that, in the future, underlying theory and knowledge will need to be properly incorporated into VET programs (Curtin & Stanwick 2011, p.14).

In terms of implications for policy, more formal recognition should be given to the VET system in innovation councils, industry skills councils, and in innovation policy (Toner 2011b; Stanwick & Beddie 2011; Toner & Dalitz 2012). The failure to explicitly include VET in the federal government's initial innovation action plan (Commonwealth of Australia 2001) was severely criticised across the entire VET sector (Pickersgill & Walsh 2003). Although the Cutler Review argued that 'the role of crafts and trades in innovation has been massively neglected, particularly in the important areas of continuing incremental innovation in the workplace' (Cutler 2008, p.48), it failed to adequately address the relationship between VET and innovation.

The VET system was also ignored in the 2009 Department of Innovation, Industry, Science and Research report. However, since 2010 the Commonwealth Government has produced innovation system reports, which address innovation and skills, including the role of vocational education. Commenting on the 2011 report, Toner and Dalitz (2012, p.417) noted that it 'is a major advance in terms of the status and recognition afforded to the VET sector in the NIS [national innovation system] by the national government'. In the 2014 report, not only is there a chapter on innovation and skills (as there was in earlier reports), but it also acknowledges that 'just like higher education, the vocational education and training (VET) sector is an important adjunct to the national innovation system' (Department of Industry 2014, p.149). Although this is a step in the right direction, it is not

enough to get VET embedded in the national innovation system. Also, as argued by Toner and Dalitz (2012, p.423), 'innovation policy and consultative mechanisms should connect more deeply with the vocational education and training system'.

In summary, vocational education and training has a key role in building skill levels in the workforce, including skills associated with innovation; it therefore needs additional investment to achieve this. A good start, for example, would be an extra stream of funding to be used specifically to help VET providers to keep up to date with the latest innovation in industry (Dalitz, Toner & Turpin 2011, p.157). As part of the VET sector, TAFE has a role to play in the process, with Boston (2001, p.5) arguing that it has the potential to act as an agent 'creating strategies that will knit together economic development and skill creation, new technologies and the creativity to make them work'.

Conclusion

Tether et al. (2005), Toner (2011) and Hanel (2008) have noted the lack of an explicit focus on skills in the innovation studies literature. Because there are many types of innovation and with the complexity of their sources and processes for creation, the relationship between skills and innovation will always be complicated (Green, Jones & Miles 2007, p.10). The skills involved depend on the nature of the innovation (for example, incremental or radical, product, process etc.), the nature, availability and distribution of skills in an enterprise, and the ability to develop new skills in organisations and across the economy (Green, Jones & Miles 2007, p.10). Skills for collaborating and networking, as well as skills (and mechanisms) for 'building connections across organizational, professional, and disciplinary boundaries', are becoming increasingly important (Dodgson & Gann 2010, p.134). This is due to an increase in the demand for knowledge sharing and learning.

The innovation studies literature has highlighted the important role of VET in 'generating, adapting and diffusing incremental innovation', and that, compared with other OECD nations, the pattern of innovation in Australia makes organisations more dependent on VET skills to achieve innovation (Toner & Dalitz 2012, p.423). Despite all of this, the 'the VET system is largely excluded from government innovation policy and programmes' (Toner & Dalitz 2012, p.411).

Acknowledgments

I gratefully acknowledge helpful comments from Associate Professor Geoff Bamberry, Charles Sturt University, and Dr Bill Dunn and Dr Phillip Toner, University of Sydney. I would also like to thank the reviewers of this paper for their helpful comments.

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