NCVER

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Assessing the impact of NCVER's research

John Stanwick
Jo Hargreaves
Francesca Beddie

National Centre for Vocational Education Research

research

Informing **policy** and **practice** in Australia's **training system**

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Publisher's note

Additional information relating to this research is available in *Assessing the impact of NCVER's research: Case studies—Support document* and *Impact of NCVER's research: Working paper—Support document*. They can be accessed from NCVER's website <http://www.ncver.edu.au/publications/2152.html>.

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

ph +61 8 8230 8400 fax +61 8 8212 3436
email ncver@ncver.edu.au
<http://www.ncver.edu.au>
<http://www.ncver.edu.au/publications/2152.html>

About the research

Assessing the impact of NCVER's research

John Stanwick, Jo Hargreaves and Francesca Beddie, NCVER

The National Centre for Vocational Education Research (NCVER) has undertaken this project to examine whether its research has an impact in the vocational education and training (VET) sector and, if so, the nature of the impact.

This was not a straightforward exercise. There are challenges associated with defining what is meant by impact, with connecting the outcomes of research to policy and practice, and with identifying measures which will provide robust but not unrealistic levels of evidence.

This project also developed a model to help in assessing the impact of NCVER's research and in identifying practices that will further enhance the influence that research has on policy and practice. The model allows for identification of impact across four categories: knowledge production, capacity building, informing policy and informing practice.

Key messages

- The case studies provided a positive assessment of NCVER's research impact, with examples of impact in each of the four categories.
- Bibliometric analysis is useful, but does not capture every aspect of research impact.
- Dissemination is key to research impact, suggesting that NCVER's emphasis on this aspect of research is appropriate. Harnessing researchers in this endeavour is worth considering.

Tom Karmel
Managing Director, NCVER

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Executive summary

The National Centre for Vocational Education Research (NCVER) is committed to ensuring that its research is useful and achieves a practical outcome related to policy implementation and practice in the vocational education and training (VET) sector. In the context in which NCVER operates, its foremost interest is in applied research. To this end it is important that we evaluate the impact of research and its alignment with policy and practice initiatives.

There are challenges associated with connecting the outcomes of research to the judgements and behaviours of professionals and practitioners. Evidence suggests that this process is not straightforward and much debate ensues about the extent to which it is indeed possible to accomplish effectively and robustly. Certainly, there is not usually a linear relationship between one research project and one consequent policy change.

The purpose of this report is to assess the impact of NCVER's research. The project was undertaken through a combination of a review of the appropriate literature, a workshop, citation analysis and case studies of three individual projects and one suite of projects based on a particular theme. The project builds on previous work in this area, but it has been some time since NCVER considered it directly.

As part of this project, we considered current thinking on assessing impact to develop a model suitable for NCVER's purpose. Models for assessing the impact of research help in the understanding of the processes involved and the parameters needed to ensure that realistic goals are maintained. The final model proposed allows for identification of impact across four categories:

- ✧ producing knowledge (knowledge production), which is related to dissemination, general awareness of and engagement with the research, contributions to the literature and ability of the research to inform future activities in policy, practice and research
- ✧ building capacity (capacity building), which supports the abilities of researchers to undertake fit-for-purpose research, improves the skills of relevant stakeholders to engage with the research and enhances their decision-making abilities. It also supports and encourages the training of early career researchers
- ✧ informing policy, encompassing research that is used to guide decisions or actions
- ✧ informing practice, broadly encompassing the behaviour, actions and knowledge of how things are done.

Importantly, the model acknowledges a number of key elements on which NCVER places high importance and which the organisation has successfully implemented over many years. These include:

- ✧ establishing the priorities and purpose of the research with some involvement from end-users
- ✧ adopting multiple dissemination strategies acknowledging the diverse needs of the sector
- ✧ engaging with stakeholders throughout the research cycle.

For each category the model identifies the types of impact and various sources of information as indicators of impact. We found significant examples of where research has made a difference across the various categories.

In terms of *knowledge production* there are a number of sources of information, including bibliometric and citation analysis in other published research and in government reports, parliamentary documents and journals, as well as citations in the media.

Across all case studies (eight research reports), a total of 142 citations, 30 media citations, based on NCVER's records, and around 120 000 web hits on those reports were identified. While these figures were somewhat resource-intensive to collect, the results are important indicators of the extent to which the research has been accessed and used.

Establishing purely quantitative measures of impact is difficult and we did not intend to do this. Instead we embraced a broad scope for what could be included in the citation analysis and did not place any emphasis on scoring or ranking the results. This is because NCVER's audience does not rely on scholarly journals as their principal source for VET research outcomes. In addition, a lower citation count may result, depending on the purpose of the research and the nature of dissemination activities. This does not necessarily equate to less impact.

There were a number of *capacity-building* impacts identified in the case studies. Some of these were not planned in the research purpose but did lead to further work and professional development opportunities for the researcher.

Notably, this project identified examples in all but one of the case studies where research has made some contribution to *policy development*, and it would appear to be at considerable levels. Nevertheless, we need to be realistic about the scale of that impact, given the nature of policy development, which draws on a diverse range of sources. There are real difficulties with proving direct cause and effect.

With respect to *informing practice*, we were limited by the nature of the research projects selected for the case studies, emphasising again the importance of recognising the purpose or intent of the research within any impact analysis. While some specific examples were identified, many of these were anecdotal.

In conclusion, our assessment of the impact of NCVER's research is positive. In addition, a number of points emerged:

- ✧ in creating impact, the importance of knowledge translation; that is, the iterative process of synthesising and exchanging research outcomes
- ✧ the potential of stakeholders as catalysts for enhancing the impact of research
- ✧ in making an impact, the efficacy of a suite of research reports rather than a single report.

Introduction

The National Centre for Vocational Education Research (NCVER) is a not-for-profit company owned by the federal, state and territory ministers responsible for vocational education and training (VET). NCVER has a wide range of stakeholders, including government ministers and advisers, public and private enterprises, researchers and research agencies, industry and employer and employee associations. Through the National Vocational Education Training Research and Evaluation (NVETRE) program, NCVER is responsible for distributing over $1.3 million in government funding for research each year. It runs a substantial in-house research program.

NCVER's foremost interest is in applied research; that is, research aimed at informing policy development or practice. It is all very well to produce a substantial amount of material, but what really counts is its impact.[1] However, measuring research impact is a difficult task. So the approach we take here is to measure the impact of three individual research projects and one themed body of research, from which we hope we can get a good feel for the overall impact of NCVER's research.

We are hopeful that this examination will have two further spin-offs:

- ✧ insights about how best to fund research
- ✧ identification of practices to enhance research impact.

The project was undertaken in two stages.[2] The first was the development of a model to assess research impact. This was facilitated by a workshop attended by a number of stakeholders. The second stage of this project was undertaking four case studies on the impact of particular NCVER projects.[3]

We found that NCVER's research does have an impact across the various categories of knowledge production, capacity building, informing policy and informing practice. Furthermore, the effort spent in disseminating the results of research is worthwhile in facilitating impact, leading us to conclude that NCVER has a strategic role to play in knowledge translation; that is, actively synthesising and implementing strategies, beyond simple dissemination activities, to enhance utilisation of research findings.

The report ends with a discussion of the implications. In brief, our experience confirms some of the difficulties associated with obtaining evidence of research impact. As a result we did not take a strongly quantitative approach, but, through a combination of both quantitative and qualitative methods, were able to identify specific examples of research impact.

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1 For the purposes of this project, research is defined as work done that increases knowledge or applies existing knowledge in new ways. Research impact is defined as the application, use and influence of research across various categories.

2 NCVER is grateful for the support and advice provided by Linda Butler, who is an expert with considerable knowledge in measuring research impact, metrics, and citation analysis. Her insights were invaluable.

3 See appendix 1 for more detail.

Development of a model for assessing research impact

There are three issues in particular that require consideration in relation to the development of a model to measure impact. These are:

- ✧ What are we using the research for?
- ✧ What measurement issues do we need to tackle?
- ✧ What models of impact are there that may be adapted for use for NCVER's research?

In relation to the first point, research can be seen as having conceptual value and instrumental value (Nutley, Percy-Smith & Solesbury 2003). The *conceptual value* of research pertains to the effect the research has on knowledge, attitudes and beliefs, whereas the *instrumental value* of research is the effect it has on policy and practice. NCVER is mainly interested in the instrumental value of its research (while not discounting the conceptual value), so we needed to develop a model which would capture the impact on informing policy and practice, in the context in which NCVER is operating.

Measuring these impacts is problematic (see Selby Smith et al. 1998). One of the key issues is the problem of attribution. How do we know that a particular piece of research has made an impact, say, for example, on a policy? Establishing cause and effect is difficult and, in addition, the time lags involved in realising the impact of a piece of research increases the problem of cause and effect. Also related to this is sorting out the effects of one research project from other research in the area.

The literature suggests that, given these issues, a combination of quantitative and qualitative indicators is the best approach. It further suggests that bodies of research are more likely to have an impact than a single research project (although not in all cases). The reasons for this include the extra weight of evidence and the capacity to look at a research problem from different perspectives (see, for example, Meagher, Lyall & Nutley 2008).

Models of research impact assist in considering the above issues. There are several models of research impact described in the literature. One of these is the Payback Framework developed in the 1990s as a way of assessing the impact of health research (Buxton & Hanney 1996). This model is relevant to an assessment of the impact of NCVER's research because (a) it has application to the social sciences; (b) the model covers several categories of impact, including impact of policy and practice; and (c) the model has been used quite extensively and has been adapted to different discipline areas within the social sciences. There are two aspects to the model: a five-dimensional categorisation of the benefits; and a 'logic model' of how best to assess the impacts. The five-dimensional categorisation is shown in table 1.

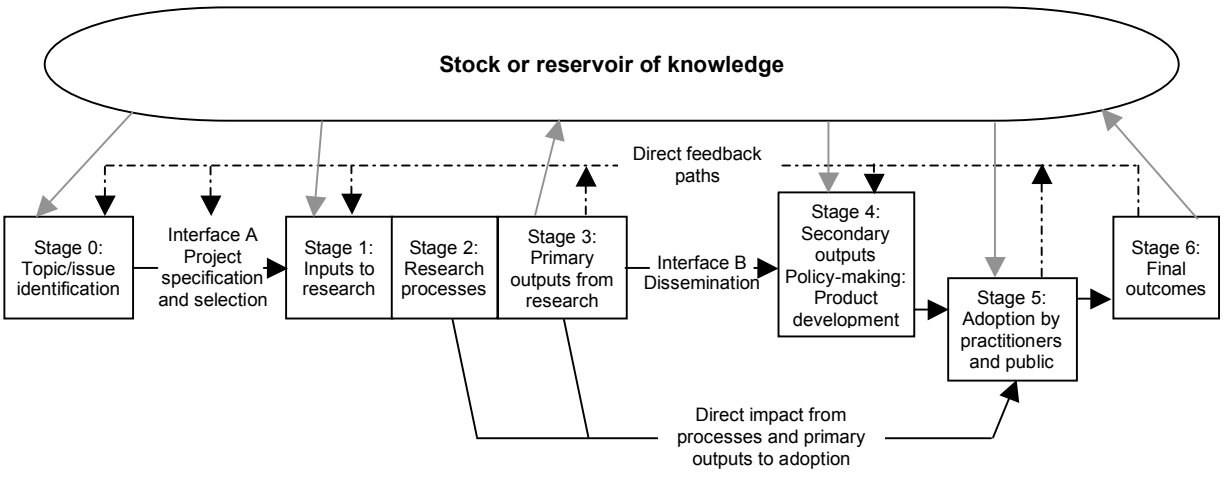
Table 1 Categories from the Payback Framework

A	Knowledge production
B	Research targeting, capacity building and absorption
	(i) better targeting of future research
	(ii) development of research skills, personnel and overall research capacity
	(iii) critical capability to utilise appropriately existing research, including that from overseas
	(iv) staff development and educational benefits.
C	Informing policy and product development
	(i) improved information bases on which to make political and executive decisions
	(ii) informing product development.
D	Health and health sector benefits
	(i) cost reduction in the delivery of existing services
	(ii) qualitative improvements in the process of service delivery
	(iii) increased effectiveness of services e.g. increased health
	(iv) equity e.g. improved allocation of resources at an area level, better targeting and accessibility
	(v) revenues gained from intellectual property rights.
E	Broader economic benefits
	(i) wider economic benefits from commercial exploitation of innovations arising from R&D
	(ii) economic benefits from a healthy workforce and reduction in working days lost.

Source: Wooding et al. (2004).

It is important to note that in this model the later categories of impact are harder to assess than the earlier ones because they occur further out from the completion of the research. This has implications for the way information is gathered for the assessment of some of the impacts. The logic model is shown in figure 1 below:

Figure 1 Logic model for assessing the impact of research

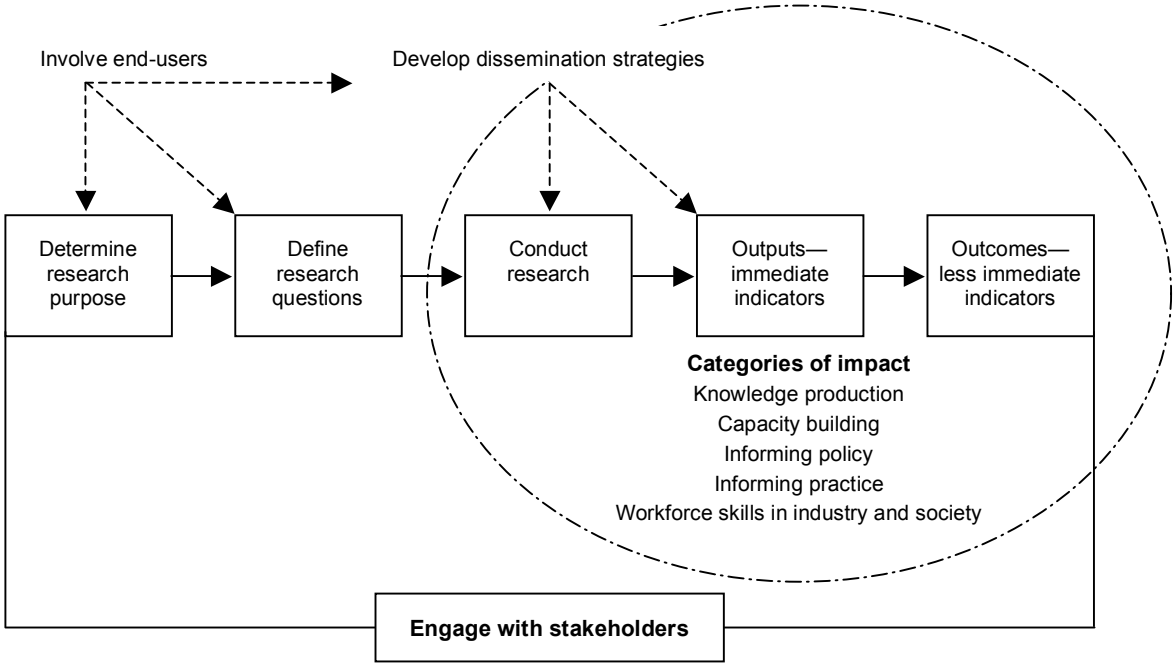


Source: Adapted from Wooding et al. (2004).

This model is a most useful way of thinking about where impact can occur across the various research stages. Others who have used this model have modified it for their own purposes. For example, in a study on the impact of primary health care research, the Primary Health Care Research and Information Service located at Flinders University included a new category that focused on enhanced structures for research transfer (Kalucy, Jackson Bowers & McIntyre 2007). This included improving pathways and relationships for transferring research to policy people and also for enhancing engagement with the sector.

This model and other approaches to assessing impact were discussed at the workshop held as a part of this project. As a result of these discussions and further feedback from participants after the workshop, we developed a model of research impact, based on the Payback Framework, which we argue is relevant to assessing the impact of research in the VET sector. As with the Payback Framework, this model has two components: a flowchart of the research process (figure 2); and a multi-dimensional categorisation of impacts.

Figure 2 Model of impact for NCVER research based on workshop outcomes



We see from figure 2 that the main elements of the flowchart are that:

- ✧ At the beginning of the research cycle a research purpose is established and, from this, the research questions are defined, possibly with some input from end-users.
- ✧ A dissemination strategy on how to best translate the findings of the research to end-users is developed early in the research cycle.
- ✧ The conduct of the research is not an isolated activity, but rather a stage where the research can have an impact; for example, by way of work-in-progress seminars or consultations with end-users. In this stage dissemination strategies may be refined.
- ✧ There are various categories of impact that will occur after the main research activity. These can be further separated into immediate impacts, which can be termed outputs, and less immediate impacts, which can be termed outcomes. More detail on this is provided in table 2.
- ✧ Stakeholder engagement can occur throughout the research cycle.

The other part of our adapted model shows a list of possible impact indicators across five domains, or categories, of impact (table 2).

Table 2 Categories of impact and indicators

Categories of impact (and definitions)	Types of impact	Outputs—immediate indicators	Outcomes—less immediate indicators	Sources of information
Knowledge production ✧ dissemination ✧ general awareness of and engagement with the research ✧ contributions to the literature ✧ ability of research to inform future research	Increasing knowledge Raising awareness of research	Publications of various types Presentations News/media references	Citations in other documents Research used in vocational or higher education courses as readings/ references	Bibliometric analysis of various publications and articles Stakeholder self-reported use of research Number of web hits Number of newsletter subscriptions (i.e. analysis of *Insight* subscriptions)
Capacity building ✧ supporting the abilities of researchers to undertake fit-for-purpose research ✧ improving the skills of relevant stakeholders and enhancing their decision-making abilities ✧ training new researchers	Increasing capacity of all undertaking VET research, including researchers in the vocational education and university sectors Developing researcher skills	Formation of partnerships and collaborations between institutions (academic, industry etc.)—communities of practice Conferences Invited keynotes Training courses/ professional development	Ongoing collaborations and networks with various institutions Engagement of new researchers Leadership development	Records of collaborations by researchers Research based on direction provided by previous research Research reports by early-career researchers
Informing policy ✧ any policy or plan that guides decisions or actions	Raising profile awareness of research among governmental agencies and other relevant stakeholders Developing new policy Changing existing policy	Submission to parliamentary enquiry Other publications Workshops and other presentations Research used/ quoted in government reports	Information requests from governmental agencies New policies Changes in policies	Submission referred to in enquiry report and other policy-related documents Records of presentations and meetings held by researchers Logs of information requests maintained by researchers Qualitative case studies Parliamentary submissions and Hansard references
Informing practice ✧ broadly encompasses behaviour, actions and knowledge of how things are done	Raising profile awareness of research among VET practitioners, industry groups and the like Developing new practices Changing existing practices	Good practice guides Practitioner publications	Information requests by practitioners Use of good practice guides Adoption of new practices Changes in practice Networks/ collaborations References in development of curriculum	Numbers of publications purchased/web hits Logs of information requests maintained by researchers Qualitative case studies
Workforce skills in industry and society ✧ can encompass a wide range of strategies, activities, policies and programs that support individuals	Improving workforce skills		Participation in education and training	Qualitative case studies Media monitoring Data on workforce skills and education levels

For each of the categories of impact the table gives examples of types of impacts, outputs, outcomes and sources of information. It needs to be noted that the table describes possible indicators. This does not mean that they will all apply to our case studies. Nor are they an

exhaustive list—there may be less generic indicators that are specific to one piece of research, or to one field of study.

The column on types of impact refers to how the research can have an effect across the five categories. So, for example, a type of impact under the capacity-building category is developing researcher's skills, while under the informing policy category it could be developing new policy.

The table distinguishes between two types of impact—outputs and outcomes. While much of the focus is on assessing impacts in terms of outcomes of the research, outputs are a necessary precursor to outcomes and are needed to achieve outcomes. Outputs are largely related to the dissemination of the research such as reports, other publications and presentations. Outputs can also include the formation of partnerships and networks relevant to the research topic.

There are a variety of intended outcomes that can be achieved from the research. Given the policy and practice emphasis of NCVER's research, intended outcomes would typically include changes in policy and practice. However, there are other potential valuable outcomes not necessarily intended by the researchers, such as citations in other documents, ongoing collaborations and networks.

The sources of information column in table 2 lists ways of measuring impact indicators qualitatively and quantitatively. In summary the main sources of information are:

- ✧ bibliometric analyses
- ✧ information held by principal researchers
- ✧ case studies of impact involving interviews with principal researchers and end-users.

Note that the sources of information and ways of capturing them are proxies for impact; they are not 'measures of impact'.

There also needs to be an awareness of the difficulties in developing a suite of indicators for some categories of impact. While measuring citations can be a relatively straightforward exercise, networks, for example, are a far more amorphous concept, making it difficult to adequately measure their impact.

This also has implications for what should be assessed. In particular, we need to be aware that some of the impacts, such as informing policy and informing practice, are more likely to be influenced by a body of research rather than one research report.

It should be noted that, given the wide range of NCVER's stakeholders (appendix 2), it follows that fairly broad definitions are applied across the categories of impact, indicators and sources of information. For example, bibliometric analysis involving citation indexes and web searches will not apply a strict metrics or ranking criterion that is more suited to the hard sciences. Rather, for our purposes, citations will involve references across a broad range of mediums.

Findings from the case studies

Approach to the case studies[4]

The approach we undertook for the case study stage of this project involved two main aspects:

- a bibliometric analysis undertaken by specialist information services staff and using various tools at their disposal. This was supplemented by records of media citations held by NCVER's marketing branch
- interviews with principal researchers and end-users of the research. A semi-structured interview approach, capturing the various categories of impact, was adopted for the interviews.

A detailed description of the findings of the case studies is contained in the support document to this report: *Assessing the impact of NCVER's research: Case studies—Support document*.

We attempted to pick a mix of projects: projects funded under the competitive grants programs and those authored by NCVER; as well as single projects and a suite of projects of themed research. We also chose projects that had been completed in the last two to five years (see table 3).

The case studies are written up according to the model of research impact that we had developed. In particular, the case studies describe the purpose and aims of the research, dissemination activities, outputs from the research and impacts across the four designated categories. We need to be aware that some categories will apply to some cases more than others in terms of impact. For example, the *Contradicting the stereotype* case study is aimed at challenging the assumptions held about adult literacy and therefore was not intended to directly influence policy. The recognition of prior learning themed case study, on the other hand, is more evidently aimed at policy *and* practice.

Table 3 Case studies

Name of case study report and description	Intended impacts
Contradicting the stereotype: Case studies of success despite literacy difficulties; Peter Waterhouse & Crina Virgona (2005) This study investigated the strengths and strategies of individuals (adults) who were successful in life/work, despite significant and continuing difficulties with literacy.	Challenging assumptions held about the deficit model of literacy.
Apprentice and trainee completion rates; Katrina Ball & David John (2005) The purpose of this study was to examine apprentice and trainee completion rates based on data from NCVER's national apprenticeship and traineeship collection.	To provide policy people with information on apprentice and trainee completion rates, to which time there had been a dearth of information in this area.
Aspects of training that meet Indigenous Australians' aspirations: A systematic review of research; Cydde Miller (2005) This systematic review was a central component of the Indigenous Australians in vocational education and training: National research strategy for 2003–06. The review's purpose was to provide a systematic evaluation of the evidence for good practice in VET for Indigenous people.	This project was aimed at providing policy and practice people with a comprehensive list of what constitutes good practice VET for Indigenous people.

[4] See appendix 1 for more detail.

Name of case study report and description	Intended impacts
Recognition of prior learning suite of projects Publication dates ranging from 2003–07 ✧ *Giving credit: A review of RPL and credit transfer in the VET sector 1995–2001*; Brian Knight, Andrea Bateman, published 26 May 2003 ✧ *Recognition of prior learning in the vocational education and training sector*; Kaye Bowman et al., published 6 August 2003 ✧ *Valuing recognition of prior learning: Selected case studies of Australian private providers*; Larry Smith, published 14 May 2004 ✧ *What's in it for me? RPL in enterprise-based registered training organisations*; Kaaren Blom et al., published 6 October 2004 ✧ *Recognition of prior learning: At a glance*; Jo Hargreaves, published 8 February 2006 ✧ *The recognition of non-formal and informal learning in Australia—country background report prepared for the OECD activity on recognition of non-formal and informal learning*; prepared for the Department of Education, Science and Training. These were a variety of projects examining different aspects of recognition of prior learning within the VET sector.	These projects were intended to improve processes by which RPL can be taken up. It was aimed at informing both policy and practice.

Table 4 shows numbers and types of people interviewed by case study.

Table 4 Respondents to the case studies

	Contradicting the stereotype	Apprentice and trainee completion rates	Indigenous systematic review	RPL theme projects
Principal researchers	1	1	1	2
End-users	1 TAFE practitioner 1 Commonwealth Government official 1 welfare organisation worker	1 state government official 1 Commonwealth Government official 1 major industry organisation manager 2 state-based tribunal employees	1 state government official 1 Commonwealth Government official 1 TAFE team leader	1 VET professional development organisation official 1 Commonwealth Government official 1 TAFE manager 1 state government official

Table 5 summarises the main impacts of the case studies across the four categories of knowledge production, capacity building, informing policy and informing practice. We originally envisaged a fifth domain—skills in the workforce and society—but respondents did not know of impacts in this area or could only answer in vague terms. This reflects the difficulty in ascribing impacts that occur further out from the research. It points to the convoluted and non-linear way in which longer-term impacts occur. It also reinforces that we need to be realistic about what impacts can be assessed.

Table 5 Overall summary of impacts across the four case studies

	Contradicting the stereotype	Apprentice and trainee completion rates	Indigenous systematic review	RPL theme projects
Knowledge production *Outputs*	One formal report One CD-ROM exploring the findings in various formats A media release An ABC radio interview on *Life matters* Four keynote and other presentations An adult literacy research overview published by NCVER Research feature in *Fine print* journal and in *Literacy link* newsletter	There was one formal report and a paper/presentation at an Australian labour market conference in 2002	One formal report and a few presentations	Five formal reports, one *At a glance* and numerous presentations
Citations	8 citations altogether	31 citations altogether	19 citations altogether	84 citations across the reports and *At a glance*
Capacity building	An NCVER-funded project was a direct consequence of this report The researchers were able to further develop their multi-media capability Won tenders partly because of this enhanced capability Development of new networks by principal researcher	There was a follow-up paper published by NCVER in 2007 Helped to build in-house research capacity in this area	Contributed to jobs for two reviewers The seven success factors derived were used as an evaluation framework in other reports	Research used in networks and collaborations Used in professional development exercises Used in further research Some consultancy work has come out of the research
Contribution to policy	Could not pinpoint any specific examples in relation to policy. Used more as awareness raising	Used by DEEWR in influencing the way they have developed purchasing contracts for Australian Apprenticeship Centres Helped design policy around requests for tenders for apprenticeship services Used in internal briefings in a state government agency Australian Chamber of Commerce and Industry used the report to inform their work on apprenticeships	Used by DEEWR in their work on Indigenous engagement	Used to inform COAG's RPL initiative Used to inform policies in various state government departments Used by the Enterprise Registered Training Organisation Association (ERTOA) to inform best practice in RPL
Contribution to practice	As with policy, no specific examples, but probably used by practitioners as awareness raising	Used to inform Australian Apprenticeship Centres so probably used in practice	Used in the development of the Australian Flexible Learning Framework's Indigenous Charter Used in selection criteria to run training programs	Used by Reframing the Future, International Centre for VET Teaching and Learning (TAFENSW), NSW DET and at least one TAFE institute to inform and develop RPL practice

It needs to be noted that there was general satisfaction by principal researchers and end-users with NCVER's current approach—NCVER research and products are highly valued and referenced. The notifications, reports, value-added products and conferences held by NCVER were all regarded as being important in facilitating the overall impact of research. In addition, the opportunity for stakeholder briefings and specific discussion between end-users and the researchers is highly valued.

The results are now discussed under each of the main category headings.

Knowledge production

We see from table 5 that the most common forms of outputs from the research were formal reports and presentations. NCVER research projects generally, although not always, result in a formal report. The *Contradicting the stereotype* had the most varied outputs from the research.

In the longer term, citations in other documents are also an important source of knowledge production. For this study, citations were searched for using Google Scholar, Google Search, Publish or Perish, and Scopus Web Search. The citations are classified into six categories as shown in table 6. Detailed citations for all the case studies are provided in the accompanying support document.

Table 6 Summary of citations across the case studies

Cited where	Contradicting the stereotype	Apprentice and trainee completion rates	Indigenous systematic review	RPL theme projects
Journal articles		3	1	4
Reports	5	13	9	46
Conference paper		9	4	14
Media		1		
Parliamentary database		3		
Other*	3	2	5	20
Total	8	31	19	84
Numbers cited in NCVER-related publications	*5*	*4*	*4*	*20*

Source: * Other includes citations in a variety of documents such as *At a glance* type documents, research degree theses, edited volumes and resource materials.

The themed recognition of prior learning case study had the greatest number of citations given that the citations were across five reports. Within this case study, the report *Recognition of prior learning in the vocational education and training sector* had 26 citations. We need to note that this report was published in 2003, before some of the other reports, and therefore has had a longer period of time to gain citations.

The single report with the greatest number of citations was the *Apprentice and trainee completion rates* case study. This report, published in 2005, also had the greatest variety of citations, including in parliamentary databases. This number of citations and the fact that this report was the only one of the case study reports to appear in parliamentary databases may well reflect the topicality of apprentice and trainee completion rates.

The *Indigenous systematic review* case study had at the time of the analysis 19 citations across a variety of document types, including papers from other organisations such as TAFE Directors Australia, an organisation concerned with Indigenous engagement in vocational education and training.

The *Contradicting the stereotype* case study had relatively fewer citations in other documents and was aimed at a fairly select audience, namely adult literacy practitioners. Its aim was to question

assumptions about approaches to adult literacy teaching, so it is not surprising that there were relatively few citations to the report in other publicly available documents. As mentioned earlier, the main impacts of research are often intended to inform policy and practice.

In terms of types of citations, we see that they are most likely to be in other reports. These other reports tend to be by government agencies and consultants on policy questions. On the other hand, there were only eight citations in journal articles across all the case study reports. This is probably not of any great concern, given that many of the people using and citing the research are not doing so for any academic purpose but rather to inform policy and practice. More detail on these citations is provided in the case studies support document.

NCVER maintains its own records of media coverage, and it is interesting to note the dearth of media-related citations in the bibliometric analysis. Media coverage is not a precise indicator of impact. Not all publications will result in a media release, some researchers or research organisations may seek their own media interest and some publications may generate unexpected interest. There are a variety of contributing factors determining what may or may not 'grab' attention, which are also affected by other events occurring at the time.

Table 7 shows NCVER's own analysis of media coverage, which reports more citations than those uncovered in the bibliometric analysis.

Table 7 Media coverage across the case studies

	Contradicting the stereotype	Apprentice and trainee completion rates	Indigenous systematic review	RPL theme projects
Number of citations	8	4	9	9

This coverage primarily relates to national newspaper articles, articles in national training or industry-related magazines or newsletters and radio interviews. Most coverage tends to occur upon publication release, but some coverage is generated later, when interest in a particular topic is re-ignited in the sector or if the research supports a topic of particular interest at the time.

In addition, another useful, although not precise, indication of impact can be the number of web download hits a research report receives (table 8).

Table 8 Total number of downloads per case study

	Contradicting the stereotype	Apprentice and trainee completion rates	Indigenous systematic review	RPL theme projects
Number of downloads	13 760	11 951	15 951	78 201

The single report with the greatest number of downloads overall is *Recognition of prior learning in the vocational education and training sector*, part of the recognition of prior learning themed case study. Until December 2008, this report has been downloaded about 38 000 times which is over about 20 000 more downloads than for any other single report.

Capacity building

There were a handful of capacity-building impacts identified from the case studies. Three of our case study projects (*Contradicting the stereotype*, *Apprentice and trainee completion rates* and the recognition of prior learning projects) resulted in further research. The *Contradicting the stereotype* and recognition of prior learning cases were purported to result in some professional development benefits. In

addition, the *Contradicting the stereotype*, *Indigenous systematic review* and recognition of prior learning cases led to or assisted with further work or employment. The seven factors derived from the *Indigenous systematic review* were used as an evaluation framework for other work, namely:

- the 2005–06 Australian Flexible Learning Framework's Indigenous Engagement Project (see McDonald et al. 2006)
- an NCVER At a glance on Indigenous VET research (see O'Callaghan 2005)
- work done for Adult Learning Australia on an operational framework for inclusive adult learning practice (see Bowman 2008).

The *Contradicting the stereotype* case had the most capacity-building impacts associated with it, although these impacts were not the primary object of the research project.

In general, capacity building is slightly different from other impacts, in that it is often not traditionally considered at the inception of the project. Usually research proposals are framed in terms of the relevance they have to a policy or practice issue rather in terms of professional development benefits to the researcher or further work resulting from the research. However, looking for capacity-building impacts was a useful exercise, in that it showed that research can add value in ways other than usually conceived.

Contribution to policy

There were examples for all but one of the case studies in relation to their contribution to policy development. We see, for instance, that the *Indigenous systematic review* case features quite prominently in the thinking of one federal government department's work on Indigenous engagement. The respondent from this department said that:

> The research has become a touchstone in the Indigenous area in the development of policy.

The *Apprentice and trainee completion rates* case has also assisted in informing certain policies for this same large government department. Specifically, it has influenced the way in which requests for tenders and purchasing contracts for Australian Apprenticeship Centres have been developed. It has also been used by the Australian Chamber of Commerce and Industry (ACCI) to inform their work on apprenticeship completion rates.

There have also been policy impacts for the themed case study on recognition of prior learning, most notably helping to inform a major government initiative in this area. As an end-user from a federal government department said:

> The research has been sent through to the Council of Australian Governments' [COAG] RPL initiative. Most people are aware of the research and it has had an influence.

The *Contradicting the stereotype* case was the only case study where no specific policy development initiatives could be identified. This report was aimed more at raising awareness and challenging assumptions, so it is perhaps not surprising that no specific initiatives could be identified. The principal researcher interviewed for this case study also could not point to specific examples but said that:

> There does seem to be an increasing recognition of strength-based approaches and their potential within ACE and VET. Perhaps this work has contributed to that shift.

The problem here, however, is that challenging assumptions and raising awareness are very difficult attributes to measure. In these cases it is best to be aware of the intention of the report when assessing its impact. Nevertheless, it is clear that at least three of the studies have had some influence on policy development, and apparently at a significant level. Of course, given the limited number of interviews that were conducted for the case studies, there may well be policy impacts that we have not uncovered.

Contribution to practice

While we did not uncover a substantial number of examples of contributions to practice, these are probably harder to detect anyway. We saw in the previous category that some of the examples were in a large federal government department and so relatively easy to track down. However, there are a plethora of practitioners across Australia and we obtained only a small insight here. Sometimes serendipitous discoveries can be made about what is happening in terms of informing practice, but unless a large-scale, well-resourced study is undertaken, many practice benefits will remain uncovered. There were nevertheless some practices identified, particularly for the *Indigenous systematic review* and recognition of prior learning theme case study.

We saw, for instance, from table 5 that the New South Wales Department of Education and Training has used the recognition of prior learning research to inform practice. More particularly, the reports have been used as a basis for implementing about 60 action research projects and one of the principal researchers of the reports has been engaged by the department to facilitate the projects. From another angle, Reframing the Future's *RPL done well* publication, which is aimed at practitioners, drew heavily on the NCVER recognition of prior learning publications.

Table 5 also shows that there have been informing practice impacts for the *Indigenous systematic review* case. The seven success factors derived from the research have been used in developing the selection criteria for tenders to run training programs in the Training Initiatives for Indigenous Adults in Regional and Remote Communities Program conducted by the federal government. This program aims to assist in building up the capacity of the training market to meet the training needs of Indigenous adults in regional and remote areas.

No specific examples of impact on informing practice could be found for the *Contradicting the stereotype* and *Apprentice and trainee completion rates* case. This second case was aimed more at the policy arena and this was confirmed in the interview with the principal researcher for this case, although one end-user believed that it had informed practice (although could not provide any specific examples). As mentioned earlier, the *Contradicting the stereotype* case was probably aimed more at awareness raising. An end-user respondent supported this notion:

> It has been a good vehicle for re-focusing on a non-deficit view of literacy, understanding notions of choice and moving away from simplistic links between notions of work.

Overall comparison of case studies

We see from the table that all the case studies have had some impact to one degree or another across the four categories. It is worth noting that, apart from the initial outputs of the research, most of the impacts uncovered tended to be less immediate.

The case study that appeared to have had the most impact overall across all four categories was the RPL themed case. There are a few reasons for this. Foremost is that this was a case study on a body of research. As we had discussed previously, a body of research is more likely to make an impact than a single piece of research.

Apart from its being a body of research, there would seem to have been other factors that assisted in this case study making an impact. In particular, it hit the mark topically and in relation to timing. There was a need for this research, given the parlous state of affairs with recognition of prior learning at the time. To rectify this gap in knowledge, one of the main reports, *Recognition of prior learning in the vocational education and training sector,* was commissioned by the Australian National Training Authority (ANTA). The other factor that clearly assisted with its impact is the level of esteem with which two of the principal researchers are held within the sector. This meant that policy people and practitioners were more likely to pay attention to the research. The principal researchers were also very proactive in promoting the research—they could be termed 'research champions'.

The *Indigenous systematic review* has also clearly had an impact. Even though it was a stand-alone piece of research, this project essentially synthesised the salient issues from other quality research in the area. The research was also undertaken in response to a need identified by the Australian Indigenous Training Advisory Committee (AITAC) to consolidate the research in this area. The seven factors resulting from the research are being seen as very important in the design of policy and programs, as well as in evaluation related to the training of Indigenous people. We see that to date there have been 17 citations associated with this report, with a variety of organisations citing the report, including the Canadian Council of Learning.

The *Apprentice and trainee completion rates* case has had the greatest number of citations as a stand-alone report. It has also had citations across the greatest number of sources, including three in journal articles and three in parliamentary databases. This in itself would suggest that the research is 'getting out there' and being read. It has also been used by a large government agency to inform policy on tenders for apprenticeship services and by the Australian Chamber of Commerce and Industry to inform their work on apprentice completion rates. This paper was one of the first papers on apprenticeship completion rates and up until that time there had been very little information in this area. The end-user from the Australian Chamber of Commerce and Industry also mentioned that it would be useful to 'renew' this report with updated information. In retrospect it may have been useful in this particular case to examine NCVER's suite of research on apprentice and trainee completions rather than a single report. Indeed, an interviewee for this case study said that they consider apprentice and trainee completion rates to be a 'body of research' rather than a series of individual reports.

For the *Contradicting the stereotype* case, pinpointing policy and practice benefits was more difficult compared with the other case studies, although capacity-building benefits were identified. As mentioned, this case study was aimed more at challenging assumptions and raising awareness about the strengths-based approach to literacy, as opposed to a deficit model. This case study was also aimed at a smaller, more select audience, mainly practitioners in the adult literacy area. One respondent commented that the case study report should be viewed in the context of the suite of adult literacy research rather than on its own.

When we look at the case studies as a whole, several issues are apparent with respect to difficulties in assessing impact and obtaining evidence. Other themes arise in terms of identifying the main sources of impacts and what can facilitate impact.[5] These themes and implications arising from the study are discussed in the next section.

[5] Note that because we have used a specific framework for establishing impacts, it is possible that some impacts falling outside of this framework will not have been detected.

Implications of the study

We have been able to identify examples of impact in one or more of the four categories in all of the case studies, but our experience confirms that there are difficulties associated with obtaining robust quantitative evidence of research impact.

In order to capture an extensive range of impacts, both quantitative and qualitative indicators should be used, for example, bibliometric analysis (measures based on publication and citation counts) with case studies. While quantitative tools provide some evidence of engagement with the research, the majority of evidence in relation to use and influence resulted from talking to end-users of the research. Here we discuss some of the issues and ways of collecting impact data.

Issues in assessing impact

The key issues which arose during this project were the problem of attribution, the nature of bibliometric analysis, finding end-users and a paucity of records about how end-users employed the research.

The problem of attribution

It was clear from the case studies that it was often difficult to attribute a research project to a particular policy development in practice. It is even more difficult to do so for a single research project than for a body of work.

For instance, while case study respondents were able to identify various impacts for the recognition of prior learning theme, this was more difficult to do for single research projects, although a few examples were mentioned. In the *Contradicting the stereotype* case study, one respondent thought that this research would be better analysed in terms of a larger body of work on adult literacy. In this case we were only able to establish that the report raised awareness about issues.

This problem of attribution has been strongly suggested in other literature on research impact. For example, Nason et al. (2007, p.44) stated that:

> Linking research to policy impacts was complicated by the general nature of the research; the lack of formal mechanisms for synthesising research findings in social science; and the opacity of policy making.

Further, while probably overstating the matter, Watson (2007, p.12) in speaking about education research in an Australian context stated that:

> Policy makers influenced by social science research will never be able to cite the findings of a specific study that influenced their decisions.

Even more difficult then would be to identify impacts on skills in the broader workforce. None of the case study respondents could really identify such an impact. It generally may not be possible for the type of research that NCVER oversees or conducts to attribute any impacts more broadly than at the policy and practice level. Even then, many of these will not be picked up. A couple of

the end-users mentioned that the research had been cited in internal documents, and as one respondent indicated:

> There are internal (departmental) documents but they can't be shared publicly. These documents are in the nature of program guidelines and policy assessments.

The important point here is to recognise the problem of attribution as an underlying platform and to conduct a balance of single project and themed case studies in impact evaluations.

Bibliometric analysis

The bibliometric analysis was one area where reasonably robust measures could be obtained. Having said this, no single tool will pick up every citation or reference to a report. Furthermore, this process has the potential to be resource-intensive if multiple sources are used to search for citations. In addition, the bibliometric analysis will not identify all the presentations that have been conducted on a research project and, based on our experience, will not pick up all media citations.

While this analysis was an important component of the case studies, it is possible to take a more liberal approach to what is counted. Counting citations in academic journals is only one metric; other indicators that can be used include citations in conference papers, parliamentary databases (particularly useful for determining policy impacts) and the media. The aim is to have a set of indicators that are not restrictive but easily understood and replicated.

Tools have been developed, particularly in academia, that allow for fairly comprehensive citation analysis to be undertaken. Citation analysis is particularly important in academia, where there is a 'publish or perish' mentality. While this is not so relevant to the research NCVER conducts, this approach still provides a good indicator of use of NCVER's research.

One tool currently available that NCVER may consider using is called, coincidentally, Publish or Perish. This tool is a free downloadable software program available at <www.harzing.com> that extracts Google Scholar references, statistically analyses them and then applies various metrics to the citations. The advantage for NCVER research is that, unlike academic databases (for example, Scopus, Web of Science), it extracts citations from sources other than the journal literature, such as government reports. For social science discipline areas, it can also be complemented with searches on Google and Google Scholar. A significant advantage of Publish or Perish is that it provides the citations in a fairly clear, easy-to-read format.

Citations and metrics

We deliberately did not use metrics or a subjective scoring in our analysis. Others have used what is known as a 'spider diagram' to score impacts across their case studies (see, for example, Wooding et al. 2004). This essentially involves project team members coming to a consensus on the extent of impact across the various impact categories. For example, the impact categories can be scored from 1 to 5, with 5 being a high degree of impact and 1 being no real impact. We did not go to this extent in our analysis. Given that ours is a modest study and the themes coming through were quite clear, we focused more on describing the impact.

When establishing citations of a particular piece of research, we also need to think about the timing of the analysis in respect to the initial outputs of the research. Clearly, the longer a piece of research has been in the public domain, the more citations it is likely to have. For our study we have used a time frame of two to five years, with the modal publication date being 2005.

It is worth reiterating that, while having citations is an indicator of impact, the reverse does not necessarily apply. For instance, the research may be in a narrow area, meaning that it is less likely to have citations. This is probably the case with the *Contradicting the stereotype* report. A report such as this is also more likely to be cited in presentations as opposed to formal reports because it is aimed more at VET practitioners. In addition, the focus of other reports might be more likely to be informing policy development or practice.

Contacting end-users and recording information about impact

Finding end-users who could provide evidence of where research has been used and the general lack of recorded information about stakeholders engaging with research (aside from citation analysis) are two areas that influence the collection of data.

We attempted to contact many more people than we ended up interviewing. The difficulty in finding end-users is probably due to factors such as:

- ✧ Some of the people we thought were familiar with the research in fact were not.
- ✧ People who were interested in the research were more likely to respond.
- ✧ Some people were time-poor; that is, it was difficult for them to put aside 45 minutes to an hour to be interviewed.

There is also an issue of content validity. As part of a case study we cannot interview everyone who may have used the research, so the results are an *indication* of where the research has made some impact.

During the research process as well as after publication of a research report, there may be several opportunities for stakeholders to engage with the findings and the researchers directly. This is an opportunity to gather evidence of impact; however, the recording of this information by researchers in particular appears not to be a widespread practice. It is a practical issue but it was raised at the workshop as being important. It also became clear from the case studies that principal researchers could not always recall all the presentations or other talks they gave in relation to the research.

There is currently no onus for researchers to give feedback on impact to NCVER. It would be useful, however, if researchers recorded stakeholder contacts both to assist in the assessment of impact (for NCVER to use in future impact case studies, for example) as well as to guide dissemination. Any recording tool should be simple to use, and collecting this information will require a change of mindset among some researchers.

Main influences on impact

Nutley, Percy-Smith and Solesbury (2003) refer to several practices for enhancing research impact. In their paper they discuss issues such as active dissemination, links between researchers and end-users of the research, facilitation of research use and using expert or peer opinion leaders to champion the research. The points discussed below are not dissimilar in tenor.

Active dissemination of research and types of product

If research is to have an impact, its dissemination is therefore a very important component of the research process and features prominently in the model that we have used. As part of the interviews respondents were asked to rate how important particular forms of dissemination were to impact, on a five-point scale ranging from 1= of no importance to 5 = of great importance. While some respondents qualified their answers, and there was a relatively small number of respondents overall, the scores can be taken as a guide.

Table 9 Importance to impact of various types of dissemination

Type of dissemination	Score
Project reports and working papers	4.4
Seminars and conferences	4.5
Briefing papers	3.7
Media coverage	2.7
Academic publications	2.6
Discussions with policy-makers	4.6

Three types of dissemination were rated above four—seminars and conference papers, discussions with policy-makers and project reports and working papers. Forms of dissemination that involve face-to-face contact are rated very highly. This is consistent with respondents' discussions on the 'human aspect' of impact and is discussed further below.

We note from the table that, conversely, academic publications and media coverage were not rated as highly as forms of dissemination. Of course these results need to be considered in the context of the types of respondents to the interviews, as well as the types of impact we were exploring; that is to say, we are looking at impact on policy and practice and in this context academic publications may not be as useful.

To supplement this table, end-user respondents were also asked about what dissemination strategies were particularly useful. There were a variety of responses. They include (in no particular order):

- ✧ short, succinct publications such as NCVER's *At a glance* product
- ✧ presentations at seminars and forums
- ✧ products tailored to particular audiences
- ✧ research reports
- ✧ digital technologies such as podcasts
- ✧ networks
- ✧ newsletters and the like.

We note that NCVER already uses these dissemination strategies to a large extent and that forms of dissemination that involve people contact are seen as important. The importance of dissemination, as opposed to promotion, of the research cannot be understated. The flowchart in the model we had developed (figure 1) clearly shows that dissemination is an integral part of the research cycle. Its aim is to focus the research products towards the needs of end-users. So the point about tailoring products to particular audiences is very important. This approach is also particularly important to NCVER, where the focus is on applied research, which implies that the research will be used to inform policy and practice.

Dissemination needs to be planned from the outset, keeping in mind the intended audience and intended impacts of the research. It is a critical part of the research-translation process discussed below. As noted, personal contact and succinct products were the most highly regarded forms of dissemination. The case studies confirmed the appropriateness of NCVER's approach to dissemination in its production of many succinct products, in particular the *At a glances*.

At a glances are very highly regarded for several reasons. They have broad appeal and are appreciated by both policy people and practitioners. In particular, the easy-to-follow writing style and the clear, straightforward messages were seen as making this product readily accessible. These publications can also give the research new life—an opportunity to reinvigorate, reshape and renew. They are an important component of the research-transfer process and can be very useful as a 'capstone' product to summarise the salient issues arising from a program of research or research theme.

The *At a glance* that was one of the products of the recognition of prior learning themed research was seen as being very useful by respondents for these reasons and also important in facilitating impact. For example, one end-user mentioned that this publication was excellent in giving a 'heads up' in providing planning and policy direction for the Council of Australian Governments' recognition of prior learning project.

There are also other concise products such as research overviews, which are considered valuable. The 1:3:25 report format, with its key messages page, is also well regarded. In addition, NCVER's *Insight* magazine provides information on upcoming reports.

The use of new technology such as podcasts was also mentioned. These can also be relatively short products, which also provide some human interface with the research. NCVER has begun to use podcasts as part of its dissemination strategy. For example, NCVER has recently released a podcast, recorded by the ABC, of a panel discussion at its Skilling Australia: Our Apprenticeship Challenge forum. One end-user said that short, fast-moving digital products that are entertaining are an effective way of engaging the attention of busy end-users who are typically bombarded with a plethora of written material.

The other type of dissemination which was considered particularly effective was that involving personal contact with the researchers. In particular, this includes presentations at seminars and forums. This is another aspect of dissemination in which NCVER currently invests a great deal of time and effort.

Links between the research and end-users

An implication of the model we used is that it is useful for engaging end-users in the research process. This occurs formally through their involvement in shaping research priorities and in the selection of proposals to be funded. We need to be cognisant that, once underway, the integrity of the research must be maintained. Researchers must be independent, and seen to be independent, otherwise there is a risk that the research findings will be perceived to be tainted.

It is nevertheless important to involve the end-users in the research at some level. One way would be to air work-in-progress and invite discussion of preliminary findings. This might also help researchers to decide how best to present their final reports. At the conclusion of a project, feedback could be sought from end-users, although this would only provide information on short-term impact.

Personal contact and networks

What came out most strongly in our study is the human aspect involved in making the research known. Face-to-face contacts and networking are seen as being particularly important. The Kalucy, Jackson Bowers and McIntyre (2007) study similarly found that the strongest avenues to impacts were through personal relationships, collaborative partnerships and the involvement of practitioners, policy-makers and the like in defining the research question.

Personal contact, engagement with the research and/or the researchers is highly valued—either through forums, conferences or more personalised targeted communication opportunities. This was an undercurrent throughout the case studies.

There was discussion on the value of personal follow-up and personal contact, particularly in terms of interpreting the outcomes of the research for end-users. Indeed, the researchers themselves can be critical to the level of impact of the research. This is what one respondent referred to as the human element of the research. We saw, for instance, in the recognition of prior learning themed case study that contact with two of the principal researchers was valued both by policy people and by practitioners in terms of influencing practice in this area in VET in Australia. They are seen as champions of research on RPL: we had mentioned as an example that one of the researchers has

recently been involved in facilitating about 60 projects on RPL coordinated through the New South Wales Department of Education and Training. One end user respondent quipped that:

> **** and **** are two of the better known researchers in Australia. This makes a big difference in getting the research out and making an impact.

Networks appear to be particularly important in the VET sector; indeed, one of the participants in the workshop noted that the VET sector runs on networks. These networks are not always formal but are seen as a valuable way of sharing information on what is happening in the sector.

Tailoring the product to the audience and implications for knowledge (research) translation[6]

It became apparent during the conduct of the case studies that there is a need to know who the audience is, as this will affect dissemination practices. There is also a need to make sure that the message fits the audience. As mentioned, dissemination is a critical part of the model we have used and there are opportunities to refine dissemination as the project progresses. Tailoring to the audience is also implied in dissemination activities after completion of the research.

While research may be of high quality and useful, this in itself may not be sufficient to ensure that the research has an impact. There is a significant role for translation; that is, interpreting the research in terms of what it means to the various audiences that may be interested in the research. In terms of the model we have been using, the research may take on different meanings, according to whether a policy person or practitioner wishes to engage with it.

The Department of Health in South Australia (South Australian Department of Health, undated), discusses two components of research transfer (translation): dissemination and uptake. While an organisation may disseminate their research, it may nevertheless not be taken up for various reasons. This is where the role of knowledge or research translation is seen as important in assisting the research to be taken up. Having said this, dissemination is nevertheless an important part of the research-translation process.

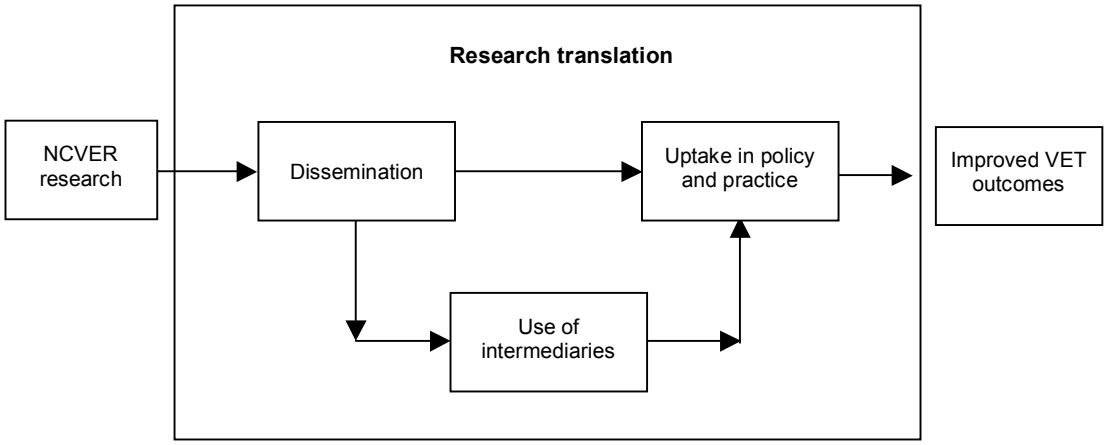
Options for knowledge translation include building it in as part of the research project; that is, as a stage of the research process. This would include allocating budget, time and people resources to it. However, it needs to be recognised that not all researchers are skilled in translating the research to different contexts. So another option may be to call on people who are skilled at translating the research to different contexts.

A very simple conceptual model of knowledge (research) translation is shown in figure 3.

Within this model the research-translation process begins with planned dissemination. To be fully effective, dissemination planning should begin at the outset of the research process and be focused on the needs of the intended end-users of the research. In addition to planned dissemination, the use of intermediaries can assist in the research-translation process. The intermediaries may include the researchers but also others who are well regarded in the sector and who are skilled in presenting research findings to different audiences.

[6] The term 'knowledge translation' most readily appears in medical and health care literature and primarily pertains to the assessment, review, and utilisation of scientific research. For our purposes we refer to knowledge translation as an active process and strategy, beyond simple dissemination activities, to synthesise and enhance exchange and utilisation of research findings.

Figure 3 Knowledge/research translation



Source: Based on ideas by Suzy McKenna (Reframing the Future) and the Strategic Education Research Program (see Wilson & Loble 2006, p.168).

In summary there are two important points to consider in the research-translation process:

- ✧ Planned dissemination needs to take place at the beginning of the research processes and evolve along the way, taking into account the needs of the intended audience(s) of the research.
- ✧ The research cycle continues after the initial outputs of the research by way of research-translation activities.

Programs of research

Much of the literature on research impact claims that a body of research (around a program or theme) is more likely to have an impact than single instances. We saw in the case studies that the recognition of prior learning themed case had a strong impact as a body of research. Several research projects considered issues associated with this topic from different angles. It was then usefully brought together with an *At a glance* product.

This has implications for research planning. Should research be programmed around themes that warrant examination from a variety of perspectives? NCVER currently does establish a cycle of research priorities based on stakeholder consultations. This does not necessarily mean, however, that all research should be programmed around a theme. There are always instances where a single report on a particular topical issue will hit the mark.

Conclusion

We assessed the impact of NCVER's research across four case studies and conclude that the research did have an impact. The impact occurred across one or more of the various categories, although it should be noted that not all of the categories will be applicable to every research report considered. Furthermore, the model we developed as part of this project provides a structured way of thinking about and capturing the impacts of research.

We also found that measuring impact is not straightforward. Many of the potential impacts are difficult to isolate. We deliberately drew back from a strongly quantitative approach to assessing impacts. The main approach to gathering information relied on bibliometric analysis and interviews with key informants—principal researchers and end-users.

This study confirms that types of research output and dissemination activities are very important in facilitating impact. While NCVER currently expends a great deal of effort in dissemination, the

concept of knowledge translation, in which the results of research are interpreted and synthesised to various audiences, is an area where even more resources could be allocated.

Further work on impact should focus on what can be reasonably assessed. One aspect of impact assessment that can be undertaken relatively easily is bibliometric analysis. This would include citation searches, mentions in the media and statistics on downloads of research reports. There are tools readily available to undertake this kind of analysis. In addition to bibliometric analysis, case study assessments of impacts could be undertaken on a small sample of NCVER's projects, say every three or so years. Doing so will still provide valuable information about whether NCVER's research is being used.

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Appendix 1: Approach to the case study analysis

The general approach to the case studies was to collect information through:

- ✧ a bibliometric analysis
- ✧ interviews with key informants
- ✧ an examination of a variety of documents.

This approach is consistent with others that have examined research impact. It has been used for instance by Kalucy, Jackson-Bowers and McIntyre (2007) in their research impact project for primary health care at Flinders University in South Australia. It was also used by Wooding et al. (2004) in their study on the returns to arthritis research.

The benefits of using this approach are that (a) it does not rely solely on difficult-to-derive quantitative metrics and, following on from this, (b) there are multiple sources of information that will assist with triangulation of the results, thereby increasing our confidence in them.

Using our model of impact in structuring the case studies

The model of research impact that was developed was used as an ordering principle for writing up our case studies. A similar approach was also used in RAND publications, where the logic model from the payback framework was used as an ordering principle.[7] Based on this, the case studies were organised according to the following headings.

Table A1 Organisation of case studies

Stage		Sources of information
1	Research purpose ✧ Funded to meet a particular research priority through the adult literacy or NVETRE program ✧ NCVER project—purpose identified at management retreat in line with research priorities and identified needs ✧ Other funding	✧ Project brief ✧ Research priority documents ✧ NCVER strategic plan
2	Project details (research questions and conduct research) ✧ Includes project description, research questions, and methods used, as well as any resource implications and audience/dissemination plan	✧ Project brief ✧ Interview with key researchers
3	Immediate impacts ✧ Knowledge production	✧ Bibliometric analysis ✧ Interviews with key researchers and key informants/end users ✧ NCVER dissemination plans

[7] See for example Wooding et al. (2004).

Stage		Sources of information
4	Less immediate impacts ✧ Capacity building ✧ Informing policy ✧ Informing practice ✧ Workforce skills in industry and society	✧ Bibliometric analysis ✧ Interviews with key informants ✧ Document analysis ✧ Records and logs maintained by researchers
5	Overall observations	Case study write-up

More detail on the selection of case studies

The approach to the selection of the case studies was purposive. The reason for this was that we wished to pick case studies where we have some reasonable expectation that we can illustrate some impacts from the projects. This was the approach taken by others examining the impact of research; for example, Wooding et al. (2004). This means that the results are not generalisable to all NCVER research.

We also wished to have some breadth across the projects chosen for the case studies. This involved a couple of considerations:

- ✧ The funding source of the projects. We wanted to have a mix between commissioned research projects and in-house projects.
- ✧ We also wanted a mix between cases examining the impact of single projects and those based on a research theme, which may involve several projects. Research impact, as the literature suggests, is usually derived from a body of work rather than a single project. However, because of budget and time implications, for this project we are able to select only one theme (encompassing approximately six individual projects) and three projects, one of which is a systematic review.

When selecting case studies we also needed to consider how long the outputs from the project have been in the public domain. Projects that have been just published would not have had enough time for the impacts to be realised. On the other hand, projects that were published some time ago would present issues of contacting the researchers and end-users, as well as issues of recall among these people. Hence a two-to-five-year time frame from the initial outputs of the research project was chosen as suitable.

More detail on the bibliometric analysis

The bibliometric analysis was largely undertaken by information services staff within NCVER; however, this was supplemented by other sources such as key informant interviews. The bibliometric analysis involved several elements as discussed below.

Publications

Two categories of publications were examined:

- ✧ primary publications from the research such as research reports and journal articles
- ✧ secondary publications, including presentations and the like.

Citations

Several categories of citations were searched for including:

- ✧ systematic reviews
- ✧ reputable journals

- other reports such as NCVER reports
- coverage in the media
- references in other sources (see more detail below).

Other document analysis

Where possible, an analysis of other documents such as policy documents, parliamentary enquiries, procedures and the like was conducted. Key informants were also used to provide clues to some of these. These are an important source of information as they provide an indication of whether NCVER research has been used to inform policy and practice.

More detail on key informant interviews

The main categories of key informants were:

- the main researcher and other researchers involved in the project(s)
- end-users of the research.

Questionnaires were developed for the key informants—one questionnaire for the researchers and one for the end-users (see case studies support document). The questionnaires probed the key informants on the categories of impact that were developed, including asking for evidence of impact.

The case study analysis

The case studies were analysed by project team members and summarised in a matrix fashion.

Appendix 2: Stakeholders

Table A2 Classification of stakeholders by concerns and categories of impact

NCVER's stakeholders	Concerns	Possible categories of impact
Government Federal, state and territory ministers with responsibility for training and their respective departments and advisors COAG members and their advisors Federal, state, territory training authorities and departmental staff Key national and state/territory committees such as the National Training Statistics Committee	VET policy and responses to VET policy Status of VET Contribution to industry skills Efficiency and sustainability of VET policy and systems	Mainly capacity building and informing policy and practice
VET sector Peak bodies, for example, Australian Council for Private Education and Training, TAFE Directors Australia, Adult Learning Australia Provider bodies, for example, Australian Institute for Training and Development, VETNetwork, VISTA Individual providers (TAFE colleges and registered training organisations) and their teachers and trainers	Teaching practices and productivity VET policy and responses to VET policy Dissemination of research findings to peers Developing researcher skills	Knowledge production, capacity building and informing policy and practice
Industry Peak bodies, for example, Australian Industry Group, Business Council of Australia, National Farmers Federation, Council of Small Business Organisations, unions State bodies, for example, Chambers of Commerce and Industry, Business SA Grass roots organisations and individual enterprises and employers Industry skills councils	Improved workforce skills Innovation in business processes Products and services offered VET policy and responses to VET policy Productivity and legislative concerns	Capacity building, workforce skills and informing policy and practice
Researchers Any research centre, organisation, or institution involved in VET research Researcher professional bodies, for example, Australian VET Research Association	Excellence in research Dissemination of research findings to peers Best-practice informing professional education Fit-for-purpose research Developing early career researchers and higher degree students	Knowledge production and capacity building Informing policy and practice
Learners Any past, current or prospective VET student	Improved skills for employment Benefits of improved teaching practices	Knowledge production, workforce skills and informing practice
Society Community members and community organisations such as the Smith Family, Dusseldorp Skills Forum Other related organisations, for example TVET Australia, Universities Australia, Australian Bureau of Statistics, education.au	General interest Improved quality of life Lifelong learning Increased national productivity	All

Support document details

Additional information relating to this research is available in two support documents: *Assessing the impact of NCVER's research: Case studies—Support document*, and *Impact of NCVER's research: Workshop paper—Support document*. They can be accessed from NCVER's website <http://www.ncver.edu.au/ publications/2152.html>.

Assessing the impact of NCVER's research: Case studies—Support document contains:

- Introduction to case studies
- Four case studies
- Case study questionnaires

Impact of NCVER's research: Workshop paper—Support document contains:

- Overview
- Background paper

The National Centre for Vocational Education Research (NCVER) is an independent body responsible for collecting, managing and analysing, evaluating and communicating research and statistics about vocational education and training (VET).

National Centre for Vocational Education Research Ltd

Level 11, 33 King William Street
Adelaide SA 5000

PO Box 8288 Station Arcade
Adelaide SA 5000

Phone +61 8 8230 8400
Fax +61 8 8212 3436
Email ncver@ncver.edu.au

www.ncver.edu.au