

VET research for industry

*Presented at the AVETRA conference,
Canberra, April 2012*

Tom Karmel

NATIONAL CENTRE FOR
VOCATIONAL EDUCATION RESEARCH

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About the research

VET research for industry

Tom Karmel, National Centre for Vocational Education Research

This paper was a keynote address at the Australian Vocational Education and Training Research Association (AVETRA) conference held in Canberra in April 2012. Karmel notes that industry is arguably the key stakeholder in the Australian vocational education and training (VET) sector, but is not a single actor nor a disinterested consumer of training. Rather, industry consists of a range of bodies, all of whom are active players in the sector.

The paper discusses six areas of research which are pertinent to industry. These areas are:

- the value of completing an apprenticeship or traineeship
- the role of wages in completion rates for apprenticeships and traineeships
- the value of completion of VET qualifications
- the level of matching between what people are training in and the jobs they get
- the role of VET in innovation
- VET and workforce development.

All of this research raises questions about VET and industry, either in terms of how public training funds are allocated or the educational principles on which VET is based. In particular, the major points made are that the value of training is quite variable and this should be a consideration in its public funding, and the narrow industry focus of VET needs to be leavened with more general education.

Tom Karmel
Managing Director, NCVET

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Introduction

One of the distinctive features of the Australian vocational education and training (VET) system is that it is 'industry' led. This description can be traced back to the reforms of the early 1990s, marked by the creation of the Australian National Training Authority. These reforms fundamentally changed the way the VET sector was construed. It was to be a national system rather than an aggregation of the systems of the individual states and it was to be led by industry, not educationalists. This was largely to be achieved through the introduction of competency-based training through national training packages. This shift can be seen, for example, in the policy document *Towards a skilled Australia: a national strategy for vocational education and training (1994–1998)* (Australian National Training Authority 1994). The first dot point of the strategy was to 'ensure that future vocational education is more flexible, to accommodate the needs of industry as the principal client'. Training packages played an important role in this by taking the content of the courses out of the hands of teachers and giving it to industry bodies, the forerunners of the current industry skills councils. The rhetoric revolved about VET meeting the needs of industry; skilled labour was seen as an input into the industrial production process.

This change in the identity of the sector did not go without challenge. While no one would deny the importance of skilled labour in the economy, one could make the point that skills are embodied in individuals, not employers (at least in the absence of indentured labour). Thus there was some broadening in the rhetoric so that 'industry and individuals' were both seen to be at the centre of the VET sector. So in *Shaping our future, Australia's national strategy for vocational education and training 2004–2010* we see the objectives including: 'Industry will have a highly skilled workforce to support strong performance in the global economy' and 'Employers and individuals will be at the centre of vocational education and training' (Australian National Training Authority 2005, p.10). This dichotomy is currently being seen quite clearly. On one hand, we see the Commonwealth's National Workforce Development Fund (with funding of over \$500 million from 2011–12 to 2014–15) which sets up industry skills councils to approve applications from employers, professional associations and other industry bodies to purchase training for existing and new workers¹. On the other hand, we see the move to entitlement funding (notably in Victoria) which allows individuals to choose the education and training that best suits them, within certain boundaries.

Thus industry has and will continue to have a key role in vocational education and training. However, its role is quite diverse and to think about VET research for industry we need to understand the role of the various industry players. While I have, perhaps facetiously, argued there is no such thing as industry, in the same sense Margaret Thatcher argued there is no such thing as society², industry

¹ Industry is expected to meet between one-third and two-thirds of the training cost (with the fraction depending on firm size).

² 'There is no such thing as society. There is living tapestry of men and women and people and the beauty of that tapestry and the quality of our lives will depend upon how much each of us is prepared to take responsibility for ourselves and each of us prepared to turn round and help by our own efforts those who are unfortunate.' 1987 interview for *Woman's Own*, <<http://www.margarethatcher.org/speeches/displaydocument.asp?docid=106689>>.

needs to be defined in terms of actual organisations rather than in the abstract. I think of industry as comprising:

- individual enterprises/employers that are after skilled labour at the cheapest cost and, in some cases, deliver training on a commercial basis. Some are employers of apprentices and trainees, and receive incentive payments for employing them.
- industry skills councils who are responsible for developing the training packages and, more recently, play a role in the delivery of training through the National Workforce Development Fund
- industry peak bodies who typically wish to advance the interests of their members
- group training organisations that broker apprenticeships and traineeships and, in some cases, offer training
- unions who have an interest in qualifications, particularly as they relate to awards and pay and conditions (and obviously education unions are interested in protecting their members who work for registered training organisations).

Thus industry is made up of a wide range of stakeholders, all of whom have a direct interest in what training is delivered and how it is paid for. The level of public funding of VET is very high, and the industry stakeholders have a direct interest in the level of these funds and how they are disbursed. Therefore, when I think about the value of VET research for industry, I tend to concentrate on research into issues that go to the institutions that provide the structure for VET, and the efficiency and effectiveness of public funding.

For the remainder of the presentation I want to present some examples of research which, at least in my view, go to the links between VET and industry and pose questions about how VET should be conceptualised and funded. They all raise public policy issues and all the issues affect industry. My examples are:

- the value of completing an apprenticeship or traineeship
- the role of wages in completion rates for apprenticeships and traineeships
- the value of completion of VET qualifications
- the level of matching between what people are training in and the jobs they get
- the role of VET in innovation
- VET and workforce development.

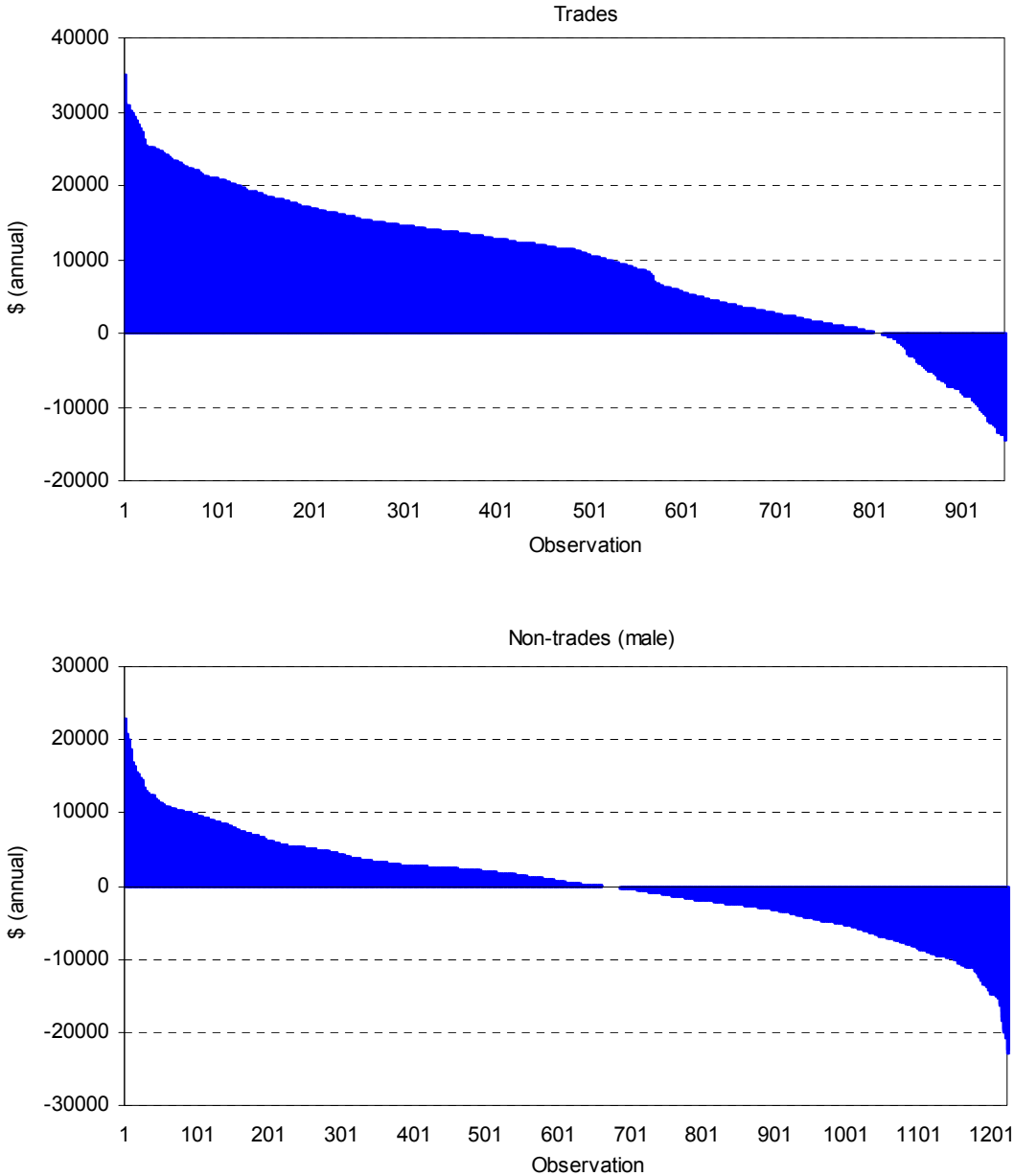
I confess there is a bias toward work I have been involved with (for the simple reason that I am familiar with it), although I have featured some work done outside the National Centre for Vocational Education Research (NCVER).

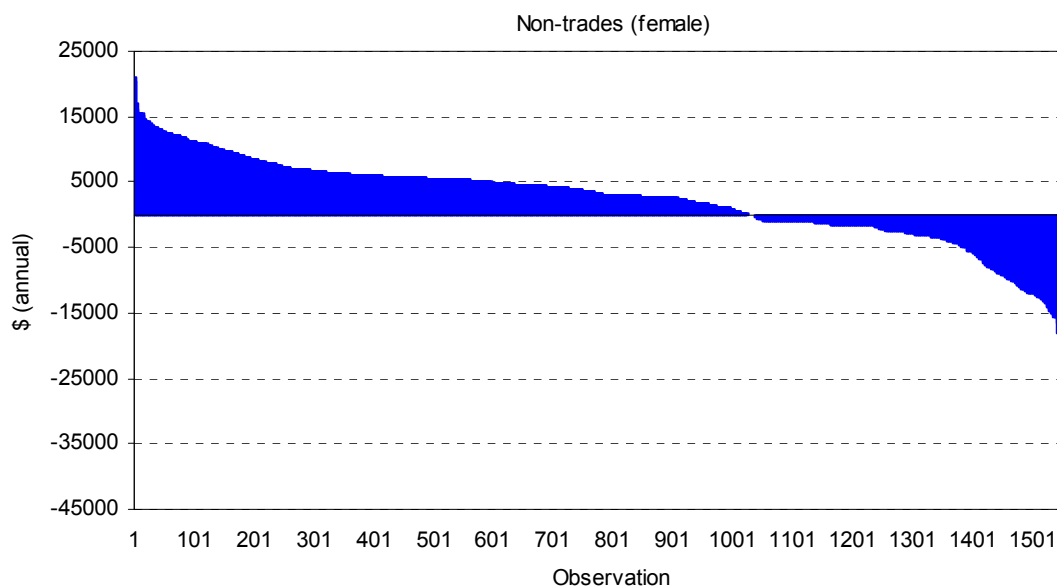
The value of completing an apprenticeship or traineeship

This work (Karmel & Mlotkowski 2010, 2011) is based on data from the Apprentice and Trainee Destination Survey. A sample of those exiting from an apprenticeship or traineeship was followed up and data obtained on training wages and the wages of current employment. This enables us to look at wages of those who did and did not complete an apprenticeship or traineeship. Statistical modelling based on background characteristics enables us to look at the opportunity cost of training (the difference between wages in an alternative job and the training wage) and the premium to

completion (the difference between wages on completion and wages in an alternative job). The first of these is relevant to the cost of undertaking an apprenticeship or traineeship and the second to the value of completion. The latter measures the skills acquisition in the apprenticeship or traineeship, or at least the market value of the skills. Figure 1 shows the value of completion – the difference between the expected wage on completion of an apprenticeship or traineeship and the expected wage the individuals could expect if they did not complete but took alternative employment. These differences are calculated for each of the individuals in the sample and then plotted, beginning with the individual with the greatest premium to completion.

Figure 1 Difference between expected wage on completion and expected wage in alternative employment, trades and non-trades (male/female)





Note: A positive difference implies that expected wages on completion are greater than expected wages in alternative employment.

We see that for the vast majority of apprenticeships there is a premium to completion and, in some cases, a very handsome one. On the other hand, for a sizable proportion of trainees there is no premium to completion.

Table 1 presents the data for the various occupations.

Table 1 Mean, and proportion above zero, of wage premium on completion of an apprenticeship or traineeship, trades and non-trades (male/female) — excluding part-timers and existing workers

	Trades		Non-trades (male)		Non-trades (female)	
	Mean (\$)	% above zero	Mean (\$)	% above zero	Mean (\$)	% above zero
Trades:						
31 Engineering, ICT and science technicians	6 329.1	100.0	-	-	-	-
32 Automotive and engineering	13 724.4	100.0	-	-	-	-
33 Construction trades workers	16 867.8	100.0	-	-	-	-
34 Electrotechnology and telecommunications trades workers	23 232.1	100.0	-	-	-	-
35 Food trades workers	6 228.8	94.5	-	-	-	-
391 Hairdressers	631.7	73.4	-	-	-	-
All other trade occupations	6 158.7	100.0	-	-	-	-
Total	12 105.0	96.4	-	-	-	-
Non-trades:						
1+2 Managers and professionals	-	-	7 937.6	91.7	5 363.9	93.3
4 Community and personal service workers	-	-	-832.7	46.4	6 428.1	92.7
5 Clerical and administrative workers	-	-	4 911.2	82.9	6 007.1	95.9
6 Sales workers	-	-	-5 088.3	8.6	-4 426.5	6.5
7 Machinery operators and drivers	-	-	1 319.0	54.6	6 452.7	100.0
8 Labourers	-	-	2 551.9	70.2	-12 667.2	0.0
Total	-	-	1 624.1	59.8	2 403.9	68.2

For the trades, the wage premiums are quite handsome, except for hairdressers. Of the other trade occupations, premiums range from around \$6000 for food and ‘all other’ trades, up to \$23 000 for electrotechnology and telecommunications.

Among the non-trade occupations the picture is rather mixed. No occupation group commands the same sort of premium as the trade occupations with the highest premium. Both males and females who complete manager and professional traineeships command a healthy premium, as do clerical and administrative workers, machinery operators and drivers, and females in community and personal service workers.

What stands out from the table is the number of the non-trades occupations for which there is a negative premium attached to completion. This means that those who complete on average get paid less than those who do not complete, at least at nine months after training. Occupations in this category are sales (both males and females), community and personal service workers (males), and labourers (females). These negative premiums suggest that there is a range of traineeships for which there is apparently little skills acquisition during the traineeship, or if there is skill acquisition the skills are not valued by the labour market over the general work experience obtained during the traineeship. This research is important because it shows that the apprenticeship and traineeship system is uneven in delivering skills of value. It raises questions about why public money is going to traineeships in some occupations. Among the apprenticeships, hairdressing emerges with a low premium and this raises issues about the efficacy of the apprenticeship model for this occupation.

The role of wages in completion rates for apprenticeships and traineeships

The main aim of the research described above was actually to establish the role of wages in completion rates, an issue of direct relevance to the debate about whether apprentices’ and trainees’ wages are adequate. Having derived the differences between the alternative wage and the training wage, and the premium to completion, we modelled the probability of completion to see whether these wage differences affected completion rates. We quote the results from Karmel and Mlotkowski (2011) which combined data from two apprentice and trainee destination surveys. The model also includes the premium to completion in terms of improved employment prospects (typically those who complete have a higher probability of being in employment relative to those who do not complete).

The bold entries are significant and show that, for apprentices, it is the premium to completion that counts not the level of training wages. However, for trainees, training wages do matter. This is not to say that increasing wages for apprentices would have no affect – increased wages could attract a different cohort of apprentices – but it does seem that training wages are not central, despite popular opinion. This makes sense when seen against the very sizeable premiums to completion presented earlier.

Table 2 Summary of regression of probability of completing an apprenticeship or traineeship, trades and non-trades (male/female), 2008 and 2010 combined

	Expected sign	Trades		Non-trades (male)		Non-trades (female)	
		Estimate	Chi-square	Estimate	Chi-square	Estimate	Chi-square
Intercept		-0.7134	208.944	0.8800	936.107	0.8260	896.946
Wedge between expected wages in alternative employment and wages during training	-	3.2*10 ⁻⁵	126.827	-1.0*10⁻⁵	14.567	-5.0*10⁻⁵	183.523
Wedge between expected wages on completion and expected wages in alternative employment	+	2.1*10⁻⁵	201.346	3.9*10 ⁻⁷	0.032	-2.0*10 ⁻⁵	36.914
Wedge between probability of employment on completion and probability of alternative employment	+	0.8496	58.213	-0.4565	14.881	1.3760	242.639
Difference between surveys (2010 survey = 1; 2008 survey = 0)		0.5875	406.212	-0.2356	107.994	-0.2802	160.699

Notes: Critical value for a chi-square test for significance at the 10% confidence level is 2.706 (1 degree of freedom).

Bold figures are significant based on a one-tail test.

2008 wages were entered into the model in 2010 prices.

The value of completion of VET qualifications

Completion rates for general VET qualifications have also received much attention from governments. They have always been difficult to estimate because of the lack of a unique student identifier in the VET collection. Mark and Karmel (2010) applied a Markov chain model to the VET data collection and estimated that the national completion rate of VET course enrolments commencing in 2005 was 27.1%. However, when restricting the analysis only to full-time VET students, 25 years old and under in 2005, who also have no prior VET qualification, the estimated completion rate becomes 34.7%.

These low completion rates caused some consternation and many argued, rather defensively, that the low completion rates reflected the fact that many students did not intend to complete and had obtained from the course what they wanted. To investigate this further, NCVET undertook a survey of students' intentions (NCVER 2011), finding that over 90% of commencing students report that they had intended to complete their qualification. However, to complete the picture we need to know whether there is in fact a value to completion, and for which groups completion is particularly important.

Karmel and Fieger (forthcoming) used Student Outcomes Survey data to model for each student the pay-off to completion in terms of employment, further study and wages. That is, for each student in the sample two predictions were made: the first assuming that the student completed, and the second assuming that the student did not complete. These predictions were based on the background characteristics of the individual and what they were studying. The data can be presented in a manner similar to that presented earlier for apprentices and trainees. For each individual the pay-off to completion is calculated, equal to the value of the variable if the person completes divided by the value if the person does not complete. The individuals are then ranked from the person with the lowest pay-off to the person with the highest (as you can see from figures 2–4, the calculations were done for some 50 000 individuals). The figures show the pay-off to completion in respect of employment after training, salary after training for full-time workers, and whether studying after training.

Figure 2 Pay-off to completion in respect of employment after training

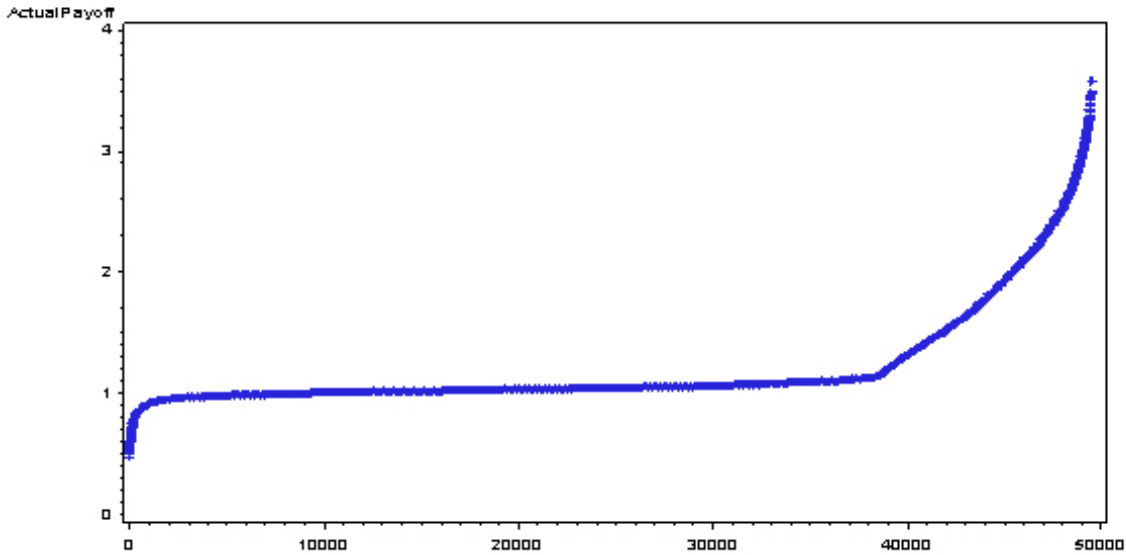


Figure 3 Pay-off to completion in respect of salary for full-time workers after training

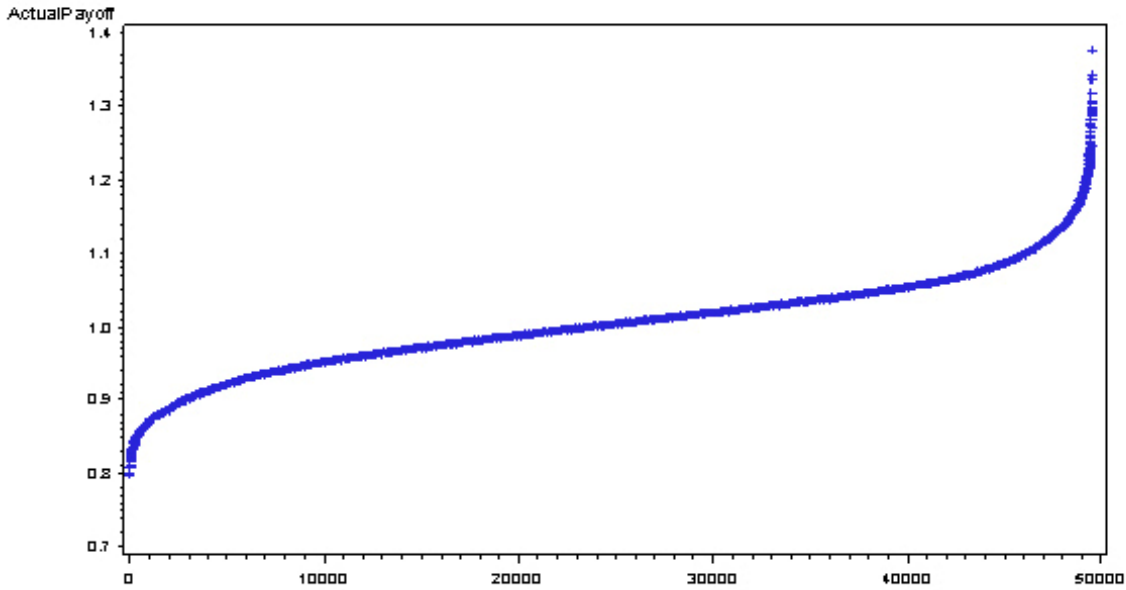


Figure 4 Pay-off to completion in respect of being in further study after training

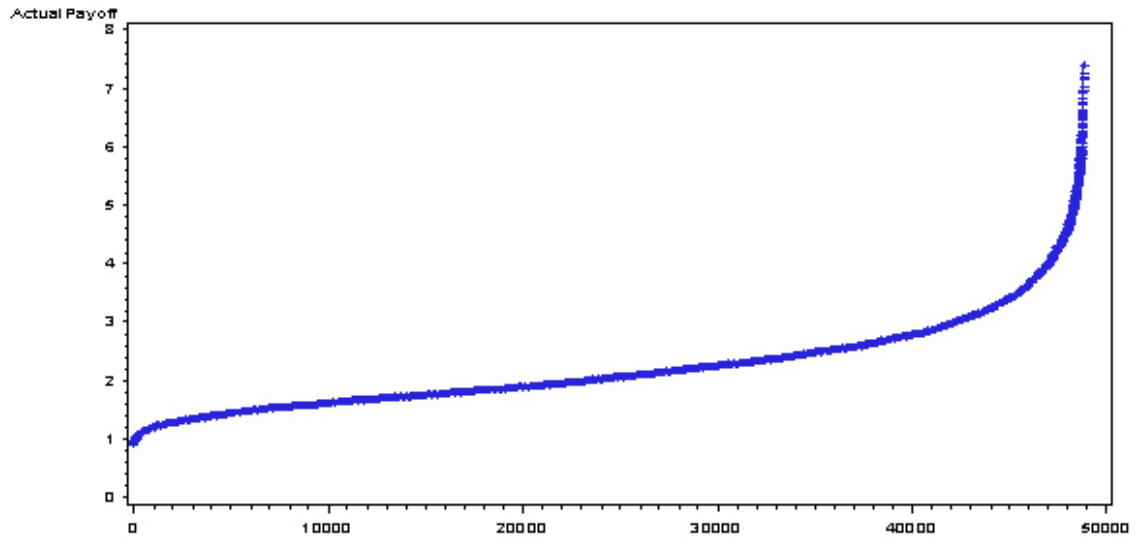


Table 3 summarises the completion pay-offs for the three outcomes.

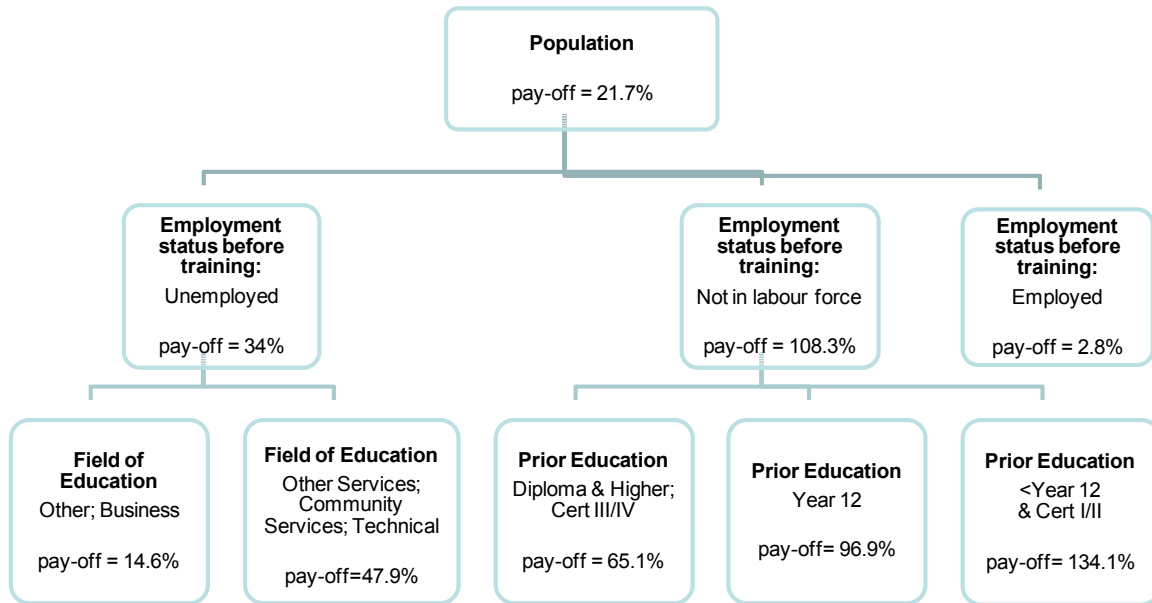
Table 3 Summary characteristics of pay-off, by outcome variable

Outcome	Average pay-off to completion (%)	Proportion with positive pay-off to completion (%)
Employed after training	21.7	80.8
Further study	122.7	99.9
Salary (full-time employed)	0.3	60.7

While the pay-off to completion is generally positive, there is considerable variability across groups.

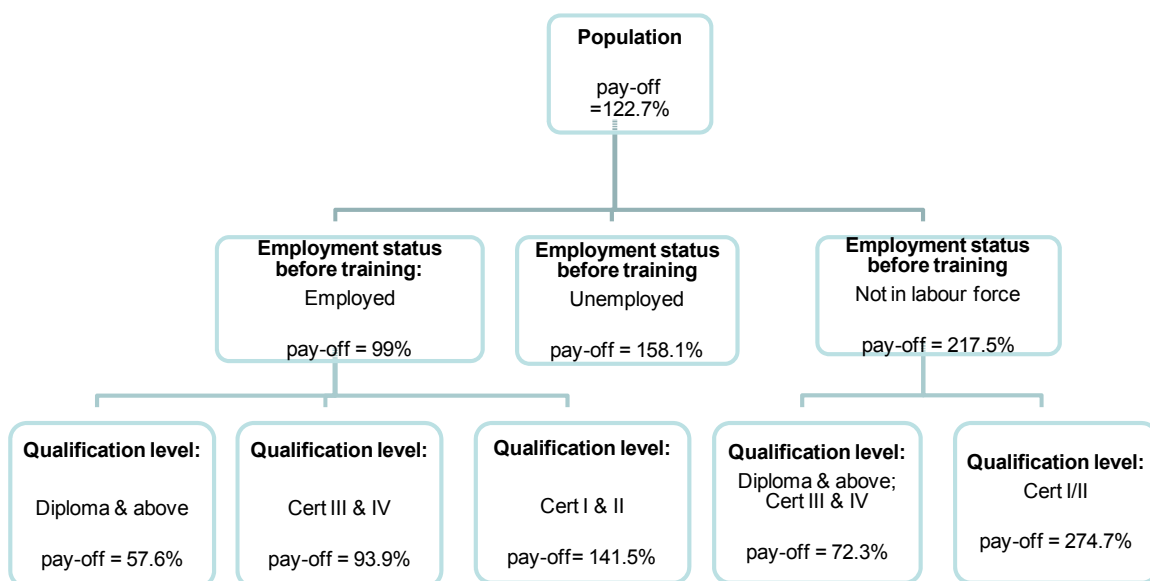
We identified those groups with the greatest pay-off using tree diagrams. At each level of the tree the population is split into two groups such that the split maximises the difference in the prediction of the dependent variable between the groups (the technical name is chi-squared automatic interaction detection). The results are shown below.

Figure 5 Groups with above average pay-off to completion, employed after training (overall average pay-off = 21.7%)



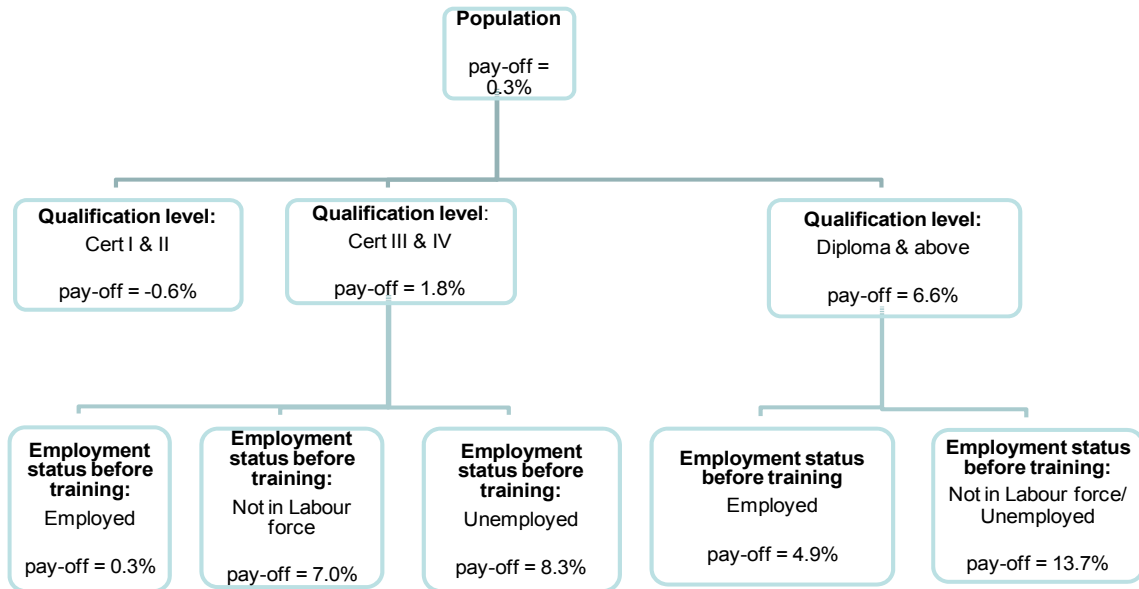
For this outcome variable, labour force status before training is key to the pay-off to completion. On average, those who were not in the labour force prior to training had the highest pay-off, followed by those who had been unemployed. Not surprisingly, those who were employed before training had low pay-off to completion (presumably because they already had a job).

Figure 6 Groups with above average pay-off to completion, further study after training (overall average pay-off = 122.7%)



With the further study outcome, again those not in the labour force had the highest pay-off, followed by those who were unemployed before training.

Figure 7 Groups with above average pay-off to completion, salary of full-time workers after training (overall average pay-off = 0.3%)



The story is rather different in terms of impact on salaries. The quick summary of this tree is that there is a pay-off in salary terms if the student is undertaking a diploma or above, or a certificate III/IV if the person is not already employed. Otherwise the pay-off to completion is marginal or negative.

Pulling this all together, our broad conclusions are:

- There is a pay-off to completion in terms of employment or further study for the large majority (over 80%) of students.
- The pay-off to completion in terms of employment outcomes is highest, in general, for those not employed before training.
- The pay-off to completion in terms of further study is highest for various combinations of labour force status before training and undertaking a certificate I/II.
- There are a substantial number of students for whom completion of training does not lead to higher wages if in a full-time job (around 40%).
- The two groups for whom there is a significant pay-off to completion in terms of wages are those undertaking diplomas and above, and those who are not employed before training and are undertaking a certificate III/IV.

Thus the overall conclusion is that completion matters, if not for every individual. It is particularly important for those not employed before training (for employment after training and wages), for certificates I/II if the objective is further study, and for diplomas and above for wages.

The main implication for policy is that the value of completing a qualification is by no means uniform and therefore we need to be careful in allocating public subsidies. Special attention should be given to those not employed before training – and this would put the focus on individuals not employers. It

questions the value of training for existing workers unless it is at a diploma level. Of course, employers can make their own decision about the value of training for their employees, but accessing public subsidies is a different issue.

The level of matching between what people are training in and the jobs they get

Karmel, Mlotkowski & Awodeyi (2008) matched the courses undertaken by VET graduates with the jobs they obtained for a cohort of graduates from the 2007 Student Outcomes Survey. The intention was to investigate 'how vocational' VET really is, in the sense of VET being training for specific jobs. Table 4 shows the results. We see that the level of matching is quite high for the traditional trades and also for carers and aides. However, for other occupations the match is quite a bit lower.

Table 4 Matches between intended and destination occupations for graduates who are employed, by selected Australian and New Zealand Standard Classification of Occupations (ANZSCO), 2007

Intended occupation of training activity	Match at major group	Match at sub-major group
	%	%
1 Managers	18.8	14.1
12 Farmers and farm managers	36.7	33.4
13 Specialist managers	14.6	8.3
14 Hospitality, retail and service managers	12.6	10.5
2 Professionals	35.4	21.5
21 Arts and media professionals	22.2	7.5*
22 Business, human resource and marketing professionals	16.9	15.0
23 Design, engineering, science and transport professionals	21.0	16.9
24 Education professionals	56.1	31.0
26 ICT professionals	28.0	16.1*
27 Legal, social and welfare professionals	29.9	28.2
3 Technicians and trades workers	66.7	60.6
31 Engineering, ICT and science technicians	29.9	20.6
32 Automotive and engineering trades workers	80.7	72.3
33 Construction trades workers	86.1	81.1
34 Electrotechnology and telecommunications trades workers	92.1	85.7
35 Food trades workers	77.8	76.4
36 Skilled animal and horticultural workers	46.6	43.6
39 Other technicians and trades workers	54.6	49.0
4 Community and personal service workers	53.3	43.8
41 Health and welfare support workers	61.3	33.0
42 Carers and aides	77.4	70.9
43 Hospitality workers	34.8	29.1
44 Protective service workers	41.3	34.9
45 Sports and personal service workers	35.0	26.4
5 Clerical and administrative workers	50.3	23.0
51 Office managers and program administrators	41.6	10.6
53 General clerical workers	50.9	21.1
54 Inquiry clerks and receptionists	54.0	41.3
55 Numerical clerks	64.9	42.1
59 Other clerical and administrative workers	41.8	18.7

Intended occupation of training activity	Match at	Match at
	major group	sub-major group
	%	%
6 Sales workers	51.6	45.2
61 Sales representatives and agents	49.6	40.1
62 Sales assistants and salespersons	52.0	46.1
7 Machinery operators and drivers	39.5	26.6
71 Machine and stationary plant operators	38.3	22.2
72 Mobile plant operators	32.1	22.1
73 Road and rail drivers	41.1	32.3
74 Storepersons	40.5	23.7
8 Labourers	33.6	25.5
81 Cleaners and laundry workers	88.8	84.8
82 Construction and mining labourers	24.0	18.3
83 Factory process workers	43.3	31.9
84 Farm, forestry and garden workers	36.4	26.3
85 Food preparation assistants	23.1	13.7
89 Other labourers	13.1	8.2
Total	47.8	36.6

Notes: Base is all graduates, irrespective of reason for study, who were employed as at May 2007, excluding those from the adult and community education (ACE) sector and unknown intended ANZSCO.

Some sub-major group-level occupations are not presented due to too few numbers in sample cells.

* Relative standard error greater than 25%; estimate should be used with caution.

Source: Karmel, Mlotkowski & Awodeyi (2008).

These findings suggested that either vocational education and training was not meeting the needs of the labour market that well or, alternatively, that VET was rather more generic than generally thought. Further questions in the Student Outcomes Survey provide quite strong evidence that it is the latter, with the majority of those not working in a 'matched' occupation reporting that their training was of relevance to their work. There was a clear exception – arts and media professionals – for whom over 60% reported that their training was of little or no relevance (sports and personal service workers also reported high levels of training being of little relevance). Table 5 shows the proportions reporting that the training is of little or no relevance, of those not in a 'matched' occupation.

Putting together the data from the matches and those, while not matched, who reported that the training was of relevance to their job, we constructed an index of how specific training was by course. The results are shown in the next figure. As can be seen, there is a group of occupations where the training is quite specific, with high proportions working in the matched occupation: the trades, carers and aides and also cleaners and laundry workers. However, there are many courses for which the training is largely generic. That is, the training is used in the jobs graduates get although the proportion of graduates working in the matched occupation is relatively low.

My view is that these findings throw out a significant challenge to the sector. The focus on 'skills for industry' and training packages makes complete sense for those courses which are quite specific – the trades and carers and aides. But this is a minority of VET training and one could question the industry-focused approach where demonstrably training is of a more generic nature.

Table 5 Courses sorted by the proportion of graduates reporting that the training is of little or no relevance to their destination occupation: graduates for whom intended and destination occupations do not match at the sub-major group level, by selected ANZSCO, 2007

Intended occupation of training activity	%
21 Arts and media professionals	63.6
45 Sports and personal service workers	45.0
26 ICT professionals	36.7
73 Road and rail drivers	35.3
43 Hospitality workers	34.0
31 Engineering, ICT and science technicians	31.2
85 Food preparation assistants	29.7
59 Other clerical and administrative workers	28.6
84 Farm, forestry and garden workers	27.2
22 Business, human resource and marketing professionals	27.1
61 Sales representatives and agents	26.0
14 Hospitality, retail and service managers	25.9
53 General clerical workers	25.9
39 Other technicians and trades workers	24.1
23 Design, engineering, science and transport professionals	23.1*
83 Factory process workers	22.5
89 Other labourers	21.7
82 Construction and mining labourers	21.2
54 Inquiry clerks and receptionists	21.2
36 Skilled animal and horticultural workers	20.7
74 Storepersons	20.1
12 Farmers and farm managers	20.0
55 Numerical clerks	19.2
56 Clerical and office support workers	18.1*
41 Health and welfare support workers	17.7
27 Legal, social and welfare professionals	16.9*
13 Specialist managers	16.2
71 Machine and stationary plant operators	16.0
72 Mobile plant operators	15.8
62 Sales assistants and salespersons	15.5
44 Protective service workers	14.7
51 Office managers and program administrators	13.8
42 Carers and aides	13.5
24 Education professionals	12.0
35 Food trades workers	8.3
32 Automotive and engineering trades workers	7.8
81 Cleaners and laundry workers	5.4*
33 Construction trades workers	3.5
34 Electrotechnology and telecommunications trades workers	3.2*

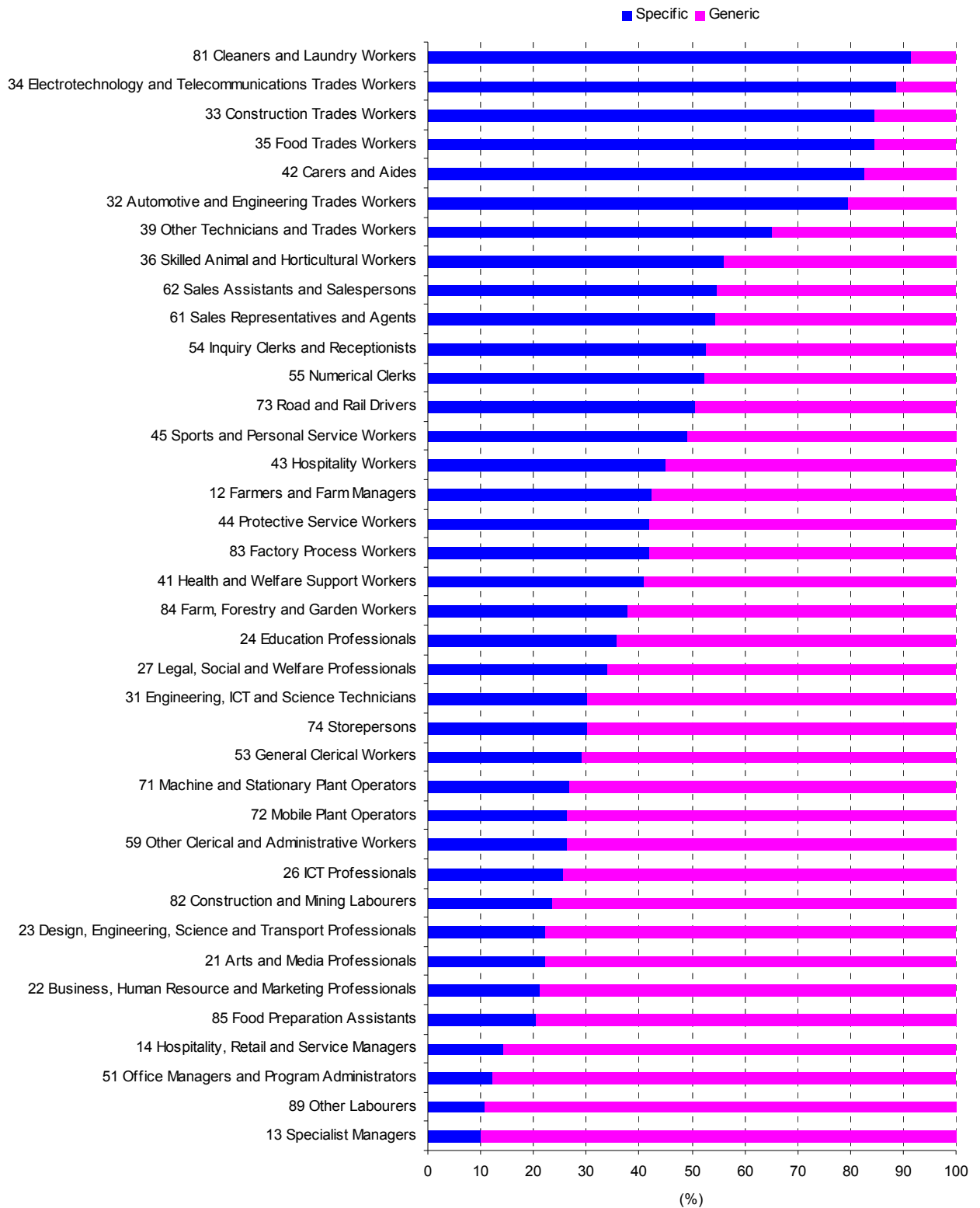
Notes: Base is all graduates, irrespective of reason for study, who were employed as at May 2007, excluding those from the ACE sector and unknown intended ANZSCO; matching between intended and destination occupation occurs at the sub-major group level.

Some sub-major group level occupations are not presented due to too few numbers in sample cells.

* Relative standard error greater than 25%; estimate should be used with caution.

Source: Karmel, Mlotkowski & Awodeyi (2008).

Figure 8 Courses ranked from most specific to most generic, by selected ANZSCO, 2007



Note: The figure presents, for each intended occupation, the number of graduates in the intended occupation relative to the number of graduates in other jobs who report that the training is relevant.

The role of VET in innovation

Over the last couple of years NCVET has put a significant effort into looking at innovation and its relationship with vocational education and training (see Curtin, Stanwick & Beddie [eds] 2011 and Stanwick 2011). Various perspectives are taken including the role of VET in training technicians for research and development (Toner 2011) and human resource practices of firms (Smith et al. 2011, 2012). However, the most provocative piece is Dalitz, Toner and Turpin (2011), because it takes aim at a central tenet of vocational education and training – competency-based training. They were interested in the interrelationship between innovation – seen as critical to improve productivity at the firm level and economic prosperity at the national level – and education and training. Their research took the form of the case studies in three industry sectors: mining, solar energy and computer gaming. Their major findings were:

- Each sector experiences differing drivers of innovation and different processes of diffusion, with consequential differences in how the sector relates to the VET sector.
- Creative and skilled people are at the heart of the innovation process, so the greatest contribution that formal VET can make is in establishing foundational knowledge and understanding, which build the capacity to learn.
- Informal skills development plays a crucial role in providing the actual skills for innovation (such as using new equipment or processes), although theory learnt in formal education is also important.
- The present model of training packages and the model of competency-based training which underpins it, have advantages in providing a common skills language but may hinder effective innovation because of the focus on current competencies rather than future innovation.
- VET providers are seen as slow to pick up on innovation.

These messages are a fundamental challenge to the VET sector. They suggest that the focus on the competencies currently required by industry is misplaced if we think innovation is critical. Rather, more emphasis should be placed on foundational knowledge, theory and building the capacity to learn.

VET and workforce development

Finally, we look at some research which focuses on industry itself. NCVET commissioned two major research programs which were aimed at getting inside industry and focus on workforce development. Both projects looked at particular industries, as is generally the case for this type of research, for the simple reason that context is so important. The first of these was undertaken by the Workplace Research Centre, University of Sydney, and focused on workforce development in early childhood education and care, and red meat processing industries. These industries were chosen because of certain similarities (both employing large numbers of relatively low-skilled people) and significant differences (one a service industry, the other a processing industry; one male dominated, the other female). This research program resulted in a series of publications, with the final one, *The role of VET in workforce development: a story of conflicting expectations* (Bretherton 2011) pulling the program together. The major point made in the research is that the notion that training is a good thing with a direct pay-off does not really hold in these industries. The high degree of casualisation militates against training, as does the lack of benefit to the individual; in childcare there is no increase in pay for upgraded qualifications. In the meat processing industry, there is little point in

investing in significant training because labour turnover is so high. The authors also make the point that the VET system faces criticism by industry for not being responsive to industry needs, but rapidly changing conditions and variation in the demands of individual employers make this difficult.

The second research program was conducted by the Centre for Work + Life, University of South Australia (Pocock, Skinner et al. 2011; Pocock, Elton et al. 2011). This research looked at low-paid workers in three industries: retail, food processing and non-residential aged care. The particular emphasis in this research was how training in these occupations needed to be balanced with the non-work demands on the worker. The researchers found that lower-paid workers tend to have fewer resources to cushion work–life pressures. The other finding, which is challenging without being that surprising, is that the acquisition of new skills are not necessarily rewarded in the labour market. In fact, the individuals are often undertaking training to retain their job, rather than for career progression or higher pay. When training increases the time and money demands on workers but without generating genuine new skills or better prospects, it can make things worse for low-paid workers by falsely raising expectations.

The findings are pretty consistent with what we know about the returns to various qualifications. In the VET world there are well-documented returns to diplomas but not necessarily to lower degrees. Of course, in one sense the studies on low-paid workers suffer from a selection bias; any worker who achieved significant skills acquisition (such as obtaining a diploma) would escape the low-paid job and therefore would not have featured in the research. However, the findings do raise policy issues. Why should public subsidies go to training where there is no obvious pay-off to the individual? If indeed there is a benefit to the training, it would seem that the benefit accrues to the employer, and therefore it would be logical for the employer to pay the full-cost of the training.

Final comment

I have chosen six areas of VET research which are of direct relevance to industry, however defined. The aim of each of the six is quite similar and all studies either focus on the pay-off to training or the content of training. On the pay-off to training, the common theme is that it is quite variable and therefore, from a public policy perspective, we should be careful where we allocate public dollars. This type of finding always is challenging to industry, for the simple reason that industry is often the beneficiary of these funds. The second theme is a challenge to the industry-focused and industry-determined training that characterises vocational education and training in Australia. The research I have briefly discussed places more stress on generic skills, and on general education (within a vocational setting) which benefits individuals in a wide variety of circumstances. This theme is a specific challenge to the notion of an industry-led system.

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