

NCVER funded research for the research theme *Students and individuals* (1999-2012)

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Abstract

The main funding source of research into Australian vocational education and training is the National Council for Vocational Education Research (NCVER). NCVER is a not-for-profit company owned by state, territory and federal ministers responsible for training which has been funding VET research in Australia since 1992. The aim of this paper is to present data from a methodological scan of the NCVER funded research from under the research theme of *Students and individuals*, from 1999 to 2012. NCVER has funded 114 research projects under the *Students and individuals* theme during this 14 year time period. This research theme is one of five main themes. The other four themes include *Teaching and learning*, *Industry and employers*, *VET system* and *VET in context*. The purpose of this study is the exploration of the level of acceptance and adoption of mixed methods in NCVER funded research for this particular research theme. The methodological preferences of funded research may provide insights into the levels of methodological innovation being practiced in relation to VET student issues and phenomenon identified as needing investigation by NCVER and active VET-based researchers and practitioners.

Key words: VET students, learners, VET research, mixed methods, multiple methods

1. Introduction

The National Centre for Vocational Education Research (NCVER) is a not-for-profit company owned by state, territory and federal ministers responsible for training with a Board of Directors who represent state, territory, and Commonwealth governments, industry, unions, and training authorities. NCVER's operations cover six main areas of activity however the focus of this research is in a specific research activity area: the coordination and management of the National VET Research and Evaluation (NVETRE) program and the NCVER in-house research program. The NVETRE program provides funding annually for VET research and commissions research based upon the research priorities agreed to by the Ministerial Council for Tertiary Education and Employment. The in-house projects are developed and conducted by NCVER's research staff and are funded by NCVER after approval from the NCVER Board.

The research activities of NCVER are focused on five main themes: *Students and individuals*; *Teaching and learning*; *Industry and employers*; *VET system* and; *VET in context*. All five of these main themes have a set of level 2 sub themes. The aim of the wider

study (which is still being undertaken with preliminary stages reported in 2011 by Cameron), is to conduct a scan of the research methods utilised in NCVER funded research from 1998-2012 across all five thematic areas. The main objective being to calculate prevalence rates under four broad methodological categories: quantitative (QUAN); qualitative (QUAL); mixed methods (MMR) or; Other. The wider study will then progress to more qualitative analysis of the mixed methods research projects identified to gauge the quality and levels of methodological innovation being undertaken.

Methodological diversity and innovation are aspects of research which are gaining attention with some overseas funding bodies embedding the requirements for mixed methodologies and multidisciplinary research teams into funding guidelines. Plano Clark (2010) acknowledges the important role funding bodies play in relation to the adoption and acceptance of certain methodologies through the allocation of resources and research priorities:

The importance of funding for research occurs through allocating resources, setting research priorities, and conveying norms for research within disciplinary and cultural contexts. As such, funding mechanisms play an important role in research because they directly influence the questions that researchers study as well as the methods used (Plano Clark 2010, p. 428).

This paper reports the findings from the study of the methods adopted for one of the five main NCVER funded research themes: *Students and individuals*. The *Students and individuals* research theme has a set of 4 sub themes and the number of funded projects for each is listed as: General (n= 7); Careers and pathways (n= 25); Learner groups (n=67) and; Student achievements and outcomes (n=15). Bringing this to a total of 114 research projects funded over the 1999 to 2012 period. A major aim of the research is to determine whether mixed methods approaches are being funded in Australian VET based research and as a consequence, determine the level of acceptance and adoption of mixed methods. It is premised here that mixed methods is an indicator of a level of methodological diversity and innovation.

The methodology employed in this current study is content/document analysis of research project summary descriptions available on the NCVER website and from NCVER archives. Mixed methods prevalence rate studies are discussed prior to describing the methodology and reporting and discussing the findings. The paper concludes by describing the future research intended for the wider study.

1. Background and literature

Cameron (2011, p. 4) found evidence of a trend towards the use of mixed methods in funded health research, 'Both the UK based and US based studies indicate an increasing trend towards the use of mixed methods in government commissioned and funded health research'. Niglas (2004) investigated the use of quantitative, qualitative and MMR designs in 15 education journals. She found 19% of the empirical articles adopted a MMR design, and the percentage of those designs ranged widely across the journals from 0% to 38%.

There have been a number of mixed methods prevalence rates studies conducted on vocational education research and the most relevant in terms of this current study was conducted by Smith (2004). Smith (2004) undertook an analysis of National Research and

Evaluation Committee (NREC) research projects managed by NCVER between 1997-2000 and found that qualitative research dominated. Non empirical work (reviews of literature and research and new analysis of existing data sets) also featured strongly in the NREC program 1997-2000. Smith (2004, p. 208) noted ‘increasingly important in NREC research has been the use of mixed methodologies’. Cameron (2010a) conducted a systematic review of publications from the Australian VET research community. The data sources included conferences papers from the 2007 and 2008 Australian Vocational Education and Training Research Association (AVETRA) conferences and journal articles from the *International Journal of Training Research* (IJTR) from 2003-2008. The study concluded that the number of monomethod (single quantitative or single qualitative) studies (78% of empirical studies) exceeded those utilising mixed methods (22% of empirical studies).

Cameron (2010b) undertook a similar study in the field of career development and analysed articles published in the *Australian Journal of Career Development* from 2004 to 2009. Cameron found that mixed methods approaches were used in 6 % of the empirical articles. ‘If the empirical articles (non-conceptual) are examined then quantitative articles represent just over half of the articles (51%) followed by qualitative articles (43%) and mixed methods at 6%’ (Cameron 2010b, p.60). As a consequence of these studies there is mounting evidence of the increasing utility of mixed method across education research. Nonetheless, the ranges of these studies are now at least five years old and so the data being presented here represents a more recent study even though the sample is funded research most of the studies cited above were on published research in academic journals. This study will complement the research undertaken by Smith (2004) and Cameron (2010a) and provide a fuller picture of the methodologies employed and in particular the prevalence of mixed methods in NCVER funded research.

The preliminary stages of the wider study were reported at the AVETRA Conference in 2011 and were focused upon NCVER funded research projects up to 2010 and applied a classification system of research approaches which included five types: qualitative; quantitative; mixed methods; conceptual or non-empirical and; other. The current study has now progressed beyond 2010 to include projects funded in 2011 and 2012 and is focused on one research theme: *Students and individuals*. The present study applies a more complex classification system based on the work of Teddlie and Tashakkorri (2003). The research question driving the present study is as follows:

RQ1: What are the prevalence rates for monomethod, multimethod and mixed methods research approaches in NCVER funded research for the research theme: Students and individuals from 1992 to 2012?

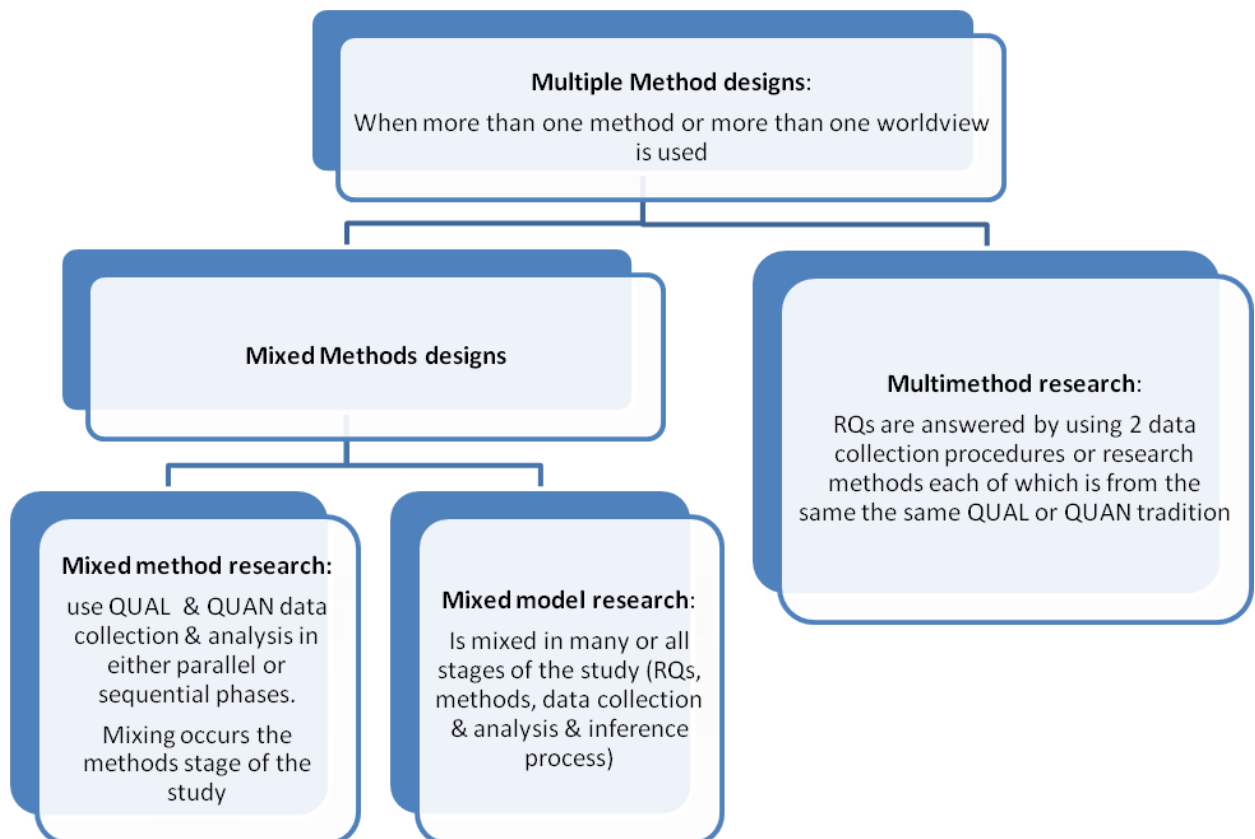
2. Methodology

The approach adopted for this study is exploratory utilising content analysis of publically available secondary data sources. Content analysis is defined by Krippendorff (2013, p. 24) as ‘a research technique for making replicable and valid inferences from texts (or other meaningful matter) to the contexts of their use’. The data sources for the analysis were accessed through the NCVER web site and included: web page content; NCVER funded publications including research reports and conference papers and; descriptions of research projects published on the NCVER web site. The content analysis involved categorising each research project as either: quantitative (QUAN); qualitative (QUAL); mixed methods (MMR) or; Other. Quantitative research is that which uses one or more quantitative data collection

methods and analysis techniques and where the data is in numerical form. Qualitative research is that which uses one or more qualitative data collection methods and analysis techniques with data mainly in textual form. Mixed methods research is that which uses a combination of quantitative and qualitative data collection methods and analysis techniques. The category of Other represents an array of approaches ranging from literature reviews, conceptual developments and new analysis of existing secondary data sets.

After the initial coding the qualitative and quantitative projects were further coded based on definitions of mono, multiple and mixed method research designs as defined by Teddlie and Tashakkorri (2003). These research projects were coded as either, quantitative monomethod (QT MONO), quantitative multimethods (QT MULTI), qualitative monomethod (QL MONO) or qualitative multimethods (QL MULTI). Those projects which did not provide enough information to undertake this further coding were left as either quantitative (QT) or qualitative (QL). Monomethods are studies which employ one data collection method. Multimethod research is defined as ‘designs in which the research questions are answered by using two data collection procedures (e.g., participant observation and oral histories) or two research methods (e.g., ethnography and case study), each of which is from the same QUAL or QUAN tradition’ (Tashakorri & Teddlie 2003, p. 11). Mixed method research (occurs in the methods stage of a study) and mixed model research (can occur in several stages of a study)’ (Teddlie and Tashakkorri 2003, p. 11). Figure 1 provides a visual depiction of the definitional framework for the mixed and multi method research classifications.

Figure 1: Definitions of Multiple Method Research Designs



Source: Adapted from Teddlie and Tashakkori (2003).

Data was also collected on the principal researchers and includes basic demographic data such as: gender; organisational affiliation and; location of the research. Coding was undertaken manually and managed through excel spreadsheets. A limitation to this research is the fact the wider project is not due for completion until early to mid, 2014. The full analysis will not be completed at the time of writing this paper, and consequently, the focus here is on the findings from the present study of one of the five main NCVET research themes: *Students and individuals*.

3. Findings and Discussion

The following tables and figures provide descriptive statistics on funding under each main theme (n=5) and more detailed analysis of the research projects funded under the *Students and individuals* theme. Table 1 provides an overview of the total number of NCVET funded projects across all five research themes from 1988 to 2012. The focus of this paper is the study of projects funded under the *Students and individuals* theme which has received just under one third of the total funding (32%) for this period. The *Teaching and learning* and the *VET in context* themes have received approximately one fifth of the funding each followed by *Industry and employers* at 15.2% and *VET system* receiving the least funding at 12.1%. Table 1 also divides the projects across three classifications as documented on project details as either, In-House, Research Program or Managed Research Program. The majority of the funding is in the latter classification with approximately 10% In-House.

Table 1: Frequencies of Research Project Types Funded 1988-2012

THEMES	IN HOUSE	RESEARCH PROGRAM	MANAGED RESEARCH PROGRAM	TOTAL
Students & Individuals	10	6	98	114 (32.0%)
Teaching & Learning	1	2	70	73 (20.5%)
VET in Context	14	2	56	72 (20.2%)
Industry & Employers	11	2	41	54 (15.2%)
VET System	2	1	40	43 (12.1%)
TOTAL	38 (10.7%)	13 (3.6%)	305 (85.7%)	356 (100%)

Table 2 provides a breakdown of the number of research projects funded under the *Students and individuals* theme. The Level 2 sub theme with the highest number of research projects is *Learner groups* followed by *Careers and pathways*. The number of research projects funded under the *Learner groups* level 2 sub theme is substantial and represents 59% of the funding under this major theme.

Table 2: Frequency of funding for *Students and individuals* sub themes

Level 2 sub theme	Frequency	Percent
Learner groups	67	59%
Careers and pathways	25	22%
Student achievements and outcomes	15	13%
General	7	6%
TOTAL	114	100%

Table 3 provides a more detailed breakdown of the research projects funded under the *Students and individuals* theme. There appears to be a large number of projects funded in the years 2003 to 2006. The *General* and *Student achievements and outcomes* level 2 sub themes last received funding in 2009 with ten In-House projects funded up until 2012.

Table 3: Details of research projects for *Students and individuals* research theme

Sub Theme	Projects	Year commenced		Type
General	7	2003 (1)		In-house (1)
		2007 (2)		Res Prog (2)
		2008 (2)		M R Prog (4)
		2009 (2)		
Careers and pathways	25	2003 (2)		In-house (3)
		2004 (6)		M R Prog (21)
		2006 (6)		Res Prog (1)
		2008 (2)		
		2009 (3)		
		2010 (1)		
		2011 (4)		
		2012 (1)		
Learner groups	67	1999 (1)	2007 (3)	In-house (3)
		2000 (1)	2008 (3)	Res Prog (3)
		2001 (3)	2009 (6)	M R Prog (61)
		2003 (13)	2010 (2)	
		2004 (11)	2011 (5)	
		2005 (10)	2012 (2)	
		2006 (7)		
Student achievements and outcomes	15	1999 (1)		In-house (3)
		2001 (2)		M R Prog (12)
		2003 (2)		
		2004 (3)		
		2005 (1)		
		2006 (5)		
		2009 (1)		
TOTAL	114	1999 (2)	2007 (5)	In-house (10)
		2000 (1)	2008 (7)	Res Prog (6)
		2001 (5)	2009 (12)	M R Prog (98)
		2003 (18)	2010 (3)	
		2004 (20)	2011 (9)	
		2005 (11)	2012 (3)	
		2006 (18)		

Figure 2 provides a breakdown of the percent of projects using the first level of classification for research approach. Qualitative research is the largest group with just under one third (32%). Quantitative approaches represents 21% followed by mixed at 15%. Almost a quarter of the projects have been coded as Other.

Figure 2: Percentage of research approaches

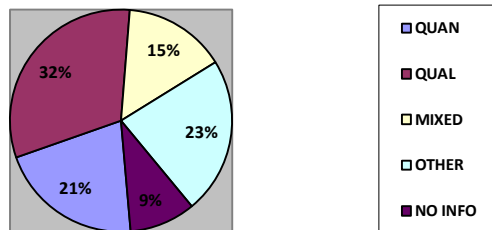


Table 4 presents data from the second level of classification of those projects using qualitative and quantitative approaches.

Table 4 Percentage of research approaches

METHOD	TOTAL	Percentage
QT	8	21.1%
QT MONO	16	
QT-MULTI	0	
QL	5	31.6%
QL MONO	15	
QL MULTI	16	
MIXED	17	14.9%
OTHER	26	22.8%
NO INFO	11	9.6%
TOTAL	114	100%

The data indicates that qualitative approaches are the most popular in this research theme at just under one third (32%) followed by Other (23%) and quantitative methods (21%). Mixed methods approaches represented 15% of the approaches utilised in this theme. This is slightly lower than the percent of mixed methods found in the Niglas (2004) and Cameron (2010a) mixed methods prevalence rate studies.

Table 5 lists the research projects which have utilised mixed methods. The mixed methods movement is relatively new and its popularity has gained in momentum since 2003 with the publication of the first edition of the *Handbook of Mixed Methods in Social & Behavioral*

Research, edited by Tashakkori and Teddlie (2003). Nonetheless, two mixed methods projects were funded in each of the following years: 2004, 2006 and 2008 and three projects funded in 2005 used mixed methods. In 2011 five funded projects utilised mixed methods which represents over a half the projects funded for that year (n=9).

Table 5: Projects utilising mixed methods

ITEM	TITLE	YR	SUBTHEME
10326	What choice? An evaluation of career development services for young people	2004	Careers & pathways
10330	Vocational education and training provision and recidivism in Queensland correctional institutions	2004	Learner Groups
10365	Community adult language, literacy and numeracy provision in Australia: Diverse approaches and outcomes	2005	Students Achievements & outcomes
10365	Community adult language, literacy and numeracy provision in Australia: Diverse approaches and outcomes	2005	Learner Groups
10357	Men's sheds in Australia: Learning through community contexts	2005	Learner Groups
10367	Complex not simple: The VET pathways from welfare to work	2006	Careers & pathways
10367	Complex not simple: The VET pathways from welfare to work	2006	Learner Groups
10405	Enhancing future productivity: The interdependence of workers, employers and VET	2008	General
10404	Low paid workers and VET: Increasing VET participation amongst lower paid workers over the life-cycle	2008	General
10438	Understanding the psychological contract in apprenticeships and traineeships to improve retention	2009	Learner Groups
10459	Access to tertiary education for rural Australians	2011	Careers & pathways
10464	An analysis of effective pathways from VET to higher education	2011	Careers & pathways
10460	Vocational education among indigenous students and the choice of pathways	2011	Learner Groups
10454	Vocations: the link between post-compulsory education and the labour market	2011	Careers & pathways
10457	Social & economic outcomes for apprentices & trainees with disability	2011	Learner Groups
10465	Hurdling the great divide: Investigating enabling factors in AQF 5, 6 7 transitions	2011	Learner Groups

Table 6 provides greater detail as to the breakdown of methods used across the four level 2 sub themes and the gender of the principal researcher. Data on the gender of all researchers was not able to be collected as only the principal researcher was listed on the documentation analysed.

Table 6: Gender and methodological approach for *Students and individuals* research theme projects (1999-2012)

Level 2 theme	Projects	Gender of PR	Approach
General	7	3 Female 4 Male	QUANT (4) QUAL (1) MMR (2)
Careers and pathways	25	11 Female 14 Male	QUANT (4) QUAL (7) MMR (6) Other (6) Not Stated (2)
Learner groups	67	32 Female 33 Male	QUANT (11) QUAL (25) MMR (8) Other (15) Not Stated (8)
Student achievements and outcomes	15	3 Female 12 Male	QUANT (5) QUAL (3) MMR (1) Other (5) Not Stated (1)
TOTAL	114	49 Female 43% 62 Male 54% Unknown 5%	QUANT (24) QUAL (36) MMR (17) Other (26) Not Stated (11)

Qualitative approaches dominate the *Learner groups* sub theme which is the largest sub theme in terms of funded projects. In relation to the gender of the principal researcher, females represent 43% and males 54%. The gender of researchers awarded research grants is an important line of inquiry and one which the Australian Research Council (ARC) undertakes regularly on the research funded through the Australian Research Council (ARC). The research undertaken on applicants for ARC Discovery Project grants from 2001-2009 there was a gender imbalance in the success rate for early career researchers (ECRs) and a long lag time for female researcher success in terms of ARC funding when compared to males. ‘Of further concern has been the trend that female researchers within the ECR cohort have been significantly less successful than male ECRs, and significantly less successful than male researchers overall’ (ARC, 2010, p.14). The ARC study found that female researchers perform similarly to their male counterparts 15 years out from being awarded their PhD and that the numbers of female researchers is small:

Although retention rates for female researchers is generally poor, for those that remain in a research career, success rates improve until a point 15 years from PhD and from then on females achieve very similar levels of success as males. At this point however the total number of female researchers is small (ARC, 2010, p. 15).

Completion of the wider study

The wider study will complete the same types of analysis for the remaining four research themes and in addition will conduct further analysis on the identified mixed methods papers in each research theme. This analysis will involve applying the extended mixed methods

notation system developed by Cameron (2012) and evaluation of each project using the mixed methods classification tool designed by the Hurmerinta-Peltomaki and Nummela (2006). The number of mixed methods research projects for each theme has been calculated as follows: *Students and individuals* (n=17); *Teaching and learning* (n=6); *Industry and employers* (n=16); *VET system* (n=7) and; *VET in context* (n=3). A total of 49 mixed methods research projects have been identified.

4. Conclusion

The NCVER funded research under the main research theme: *Students and individuals* from in the past 14 years (1992-2012) has been analysed in terms of frequencies of funded projects across the level 2 sub themes. The dominant methodological approach appears to be qualitative (31.6%), followed by quantitative (21.1%) and then mixed methods (14.9%). If the quantitative and qualitative methods are broken down into mono and multiple method approaches then qualitative multimethods (QL MULTI) and quantitative monomethods (QT MONO) are the most frequently utilised. An area of further inquiry would be to examine the QT monomethod studies to see what proportion are using secondary or primary data and if the secondary data is from one of the NCVER data collections.

Further analysis and a deeper investigation into the methods utilised and in particular the use of mixed methods is planned. As noted by Plano Clark (2010) this type of analysis or mixed methods prevalence studies provides evidence of the prevalence and adoption of mixed methods across a discipline or broader field of inquiry and may be an indicator of either the research funding inhibitor or stimulus effect on mixed methods referred to by Creswell (2010).

The purpose of this study has been the exploration of the level of acceptance and adoption of mixed methods in NCVER funded research for this particular research theme. The methodological preferences of funded research can provide valuable insights into the levels of methodological innovation being practiced in relation to VET student issues and phenomenon identified as needing investigation by NCVER and active VET-based researchers and practitioners. The data also indicates the openness of NCVER to fund emergent methodological approaches and the level of methodological innovation or otherwise within the broad quantitative and qualitative methodological approaches and across them through the use of mixed methods.

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