Informing **policy** and **practice**

The value of completing a vocational education and training qualification

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National Centre for
Vocational Education Research

research

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

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Foreword

This report forms part of the National Centre for Vocational Education Research's (NCVER) own research program and makes use of data from the Student Outcomes Survey, an annual survey of students who have completed their vocational education and training (VET) studies. This survey is a joint initiative of NCVER with the Australian Government and state and territory governments, with funding provided by the Department of Science, Education and Training.

The number of qualifications completed is one of the outcome measures for the sector. At the same time we know that many people dip into the sector to obtain specific training and have no desire or intention to complete a qualification. Thus the motivation behind the research was to establish whether or not there is a quantifiable benefit from completing a qualification. To do this we made use of the wages data obtained from students in the Student Outcomes Survey. The answer to this question, which turns out to be rather complicated, is important to policy-makers in terms of defining performance indicators for the sector and also in terms of thinking about resourcing and fee models for the sector.

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Managing Director

Readers interested in the value of VET qualifications are pointed to other projects in this area.

✧ NCVER, *Australian vocational education and training statistics: Student Outcomes Survey 2005—Summary,* NCVER, Adelaide.

✧ C Ryan 2002, *Individual returns to vocational education and training qualifications: Their implications for lifelong learning,* NCVER, Adelaide.

To find other material of interest, search VOCED (the UNESCO/NCVER international database <http://www.voced.edu.au>) using the following keywords: vocational education; training; qualifications; wage; outcome of education; statistical analysis.

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Key messages

The aim of this report was to identify the benefits, in terms of wages, realised by completing a vocational education and training (VET) qualification. This was achieved by using wage data from the Student Outcomes Survey conducted by the National Centre for Vocational Education Research (NCVER). The report builds on the fact that many VET students do not complete full qualifications and come with varied education and employment backgrounds.

✧ The analysis finds that there is no universal benefit from completing a VET qualification in terms of returns in the form of higher wages; some groups benefit, but not all do so.
   ♦ Those who already have low-level qualifications (certificate II or below) benefit from undertaking, and particularly completing, qualifications at around certificate III or IV or higher.
   ♦ Those who already have higher-level qualifications (certificate IV or higher) get no wage benefit from undertaking or completing a further VET qualification at any level, relative to the control group of those undertaking only modules at the certificate I or II level (the closest we have to a 'no training' control group).

✧ By contrast, students *perceive* wage increases as a result of training, especially those who already have a higher-level qualification.

Executive summary

The aim of this report was to quantify the benefit, in terms of higher wages, of completing a vocational education and training (VET) qualification. Two factors influenced the direction of this research. First of all, VET is concerned primarily with improvements in skill levels (with a likely consequence of improved productivity and therefore increased wages). Secondly, it is certainly the case that many students do not complete qualifications; it is apparent that students take what they want from VET and do not necessarily desire a qualification.

The data examined for this study came from the Student Outcomes Survey and the national VET collection conducted annually by the National Centre for Vocational Education Research (NCVER).

Can we conclude from this research that, indeed, there is a return from completing a qualification and that we should be concerned about the high non-completion rate? There is no simple answer and we need to acknowledge, first, that VET is very varied and, second, there are positive wage returns from completing a VET qualification for some students, but not for others.

These findings stand in sharp contrast to the perceived wage benefits that graduates (and module completers to a lesser extent) report as a result of their training. This contrast is particularly sharp for those with higher-level (certificate IV or higher) previous qualifications.

Do these results have any policy implications? The first point is that we should be wary of using qualification completion rates as a performance indicator without taking into account the educational background of students.

The second point is that the differences in return prompt the question of whether it is worth considering student admission and funding arrangements. For example, the analysis indicates that low-level qualifications (certificates I and II) appear to have little return. If funding is constrained, are these qualifications as worthy as higher-level qualifications? Perhaps a rejoinder to this question is that the lower-level qualifications act as stepping stones to higher-level qualifications.[1] People who already have a higher-level qualification (certificate IV or higher in this analysis) appear to get no wage benefit from further VET study on average. Should these individuals therefore be asked to pay more for their VET study? Averages, however, hide the huge variety in outcomes and for some of these individuals there may well be a return to completing a VET qualification, because their initial (high-level) qualification has turned out to be not particularly useful. Should such students be entitled to further government funding? Others will be undertaking specific VET modules mandated by their employer. Perhaps their employers should pay for this specific training.

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[1] Stanwick (2005) looks at lower-level qualifications and paints a fairly modest picture of completion rates and progression to higher-level qualifications.

Introduction

One of the distinct features of the Australian vocational education and training (VET) system is that large numbers of students do not complete qualifications. The common argument is that these students are typically not interested in qualifications as such, but are seeking particular skills. This phenomenon is, therefore, of no real concern. On the other hand, we know from the Student Outcomes Survey that module completers (those who have successfully completed a module but not a qualification) tend to have poorer outcomes than those who have completed qualifications (graduates). On average, graduates are more likely to be employed after training and achieve their main aim of study than module completers.

In this report we seek to quantify the benefits of completing a VET qualification in terms of impact on wages. It is acknowledged that wages (and employment) are not the only criterion by which the value of VET study should be judged. For example, some students participate for self-development purposes, and others may need particular modules for licensing reasons, with no obvious flow-on to wages. However, on the whole, vocational education and training is aimed at improving skills for work, and we would expect that employers reward these skills and associated improved labour productivity through the wages they pay. Hence, wages are arguably the most important indicator of the value of qualifications.

Ryan (2002) took the usual approach measuring the return from education across the whole population using the 1997 Survey of Education and Training (conducted by the Australian Bureau of Statistics). Using a traditional wage equation, he found that individuals with associate diplomas receive on average 10% more than similar individuals who only completed Year 12. Basic and skilled vocational graduates (certificates III and IV) also receive 10% more than similar individuals who did not complete school. Ryan also explored the value of follow-up VET qualifications no higher than some previous qualification and found that, while additional VET qualifications provided a positive impact on wages, short courses or VET study not leading to a qualification had no effect on employee wages.

Our approach is somewhat different. We use the NCVER 2003 Student Outcomes Survey, an annual survey in which those who either complete a VET qualification (graduates) or leave technical and further education (TAFE) with an incomplete qualification (module completers) are followed up to obtain information on employment outcomes and course satisfaction.

If we had data on wages before study as well as wages after study, we could look directly at the improvement due to either full or partial completion of the latest qualification. However, we only have wages after study and so we concentrate on the difference in the wages between those who do and do not complete their qualifications, taking into account previous highest educational qualification and field of education. As our baseline we use students who have partially completed a certificate I. This, at least in terms of complexity of the training, is the closest state we have to undertaking no training at all.

The report begins by describing the nature of VET qualifications and giving some basic characteristics of VET students in order to provide some context for the study.

The next section considers the impact of the highest educational attainment, firstly on employment, then on wages during the transitional period after completing VET study. Our approach here is similar to that of Ryan.

We then move to our analysis of the differences in wages between the completion and partial completion of the latest period of VET study. We are very conscious of the role of previous educational attainment and take this into account, with separate models for each previous education level. The fact that the Student Outcomes Survey is covering a transitional period is important in our modelling approach and we explicitly allow for the impact of qualifications to be different for those who were already in employment compared with those who have to look for a job.

The Student Outcomes Survey also allows for some analysis of the motivations and the benefits related directly to the latest period of study and provides for estimates of the benefits of completing a qualification according to the individual's perception. The report ends with some conclusions.

The data used in the analysis come from an amalgamation of two sets of data. The outcomes and contextual variables are taken from the 2003 Student Outcomes Survey[2], and data about modules and competencies, qualifications and field of education come from the 2002 NCVER National VET Provider Collection.

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[2]   It was intended to incorporate the data from the NCVER 2004 Down the Track Survey, which includes 15 to 24-year-olds who completed training in 2002, in this analysis to enable comparison of the vocational outcomes and wage differentials of graduates and module completers 30 months after completion of their course/module(s). However, the subsequent sample size was too small to produce robust findings.

Background

To provide some context, it is useful to look at the qualifications structure and some of the characteristics of students.

Vocational education and training qualifications are embedded in the Australian Qualifications Framework, a framework that covers the three education sectors. As can be seen from table 1, the VET sector qualifications straddle both the schools and higher education sectors. Certificates I and II are not clearly post-school, while the diploma qualification is offered in both the VET and higher education sectors.

Table 1   Australian Qualifications Framework

School sector accreditation	VET accreditation	Higher education accreditation
		Doctoral degree
		Masters degree
	Vocational graduate diploma	Graduate diploma
	Vocational graduate certificate	Graduate certificate
		Bachelor degree
	Advanced diploma	Associate degree, advanced diploma
	Diploma	Diploma
Senior Secondary Certificate of Education	Certificate III or IV	
	Certificate I or II	
	Certificate not further defined	

Source: Australian Qualifications Framework (2002)

Diplomas and advanced diplomas are designed to prepare students for self-directed application of skills and knowledge based on fundamental principles and/or complex techniques. The advanced diploma is a more specialised qualification and signifies skill and knowledge of a greater complexity and a higher level of personal accountability than is required at a diploma level (Australian Qualifications Framework 2002).

Certificates I–V are intended to prepare students for both employment and further education and training. Certificates I and II recognise basic vocational skills and knowledge, while certificates III and IV largely replace the previous category of trade certificates.

Orthodox human capital models imply that higher-level qualifications provide, on average, higher returns, because the size of the investment is higher. The structure of the qualifications reflects a hierarchy, and we would expect that employers value advanced competencies gained from higher-level qualifications over basic competencies covered by lower-level qualifications.

In looking at the impact of VET qualifications on wages, it needs to be noted that the VET student body is very diverse. There are sizable numbers of school leavers who study full-time in preparation for the labour market. But there are many more students studying part-time, many of

whom are working full-time. The impact of extra study on wages is going to be different for these two groups. For example, an individual who is looking for their first full-time job may be prepared to take a job that is not fully commensurate with their qualification as a stepping stone in their career. By contrast, individuals established in their career may be seeking specific skills for their current employment (in some cases mandated by an employer) or a new qualification to provide further career opportunities. Table 2 classifies graduates by age and study status (full-time/part-time). We can see that full-time students are very much in the minority overall, but make up substantial proportions of students who are 24 years and under.

Table 2   Percentage of graduates/module completers by age group and study mode, 2003

Age group (years)	Mode of study		
	Full-time study	Part-time study	All students
Graduates			
Under 18	25	75	100
18–24	35	65	100
25–44	22	78	100
45 and over	16	84	100
All graduates	**26**	**74**	**100**
Module completers			
Under 18	14	86	100
18–24	21	79	100
25–44	5	95	100
45 and over	3	97	100
All module completers	**10**	**90**	**100**

Source: Derived from the Student Outcomes Survey, 2003 and National VET Provider Collection, 2002

Looking at students by employment status gives a different perspective (table 3). We see that, generally, full-time employment exceeds part-time employment, but there are large numbers of students who are either unemployed or not in the labour force. Those who are in a full-time job may be looking for increased pay (possibly through promotion) in that job or they might be looking around for a better job for which they are now qualified. There are also those who are not in a full-time job but are looking for one; there are also other groups who may be more interested in the part-time labour market.

Table 3   Percentage of graduates/module completers by labour force status and age group, 2003

Age group (years)	Labour force status before course							
	Total employed (full-time)	Total employed (part-time)	Total employed (hours not stated)	Total unemployed	Total not in labour force	Total not employed (NFI)	Not stated	**Total**
Graduates								
15–17	6	39	2	16	35	2	1	**100**
18–24	27	38	2	14	16	2	0	**100**
25–44	48	23	1	12	15	2	0	**100**
45+	41	26	2	12	16	3	1	**100**
Total	**36**	**30**	**2**	**13**	**16**	**2**	**0**	**100**
Module completers								
15–17	5	29	2	18	42	4	1	**100**
18–24	26	34	2	18	16	4	0	**100**
25–44	49	21	2	11	14	3	0	**100**
45+	39	22	3	10	21	4	1	**100**
Total	**38**	**25**	**2**	**13**	**18**	**3**	**1**	**100**

Note: NFI – no further information
Source: Unpublished data from NCVER 2003 Student Outcomes Survey

The impact of highest qualification level on employment and wages

As noted earlier, Ryan (2002) looked at the impact of the highest level of educational attainment on wages using the Survey of Education and Training. In this section we adopt a similar approach to Ryan.

As expected, we find a generally positive association between highest education level and employment and wages. However, it needs to be kept in mind that our sample is a cohort of people leaving the VET sector and not a random sample of the whole population.[3]

Employment

Logistic regression models were used to examine the impact of an individual's highest educational attainment, including the impact of their most recent qualification on employment six months after completing VET study.

The first model focuses on the impact the highest level of educational attainment has on being in either full-time or part-time employment. Highest level could have been the result of the latest period of study, but not necessarily so. Control variables include age and field of study during the recent study.

The predicted probabilities in table 4 indicate that the likelihood of being in employment during the transitional period after completing VET study generally increases by qualification level. (Logistic regression results are reported in appendix A.) The probability of being in employment is higher for males than for females while, for both groups, individuals with a degree are most likely to be in employment, followed by individuals with a certificate III. Employment rates for those with certificates I or II level qualifications are lower than those only completing Year 12.

Full-time employment

The second model looks at the impact of highest level of educational attainment on being in full-time employment.

As obviously will be the case, the probabilities of being in full-time employment are lower than of being in any type of employment (table 5). Males are more likely to be in full-time employment and those with a certificate III qualification level are the most likely to be in full-time employment. A large proportion of these would be individuals completing their apprenticeships and moving onto full-time employment. Males with a degree also have a high probability of being in full-time employment. For females, the probabilities are highest for those with certificate III,

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[3] Data analysed in this section is derived from the 2003 Student Outcomes Survey and the 2002 National VET Provider Collection. Categories for 'employment status' before training have been sourced from the National VET Provider Collection.

with those with diplomas or higher close behind. One noticeable difference between the overall and full-time employment probabilities (both male and female) is that the full-time probabilities for those with a certificate II are as high as those who only completed Year 12.

Table 4   Predicted probability of being in employment six months after completing VET study, 2003

Qualification level	Predicted probability	
	Females	Males
Bachelor degree and above	0.796	0.834
Advanced diploma	0.729	0.776
Diploma	0.756	0.800
Certificate IV	0.755	0.799
Certificate III	0.795	0.833
Certificate II	0.664	0.718
Certificate I	0.557	0.618
Year 12	0.719	0.767
Year 11	0.680	0.733
Year 10	0.662	0.716
Miscellaneous education	0.682	0.734
Year 9 or lower (reference group)	0.586	0.646

Note: Probabilities have been derived by holding other characteristics constant at their average values.

Table 5   Predicted probability of being in full-time employment six months after completing VET study, 2003

Qualification level	Predicted probabilities	
	Females	Males
Bachelor degree and above	0.574	0.668
Advanced diploma	0.442	0.541
Diploma	0.495	0.593
Certificate IV	0.533	0.630
Certificate III	0.627	0.715
Certificate II	0.435	0.534
Certificate I	0.358	0.454
Year 12	0.459	0.559
Year 11	0.529	0.626
Year 10	0.461	0.561
Miscellaneous education	0.460	0.560
Year 9 or lower (reference group)	0.372	0.469

Note: Probabilities have been derived by holding other characteristics constant at their average values.

Wages

As we have discussed, it is important to understand how people are likely to get improved wages as a result of their study. Some people will be looking for a promotion or an immediate increase in pay as a consequence of their completion of a qualification and will not be seeking to change employers. Others will be looking for a new job. In the latter case, those already in a good job will be willing to wait until the appropriate job comes along (in the terminology of labour economics, their reservation wage will be relatively high). By contrast, others may be more inclined to take a job even if it is not their ultimate or ideal choice (that is, their reservation wages will be relatively low). Hence, it is likely that, on average, the wages of those who had been in a job before training are likely to be earning more than those who had not. In order to account for

this type of behaviour, we have split our sample into two groups: those who were in a full-time job before their study and those who were not.

We restrict the analysis to those who are in full-time employment. This is for a practical reason since, if we included both groups, we would be confusing the effect of wage rates with the number of hours of work.[4]

Similar to the logistic regressions, we run a simple model relating qualification to wages, focusing on the highest educational attainment rather than on the latest period of study, which, if it were at a lower level may exert a different impact.[5] Thus for those in full-time employment six months after leaving VET, we model wages (natural logarithm) as a function of age, age (squared) and highest education qualification.[6] We also include field of study as a control.

The purpose of the models is to illustrate wage returns to people as a consequence of undertaking education. However, it implicitly assumes that the latest period of study only affects wages if it results in a qualification higher than any previously held qualifications. This assumption we relax later in the report.

The first thing to note is that the models (see appendix B) for those not employed before the course have relatively little explanatory power (table 6). For females only four per cent of the variation in log wages is explained by the model. That said, there is a distinct hierarchy in wage premiums[7], with all education levels higher than leaving school at Year 9, and degrees, diplomas and certificate IVs showing higher premiums than other levels. The premiums for certificate III and Year 12 completion are similar. For males, only degrees and certificate IIIs have positive premiums (but with high standard errors). Certificates I and II are significantly different from the reference group (those with highest education of Year 9), but the premium is negative. So we have a clear picture that six months after finishing study is too short a period for many people to have found a job suitable for their qualifications.

The models for people already in employment explain a much higher proportion of variance. In this model, the pay off for high-level qualifications (certificate IV and above) is clear, but the picture for certificate III and the lower-level certificates I and II is rather messy.

For females, certificate I and Year 12 rank above certificates II and III. For males, there is apparently no advantage in completing a certificate I or II relative to Year 9, and there is little difference between leaving school at Years 11 or 12 or obtaining a certificate III.

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[4] The data available on hours of work are in ranges, as per wage rates. Using midpoint values in both variables would increase errors already introduced through the use of midpoint values for weekly wages. However, we acknowledge that our results are contingent upon finding (acceptable) full-time employment. Therefore, they may not apply to the whole population.

[5] A wage of over $180 a week was accepted as a likely full-time wage and people reporting wages under $180 per week were excluded. Those who were under 18 years old were also excluded from the analysis, as the distinct labour market for young people may affect the analysis.

[6] This is the standard human capital model, with age used as a proxy for experience.

[7] The wage premium indicates the wage relative to the reference group. For example, of females employed full-time before a course, those with a bachelor degree and above have wages 59.5% higher than those who left at Year 9 or lower.

Table 6 Wage premiums attached to highest level of qualification at 30 May 2003, by sex and employment status before course

Qualification	Not employed full-time before course		Employed full-time before course	
	Females	Males	Females	Males
Bachelor degree and above	0.346*	0.086	0.595*	0.301*
Advanced diploma	0.179*	-0.004	0.318*	0.192*
Diploma	0.174*	-0.006	0.292*	0.181*
Certificate IV	0.124*	-0.013	0.243*	0.161*
Certificate III	0.087	0.039	0.099	0.052
Certificate II	0.033	-0.149*	0.083	-0.003
Certificate I	0.051	-0.197*	0.149*	-0.078
Miscellaneous education[a]	0.185*	-0.054	0.212*	0.091*
Year 12	0.096	-0.062	0.181*	0.084*
Year 11	0.022	-0.116	0.112	0.076*
Year 10	0.058	-0.065	0.106	0.037
Year 9 or lower (reference group)	–	–	–	–
R-squared	**0.04**	**0.09**	**0.23**	**0.20**

Notes: *Denotes significance at $p < 0.05$.

(a) 'Miscellaneous education' category includes statements of attainment, bridging and enabling courses not identifiable by level, and education not elsewhere classified.

The value of completing a VET qualification

In the previous section we took a naive approach and did not differentiate between the most recent qualification and earlier qualifications—all we were worried about was the highest educational qualification. In this section, we tease out the role of previous qualifications.

For example, some individuals come to VET with high-level qualifications and consequently their wages are likely to be higher than a person with no previous qualifications. That is, the additional value of a certificate III, for example, will be very different for a person who already has a degree compared with a person with no qualifications at all. We account for this by running models by previous education level separately: certificate IV and above, certificate III, and certificate II and below, representing high-level, medium-level and lower-level qualifications, respectively.[8]

Within each group, we take a relatively straightforward approach. As before, we model the logarithm of weekly wages as a function of education, age and age (squared) and males and females separately.

Wages for those gaining full-time employment after training

The parameter estimates are summarised in tables 7–14 grouped by employment status and previous education level. (Detailed regression results are reported in appendix C.) As in the previous wage models, their explanatory power is low, although a little better for males than for females. Few coefficients are significant. However, some relatively clear patterns emerge.

For individuals who gain full-time employment after training and have a previous qualification level of certificate IV and above, parameter estimates for both males and females indicate that additional VET study does not have a positive impact on wages (table 7). In fact, with the exception of males completing modules, all parameter estimates are negative. That is, those who already have a qualification at certificate IV or higher but who are not currently in a full-time job do not benefit from a further VET qualification. (Remember that the control group are module completers at certificate I and II level; this is as close as we can get to no training.[9])

The returns are quite different for individuals with a previous certificate III qualification. For females, the pattern is remarkably straightforward: positive returns for those completing a certificate III or higher (with higher returns for certificate IV and above) and negative returns for completing a certificate II and below or partial completion (modules).

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[8] Data analysed in this section is derived from the 2003 Student Outcomes Survey and the 2002 National VET Provider Collection. Categories for 'employment status' before training have been sourced from the National VET Provider Collection.

[9] Earlier we used module completers at certificate I. However, in this section we collapse the qualification categories, and hence we use module completers at certificates I and II level as the control group.

According to the model, therefore, a woman with a certificate III will not benefit from undertaking anything lower than the qualification she has already obtained. This finding, of course, needs to be interpreted with caution and we would not wish to argue that lower-level certificates reduce the skill levels of those who undertake them. Two possible explanations come to mind. The first is that women who undertake lower-level qualifications have other characteristics that make them accept poorer paying jobs. The second is that the completion of a certificate I or II may stigmatise the person in the eyes of employers.

The picture for males with a previous certificate III is not so neat. Standard errors are high and parameters are not significant. Module completers tend to get lower wages than graduates. An anomaly is a high return for a certificate III, but little consideration should be accorded to this, given the lack of significance of the coefficient.

Finally, consider those who previously had a qualification no higher than certificate II. Again, the explanatory power is relatively low (especially for women). However, studying a higher-level qualification (certificate III or above) is associated with higher wages. Graduates tend to do better than module completers, and both men and women receive negative returns for completing a certificate II or I qualification. These coefficients are statistically significant (table 9).

On the whole, the completion of a qualification leads to higher wages than if it were not completed. For females, the higher the VET qualification completed, the higher the wage premium. Completing VET modules at diploma and certificate II level has a positive impact on wages. Completing a certificate I or II level qualification, however, has little pay off. Nevertheless, it should be noted that none of the coefficients are individually significant.

Table 7   Wage premiums attached to VET qualifications, for those with a previous highest qualification of certificate IV and above

Qualification	Females		Males	
	Graduates	Module completers	Graduates	Module completers
Certificate IV and above	-0.001*	-0.017	-0.083	0.024
Certificate III	-0.106	-0.056	-0.114	0.014
Certificate II and below	-0.080	(a)	-0.110	0.000
R-squared	**0.03**		**0.06**	

Note: *Denotes significance level $p > 0.05$.
(a)Indicates reference group.

Table 8   Wage premiums attached to VET qualifications, for those with a previous highest qualification of certificate III

Qualification	Females		Males	
	Graduates	Module completers	Graduates	Module completers
Certificate IV and above	0.056*	-0.015	0.157	0.092
Certificate III	0.019*	-0.088	-0.001	0.185
Certificate II and below	-0.117	(a)	0.053	0.000
R-squared	**0.02**		**0.07**	

Note: *Denotes significance level $p > 0.05$.
(a)Indicates reference group.

Table 9   Wage premiums attached to VET qualifications, for those with a previous highest qualification of certificate II and below

Qualification	Females		Males	
	Graduates	Module completers	Graduates	Module completers
Certificate IV and above	0.103*	0.084*	0.101*	0.082*
Certificate III	0.038*	0.022	0.185*	0.081*
Certificate II and below	-0.016	(a)	-0.071*	0.000
R-squared	**0.02**		**0.09**	

Note: *Denotes significance level p >0.05.
(a)Indicates reference group.

Table 10 summarises these results schematically with + indicating a positive return, (+) a positive return but with less certainty, and – indicating no return (and possibly negative). The gradient of high to low represents qualification levels of certificate IV and above, certificate III, and certificate II and below.

Table 10   Summary of wage regression results for individuals gaining full-time employment after training

Previous educational level	Latest qualification studied					
	Females			Males		
	High	*Medium*	*Low*	*High*	*Medium*	*Low*
High	–	–	–	–	–	–
Medium	+	+	–	(+)	–	–
Low	+	+	–	+	+	–

Note: + = positive return; (+) = positive return but with less certainty; – = no return

Wages for those in full-time employment before and after training

We now turn to those who had a full-time job before training. First, it should be noted that, on the whole, the explanatory power of the models is better than was the case for the models for those not in full-time employment before training.

First, we consider those whose prior qualification was a certificate IV or higher. Compared with the reference group (the group with the least VET study), the coefficients are all negative (with the exception of males completing modules at certificate IV and above, table 11). That is, the return to study is negative. On the whole, module completers do better: completing a course is even worse than not completing it.

By contrast, females with a previous certificate III qualification do seem to benefit from completing any additional VET study, although these parameter estimates are not significant (table 12). They also suggest that, on the whole, this group benefits from completion of a VET qualification over partial completion. However, the story for males is quite different. Apart from graduates completing a certificate IV or higher qualification, there is no wage premium for either partial or full completion of an additional qualification.

Finally, consider those whose previous highest education was certificate II or below. For both men and women, there is a clear wage premium for those completing training at a certificate IV or higher level, and it is slightly higher for those completing a qualification compared with a

partial completion. By contrast, all the coefficients are negative for full or partial completion of a certificate I, II or III.

A reasonably clear picture emerges. First, if you already have a qualification at certificate IV or higher and are in a full-time job, do not expect to have increased wages six months after finishing study. There may be very good reasons for undertaking VET, but higher wages in the short term is not one of them. Second, men with a certificate III are unlikely to see benefit in their wages from further VET study. By contrast, women with a certificate III do benefit from further VET study, especially if they complete the qualification. Finally, those with lower-level qualifications (certificate II or below) benefit from further study at certificate IV or higher level, but not study at lower levels. On average, for those people, completion is beneficial.

Table 14 summarises these results schematically as before.

Table 11   Wage premiums attached to VET qualifications, for those with a previous highest qualification of certificate IV and above

Qualification	Females		Males	
	Graduates	Module completers	Graduates	Module completers
Certificate IV and above	-0.097*	-0.040	-0.003	0.001
Certificate III	-0.158*	-0.081*	-0.109*	-0.028
Certificate II and below	-0.019	(a)	-0.029	0.000
R-squared	**0.11**		**0.09**	

Note: *Denotes significance level p >0.05.
          (a)Indicates reference group.

Table 12   Wage premiums attached to VET qualifications, for those with a previous highest qualification of certificate III

Qualification	Females		Males	
	Graduates	Module completers	Graduates	Module completers
Certificate IV and above	0.162	0.143	0.024*	0.001
Certificate III	0.126	0.048	-0.129	-0.088*
Certificate II and below	0.157	(a)	-0.081*	0.000
R-squared	**0.13**		**0.10**	

Note: *Denotes significance level p >0.05.
          (a)Indicates reference group.

Table 13   Wage premiums attached to VET qualifications, for those with a previous highest qualification of certificate II and below

Qualification	Females		Males	
	Graduates	Module completers	Graduates	Module completers
Certificate IV and above	0.160*	0.130*	0.091*	0.065*
Certificate III	-0.018	-0.021	-0.029	-0.036
Certificate II and below	-0.034	(a)	-0.053*	0.000
R-squared	**0.15**		**0.18**	

Note: *Denotes significance level p >0.05.
          (a)Indicates reference group.

Table 14   Summary of wage regression results for individuals employed full-time before and after training

Previous educational level	Latest qualification studied					
	Females			Males		
	High	*Medium*	*Low*	*High*	*Medium*	*Low*
High	–	–	–	–	–	–
Medium	(+)	(+)	(+)	+	–	–
Low	+	–	–	+	–	–

Note: + = positive return; (+) = positive return but with less certainty; – = no return

Discussion

While the results of the analysis—that completing higher-level qualifications rather than additional qualifications is associated with higher wages—are clear cut, the interpretation is not. In an ideal word we would have information on wages before and after training, and so we could assess which qualifications lead to increased wages. However, we have only cross-sectional data and therefore all the results are relative to a benchmark (undertaking modules at certificates I and II level). Thus, in concluding that only higher-level qualifications are worth completing, we are implicitly assuming that other unmeasured characteristics do not matter and therefore we are measuring the effect of the additional qualification. But it is also possible to construct situations in which these characteristics do matter. Take, for example, a university graduate with a poor or unmarketable degree (performing arts, say). Such a university graduate is likely to receive a lower wage than the average graduate, and the graduate may well complete a VET qualification in order to get increased wages. The resulting wage may still be less than the wages of an average university graduate. In this scenario, the average university graduate doing a module (most likely for a very specific purpose rather than an expectation of increased wages) would receive higher wages than the university graduate who completes the VET qualification. Thus we observe a negative return to the VET qualification when, in fact, there is a positive return for those individuals who have undertaken them. So our findings in respect of the apparent negative return to finishing a qualification for those who already possess high-level qualifications have two possible explanations:

(1) if a person already has a high-level qualification then there is no wage premium attached to completing a VET qualification

(2) people with high-level qualifications who complete VET qualifications will tend to have undertaken these qualifications because of their poor position in the labour market. That is, there is a return to completing a VET qualification for these individuals because of their poor position in the labour market. Of course, the corollary is that we cannot estimate the impact of the additional VET qualifications on the wages of these individuals.

It might be argued that the second explanation is a little contrived and is searching for a finding of positive returns to VET qualifications in the face of the evidence. However, a counter to this is to ask the question: why, in this case, do the individuals undertake and finish their qualifications? In noting that many of these people say that their motivation for studying is related to promotion and other employment-related reasons, it is thus logical that individuals who complete qualifications both obtain wage rises and, at the same time, end up with lower than average wages.

One conclusion that stands, independent of which interpretation is taken, is that there is not a return to finishing a VET qualification for the sake of it, if you already have a high-level qualification. If there is a return, it is likely to be because the individual's wage (in the absence of the VET qualification) is relatively low.

Motivation and benefits of completing VET study

In the previous section we found a fairly mixed bag in terms of increased wages. Previous education level, qualification being studied, and whether the person had been in full-time employment or not all played a role in whether there was a benefit (in wages) as a result of the latest episode of VET study. In trying to understand this, it is worth looking at what motivates people to study.

Main reasons for undertaking VET study

By asking the main reason for training the Student Outcomes Survey provides some information on the motivation behind VET study. For people not already in a full-time job, the notion of increased wages (in a full-time job) makes little sense. Hence, it is not surprising that 'To get a job' and 'Personal/other' are dominant motivators for study (table 15). For those already in a full-time job, the motivators are, not surprisingly, different. Reasons (table 16) of importance fall into two categories. The responses 'To try for a different career', 'It was a requirement for my job' and 'Personal/other' are unlikely to be directly related to an expectation of increased wages. By contrast, 'To get a job promotion' and 'I wanted extra skills for my job' can reasonably be expected to be related to a desire for increased wages. (Appendix D tabulates these reasons by previous highest education qualification.) In table 17 we focus on the reasons, classified by level of previous education. (Appendix D provides more details.) We restrict ourselves to those already in full-time employment in order to focus on increased wages.

Table 17 suggests, at least for those completing their qualification, that those with previously higher-level qualifications are more likely to have been motivated by the desire for promotion or a desire for increased skills (and therefore higher remuneration?). However, our earlier results indicate that those with such qualifications do not get a return from further VET study, at least within six months, so our investigation of motivation suggests that either these individuals' expectations are not being met or, alternatively, that their starting point was low relative to the module completers.

Table 15   Reason for undertaking VET: Those not employed full-time before course* (%)

Main reason for undertaking course	Male		Female	
	Graduates	Module completers	Graduates	Module completers
To get a job	36	28	29	22
Business(includes start and develop business)	5	4	3	3
To try for a different career	7	7	10	8
To get a better job or promotion	4	3	5	4
It was a requirement of my job	13	6	7	5
I wanted extra skills for my job	5	6	9	9
Personal/other (includes further study and other)	26	39	31	42
Not stated	5	7	6	7
Total	**100**	**100**	**100**	**100**

Note: *'Not employed full-time before course' includes employed part-time or hours not stated, not employed and not stated.

Source: Unpublished data from NCVER 2003 Student Outcomes Survey

Table 16   Reason for undertaking VET: Those employed full-time before and after course (%)

Main reason for undertaking course	Male		Female	
	Graduates	Module completers	Graduates	Module completers
To get a job	8	6	5	5
Business(includes start and develop business)	7	7	4	5
To try for a different career	10	10	14	12
To get a better job or promotion	12	8	17	10
It was a requirement of my job	23	21	14	10
I wanted extra skills for my job	20	24	22	27
Personal/other (includes further study and other)	14	20	17	24
Not stated	6	5	6	7
Total	**100**	**100**	**100**	**100**

Source: Unpublished data from NCVER 2003 Student Outcomes Survey

Table 17   Reasons for study for those already employed full-time before and are employed after course: Proportion giving 'to get a promotion' or 'increased skills'

Previous education qualification	Female	Male
High	49	45
Medium	43	41
Low	39	29

Benefits directly associated with completion of VET study

The Student Outcomes Survey collects the perceived benefits of VET study and therefore provides a useful comparison with the previous regression models on wage in this report. One of the questions in the survey relates to whether the person had received a wage increase as a result of their VET study. The response to this question is related to the level of training. Using the same modelling from the wage regressions given in the previous chapter, we can determine (to some extent) whether students are reporting an actual increase in wage as a direct result of training or a perception of increased wages.[10]

It should be noted that the following results are based on a simplified model (with field of education and age constants not included in the model), due to the small sample size from the small number of responses to this increased wages category combined with the segmentation we apply. However, they all indicate a likelihood of reporting an increase in wages as a direct result of training six months ago, a perception not consistent with previous analysis in the chapter, 'The value of completing a VET qualification'.

Tables 18 and 19 show predicted probabilities of reporting a wage increase for those gaining full-time employment and those already in full-time employment, respectively. (See appendix E for details of analysis.) For both employment groups, the likelihood of perceiving an increase in wages is higher for graduates than for module completers, with those completing higher-level qualifications more likely to report that their wages have increased as a result of their study. Apart from those with previous qualification levels at certificate IV or above, male graduates completing a certificate III level qualification are more likely to perceive an increase in their wages.

On the whole, individuals tend to perceive a positive return from undertaking VET, and graduates completing higher-level qualifications usually believe that their wages have increased as a consequence. Module completers are less likely to perceive an increase in wage.

Table 18   Likelihood of perceiving an increase in wage as a direct result of VET qualification, by previous highest qualification, not employed full-time before

Qualification completed in 2002	Previous qualification					
	Certificate IV and above		Certificate III		Certificate II and below	
	Females	*Males*	*Females*	*Males[(a)]*	*Females*	*Males*
Graduates						
Certificate IV and above	0.229*	0.201*	0.326*	0.208	0.312*	0.236*
Certificate III	0.172*	0.225*	0.296*	0.392	0.302*	0.478*
Certificate II and below	0.107*	0.200*	0.178*	0.171	0.208*	0.179*
Module completers						
Certificate IV and above	0.091	0.081*	0.121	0.065	0.096*	0.125*
Certificate III	0.071	0.114	0.114	0.200	0.103	0.240
Certificate II and below	0.063	0.028	0.036	–	0.071	0.097*

Notes: (a) Validity of the model is not reliable due to insufficient sample size. Blank cells indicate no population.
          *Denotes significance level p >0.05.

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[10] Data analysed in this section is derived from the 2003 Student Outcomes Survey and the 2002 National VET Provider Collection. Categories for 'employment status' before training have been sourced from the National VET Provider Collection.

Table 19   Likelihood of perceiving an increase in wage as a direct result of VET qualification, by previous highest qualification, employed full-time before

Qualification completed in 2002	Previous qualification					
	Certificate IV and above		Certificate III		Certificate II and below	
	Females	*Males*	*Females*[a]	*Males*	*Females*	*Males*
Graduates						
Certificate IV and above	0.232*	0.227*	0.264	0.283*	0.327*	0.260*
Certificate III	0.202*	0.181*	0.247	0.342*	0.298*	0.447*
Certificate II and below	0.072*	0.154*	0.261	0.149*	0.194*	0.209*
Module completers						
Certificate IV and above	0.121	0.099*	0.188	0.180	0.118*	0.166*
Certificate III	0.064*	0.051*	0.091	0.159*	0.084*	0.183*
Certificate II and below	0.036	0.044	–	0.115	0.053	0.118*

Notes: (a) Validity of the model is not reliable due to insufficient sample size. Blank cells indicate no population.
         *Denotes significance level $p > 0.05$.

The contrast with the earlier result is stark, especially for graduates who previously had a higher-level qualification and who have just completed a lower-level qualification. This may indicate those with the higher-level qualification are on a better career path and mistakenly attribute their wage increase to their latest period of study. Alternatively, their perceptions may be correct and indicate that their starting point was lower than those who did not complete their qualification.

Conclusions

The aim of this report was to quantify the return to wages of completing a VET qualification. This was undertaken in the context of VET clearly being primarily concerned with improvements in skill levels (with a likely consequence of improved productivity and therefore increased wages) on the one hand, and the undisputed observation that many students do not complete qualifications (and a recognised view that students take what they want from VET and do not necessarily desire a qualification), on the other hand.

The data examined for this study came from the Student Outcomes Survey and the national VET collection conducted annually by NCVER.

Can we conclude that, indeed, there is a return from completing a qualification and that we should be concerned about the high non-completion rate? The answer is unclear and perhaps indicates the presence of other issues. That is, there is no simple answer and we need to acknowledge first that VET is very varied and, second, that there are positive wage returns from completing a VET qualification for some students but not for others.

Our main findings are summarised in the following.

✧ Motivation for studying VET is varied and covers from wanting to get a job or effect a career change, to wanting a promotion or improved skills (and hence better pay?), to personal development or further study. For some, VET is mandated by the employer. Thus it is not surprising that we do not find a wage effect for all students.

✧ Qualifications play a role in obtaining full-time employment. For females in particular, qualifications at certificate III level or higher are noticeably beneficial, but perhaps not at certificate levels I and II. For males, a certificate III is particularly beneficial.

✧ Wages are related to highest educational qualifications, although this may not be apparent in the initial transition to (full-time) employment. If we take those people already in full-time employment at the time of study (that is, putting transitions to one side), we observe the highest returns to degrees, followed by diplomas and certificate IVs. The returns are less clear for other qualifications. For women there is little difference between Years 10, 11, 12, certificates I, II and III. For men certificates III and Years 11 and 12 are on a par, while there is no benefit from certificates I or II. Of course, it must be noted that these returns were calculated only for those who had been recently studying VET and do not represent the whole population.

✧ Those with low-level qualifications (certificate II or below) do benefit from undertaking, and particularly completing, qualifications at around certificate III or IV or diploma level. For those people, there is a clear pay off in increased wages from completing the qualification.

✧ People who already have a certificate IV or higher qualification do not receive higher wages from completing their VET qualification relative to the control group studying only modules at a certificate I or II level. Indeed, on average, we observe a negative effect. It is possible that these 'average' results reflect personal characteristics we have not observed (for example, such individuals complete a VET qualification in order to improve a poor quality or unmarketable

earlier (high-level) qualification; or take a pay cut in order to change career). However, it is a sobering finding.

✧ By contrast with these findings, graduates on the whole report that they receive wage increases as a result of their training. Module completers also report such benefits, but to a lesser extent.

It is important to consider whether these results have any policy implications. The public VET system is very distinctive in that all students are treated similarly in terms of admission and fees (putting fee waivers for disadvantaged people to one side) and that all students are counted equally toward load targets for funding purposes. However, motivation clearly varies, educational background varies, and the return from study varies.

The first point to make is that completing a qualification should not be seen as the 'be all and end all' for students. Completion of awards is clearly beneficial for some student groups, and so should be encouraged for them; however, for other groups it is of no real benefit.

The second point is that it may be worthwhile considering changing student admission and funding arrangements. For example, our analysis indicates that low-level qualifications (certificates I and II) appear to have little return. If funding is constrained, are these qualifications as worthy as higher-level qualifications? Perhaps a rejoinder to this question is that the lower-level qualifications act as stepping stones to higher-level qualifications[11]. People who already have a higher-level qualification (certificate IV or higher in this analysis) appear to get no wage benefit from further VET study on average. Should these individuals therefore be asked to pay more for their VET study? For some of these individuals, however, there may be a return to completing a VET qualification because their initial (high-level) qualification has turned out to be not particularly useful. Should such students be entitled to further government funding? Others will be undertaking specific VET modules mandated by their employer. Perhaps their employers should pay for this specific training.

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[11] Stanwick (2005) looks at lower-level qualifications and paints a fairly modest picture of completion rates and progression to higher-level qualifications.

References

Australian Qualifications Framework 2002, Australian Qualifications Framework, Victoria, viewed July 2006, <http://www.aqf.edu.au/aqfqual.htm>.

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Appendix A

This section contains the logistic regression results for tables 4 and 5 in the main report. The following summarises the definition of each output measure for regression results.

✧ Estimate: These are the estimated beta coefficient for the logistic regression equation for predicting the dependent variable from the independent variables. The prediction equation is

$$p = 1/(1 + \exp^{-z})$$

$$\text{where } z = b_0 + b_1 * x_1 + b_2 * x_2 + ... + b_n * x_n$$

✧ Standard error: These are the standard errors associated with the coefficients.

✧ Wald chi-square and Pr> chi-square: These columns provide the Wald chi-square value and the 2-tailed p-value used in testing whether the coefficient is significantly different from 0.

✧ Summary on Goodness-fit Tests: This table gives different methods on Goodness-fit Tests and their corresponding values. We compare our model with the null model where the only predictor is the intercept.

✧ Testing on Global Null Hypothesis: These are the tests conducted to test if the model is significant in general. The Global Null Hypothesis **BETA=0** here is that all the coefficients are zero.

Variables with b = 0 and missing outputs are our reference group.

Table A1   Output from logistic regression to model likelihood of being in employment at 30 May, 2003

Parameter	Females				Males			
	Estimate	Standard error	Wald chi-square	Pr> chi-square	Estimate	Standard error	Wald chi-square	Pr> chi-square
Intercept	-3.775	0.213	314.667	<.001	-2.677	0.196	186.219	<.001
Age 18–24	2.402	0.184	170.224	<.001	2.093	0.160	171.524	<.001
Age 25–34	2.129	0.184	133.580	<.001	2.233	0.162	190.791	<.001
Age 35–44	2.336	0.184	161.459	<.001	2.174	0.161	181.914	<.001
Age 45–54	2.448	0.185	175.245	<.001	1.947	0.162	143.939	<.001
Age 55–64	1.800	0.191	89.069	<.001	1.359	0.169	64.523	<.001
Age 65 and over	0.00	_	_	_	0.000	_	_	_
Highest educational attainment								
Bachelor degree and above	1.573	0.117	179.696	<.001	1.013	0.130	60.356	<.001
Advanced diploma	1.446	0.125	134.977	<.001	0.642	0.133	23.328	<.001
Diploma	1.522	0.114	178.806	<.001	0.786	0.106	42.499	<.001
Certificate IV	1.304	0.114	130.946	<.001	0.780	0.121	41.864	<.001
Certificate III	1.291	0.111	134.670	<.001	1.007	0.116	75.860	<.001

Parameter	Females				Males			
	Estimate	Standard error	Wald chi-square	Pr> chi-square	Estimate	Standard error	Wald chi-square	Pr> chi-square
Certificate II	0.896	0.114	61.443	<.001	0.334	0.122	7.564	0.006
Certificate I	0.817	0.133	37.553	<.001	-0.117	0.148	0.626	0.429
Year 12	1.102	0.119	86.108	<.001	0.592	0.127	21.788	<.001
Year 11	0.988	0.134	54.646	<.001	0.408	0.145	7.923	0.005
Year 10	0.758	0.120	39.706	<.001	0.324	0.133	5.914	0.015
Miscellaneous	1.042	0.128	66.494	<.001	0.415	0.150	7.671	0.006
Year 9	0.000	_	_	_	0.000	_	_	_
Field of education								
Natural and physical sciences	1.193	0.168	50.587	<.001	0.666	0.246	7.342	0.007
Information technology	0.790	0.079	99.107	<.001	0.204	0.092	4.879	0.027
Engineering and technology	1.324	0.084	246.578	<.001	1.671	0.086	382.249	<.001
Architecture and building	1.149	0.145	62.795	<.001	1.858	0.115	260.534	<.001
Agriculture and related studies	1.227	0.089	190.216	<.001	1.524	0.095	255.844	<.001
Health	1.887	0.093	409.894	<.001	1.543	0.172	80.628	<.001
Education	1.999	0.107	349.285	<.001	1.937	0.149	168.697	<.001
Management and commerce	1.165	0.059	386.848	<.001	1.118	0.090	155.742	<.001
Society and culture	1.152	0.063	333.611	<.001	0.723	0.100	52.390	<.001
Creative arts	0.696	0.781	79.487	<.001	0.210	0.112	3.547	0.060
Food, hospitality and personal services	1.424	0.078	335.205	<.001	1.111	0.108	106.490	<.001
Mixed field programs	0.000	–	–	–	0.000	–	–	–

Model diagnostics summary

Observations	Females	Males
Dependent variable—gaining employment	17 902	14 485
Total observations	25 712	18 903

Note: Convergence criterion satisfied.

Model fit statistics

Criterion	Females		Males	
	Intercept only	Intercept and covariates	Intercept only	Intercept and covariates
AIC	31 576.728	29 572.958	20 558.323	18 617.695
SC	31 584.883	29 801.29	20 566.170	18 837.413
-2 Log L	31 574.728	29 516.958	20 556.323	18 561.695

Testing Global Null Hypothesis: BETA=0

Test	Females			Males		
	Chi-square	DF	Pr > ChiSq	Chi-square	DF	Pr > ChiSq
Likelihood ratio	2 057.7700	27	<.0001	1 994.6278	27	<.0001
Score	2 106.8497	27	<.0001	2 114.9305	27	<.0001
Wald	1 724.5587	27	<.0001	1 755.3692	27	<.0001

Table A2   Output from logistic regression to model the likelihood of being in full-time employment at 30 May, 2003

Parameter	Females				Males			
	Estimate	Standard error	Wald chi-square	Pr> chi-square	Estimate	Standard error	Wald chi-square	Pr> chi-square
Intercept	-4.494	0.330	185.438	<.001	-3.450	0.232	222.059	<.001
Age 18–24	2.366	0.300	62.325	<.001	1.832	0.196	87.194	<.001
Age 25–34	2.159	0.300	51.814	<.001	2.327	0.197	138.994	<.001
Age 35–44	1.899	0.300	40.147	<.001	2.348	0.197	141.844	<.001
Age 45–54	2.051	0.300	46.676	<.001	2.056	0.198	107.806	<.001
Age 55–64	1.685	0.306	30.345	<.001	1.452	0.204	50.477	<.001
Age 65 and over	0.000	–	–	–	0.000	–	–	–
Highest educational attainment								
Bachelor degree and above	1.200	0.142	71.533	<.001	0.822	0.127	42.030	<.001
Advanced diploma	0.808	0.147	30.056	<.001	0.289	0.129	4.994	0.025
Diploma	0.868	0.140	38.392	<.001	0.503	0.120	17.547	<.001
Certificate IV	0.647	0.141	21.133	<.001	0.656	0.120	29.914	<.001
Certificate III	0.533	0.139	14.730	<.001	1.043	0.116	81.452	<.001
Certificate II	0.449	0.142	9.936	0.002	0.262	0.122	4.630	0.031
Certificate I	0.193	0.168	1.310	0.253	-0.060	0.150	0.162	0.687
Year 12	0.533	0.145	13.444	<.001	0.361	0.125	8.288	0.004
Year 11	0.350	0.161	4.702	0.030	0.639	0.143	19.894	<.001
Year 10	0.388	0.149	6.751	0.009	0.369	0.132	7.793	0.005
Miscellaneous	0.681	0.153	19.725	<.001	0.365	0.148	6.046	0.014
Year 9	0.000	–	–	_	0.000	–	–	–
Field of education								
Natural and physical sciences	1.134	0.163	48.294	<.001	0.977	0.234	17.462	<.001
Information technology	0.864	0.099	76.129	<.001	0.174	0.100	3.043	0.081
Engineering and technology	1.311	0.097	183.728	<.001	1.935	0.091	454.167	<.001
Architecture and building	0.926	0.147	39.673	<.001	2.280	0.111	419.049	<.001
Agriculture and related studies	1.260	0.101	155.097	<.001	1.652	0.098	286.244	<.001
Health	1.014	0.097	109.571	<.001	1.166	0.145	65.068	<.001
Education	1.256	0.102	151.139	<.001	1.739	0.128	184.194	<.001
Management and commerce	1.250	0.080	243.473	<.001	1.162	0.094	151.999	<.001
Society and culture	0.703	0.084	70.616	<.001	0.364	0.104	12.203	<.001
Creative arts	0.353	0.100	12.340	<.001	-0.455	0.129	12.489	<.001
Food, hospitality and personal services	1.277	0.092	194.633	<.001	1.075	0.108	100.070	<.001
Mixed field programs	0.000	–	–	–	0.000	–	–	–

Model diagnostics summary

Observations	Females	Males
Dependent variable—gaining employment	8 334	11 524
Total observations	25 712	18 903

Note: Convergence criterion satisfied.

Model fit statistics

Criterion	Females		Males	
	Intercept only	Intercept and covariates	Intercept only	Intercept and covariates
AIC	32 396.166	31 072.357	25 290.790	21 942.410
SC	32 404.321	31 300.689	25 298.637	22 162.128
-2 Log L	32 394.166	31 016.357	25 288.790	21 886.410

Testing Global Null Hypothesis: BETA=0

Test	Females			Males		
	Chi-square	DF	Pr > ChiSq	Chi-square	DF	Pr > ChiSq
Likelihood ratio	1 377.8093	27	<.0001	3 402.3804	27	<.0001
Score	1 265.1823	27	<.0001	3 249.2788	27	<.0001
Wald	1 160.4217	27	<.0001	2 742.0053	27	<.0001

Appendix B

The qualification effects reported in table 6 are based on regression results in tables B1 and B2. With the log of full-time weekly wages specification used in the wage equation, the wage premiums in the tables are calculated as [exponent (regression coefficient) – 1]. Variables with b = 0 and missing outputs are our reference groups.

Table B1 Wage regression results for those not employed full-time before their course: Dependent variable is the log of full-time weekly wages

Variable	Females				Males			
	Coefficient	Standard error	T value	Pr >	Coefficient	Standard error	T value	Pr >
Intercept	5.810	0.075	77.03	<.001	5.617	0.087	64.54	<.001
Age	0.007	0.002	2.65	0.008	0.037	0.004	9.44	<.001
Age (squared)	8.1×10^{-5}	3.5×10^{-5}	-2.32	0.021	-4.5×10^{-4}	5.5×10^{-5}	-8.18	<.001
Highest education level								
Bachelor degree and above	0.297	0.061	4.84	<.001	0.082	0.060	1.37	0.169
Advanced diploma	0.164	0.062	2.63	0.009	-0.004	0.060	-0.07	0.946
Diploma	0.160	0.061	2.64	0.008	-0.006	0.057	-0.10	0.922
Certificate IV	0.117	0.061	1.92	0.056	-0.013	0.057	-0.23	0.815
Certificate III	0.083	0.060	1.39	0.166	0.038	0.055	0.70	0.484
Certificate II	0.032	0.061	0.52	0.600	-0.162	0.058	-2.81	0.005
Certificate I	0.050	0.068	0.73	0.468	-0.220	0.067	-3.27	0.001
Year 12	0.091	0.062	1.47	0.142	-0.064	0.058	-1.11	0.268
Year 11	0.022	0.066	0.34	0.737	-0.123	0.068	-1.82	0.069
Year 10	0.056	0.064	0.88	0.378	-0.068	0.063	-1.07	0.285
Miscellaneous education	0.170	0.065	2.62	0.009	-0.055	0.072	-0.77	0.440
Year 9 or lower	0.000	–	–	–	0.000	–	–	–
Field of education								
Natural and physical sciences	0.095	0.052	1.82	0.069	0.078	0.115	0.68	0.498
Information technology	0.029	0.033	0.86	0.389	-0.116	0.045	-2.59	0.010
Engineering and technology	0.007	0.033	0.21	0.836	0.076	0.040	1.89	0.0588
Architecture and building	0.052	0.048	1.07	0.283	0.067	0.043	1.54	0.1234
Agriculture and related studies	0.057	0.035	1.64	0.102	-0.062	0.041	-1.38	0.169
Health	0.054	0.030	1.80	0.071	-0.123	0.061	-2.02	0.043
Education	0.057	0.032	1.75	0.080	0.052	0.061	0.86	0.389
Management and commerce	0.010	0.026	0.37	0.710	-0.055	0.043	-1.28	0.200
Society and culture	-0.034	0.026	-1.30	0.193	-0.151	0.045	-3.33	<.001
Creative arts	-0.045	0.032	-1.41	0.157	-0.108	0.051	-2.12	0.034
Food, hospitality and personal services	-0.032	0.029	-1.10	0.272	-0.067	0.046	-1.47	0.141
Mixed field programs	0.000	–	–	–	0.000	–	–	–
Observations	**7912**				**4189**			
R squared	**0.04**				**0.09**			

Linear Hypothesis Test: Highest education level results for dependent variable log wage

Source	Females				Males			
	DF	Mean square	F value	Pr > F	DF	Mean Square	F Value	Pr > F
Numerator (usual quadratic form of the estimates)	11	3.265	21.53	<.001	11	1.854	10.55	<.001
Denominator (mean squared error)	7887	0.152			4164	0.175		

Table B2   Wage regression results for those employed full-time before their course: Dependent variable is the log of full-time weekly wages

Variable	Females				Males			
	Coefficient	Standard error	T value	Pr >	Coefficient	Standard error	T value	Pr >
Intercept	5.394	0.079	68.71	<.001	5.264	0.066	80.05	<.001
Age	0.038	0.003	12.98	<.001	0.059	0.002	23.85	<.001
Age (squared)	-4.3×10^{-4}	4.0×10^{-5}	-10.72	<.001	-6.6×10^{-4}	3.3×10^{-5}	-20.21	<.001
Highest education level								
Bachelor degree and above	0.467	0.055	8.55	<.001	0.263	0.040	6.53	<.001
Advanced diploma	0.276	0.057	4.88	<.001	0.176	0.042	4.19	<.001
Diploma	0.256	0.055	4.69	<.001	0.166	0.040	4.20	<.001
Certificate IV	0.217	0.055	3.98	<.001	0.149	0.039	3.78	<.001
Certificate III	0.095	0.054	1.74	0.083	0.051	0.038	1.33	0.184
Certificate II	0.080	0.056	1.43	0.153	-0.003	0.041	-0.08	0.940
Certificate I	0.139	0.066	2.10	0.035	-0.082	0.052	-1.56	0.118
Year 12	0.166	0.056	2.95	0.003	0.080	0.042	1.93	0.053
Year 11	0.107	0.062	1.71	0.087	0.073	0.044	1.66	0.097
Year 10	0.101	0.058	1.73	0.083	0.036	0.042	0.86	0.392
Miscellaneous education	0.192	0.058	3.29	0.001	0.087	0.047	1.85	0.064
Year 9	0.000	_	_	_	0.000	_	_	_
Field of education								
Natural and physical sciences	0.051	0.061	0.84	0.403	0.097	0.074	1.32	0.187
Information technology	0.105	0.040	2.59	0.010	0.055	0.040	1.37	0.172
Engineering and technology	0.103	0.038	2.69	0.007	0.150	0.036	4.14	<.001
Architecture and building	0.043	0.059	0.73	0.465	0.129	0.039	3.32	<.001
Agriculture and related studies	-0.008	0.040	-0.20	0.843	0.015	0.037	0.39	0.693
Health	-0.024	0.039	-0.62	0.536	0.097	0.047	2.05	0.040
Education	0.230	0.039	5.90	<.001	0.186	0.041	4.55	<.001
Management and commerce	0.130	0.034	3.77	<.001	0.117	0.037	3.14	0.002
Society and culture	-0.030	0.036	-0.83	0.408	-0.011	0.041	-0.27	0.796
Creative arts	0.084	0.042	1.98	0.047	-0.038	0.055	-0.69	0.487
Food, hospitality and personal services	-0.032	0.038	-0.83	0.408	-0.067	0.040	-1.63	0.103
Observations	**5822**				**8238**			
R squared	**0.23**				**0.20**			

Linear Hypothesis Test: Highest education level results for dependent variable log wage

Source	Females				Males			
	DF	Mean square	F value	Pr > F	DF	Mean square	F value	Pr > F
Numerator (quadratic form of the estimates)	11	7.546	55.59	<.001	11	3.767	24.62	<.0001
Denominator (mean squared error)	5797	0.136			8213	0.153		

The value of completing a VET qualification

Appendix C

The qualification effects reported in tables 7–9 and 11–13, are based on regression results in tables B1 and B2. With the log of full-time weekly wages specification used in the wage equation, the wage premiums in the tables are calculated as [exponent (regression coefficient) – 1]. Variables with b = 0 and missing outputs are our reference groups.

Table C1 Wage regression results for those not employed full-time before their course with a previous education of certificate IV and above: Dependent variable is the log of full-time weekly wages

Variable	Females				Males			
	Coefficient	Standard error	T value	Pr >	Coefficient	Standard error	T value	Pr >
Intercept	5.701	0.135	42.17	<.001	5.379	0.231	23.27	<.001
Age	0.018	0.007	2.77	0.006	0.049	0.011	4.64	<.001
Age (squared)	2.0×10^{-4}	8.7×10^{-5}	-2.31	0.021	5.8×10^{-4}	1.3×10^{-4}	-4.20	<.001
Graduates								
Certificate IV and above	0.082	0.040	2.07	0.039	0.030	0.080	0.38	0.707
Certificate III	-0.029	0.045	-0.365	0.519	-0.004	0.090	-0.05	0.961
Certificate II & below	-0.083	0.053	-1.55	0.120	-0.116	0.108	-1.07	0.283
Module completers								
Certificate IV and above	-0.017	0.053	-0.33	0.744	0.023	0.098	0.24	0.810
Certificate III	-0.058	0.057	-1.02	0.309	0.014	0.107	0.13	0.898
Certificate II & below	0.00	–	–	–	0.000	–	–	–
Field of education								
Natural and physical sciences	0.086	0.119	0.72	0.472	0.143	0.229	0.62	0.533
Information technology	0.176	0.077	2.28	0.023	-0.015	0.134	-0.12	0.908
Engineering and technology	0.192	0.085	2.26	0.024	0.138	0.129	1.07	0.283
Architecture and building	0.181	0.103	1.75	0.080	0.222	0.160	1.40	0.163
Agriculture and related studies	0.182	0.083	2.18	0.029	-0.035	0.139	-0.25	0.799
Health	0.098	0.079	1.23	0.217	-0.136	0.181	-0.75	0.453
Education	0.222	0.076	2.94	0.003	0.037	0.148	0.25	0.802
Management and commerce	0.109	0.067	1.62	0.105	0.061	0.131	0.47	0.642
Society and culture	0.043	0.069	0.62	0.532	-0.055	0.135	-0.40	0.686
Creative arts	0.027	0.077	0.35	0.726	0.019	0.13	1.45	0.894

Variable	Females				Males			
	Coefficient	Standard error	T value	Pr >	Coefficient	Standard error	T value	Pr >
Food, hospitality and personal services	0.118	0.091	1.29	0.197	0.056	0.34	1.67	0.736
Mixed field programs	0.000	–	–	–	0.000	–	–	–
Observations	**1553**				**557**			
R squared	**0.03**				**0.06**			

Note: Wage premiums in tables 7–12 for graduates are derived by calculating the combined impact of the qualification (parameter estimate for particular qualification) completed with the completion of a course (graduate coefficient).

Linear Hypothesis Test: Results for dependent variable log wage

Source	Females				Males			
	DF	Mean square	F value	Pr > F	DF	Mean square	F value	Pr > F
Graduates								
Numerator (quadratic form of the estimates)	3	0.851	4.50	0.004	3	0.124	0.56	0.643
Denominator (mean squared error)	1534	0.189			538	0.223		
Module completers								
Numerator (quadratic form of the estimates)	2	0.108	0.57	0.565	2	0.006	0.03	0.971
Denominator (mean squared error)	1534	0.189			538	0.223		

The value of completing a VET qualification

Table C2 Wage regression results for those not employed before the course with a previous education of certificate III: Dependent variable is the log of full-time weekly wages

Variable	Females				Males*			
	Coefficient	Standard error	T value	Pr >	Coefficient	Standard error	T value	Pr >
Intercept	6.057	0.196	30.93	<.001	6.412	0.288	22.25	<.001
Age	-0.005	0.010	-0.47	0.637	-0.001	0.014	-0.07	0.943
Age (squared)	8.7×10^{-4}	1.4×10^{-4}	0.62	0.533	3.8×10^{-5}	2.0×10^{-4}	0.02	0.844
Graduates								
Certificate IV and above	0.179	0.066	2.70	0.007	0.095	0.098	0.97	0.333
Certificate III	0.143	0.069	2.07	0.039	-0.052	0.102	-0.51	0.611
Certificate II & below	-0.124	0.097	-10.15	0.202	0.051	0.139	0.37	0.712
Module completers								
Certificate IV and above	-0.015	0.099	-0.387	0.880	0.088	0.134	0.66	0.512
Certificate III	-0.092	0.106	-1.02	0.386	0.170	0.152	1.11	0.266
Certificate II & below	0.000	–	–	–	0.000	–	–	–
Field of education								
Natural and physical sciences	-0.164	0.211	-0.78	0.438	0.000	.	.	.
Information technology	0.183	0.141	1.30	0.196	-0.342	0.152	-2.25	0.025
Engineering and technology	-0.044	0.132	-0.33	0.739	-0.094	0.145	-0.65	0.512
Architecture and building	-0.208	0.228	-0.91	0.363	-0.154	0.169	-0.91	0.363
Agriculture and related studies	0.029	0.142	0.21	0.837	-0.527	0.163	-3.24	0.001
Health	0.055	0.131	0.42	0.676	-0.351	0.214	-1.64	0.103
Education	-0.009	0.138	-0.06	0.949	-0.138	0.189	-0.73	0.466
Management and commerce	0.100	0.120	0.83	0.406	-0.223	0.156	-1.43	0.153
Society and culture	-0.046	0.122	-038	0.707	-0.512	0.161	-3.18	0.002
Creative arts	0.003	0.145	0.02	0.983	-0.321	0.194	-1.66	0.100
Food, hospitality and personal services	0.103	0.132	0.78	0.438	-0.190	0.185	-1.03	0.306
Mixed field programs	0.000	–	–	–	0.000	–	–	–
Observations	**580**				**313**			
R squared	**0.02**				**0.07**			

Note: *Model is not full rank. Least-squares solutions for parameters are not unique. Some statistics will be misleading. A reported '0' for 'natural and physical sciences' estimate is biased (multi-co linearity).

Linear Hypothesis Test: results for dependent variable log wage

Source	Females				Males			
	DF	Mean square	F value	Pr > F	DF	Mean square	F value	Pr > F
Graduates								
Numerator (quadratic form of the estimates)	3	0.370	2.44	0.063	3	0.324	1.48	0.219
Denominator (mean squared error)	561	0.152			295	0.218		
Module completers								
Numerator (quadratic form of the estimates)	2	0.084	0.55	0.575	2	0.137	0.63	0.535
Denominator (mean squared error)	561	0.152			295	0.218		

Table C3   Wage regression results for those not employed full-time before the course with a previous education of certificate II and below: Dependent variable is the log of weekly wages

Variable	Females				Males			
	Coefficient	Standard error	T value	Pr >	Coefficient	Standard error	T value	Pr >
Intercept	5.904	0.055	107.7	<0.001	5.494	0.085	64.32	<.001
Age	0.007	0.003	2.49	0.012	0.038	0.005	8.18	<.001
Age (squared)	9.4×10^{-5}	4.1×10^{-5}	-2.30	0.021	4.7×10^{-4}	6.7×10^{-5}	-7.07	<.001
Graduates								
Certificate IV and above	0.114	0.017	6.59	<0.001	0.169	0.026	-7.07	<.001
Certificate III	0.053	0.017	3.12	0.002	0.243	0.026	6.56	<.001
Certificate II & below	-0.016	0.023	-0.71	0.479	-0.074	0.035	-2.10	0.035
Module completers								
Certificate IV and above	0.080	0.026	3.10	0.002	0.079	0.038	2.06	<.001
Certificate III	0.021	0.026	0.82	0.415	0.078	0.038	2.08	0.039
Certificate II & below	0.000	_	_	_	0.000	_	_	_
Field of education								
Natural and physical sciences	0.105	0.061	1.72	0.069	0.060	0.142	0.42	0.672
Information technology	-0.041	0.039	-1.08	0.301	-0.136	0.051	-2.68	0.007
Engineering and technology	-0.047	0.037	-1.28	0.204	0.052	0.045	1.16	0.247
Architecture and building	-0.001	0.058	0.02	0.893	0.038	0.048	0.80	0.422
Agriculture and related studies	0.016	0.040	0.04	0.743	-0.039	0.050	-0.79	0.429
Health	-0.005	0.033	-0.15	0.792	-0.111	0.069	-1.63	0.102
Education	-0.063	0.039	-1.58	0.208	0.128	0.085	1.50	0.133
Management and commerce	-0.043	0.029	-1.50	0.136	-0.081	0.048	-1.70	0.090
Society and culture	-0.077	0.030	-2.57	0.015	-0.140	0.052	-2.72	0.006
Creative arts	-0.078	0.037	-2.11	0.034	-0.1455	0.058	-2.51	0.012
Food, hospitality and personal services	-0.097	0.032	-3.02	0.005	-0.090	0.050	-1.80	0.071
Mixed field programs	0.000	–	–	–	0.000	–	–	–
Observations	**5779**				**3319**			
R squared	**0.02**				**0.09**			

Linear Hypothesis Test: Results for dependent variable log wage

Source	Females				Males			
	DF	Mean square	F value	Pr > F	DF	Mean square	F value	Pr > F
Graduates								
Numerator (quadratic form of the estimates)	3	2.462	17.32	<.001	3	6.217	38.30	<.001
Denominator (mean squared error)	5760	0.142			3300	0.162		
Module completers								
Numerator (quadratic form of the estimates)	2	0.768	5.40	0.005	2	0.439	2.70	0.067
Denominator (mean squared error)	5760	0.142			3300	0.162		

Table C4   Wage regression results for those employed full-time before the course with a previous education of certificate IV and above: Dependent variable is the log of full-time weekly wages

Variable	Females				Males			
	Coefficient	Standard error	T value	Pr >	Coefficient	Standard error	T value	Pr >
Intercept	5.744	0.143	40.25	<.001	5.458	0.147	37.17	<.001
Age	0.042	0.007	6.13	<.001	0.058	0.006	9.09	<.001
Age (squared)	4.6×10^{-4}	9.0×10^{-5}	-5.19	<.001	6.4×10^{-4}	7.8×10^{-5}	-8.19	<.001
Graduates								
Certificate IV and above	-0.082	0.035	-2.36	0.018	0.026	0.035	0.74	0.457
Certificate III	-0.153	0.040	-3.73	<.001	-0.086	0.039	-2.18	0.029
Certificate II & below	-0.019	0.045	-0.43	0.664	-0.029	0.041	-0.70	0.484
Module completers								
Certificate IV and above	-0.041	0.041	-1.00	0.318	0.001	0.037	0.02	0.981
Certificate III	-0.085	0.047	-1.79	0.073	-0.028	0.043	-0.65	0.513
Certificate II & below	0.000	–	–	–	0.000	–	–	–
Field of education								
Natural and physical sciences	-0.066	0.1119	-0.56	0.575	0.151	0.129	1.17	0.242
Information technology	0.106	0.081	1.30	0.194	0.077	0.082	0.93	0.353
Engineering and technology	0.097	0.082	1.18	0.238	0.150	0.078	1.92	0.055
Architecture and building	0.168	0.111	1.52	0.129	0.066	0.086	0.77	0.442
Agriculture and related studies	-0.027	0.082	-0.32	0.746	0.022	0.080	0.28	0.777
Health	-0.022	0.084	-0.26	0.798	0.066	0.098	0.67	0.501
Education	0.274	0.079	3.45	<.001	0.202	0.083	2.43	0.015
Management and commerce	0.109	0.075	1.45	0.148	0.131	0.079	1.64	0.101
Society and culture	0.005	0.078	0.06	0.952	0.045	0.083	0.54	0.586
Creative arts	0.084	0.083	101	0.311	-0.006	0.101	-0.06	0.952
Food, hospitality and personal services	-0.058	0.089	-0.66	0512	-0.0359	0.104	-0.34	0.732
Mixed field programs	0.000	–	–	–	0.000	–	–	–
Observations	**1715**				**1840**			
R squared	**0.11**				**0.09**			

Linear Hypothesis Test: Results for dependent variable log wage

Source	Females				Males			
	DF	Mean square	F value	Pr > F	DF	Mean square	F value	Pr > F
Graduates								
Numerator (quadratic form of the estimates)	3	1.085	7.37	<.001	3	0.730	4.85	0.002
Denominator (mean squared error)	1696	0.147			1821	0.150		
Module completers								
Numerator (quadratic form of the estimates)	2	0.237	1.61	0.200	2	0.047	0.31	0.7319
Denominator (mean squared error)	1696	0.147			1821	0.150		

Table C5   Wage regression results for those employed full-time before the course with a previous education of certificate III: Dependent variable is the log of full-time weekly wages

Variable	Females				Males			
	Coefficient	Standard error	T value	Pr >	Coefficient	Standard error	T value	Pr >
Intercept	5.291	0.238	22.24	<.001	5.824	0.161	36.17	<.001
Age	0.041	0.012	3.55	<.001	0.038	0.007	5.28	<.001
Age (squared)	4.6×10^{-4}	1.6×10^{-4}	-2.84	0.005	4.3×10^{-4}	9.4×10^{-5}	-4.63	<.001
Graduates								
Certificate IV and above	0.004	0.084	0.04	0.964	0.108	0.039	2.75	0.006
Certificate III	-0.027	0.085	-0.32	0.750	-0.053	0.041	-1.29	0.195
Certificate II & below	0.146	0.113	1.29	0.196	-0.084	0.045	-1.86	0.063
Module completers								
Certificate IV and above	0.133	0.107	1.25	0.212	0.001	0.040	0.02	0.982
Certificate III	0.047	0.119	0.39	0.696	-0.092	0.045	-2.01	0.044
Certificate II & below	0.000	_	_	_	0.000	_	_	_
Field of education								
Natural and physical sciences	0.446	0.389	1.14	0.253	0.029	0.210	0.14	0.891
Information technology	0.228	0.171	1.57	0.118	0.102	0.099	1.03	0.302
Engineering and technology	0.332	0.169	1.96	0.051	0.225	0.091	2.48	0.013
Architecture and building	0.164	0.217	0.76	0.449	0.160	0.097	1.64	0.101
Agriculture and related studies	-0.149	0.170	-0.88	0.381	-0.031	0.093	-0.34	0.736
Health	0.031	0.157	0.20	0.841	0.184	0.109	1.69	0.091
Education	0.223	0.170	1.32	0.189	0.090	0.104	0.86	0.388
Management and commerce	0.234	0.147	1.59	0.112	0.128	0.094	1.37	0.172
Society and culture	0.015	0.150	0.10	0.920	-0.015	0.103	-0.15	0.882
Creative arts	0.179	0.190	0.94	0.348	0.171	0.170	1.00	0.316
Food, hospitality and personal services	0.004	0.158	0.03	0.977	-0.027	0.109	-0.25	0.802
Mixed field programs	0.000	–	–	–	0.000	–	–	–
Observations	**383**				**1402**			
R squared	**0.13**				**0.10**			

Linear Hypothesis Test: Results for dependent variable log wage

Source	Females				Males			
	DF	Mean square	F value	Pr > F	DF	Mean square	F value	Pr > F
Graduates								
Numerator (quadratic form of the estimates)	3	0.112	0.87	0.456	3	1.435	9.93	<.001
Denominator (mean squared error)	364	0.129			1383	0.145		
Module completers								
Numerator (quadratic form of the estimates)	2	0.125	0.97	0.380	2	0.430	2.98	0.051
Denominator (mean squared error)	364	0.129			1383	0.145		

Table C6   Wage regression results for those employed full-time before the course with a previous education of certificate II and below: Dependent variable is the log of full-time weekly wages

Variable	Females				Males			
	Coefficient	Standard error	T value	Pr >	Coefficient	Standard error	T value	Pr >
Intercept	5.516	0.072	76.18	<.001	5.298	0.071	75.00	<.001
Age	0.038	0.003	10.96	<.001	0.059	0.003	19.03	<.001
Age (squared)	4.4×10^{-4}	4.8×10^{-5}	-9.12	<.001	6.8×10^{-4}	4.2×10^{-5}	-16.04	<.001
Graduates								
Certificate IV and above	0.184	0.021	8.60	<.001	0.141	0.021	6.78	<.001
Certificate III	0.017	0.022	0.78	0.435	0.025	0.019	1.31	0.190
Certificate II & below	-0.035	0.027	-1.28	0.201	-0.054	0.024	-2.26	0.024
Module completers								
Certificate IV and above	0.122	0.028	4.36	<.001	0.063	0.026	2.47	0.014
Certificate III	-0.021	0.029	-0.71	0.477	-0.036	0.026	-1.43	0.153
Certificate II & below	0.000	–	–	–	0.000	–	–	–
Field of education								
Natural and physical sciences	0.103	0.073	1.40	0.160	0.084	0.101	0.83	0.409
Information technology	0.107	0.049	2.16	0.030	0.028	0.053	0.53	0.594
Engineering and technology	0.099	0.045	2.18	0.029	0.148	0.047	3.16	0.002
Architecture and building	-0.079	0.076	-1.04	0.296	0.164	0.049	3.30	0.001
Agriculture and related studies	0.023	0.050	0.46	0.646	0.053	0.047	1.12	0.261
Health	-0.041	0.046	-0.89	0.371	0.101	0.063	1.61	0.108
Education	0.190	0.051	3.68	<.001	0.191	0.057	3.32	0.001
Management and commerce	0.118	0.041	2.85	0.004	0.123	0.048	2.53	0.011
Society and culture	-0.043	0.043	-1.01	0.313	-0.016	0.053	-0.30	0.763
Creative arts	0.074	0.054	1.36	0.173	-0.081	0.073	-1.10	0.270
Food, hospitality and personal services	-0.027	0.045	-0.59	0.553	-0.039	0.051	-0.77	0.422
Mixed field programs	0.000	–	–	–	0.000	–	–	–
Observations	**3724**				**4996**			
R squared	**0.15**				**0.18**			

Linear Hypothesis Test: results for dependent variable log wage

Source	Females				Males			
	DF	Mean square	F value	Pr > F	DF	Mean square	F value	Pr > F
Graduates								
Numerator (quadratic form of the estimates)	3	5.826	43.47	<.001	3	3.066	19.96	<.001
Denominator (mean squared error)	3705	0.134			4977	0.154		
Module completers								
Numerator (quadratic form of the estimates)	2	2.380	17.76	<.001	2	1.269	8.26	<.001
Denominator (mean squared error)	3705	0.134			4977	0.154		

Appendix D

Table D1   Main reason for VET study for females not employed full-time before course by previous education level and group status, 2003 (%)

Main reason	Graduate			Module completer		
	Certificate IV and above	Certificate III	Certificate II and below	Certificate IV and above	Certificate III	Certificate II and below
To get a job	27	26	26	13	17	25
To develop my existing business	1	1	1	3	1	2
To start my own business	1	3	2	2	2	2
To try for a different career	14	14	13	16	16	10
To get a job promotion	8	8	9	8	7	8
It was a requirement of my job	10	6	11	7	8	9
I wanted extra skills for my job	14	15	13	19	14	13
To get into another course of study	3	5	4	1	8	4
For interest or personal reasons	13	12	12	20	13	18
Other reasons	3	3	2	5	7	4
Not stated	4	7	6	6	7	7
Total	**100**	**100**	**100**	**100**	**100**	**100**

Table D2   Main reason for VET study for males not employed full-time before course by previous education level and group status, 2003 (%)

Main reason	Graduate			Module completer		
	Certificate IV and above	Certificate III	Certificate II and below	Certificate IV and above	Certificate III	Certificate II and below
To get a job	30	33	34	27	24	33
To develop my existing business	4	2	1	1	2	1
To start my own business	6	2	5	3	3	5
To try for a different career	16	11	4	9	22	7
To get a job promotion	8	5	4	5	8	6
It was a requirement of my job	8	21	28	6	7	14
I wanted extra skills for my job	10	6	5	20	13	7
To get into another course of study	4	2	4	2	1	4
For interest or personal reasons	9	13	9	17	7	13
Other reasons	3	1	2	4	7	3
Not stated	4	4	5	5	6	6
Total	**100**	**100**	**100**	**100**	**100**	**100**

Table D3   Main reason for VET study for females employed full-time before course by previous education level and group status, 2003 (%)

Main reason	Graduate			Module completer		
	Certificate IV and above	Certificate III	Certificate II and below	Certificate IV and above	Certificate III	Certificate II and below
To get a job	3	3	6	2	4	4
To develop my existing business	2	2	2	4	2	3
To start my own business	3	2	2	2	4	2
To try for a different career	12	21	14	12	12	14
To get a job promotion	21	27	17	13	13	13
It was a requirement of my job	12	11	17	8	6	12
I wanted extra skills for my job	28	16	22	28	31	25
To get into another course of study	1	3	2	2	.	2
For interest or personal reasons	12	10	10	23	20	16
Other reasons	2	2	2	2	1	2
Not stated	4	4	7	6	8	7
Total	**100**	**100**	**100**	**100**	**100**	**100**

Table D4   Main reason for VET study for males employed full-time before course by previous education level and group status, 2003 (%)

Main reason	Graduate			Module completer		
	Certificate IV and above	Certificate III	Certificate II and below	Certificate IV and above	Certificate III	Certificate II and below
To get a job	4	3	9	3	3	5
To develop my existing business	4	4	2	4	7	4
To start my own business	2	5	5	3	3	3
To try for a different career	11	15	9	9	9	12
To get a job promotion	16	16	11	9	9	10
It was a requirement of my job	14	16	30	16	19	24
I wanted extra skills for my job	29	25	18	27	32	21
To get into another course of study	2	2	1	2	0	1
For interest or personal reasons	11	8	7	22	13	12
Other reasons	2	1	2	3	1	3
Not stated	5	5	6	3	4	6
Total	**100**	**100**	**100**	**100**	**100**	**100**

Appendix E

This section contains the logistic regression results for tables 18 and 19 in the main report.

Table E1   Output from logistic regression to model likelihood of perceived increase in wages for those not employed full-time before their course with a previous education of certificate IV and above: Dependent variable is the log of full-time weekly wages

Parameter	Females				Males			
	Estimate	Standard error	Wald chi-square	Pr> chi-square	Estimate	Standard error	Wald chi-square	Pr> chi-square
Intercept	-2.707	0.390	48.132	<.001	-3.555	1.014	12.293	0.001
Graduates								
Certificate IV and above	1.495	0.401	13.927	0.000	2.173	1.026	4.489	0.034
Certificate III	1.139	0.427	7.104	0.008	2.318	1.049	4.886	0.027
Certificate II & below	0.589	0.472	1.563	0.211	2.168	1.088	3.971	0.046
Module completers								
Certificate IV and above	0.405	0.462	0.767	0.381	1.131	1.088	1.081	0.299
Certificate III	0.134	0.521	0.066	0.797	1.501	1.120	1.796	0.180
Certificate II & below	–	–	–	–	–	–	–	–

Model diagnostics summary

Observations	Females	Males
Dependent variable—gaining employment	250	91
Total observations	1516	545

Note: Convergence criterion satisfied.

Model fit statistics

Criterion	Females		Males	
	Intercept only	Intercept and covariates	Intercept only	Intercept and covariates
AIC	1359.484	1316.437	493.648	485.928
SC	1364.808	1348.38	497.949	511.733
-2 Log L	1357.484	1304.437	491.648	473.928

Testing Global Null Hypothesis: BETA=0

Test	Females			Males		
	Chi-square	DF	Pr > ChiSq	Chi-square	DF	Pr > ChiSq
Likelihood ratio	53.047	5	<.001	17.720	5	0.003
Score	49.201	5	<.001	14.820	5	0.011
Wald	45.369	5	<.001	12.570	5	0.028

Table E2   Output from logistic regression to model likelihood of perceived increase in wages for those not employed full-time before their course with a previous education of certificate III: Dependent variable is the log of full-time weekly wages

Parameter	Females				Males*			
	Estimate	Standard error	Wald chi-square	Pr> chi-square	Estimate	Standard error	Wald chi-square	Pr> chi-square
Intercept	-3.294	1.018	10.480	0.001	-13.686	234.300	0.003	0.953
Graduates								
Certificate IV and above	2.566	1.026	6.249	0.012	12.346	234.300	0.003	0.958
Certificate III	2.427	1.034	5.507	0.019	13.246	234.300	0.003	0.955
Certificate II & below	1.763	1.090	2.617	0.106	12.110	234.300	0.003	0.959
Module completers								
Certificate IV and above	1.309	1.095	1.429	0.232	11.023	234.300	0.002	0.963
Certificate III	1.247	1.148	1.179	0.278	12.299	234.300	0.003	0.958
Certificate II & below	–	–	–	–	–	–	–	–

Note: *Results shown are based on the last maximum likelihood iteration. Validity of the model fit is questionable.

Model diagnostics summary

Observations	Females	Males
Dependent variable—gaining employment	145	65
Total observations	563	302

Note: Convergence criterion satisfied.

Model fit statistics

Criterion	Females		Males	
	Intercept only	Intercept and covariates	Intercept only	Intercept and covariates
AIC	644.358	624.583	316.567	298.635
SC	648.691	650.583	320.277	320.898
-2 Log L	642.358	612.583	314.567	286.635

Testing Global Null Hypothesis: BETA=0

Test	Females			Males		
	Chi-square	DF	Pr > ChiSq	Chi-square	DF	Pr > ChiSq
Likelihood ratio	29.774	5	<.001	27.932	5	<.001
Score	25.382	5	0.000	24.659	5	<.001
Wald	21.327	5	0.001	16.997	5	0.005

Table E3   Output from logistic regression to model likelihood of perceived increase in wages for those not employed full-time before their course with a previous education of certificate II and below: Dependent variable is the log of full-time weekly wages

Parameter	Females				Males			
	Estimate	Standard error	Wald chi-square	Pr> chi-square	Estimate	Standard error	Wald chi-square	Pr> chi-square
Intercept	-2.568	0.193	177.562	<.001	-2.230	0.235	89.803	<.001
Graduates								
Certificate IV and above	1.779	0.199	79.814	<.001	1.058	0.250	17.914	<.001
Certificate III	1.732	0.200	75.139	<.001	2.142	0.242	78.464	<.001
Certificate II & below	1.233	0.212	33.725	<.001	0.708	0.269	6.926	0.009
Module completers								
Certificate IV and above	0.331	0.246	1.805	0.179	0.280	0.295	0.901	0.343
Certificate III	0.408	0.249	2.690	0.101	1.075	0.273	15.527	<.001
Certificate II & below	–	–	–	–	–	–	–	–

Model diagnostics summary

Observations	Females	Males
Dependent variable—gaining employment	1376	1000
Total observations	5655	3258

Note: Convergence criterion satisfied.

Model fit statistics

Criterion	Females		Males	
	Intercept only	Intercept and covariates	Intercept only	Intercept and covariates
AIC	6277.713	5998.120	4019.946	3699.515
SC	6284.353	6037.961	4026.035	3736.048
-2 Log L	6275.713	5986.120	4017.946	3687.515

Testing Global Null Hypothesis: BETA=0

Test	Females			Males		
	Chi-square	DF	Pr > ChiSq	Chi-square	DF	Pr > ChiSq
Likelihood ratio	289.594	5	<.001	330.432	5	<.001
Score	254.190	5	<.001	321.117	5	<.001
Wald	225.272	5	<.001	294.519	5	<.001

Table E4 **Output from logistic regression to model likelihood of perceived increase in wages for those employed full-time before their course with a previous education of certificate IV and above: Dependent variable is the log of full-time weekly wages**

Parameter	Females				Males			
	Estimate	Standard error	Wald chi-square	Pr> chi-square	Estimate	Standard error	Wald chi-square	Pr> chi-square
Intercept	-3.296	0.455	52.375	<.001	-3.085	0.362	72.826	<.001
Graduates								
Certificate IV and above	2.097	0.463	20.485	<.001	1.857	0.372	24.897	<.001
Certificate III	1.922	0.489	15.475	<.001	1.578	0.403	15.376	<.001
Certificate II & below	0.745	0.553	1.817	0.178	1.384	0.422	10.764	0.001
Module completers								
Certificate IV and above	1.312	0.492	7.113	0.008	0.875	0.405	4.656	0.031
Certificate III	0.613	0.584	1.102	0.294	0.156	0.530	0.087	0.769
Certificate II & below	–	–	–	–	–	–	–	–

Model diagnostics summary

Observations	Females	Males
Dependent variable—gaining employment	277	278
Total observations	1665	1765

Note: Convergence criterion satisfied.

Model fit statistics

Criterion	Females		Males	
	Intercept only	Intercept and covariates	Intercept only	Intercept and covariates
AIC	1500.758	1435.255	1539.360	1475.733
SC	1506.176	1467.761	1544.836	1508.588
-2 Log L	1498.758	1423.255	1537.360	1463.733

Testing Global Null Hypothesis: BETA=0

Test	Females			Males		
	Chi-square	DF	Pr > ChiSq	Chi-square	DF	Pr > ChiSq
Likelihood ratio	75.503	5	<.001	73.628	5	<.001
Score	66.132	5	<.001	65.594	5	<.001
Wald	57.083	5	<.001	57.473	5	<.001

Table E5   Output from logistic regression to model likelihood of perceived increase in wages for those employed full-time before their course with a previous education of certificate III: Dependent variable is the log of full-time weekly wages

Parameter	Females*				Males			
	Estimate	Standard error	Wald chi-square	Pr> chi-square	Estimate	Standard error	Wald chi-square	Pr> chi-square
Intercept	-13.641	216.000	0.004	0.950	-2.042	0.258	62.742	<.001
Graduates								
Certificate IV and above	12.616	216.000	0.003	0.953	1.113	0.278	16.021	<.001
Certificate III	12.527	216.000	0.003	0.954	1.386	0.291	22.653	<.001
Certificate II & below	12.600	216.000	0.003	0.954	0.302	0.354	0.726	0.394
Module completers								
Certificate IV and above	12.175	216.000	0.003	0.955	0.528	0.305	3.001	0.083
Certificate III	11.339	216.000	0.003	0.958	0.377	0.351	1.154	0.283
Certificate II and below	–	–	–	–	–	–	–	–

Note: *The LOGISTIC procedure continues in spite of the above warning. Results shown are based on the last maximum likelihood iteration. Validity of the model fit is questionable.

Model diagnostics summary

Observations	Females	Males
Dependent variable—gaining employment	85	315
Total observations	374	1364

Note: Convergence criterion satisfied.

Model fit statistics

Criterion	Females		Males	
	Intercept only	Intercept and covariates	Intercept only	Intercept and covariates
AIC	402.898	398.677	1476.232	1437.642
SC	406.822	422.222	1481.451	1468.951
-2 Log L	400.898	386.677	1474.232	1425.642

Testing Global Null Hypothesis: BETA=0

Test	Females			Males		
	Chi-square	DF	Pr > ChiSq	Chi-square	DF	Pr > ChiSq
Likelihood ratio	14.221	5	0.014	48.590	5	<.001
Score	9.764	5	0.082	47.457	5	<.001
Wald	3.749	5	0.586	45.381	5	<.001

Table E6 Output from logistic regression to model likelihood of perceived increase in wages for those employed full-time before their course with a previous education of certificate II and below: Dependent variable is the log of full-time weekly wages

Parameter	Females				Males			
	Estimate	Standard error	Wald chi-square	Pr> chi-square	Estimate	Standard error	Wald chi-square	Pr> chi-square
Intercept	-2.887	0.257	126.307	<.001	-2.016	0.144	197.275	<.001
Graduates								
Certificate IV and above	2.163	0.264	67.193	<.001	0.968	0.159	36.919	<.001
Certificate III	2.031	0.268	57.526	<.001	1.802	0.152	141.300	<.001
Certificate II & below	1.466	0.284	26.592	<.001	0.683	0.174	15.361	<.001
Module completers								
Certificate IV and above	0.878	0.294	8.902	0.003	0.402	0.184	4.764	0.029
Certificate III	0.498	0.322	2.397	0.122	0.518	0.185	7.813	0.005
Certificate II & below	–	–	–	–	–	–	–	–

Model diagnostics summary

Observations	Females	Males
Dependent variable—gaining employment	838	1404
Total observations	3620	4900

Note: Convergence criterion satisfied.

Model fit statistics

Criterion	Females		Males	
	Intercept only	Intercept and covariates	Intercept only	Intercept and covariates
AIC	3919.365	3684.357	5872.356	5514.401
SC	3925.559	3721.523	5878.853	5553.382
-2 Log L	3917.365	3672.357	5870.356	5502.401

Testing Global Null Hypothesis: BETA=0

Test	Females			Males		
	Chi-square	DF	Pr > ChiSq	Chi-square	DF	Pr > ChiSq
Likelihood ratio	245.008	5	<.001	367.956	5	<.001
Score	217.321	5	<.001	364.958	5	<.001
Wald	188.047	5	<.001	341.895	5	<.001