Measuring the quality of VET using the Student Outcomes Survey

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About the research

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Measuring the quality of VET using the Student Outcomes Survey

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Currently, as noted in the review on the Australian vocational education and training (VET) system undertaken by the Organisation for Economic Co-operation and Development (OECD), there is a dearth of information available to students to help them make decisions about which course and provider will best meet their needs.

This report by Lee and Polidano examined the potential use of information from the Student Outcomes Survey, including the use of student course satisfaction information and post-study outcomes, as a means of determining markers of training quality. This project was undertaken independent of the work of the National Centre for Vocational Education Research (NCVER) in this area and is a welcome complement to it.

The main recommendation is that a 'scoreboard' approach of post-study outcomes is adopted as a means of measuring quality. The scoreboard would provide average outcomes by provider and field of education for a number of variables related to employment and training. While this approach has merit, it would necessitate a larger sample than that currently obtained for the Student Outcomes Survey in order for robust estimates to be provided.

In addition to the scoreboard approach, the authors recommend other changes to the Student Outcomes Survey to ensure the data are better used. Coincidentally, NCVER has a number of projects currently underway that align with these recommendations:

✧ *Publish individual provider information*: NCVER is reviewing the data protocols which currently proscribe the release of identified provider information.

✧ *Collect more information on students and their labour market outcomes*: NCVER reviews the survey instrument regularly and welcomes Lee and Polidano's suggestions.

✧ *Expand the survey to include information on private fee-for-service courses and all ACE (adult and community education) courses:* NCVER has commenced a three-year project to address this data gap.

✧ *Add a panel dimension to the survey*: others have also identified the need for longitudinal data that allow for the pathways of students to be tracked. The main issues with this proposal are the cost and the likely response rate in subsequent waves.

In addition to the recommendations listed above, a further challenge now in the quest for greater transparency is to design a survey framework that applies across the entire tertiary sector.

Tom Karmel
Managing Director, NCVER

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Executive summary

The vocational education and training (VET) sector in Australia is moving towards a more competitive model of provision. In theory this will deliver more efficient outcomes by making training providers more responsive to the needs of students. However, in practice, realising such efficiency gains depends upon prospective students being able to determine how well each course meets their needs so that responsive providers are rewarded with higher demand for their courses. At present, there is little information available for students to make such decisions, a key point raised in the review on the Australian VET system undertaken by the Organisation for Economic Co-operation and Development (OECD) (Hoeckel et al. 2008). Without information on the quality of training, there is the risk that providers will compete on fees alone, to the detriment of quality. Anderson (2005) found evidence of such 'commoditisation' occurring in the VET sector in response to market reforms.

The aim of this report is to examine the potential use of information from the Student Outcomes Survey, including the use of student course satisfaction information and post-study outcomes, as a means of determining markers of training quality. In an analysis of the student course satisfaction measures, we found there are very small variations in reported average student satisfaction across providers, with and without controls for factors that differ among providers unrelated to training quality, such as differences in student intake. There are several possible reasons for this, including the sample used for the survey not being representative of all VET participants.

We argue that outcome measures from the Student Outcomes Survey, such as further study and labour market outcomes, are more meaningful for students making choices on courses and providers, given that such outcomes are the main motivations for study. Further, differences in labour market outcomes also signal how valuable the skills acquired are to employers. All else being equal, the more favourable the graduate employment outcomes relative to competitors, the better a provider is in meeting the needs of students.

We recommend the collation of outcome measures from the Student Outcomes Survey, along with other relevant course and provider information, to be made available as part of a 'scoreboard' of information on courses, similar to the *Good universities guide* for prospective higher education students. Such a depository of information makes it easy for students to compare and contrast courses and providers. However, we recognise that using outcomes for comparison has its drawbacks. In particular, differences in the outcomes across providers may not only reflect differences in quality, but also differences in the regions and in student clientele, which may create perverse incentives for providers to bias their student intake, shift their location, or pressure poor students to exit prematurely. For this reason we suggest that raw outcome measures are validated against measures that control for differences in student characteristics and student opportunities across providers, such as output from regression models.

To ensure that data from the Student Outcomes Survey are better used, including as part of a 'scoreboard' of information, we recommend a number of changes to the survey, listed in order, from what we consider to be easiest to hardest:

✧ publish individual provider information

✧ collect more information on students and their labour market outcomes

✧ increase the sample size and survey response rates

✧ expand the survey to include information on private fee-for-service courses and all adult and community education (ACE) courses

✧ add a panel dimension to the survey.

Introduction

Reforms to the VET sector since the Hilmer report in 1993 have focused on making providers more responsive to the needs of students and employers. Central to these reforms have been legislative changes to allow non-TAFE (technical and further education) providers to compete on equal terms with TAFE for public funding of VET courses. These changes have given employers, together with employees, the right to choose the provider (public or private) of publicly funded training.

While the impetus for the reforms may be to make the VET sector more responsive to training needs, evidence presented by Anderson (2005) shows that, while market reforms in the Australian VET system have led to cost reductions, they've come at the expense of quality. This outcome is consistent with economic theory which dictates that where there is poor information on product/service quality, producers will typically respond to greater competition by reducing costs rather than improving services (Kranton 2003). An example of such behaviour is in the health sector, where, because of poor information on service quality, greater competition led hospitals in the United Kingdom to cut costs at the expense of quality (Propper, Burgess & Green 2004).

The need to improve information on course quality, including better use of the Student Outcomes Survey, is a key recommendation of the OECD review on the Australian VET system (Hoeckel et al. 2008). According to Hoeckel et al. (2008), improving information on quality will enable prospective students to choose the course that best meet their needs. In this way, institutions are rewarded for the quality of their training and not just for reducing costs.

The aim of this study is to address the OECD recommendation by examining possible uses by students for the Student Outcomes Survey data. The analysis is conducted in three key parts: first we evaluate the use of student course satisfaction measures in the survey. Given findings from the first part, in the second part we broaden the discussion by examining the information needs of students. In the final part, we make recommendations on the best mix of information from the Student Outcomes Survey and other sources, and how the survey can be improved.

The role of quality measures in light of VET reforms

The Australian Quality Training Framework (AQTF) formally defines quality as 'the level of satisfaction with and effectiveness of vocational education and training organisations, their products and services, established through conformity with the requirements set by clients and stakeholders' (ANTA 1999, p.22) and quality assurance as 'the planned and systematic process of ensuring the consistent application of registration requirements by registered training organisations' (ANTA 1999, p.23).

It is, however, not simple to find a definition of quality in VET that suits all purposes. Quality in VET can mean different things to different people, as Gibb (2003, p.33) found from conducting focus group discussions. From the viewpoint of VET managers, 'Quality is meeting the needs of the customer. It is concerned with levels of satisfaction and effectiveness. It is fitness for purpose; it is about achieving consistency.' In contrast, quality to VET teachers is, '… that which makes

learning a pleasure and a joy. It is about excellence of the educational experience. It is about continuous improvement and finding ways to improve outcomes and satisfaction.'[1]

At its essence, quality is a measurement of performance, and the range of definitions observed in the VET sector merely represents the various expectations against which people evaluate it. Using the examples above, VET teachers emphasise the processes of teaching, while VET managers emphasise meeting customer needs. How expectations vary depends on the interests of the individuals. In broad terms, we can identify three groups with varying interests in the quality of VET. First, there are prospective students, who, according to investment and consumption theories of education (Lazear 1977), are interested in the labour market returns and enjoyment derived from various courses. Second, there are employer interests, which include having adequate graduates available with the right mix of skills. Third, because they provide public funds to meet much of the cost of VET, governments are interested in ensuring that public funds are used efficiently to meet public interest objectives, including meeting both student and employer needs.

While all three broad categories of interest in the VET sector are important, the focus of this study is on the development of quality measures to meet the interests of prospective students. Providing information on the quality of courses for students is important, given the recent and ongoing shifts towards a more 'customer focused' or 'market-driven' model of VET provision. Economic theory dictates that, in competitive markets where the quality of a good or service is hard to measure or where information on quality is poor, quality may be sacrificed in the pursuit of lowering costs (McMillan 2004; Kranton 2003). If customers have no or little information on the quality of goods or services, producers will not be rewarded for improving quality, only for reducing price.

There is empirical evidence of this 'commoditisation process' in the literature, especially in the health sector (for example, Propper, Burgess & Green 2004) and findings from a report by Anderson (2005) suggest that reforms may have triggered such a process in the Australian VET sector. Reforms to VET in Australia during the 1990s were aimed at increasing competition in the sector; in particular, private providers were allowed to compete against public providers for government funding. These reforms led to a burgeoning in the number of private VET providers in Australia (Anderson 2005). However, despite the increase in contestability of government funding, Anderson (2005) in a study on the effects of market reforms concluded that the reforms of the 1990s had led to a reduction in the quality of education. Although Anderson did not point to the role of information in explaining poor market outcomes, this point was emphasised in the OECD review of the VET sector. Improving information on course quality, including better utilisation of the Student Outcomes Survey, was a key recommendation (Hoeckel et al. 2008). According to Hoeckel et al. (2008), improving information on quality will enable prospective students to choose the course that best meet their needs.

The need for better information for students is even more pressing, given recent changes to the government funding model of VET that are likely to intensify competition. From July 2009, eligible students will be able to access a loan-type scheme similar to the Higher Education Contribution Scheme (HECS), known as VET FEE-HELP. Like HECS, the Australian Government will pay the course fees (from approved providers), with students repaying part of the course costs after course completion.[2] For providers, this means that, instead of applying directly to the government for funding, they must compete for students. For eligible students, this means that they have greater freedom to choose a course and provider that best meets their needs. However, if greater freedom of choice is to translate into better outcomes, students need accurate information on the quality of available courses across providers.

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[1] No focus groups involving students were conducted in the Gibb (2003) study.

[2] While it does not cover accommodation and general living expenses, it allows students to be able to borrow funds to help pay for all or part of their tuition fees. Students approved for VET FEE-HELP assistance will have a loan with the Australian Government which will, on the student's behalf, pay their tuition fees to their approved VET provider. At the time of writing of this report, VET FEE-HELP loans can only be accessed through approved VET providers; this list of approved VET providers is still growing.

An overview of the Student Outcomes Survey

The Student Outcomes Survey is an annual, nationally stratified, randomly selected sample of VET completers. In essence it is a satisfaction and destination survey of those exiting the VET system upon completion. VET completers are identified as those who in the previous year were awarded a qualification (graduates) or who successfully completed part of a VET course and then left the VET system (module completers). It excludes those who undertook leisure or recreation short courses. Although the survey has been conducted since 1999, because we are interested in comparing student perceptions across provider types we limit our sample to the last four waves, 2005 to 2008. Information on provider types other than TAFE is unavailable prior to 2005.

A point to keep in mind is that the sample size of the Student Outcomes Survey fluctuates between 81 000 (plus 'top ups' by individual providers) and 300 000 every alternate year (table 1). This allows for national and state reporting to be carried out every year, with institute reporting in alternate years (the large sample years). According to NCVER, while the sample size varies from year to year, the survey methodology remains unchanged (NCVER 2005, 2006, 2007, 2008).

Table 1   VET enrolments and Student Outcomes Survey sample and responses

	Enrolments[1]	Sample[2]	Responses[3]	Response rate (%)
2005	1 606 400	300 425	100 904	39
2006	1 650 800	95 228	36 663	39
2007	1 676 000	300 104	96 633	32
2008	1 665 000	107 294	39 300	37
Total	**6 598 200**	**803 051**	**273 500**	**34**

Notes: 1 Number of people in VET in the year previous, National VET Provider Collection, 2007.
         2 Number of people who received a survey in the year after completing.
         3 Survey returned and completed.

At present, due to current data protocols, only information on the 'type' of provider is publicly available. Provider type may be categorised as TAFE, other government, ACE or private. The ACE sector provides locally accessible and community-based educational opportunities for adults, especially for people who may have difficulty participating in more formal education groups (NCVER 2009). For the purposes of this study, we merge TAFE and other government providers (such as agricultural colleges) because there are only a small number of observations for the latter.

A limitation of the Student Outcomes Survey is the low survey response rates (table 1), which are around 40% for graduates and around 30% for module completers over the period of interest. Response rates across the provider types are roughly comparable, although graduates from private providers report around a 5% lower response rate. Low response rates means that the sample may not be representative of graduate and module completers, because survey respondents are known to have different characteristics from non-respondents.

The issue of non-response bias has been raised in survey evaluation reports. In the 2008 report (I-VIEW 2008), post-survey analysis of non-respondents found that they differed significantly from

respondents in a number of ways. Some of the key differences between (self-completion and telephone) respondents and non-respondents found in the 2008 survey are:

✧ Non-respondents are more likely to be male.

✧ For TAFE graduates, non-respondents are less likely to report employment as their main motivation for training.

✧ Non-respondents are more likely to report achieving their main motivation for training.

✧ Non-respondents rated general skills and learning experiences of their courses *more* highly than respondents, but their experiences of teaching and assessment *less* highly.

Many of these differences have been found in prior surveys. Of particular importance to this study is the finding of no estimated statistical differences in reported overall course satisfaction between respondents and non-respondents.

Issues of sample size aside, the data in the Student Outcomes Survey are not representative of *all* VET courses because there is no information on students who completed fee-for-service courses from private providers[3] or from those who dropped out of the course without completing a module (estimated by Callan [2005] to be about 16% of all VET students), and information on students from ACE providers is limited to those from Victoria and New South Wales.[4] Further, there is less information available from ACE courses because ACE students are given a shorter questionnaire. For example, ACE students are not asked questions on post-training outcomes such as enrolment in further study, employment and wages.

It became evident after the analyses for this report were completed that the coding of the 'language other than English' (LOTE) variable differed for the 2005 cohort. Further, missing values were included in the descriptive analysis of the 'mode of delivery' variable. Standard practice excludes missing values. However, both are inconsequential to the overall result.

Descriptive statistics

As background, we present a snapshot of key respondent and provider characteristics, including reporting main motivations for training, provider characteristics and individual characteristics.

Main motivations

From table 2, we can conclude that, across all fields of education, the main motivations and characteristics of VET participants are varied. From the data, we cannot generalise to say that some fields of education have more homogenous training needs than any other. While there are various reasons for undertaking training given across all fields, labour market reasons (find work, upskill, reskill and general skills) dominate. When considering the reported motivations, it is pertinent to keep in mind that they were elicited six months after ceasing study, so it is possible that responses may be influenced by post-study outcomes.

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[3] This is not limited to the Student Outcomes Survey but the National VET Provider Collection is used as the sample frame.

[4] Due to an error, Victorian fee-for-service students from private providers were inadvertently included in the 2005 survey. These data are omitted because there is insufficient information to make robust comparisons.

Table 2   Main motivation for studying and student characteristics by main field of education

	Sci.	IT	Eng.	Arch.	Agr. & env.	Hlth	Educ.	Man. & com.	Soc. & cult.	Arts	Hosp.	Mix	Sub. only
	%	%	%	%	%	%	%	%	%	%	%	%	%
Main reason for training													
Find work	27	21	16	22	11	12	9	19	21	19	23	15	12
Voluntary upskill[1]	20	27	29	26	34	31	36	36	24	18	24	17	25
Compulsory upskill	15	4	32	29	25	29	26	14	15	2	23	9	21
Reskill	17	8	6	8	8	13	11	9	14	15	8	5	5
General skill	9	26	9	7	13	6	8	14	11	24	12	28	20
Other[2]	14	14	7	6	10	9	11	8	15	22	10	27	17
Work while studying	40	35	49	41	54	62	64	52	46	33	49	31	31
How well speak English													
Very well	58	66	63	72	65	67	78	67	44	74	65	28	60
Well	37	31	32	24	27	30	19	30	37	23	29	42	34
Not well	4	3	5	4	8	3	3	3	18	3	6	28	6
Not at all	0	0	0	0	0	0	0	0	1	0	0	1	0
Age													
15–19	15	26	22	29	18	8	5	21	12	23	40	16	9
20–24	22	16	23	30	13	15	4	19	15	25	20	10	9
25–44	43	30	34	29	38	42	47	37	41	28	23	39	36
45–64	19	25	21	12	29	33	41	22	31	21	16	30	40
65+	1	4	1	1	2	1	3	1	1	3	1	4	7
Has a disability	8	15	8	6	11	8	9	9	10	13	8	20	9
Highest prior qualification													
Diploma/bachelor	22	21	12	12	19	23	43	21	22	28	11	23	23
Certificate III &IV	24	20	22	20	19	32	22	19	22	19	12	13	17
Certificate I & II	7	15	13	12	14	7	3	13	9	10	17	11	5
Other cert.	11	9	12	11	12	12	10	11	12	9	10	13	9
Year 12	25	15	16	18	11	13	8	18	16	23	17	10	16
Less than Year 12	11	20	25	27	25	14	14	19	19	13	32	30	29
Male	38	57	87	88	68	32	36	28	20	32	31	35	40
No. of individuals	1 502	9 430	46 443	16 077	15 474	13 293	12 974	58 149	32 917	10 066	24 115	24 517	4 525

Notes: Sci. is natural and physical sciences, IT is Information technology, Eng. is engineering and related technologies, Arch. is architecture and building, Agr. & env. is agriculture, environmental and related studies, Hlth is health, Educ is education, Man. & com. is management and commerce, Soc.& cult. is social and cultural studies, Arts is creative arts, Hosp. is food, hospitality and personal services, Mix. is mixed-field programs and Sub. is subject only enrolment. **1.** Voluntary upskill are those who report the main reason for training is to get a job or promotion, those who want extra skills for their job, those who want to start a new business and those who want extra skills for their existing business. **2.** Other is those who report their motivation for training is to get into another course of study, to get skills for community/voluntary work or to increase confidence/self-esteem.

Source: Student Outcomes Survey, 2005–08.

Provider and student characteristics

A key consideration when using quality measures is to establish whether differences in the measures reflect differences in the quality of the courses or other differences unrelated to quality. In comparisons across providers, differences in quality measures unrelated to the quality of training might be differences related to the providers themselves (such as the types of courses offered and their location) and/or differences in the students. The statistics in tables 3 and 4 show the average characteristics of providers and their students respectively.

From table 3 we can conclude that the split between rural and urban training is roughly the same, with each provider type servicing both in approximately equal proportions. There are more noticeable differences between the types of courses undertaken; in particular, and to be expected, ACE providers are more likely to deliver non-certificate training in subject enrolments. The level of the course also appears to be tied to funding, with government-funded courses more likely to be higher level (certificate III/IV and above) and fee-for-service courses being more elementary. Courses delivered through ACE are more likely to involve personal instruction and, because they tend to be more elementary, the duration of these is also typically shorter.

Table 3   Characteristics of VET provision by provider type and funding source

	TAFE & other govt		ACE		Private
	Govt-funded	Fee-for-service[1]	Govt-funded	Fee-for-service	Govt-funded
	%	%	%	%	%
Location					
City	52	47	42	45	55
Rural	42	47	56	53	41
Remote	6	6	2	1	5
Qualification level					
Diploma and above	18	5	1	2	2
Certificate III & IV	50	28	26	26	58
Certificate I & II	24	19	24	24	32
Other certificate	3	35	4	4	1
Statement of attainment/subject only	4	13	46	43	6
Field of education					
Natural and physical sciences	1	0	0	0	0
Information technology	4	2	4	3	1
Engineering and related technologies	17	17	1	1	21
Architecture and building	6	6	0	0	4
Agriculture, environmental and related	6	5	1	2	4
Health	4	9	2	5	2
Education	3	10	5	9	2
Management and commerce	22	14	14	13	35
Society and culture	14	7	15	16	11
Creative arts	5	1	1	1	1
Food, hospitality and personal services	8	11	5	6	12
Mixed-field programs	8	15	8	6	4
Subject only enrolment	0	2	44	39	3

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	TAFE & other govt		ACE		Private
	Govt-funded	Fee-for-service[1]	Govt-funded	Fee-for-service	Govt-funded
	%	%	%	%	%
Modes of course delivery[2]					
Personal/classroom communication with instructor(s)	61	73	78	81	59
Printed materials	42	41	43	43	45
Web-based resources	14	9	9	8	9
Videotape, CD or DVD	18	17	16	16	13
Online communication with instructor and other students	6	4	4	3	4
Radio	1	0	1	0	0
Television	3	2	2	2	2
Video conference	2	1	1	1	1
Teleconference	1	0	0	0	1
Workshop practical activities	29	29	25	27	29
Other	5	4	4	3	7
Not stated	1	1	1	1	1
Course hours					
Less than 50 hours	31	66	63	67	39
50–199 hours	38	18	18	16	34
200–540 hours	18	10	15	14	22
More than 540 hours	9	3	4	3	4
Missing	3	4	0	0	1
Number of respondents	169 892	66 238	4 023	1 092	25 037

Notes: 1 Fee-for-service is training for which most or all of the cost is borne by the student or a person or organisation on behalf of the student.

2 Respondents could select more than one response; hence, totals add up to more than 100%. Missing values included in the analysis

Source: Student Outcomes Survey, 2005–08.

As with the variation in student training needs (table 2), there are differences in respondent characteristics across provider types (table 4). Respondents from ACE institutions are more likely to be from non-English speaking backgrounds, are older, female, are less likely to hold post-school qualifications and are motivated more by the need to develop general skills than respondents from other provider types. Another point of difference is that those who completed government-funded courses with private providers are much more likely than respondents undertaking fee-for-service or government-funded TAFE and other government courses to be trainees or apprentices (48% compared with 7% and 18% respectively).

Table 4   Respondent characteristics by provider type and funding source

	TAFE		ACE		Private
	Govt-funded	Fee-for-service	Govt-funded	Fee-for-service	Govt-funded
	%	%	%	%	%
Speak a language other than English at home	58	57	68	76	62
Age					
15–19	21	16	8	10	25
20–24	21	8	7	5	23
25–44	35	40	35	34	30
45–64	21	34	42	44	21
65+	1	2	8	7	1
Has a disability	11	8	9	7	9
Main reason for training					
Get a job	22	9	16	13	17
Voluntary upskill	26	32	24	29	32
Compulsory upskill	14	29	13	17	27
Reskill	11	6	7	7	7
General skill	14	13	24	19	10
Other	13	11	16	15	7
Apprentice/trainee	18	7	n.a.	n.a.	48
Highest prior education					
Diploma/advanced diploma/bachelor	18	27	18	24	11
Certificate III & IV	20	22	10	11	15
Certificate I & II	13	7	2	2	16
Other cert.	11	11	3	2	13
Year 12	17	11	24	22	18
Less than Year 12	21	22	44	39	27
Male	44	53	28	27	44
Work while studying	42	61	n.a.	n.a.	58
Number of respondents	169 892	66 238	4 023	1 092	25 037

Notes: na = not collected from students of ACE providers. Voluntarily upskill is those who report undertaking training to get a better job or promotion, to get extra skills for current job, to develop existing business or to start a new business. Compulsory is those who report undertaking training as a job requirement. Reskill is those who report undertaking training to try for a different career. Other is those who report undertaking training to get into another course of study, to get skills for community/voluntary work or to increase confidence and self-esteem.

Source: Student Outcomes Survey, 2005–08.

In summary, from the data presented in tables 2 to 4, we can conclude that the training needs, measured as motivations for training and respondent characteristics, are varied and that these variations extend across all fields of education. In contrast to the variety of training needs, the courses offered by provider types are relatively uniform, as are the characteristics of respondents who attend each. However, we note that these aggregate data mask differences that are likely to be present across individual providers.

Student perceptions of quality

Broadly speaking, quality measures from the Student Outcomes Survey can be categorised as information on student perceptions of course quality and student post-study outcomes. In this section, we examine the use of student perceptions of course quality. An advantage of using student perceptions of quality over using outcomes is that the former allows for easy comparison of quality, regardless of the motivation for studying. For instance, while wage progression or post-study employment outcomes may be appropriate measures for students who undertake training to gain a promotion or employment, respectively, such outcomes are not appropriate for those who undertake a course for pleasure or to help prepare them for further training.

Producing course satisfaction instruments

In the Student Outcomes Survey, information on student satisfaction is elicited by asking participants to respond to statements on three aspects of their course—teaching, assessment and general skill and learning experiences (see table A1 in the appendix). These opinions are reported on a five-point scale, where one is 'strongly disagree' with the statement and five is 'strongly agree' with the statement. After being asked to respond to statements on quality, respondents are asked to respond on the same five-point scale, to the statement, 'Overall, I was satisfied with the quality of this training'.

Given the sequence in which respondents are asked to respond to these statements, it is assumed that respondents first form an impression of each of the three course aspects and then combine these impressions, together with other relevant information, to decide on a level of course satisfaction. However, reverse causation is a possibility; that is, individuals form a view of course satisfaction first and use it to form impressions on aspects of course quality. If this is the case, then it would be pointless to use impressions of course aspects because they wouldn't provide any information on quality that could not be gleaned by examining overall satisfaction.

While testing for reverse causation is very difficult, we can test whether there is or is not more than one factor driving responses to statements on the various aspects of quality. If there is only one underlying factor (such as overall course satisfaction) driving response to all statements, then conducting separate analysis on the variables driving responses on each aspect of quality is unnecessary. Results from a principal components analysis show that there is sufficient variation in responses to conclude that there are three underlying factors driving responses and not one.[5] Further, results show that statement responses under each aspect of quality are linked to the same underlying factor, which suggests that responses are reliable, or internally consistent. From these results, we can conclude that it is worthwhile examining responses to each of the three course aspects and, because statement responses under each aspect are linked to the same underlying factor, they can be combined to form three scales, one for each aspect.

Producing a scale involves weighting and combining responses to each statement on a course aspect for each individual. While there are many different ways of weighting the statements,

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[5] The three factors are extracted using an Eigenvalue of 1, which is standard in the literature (de Vaus 2002).

without a clear reason for choosing one way over another, we elect to give each item the same weight and we simply take the average of all responses.

The mean scores, across all individuals in the sample, are presented in table 5, along with the mean overall rating of satisfaction. What is clearly noticeable from table 5 is that, across all fields of study, teaching is rated most highly and general skill and learning experiences is rated the lowest. Another interesting point is that the average overall course satisfaction lies between the highest and lowest aspect rating for all fields of study, which may suggest that individuals are combining the quality ratings when forming an overall view of course satisfaction. A final point is that the differences in means among fields of study are small, albeit significant.[6]

Table 5   Mean ratings for aspects of course quality on a scale of 1 to 5, by field of education

	Teaching	Assessment	General skill & learning experiences	Overall satisfaction
Natural and physical sciences	4.23	4.14	3.94	4.16
Information technology	4.18	4.05	3.77	4.00
Engineering and related technologies	4.30	4.12	3.84	4.13
Architecture and building	4.24	4.06	3.85	4.10
Agriculture, environmental and related studies	4.37	4.12	3.81	4.18
Health	4.37	4.18	3.84	4.19
Education	4.36	4.22	3.77	4.13
Management and commerce	4.26	4.13	3.86	4.09
Society and culture	4.33	4.18	3.99	4.17
Creative arts	4.27	4.06	3.90	4.11
Food, hospitality and personal services	4.37	4.16	3.85	4.23
Mixed-field programs	4.32	4.09	3.90	4.17
Subject only enrolment	4.41	4.08	3.77	4.21

Source: Student Outcomes Survey, 2005–08.

We present the distribution of the mean scores for the three aspects of course quality—teaching, assessment and general skill and learning experiences—together with the distributions of overall satisfaction ratings in table 6.

The descriptive statistics in table 6 show that across all measures there are only minor differences between provider types. The only differences of note are the higher teaching ratings for ACE providers. For instance, around 70% of those who attended an ACE institution had a mean teaching score of between 4.1 and 5 (out of 5), compared with 67%, 63% and 65% of fee-for-service TAFE, government-funded TAFE and government-funded private providers, respectively. However, caution should be exercised when interpreting descriptive statistics, as any differences in satisfaction between provider types may be masked by differences in the characteristics of students who attend these institutions and differences in the nature of the training offered. In the section below, we use multivariate analysis to estimate the differences in student satisfaction across providers after controlling for such differences.

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[6] Results from a t-test suggest that many of the differences between fields of study are significantly different at the 5% level.

Table 6 Distribution of mean ratings for aspects of course quality

	TAFE		ACE		Private
	Govt-funded	Fee-for-service	Govt-funded	Fee-for-service	Govt-funded
	%	%	%	%	%
General skill and learning experiences					
1.0–2.0	2	4	3	4	4
2.1–3.0	9	14	11	11	11
3.1–4.0	47	51	52	55	45
4.1–5.0	41	31	35	30	41
Assessment					
1.0–2.0	2	2	2	2	2
2.1–3.0	6	6	6	7	7
3.1–4.0	44	45	44	42	42
4.1–5.0	49	47	48	48	48
Teaching					
1–2	1	1	1	2	2
2.1–3	4	3	3	3	4
3.1–4	32	29	25	24	30
4.1–5	63	67	71	70	65
Overall satisfaction					
1 (strongly disagree)	2	2	2	2	3
2	4	3	3	5	4
3	8	7	5	6	8
4	50	51	47	44	47
5 (strongly agree)	36	37	42	42	38
Number of respondents	170 553	66 226	1 088	4 025	25 095

Note: Columns may not sum to 100% because of rounding error.
Source: Student Outcomes Survey, 2005–08.

Multivariate analysis

While it is possible to adjust measures of student satisfaction to account for differences in factors unrelated to training quality by merely re-weighting the data, this is a difficult task if there are differences in multiple factors, which is most often the case. To control for multiple sources of difference, the best method is to use multivariate analysis. Multivariate analysis allows us to remove the influence of observed differences that are unrelated to course quality, such as differences in the characteristics of students across providers and differences in the courses offered. The remainder is assumed to represent the differences in student satisfaction that are related to the quality of the courses offered by providers.

We estimate separate ordinary least squares (OLS) regression models for each of the satisfaction measures—mean scores for teaching, learning experiences and general skills, assessment and overall course satisfaction—using all waves of the sample. Applying OLS regression means that we treat each of the dependent variables as a cardinal measure of satisfaction: someone who reports a course satisfaction of five out of five is assumed to be twice as happy with their course as someone who scores a two. Studies using similar scales, such as five-point measures of life satisfaction, have shown that whether the dependent variable is treated as a cardinal measure (OLS) or as an ordered measure (ordered probit) has little effect on the results (see for example, Stutzer & Frey 2006). An advantage of treating all of the dependent variables as cardinal is that the model results are easily comparable.

The variables included in the models are chosen for the purpose of trying to test differences in course satisfaction across provider types. Therefore, variables that are not derived for ACE providers, such as whether the course was part of a traineeship or apprenticeship are not included. Excluded is also the dummy variable for whether the respondent completed the course or not (module completers or graduates) because it is potentially endogenous; that is, individuals fail to complete the course because they were dissatisfied with the quality of the training.[7] We also exclude variables of training delivery modes because they should be captured in the effects of provider types. That said, we test to see whether differences in provider types are related to differences in delivery modes by examining the effect the inclusion of these variables has.

An issue with undertaking this type of analysis is that there are likely to be unobserved personal and course-related variables that affect both course satisfaction and explanatory variables. For example, whether an individual studied part-time or full-time is not observed in the Student Outcomes Survey, but is likely to be linked with course satisfaction and individual characteristics. Controlling for all sources of unobserved individual and course heterogeneity is difficult. Due to the lack of year-on-year variation in the data from the survey (due to the small changes in year-on-year characteristics of students and course undertaken), there is no point estimating results from a fixed-effects estimation using a constructed pseudo panel model of the Student Outcomes Survey.[8]

Model results

The estimated model coefficients and t-statistics for each of the student satisfaction models are presented in table 7.

Because all of the explanatory variables are dummy (categorical) variables, the estimated coefficients represent the value of the dependent variable (mean score for teaching, mean score for assessment, mean score for general skill and learning experiences and overall satisfaction with the course) for an otherwise average individual on a scale of 1 to 5, when the given category is present, relative to when the reference category is present. For example, from the first column in table 7, the 0.02 estimated coefficient for fee-for-service courses at a TAFE institute can be interpreted as follows: on average, respondents who had undertaken a fee-for-service course with a TAFE rated the training at 0.02 points higher on a scale of 1 to 5 than those who undertook a government-funded course at a TAFE institute. In percentage terms, fee-for-service training at a TAFE institute is rated 0.4 percentage points higher than government-funded training undertaken at a TAFE institute.[9] The t-statistics reported in the cells next to the estimated coefficients is a measure used to test whether the estimated model coefficient is different from zero. The greater its absolute value, the more confident we are that the coefficient is different from zero. Significance at 5% and 10% are indicated by a double or a single asterisk respectively.

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[7] When we included a binary variable of whether the respondent was a module completer (1 if module completer and 0 for graduate) in the models we observed consistently large negative coefficients with an unusually small standard error, a good indication that the variable is endogenous in the satisfaction equations.

[8] Using fixed-effects panel data approaches estimates relationships in the data, based only on changes in the average group characteristics and group satisfaction levels over time. In this way, differences in course content and unobserved differences in individuals across the fields of study have no effect on the results.

[9] Calculated as 0.02 divided by 5 and multiplied by 100.

Table 7   Estimated coefficients for the OLS regression models of satisfaction

	Teaching		Assessment		General skill & learning experiences		Overall satisfaction	
	coeff.	t-stat	coeff.	t-stat	coeff.	t-stat	coeff.	t-stat
Constant	4.18	643.67**	4.05	587.82**	3.94	539.55**	4.12	494.81**
Course provider and funding source								
TAFE government-funded (reference case)	ref.	ref.	ref.	ref.	ref.	ref.	ref.	ref.
TAFE fee-for-service	0.02	6.00**	-0.02	-3.90**	-0.07	-14.51**	0.01	2.85**
ACE fee-for-service	0.02	0.71	-0.06	-1.72*	-0.04	-1.10	-0.02	-0.59
ACE government-funded	0.07	3.89**	-0.04	-2.08**	0.01	0.53	0.03	1.19
Private government-funded	0.03	5.14**	-0.03	-5.65**	-0.01	-0.93	-0.02	-3.22**
Age								
15–19 (reference case)	ref.	ref.	ref.	ref.	ref.	ref.	ref.	ref.
20–24	0.02	3.24**	0.02	4.60**	0.01	2.52**	0.00	0.16
25–29	0.07	12.19**	0.07	11.44**	0.01	0.87	0.03	3.38**
30–34	0.10	16.47**	0.10	15.69**	0.01	2.00**	0.06	7.08**
35–39	0.11	18.57**	0.11	17.22**	0.01	2.03**	0.07	9.19**
40–44	0.12	20.32**	0.11	16.83**	0.01	1.58	0.07	8.99**
45–49	0.12	20.71**	0.11	16.59**	-0.02	-2.31**	0.06	7.91**
50–54	0.13	20.23**	0.11	15.68**	-0.03	-3.45**	0.08	9.04**
55–59	0.14	19.11**	0.12	15.39**	-0.01	-1.68*	0.11	11.01**
60–64	0.18	17.31**	0.12	10.98**	0.01	1.11	0.13	9.60**
65+	0.22	16.48**	0.11	8.10**	0.12	7.99**	0.18	10.81**
Male	-0.02	-4.60**	-0.04	-11.64**	-0.08	-21.24**	-0.02	-5.26**
Born in a non-English speaking country	-0.06	-12.75**	-0.05	-10.43**	0.12	22.03**	-0.02	-4.07**
Speak a language other than English at home	0.02	4.41**	0.02	4.39**	-0.02	-4.59**	0.01	1.89*
Field of education								
Management and commerce (reference case)	ref.	ref.	ref.	ref.	ref.	ref.	ref.	ref.
Natural and physical sciences	0.03	1.40	0.01	0.63	-0.01	-0.64	0.04	1.49
Information technology	-0.08	-9.71**	-0.07	-8.40**	-0.06	-7.08**	-0.11	-10.41**
Engineering and related technologies	0.04	7.91**	0.00	0.91	0.01	1.03	0.02	2.53**
Architecture and building	0.00	0.61	-0.04	-5.04**	0.02	2.97**	0.00	-0.26
Agriculture, environmental and related studies	0.07	10.92**	-0.03	-4.13**	-0.02	-2.34**	0.03	3.19**
Health	0.03	4.73**	0.00	-0.17	0.06	7.04**	0.01	1.15
Education	0.05	6.68**	0.06	7.01**	0.02	1.98**	0.03	2.67**
Society and culture	0.08	15.00**	0.03	5.30**	0.10	16.74**	0.07	10.38**
Creative arts	0.04	4.65**	-0.08	-9.92**	0.01	1.47	0.02	1.91*
Food, hospitality and personal services	0.11	18.44**	0.04	6.75**	0.02	2.69**	0.09	12.22**
Mixed-field programs	0.02	3.41**	-0.03	-3.91**	0.09	12.59**	0.01	1.20
Subject only enrolment	-0.02	-1.02	-0.06	-3.50**	0.01	0.54	-0.03	-1.48
Location								
Urban (reference case)	ref.	ref.	ref.	ref.	ref.	ref.	ref.	ref.
Regional	0.04	11.47**	0.04	12.18**	0.05	13.08**	0.04	10.79**
Remote	0.04	6.41**	0.05	7.38**	0.10	13.63**	0.07	9.07**
Region missing	0.02	1.95*	0.03	2.35**	0.02	1.71*	0.02	1.51

Continued over page

	Teaching		Assessment		General skill & learning experiences		Overall satisfaction	
	coeff.	t-stat	coeff.	t-stat	coeff.	t-stat	coeff.	t-stat
Level of course								
Diploma/advanced diploma	-0.12	-22.00**	-0.08	-13.47**	0.06	9.31**	-0.13	-18.68**
Certificate III & IV	-0.06	-15.68**	-0.02	-4.81**	0.03	7.21**	-0.09	-17.07**
Certificate I & II (reference case)	ref.	ref.	ref.	ref.	ref.	ref.	ref.	ref.
Other certificate	0.01	1.56	-0.03	-4.87**	-0.03	-3.98**	0.01	0.75
Subject only or statement of attainment	0.05	6.90**	0.04	5.79**	0.00	-0.59	0.09	9.54**
Length of course								
Less than 50 hours (reference case)	ref.	ref.	ref.	ref.	ref.	ref.	ref.	ref.
50–199 hours	0.02	4.90**	0.04	9.22**	0.07	16.08**	0.03	6.35**
200–540 hours	0.06	12.74**	0.10	20.94**	0.14	28.06**	0.10	17.23**
More than 540 hours	0.09	13.71**	0.11	16.56**	0.17	24.77**	0.15	18.19**
Hours missing	0.04	4.96**	0.06	5.98**	0.12	11.66**	0.07	6.15**
Main reason for studying								
Get a job (reference case)	ref.	ref.	ref.	ref.	ref.	ref.	ref.	ref.
Upskill	0.05	11.25**	0.05	10.57**	-0.06	-12.68**	0.03	5.29**
Reskill	0.02	3.28**	0.04	6.67**	-0.06	-8.57**	-0.01	-1.44
Requirement of job	0.00	-0.18	-0.02	-3.87**	-0.22	-40.96**	-0.05	-8.91**
General skill	0.03	5.96**	0.02	3.83**	-0.11	-18.17**	0.02	3.43**
Other	0.04	6.93**	0.03	5.24**	-0.08	-13.18**	0.02	3.16**
Has a disability	-0.05	-9.82**	-0.07	-12.86**	-0.04	-7.98**	-0.05	-8.31**
Survey year								
2005 (reference case)	ref.	ref.	ref.	ref.	ref.	ref.	ref.	ref.
2006	0.01	1.20	-0.01	-2.00**	-0.01	-1.43	0.00	0.31
2007	0.03	7.59**	0.00	0.75	0.01	2.35**	0.01	2.02**
2008	0.05	10.10**	0.03	4.66**	0.04	7.65**	0.04	5.91**
Highest prior qualification								
Higher education	-0.04	-6.52**	0.00	0.74	-0.33	-50.52**	-0.13	-17.33**
Diploma/advanced diploma	-0.03	-5.13**	0.02	3.16**	-0.17	-24.70**	-0.09	-11.55**
Certificate III & IV	-0.02	-3.34**	0.02	3.50**	-0.07	-12.75**	-0.05	-8.11**
Certificate I & II	-0.02	-3.43**	0.01	1.22	-0.01	-1.99**	-0.02	-3.57**
Other certificate	-0.01	-2.37**	0.00	0.08	-0.03	-5.33**	-0.03	-4.41**
Completed secondary school	-0.02	-4.97**	0.00	0.06	-0.10	-18.78**	-0.05	-7.27**
Didn't complete secondary school (reference case)	ref.	ref.	ref.	ref.	ref.	ref.	ref.	ref.

Note: ** Significant at 5%, *Significant at 10%.
Source: Student Outcomes Survey, 2005–08.

Overall, the magnitude of the model results in table 7 is consistent with the findings from the descriptive statistics; that is, there are statistically significant differences between respondent ratings of provider types, but the magnitudes of these differences are so small that it is hard to make any strong claims over the relative quality of one against another. For example, we cannot rule out the possibility that these differences may be spuriously linked to unobserved differences in respondent characteristics across provider type that are unrelated to the quality of the training, such as whether the training was taken part- or full-time.

As for differences in provider types, the model results in table 7 show only minor differences in the quality scores across individual characteristics, with few differences of note. In terms of magnitude, the largest coefficient across all of the explanatory variables is -0.33 points on a scale of 1 to 5, or a 7-percentage point difference in the relationship between holding a pre-training higher education qualification relative to no qualification on the mean 'general skills and learning experiences' score.

There may be several explanations for the small differences in quality observed above.

1 The small differences may be because those who may have been least satisfied with the quality of the education are not included in the survey—those who ceased studying without completing at least a module, estimated to be around 16% of all VET students (Callan 2005).

2 Student perceptions of quality may not be valid instruments of actual training quality. One reason why they may not be representative of actual course quality is that the survey is conducted around six months after completion, at which time students may have forgotten aspects of the course.

3 The results presented above may be right: there may in fact be high satisfaction with training courses with little variation in course quality between provider types. This may be because the Australian Quality Training Framework, which is a set of national training standards for provider registration, actually ensures a uniformly high training quality.

We cannot rule out the first point because there is no information in the Student Outcomes Survey about those who did not complete at least a module, or the circumstances under which they ceased studying. Given that these individuals are estimated to comprise around 16% of all VET students, not an insignificant number, priority should be given to an analysis of the characteristics and experiences of those who cease studying before completing a module. It needs to be noted, however, that the survey was designed to measure outcomes of students who completed training.

On the second point, it is difficult using the Student Outcomes Survey data to test whether perceptions of quality is a valid measure, mainly because perceptions of quality are measured at the same time as the outcomes, so that perceptions themselves may be affected by the outcomes. This point is underlined by regression results when an indicator for module completers is included in the model. Results from this model produced strong evidence to suggest that the module identifier was an endogenous variable in course satisfaction ratings. This suggests that there is a two-way (non-causal) relationship between course satisfaction and module completion: students become module completers (cut short their course) because of low satisfaction with their course, but also exiting study without completion may lower their perception of the course six months after completing. Note, however, that in VET many students do not intend to complete qualifications. They may exit the system when they have acquired the skills they sought. Ideally, validation would take place by assessing the skills of a sample of students before and after completing the training and examining how their skill accumulation is linked to satisfaction with their course.

On the third point, the lack of individual provider data and data from private provider fee-for-service courses in the Student Outcomes Survey means that we cannot test this hypothesis. Data at the provider type level are highly aggregated and mask possible differences in student satisfaction across individual providers.

Putting aside the first two points, even if we could conclude that the small differences in perception of quality across provider types are due to the uniformly high standard of training, there are still more fundamental questions that may be considered in relation to the use and design of quality measures:

◇ If there is little variation in training quality between provider types, is there a need for quality measures?

◇ If so, who would use the measures and for what purpose? What outcomes will these measures help to achieve?

◇ What are the potential user-information needs? For example, do prospective students need information on provider types or is information at an institutional, campus, course or module level more important? Do they need information on facets other than the quality of training, for example, on-campus amenities and services?

◇ Are these needs already met from other data sources? If not, how well does the Student Outcomes Survey meet these needs currently? What changes would be needed to the survey to accommodate them?

These questions are addressed in the remainder of this report.

What information do students need to make good choices?

The study so far has examined the use of student course satisfaction measures from the Student Outcomes Survey to evaluate quality. Results from this analysis suggest that prospective students would gain little insight from such measures. Just as good information can improve market outcomes, bad information can lead to poor outcomes. This raises the question, 'What information do students need to make good choices?'

To answer this question, we need to consider why students engage in VET. From a theoretical perspective, students are deemed to engage in education to improve their future labour market prospects (investment model) and/or because they derive pleasure from studying (consumption model) (Duncan 1976). Under the human capital model, an individual's choice of course and provider depends on whether their discounted future benefits outweigh the costs of studying. Future benefits are typically identified as being from the financial (higher future wages) and non-financial (greater job satisfaction and securing expanded employment options) benefits. Costs involved in studying are immediate and may include course costs (such as fees, transport and equipment costs) and foregone income and time that could have been spent in leisure, socialising or with family. When weighing up the future benefits and costs, because of time preference people tend to discount the importance of future benefits. In contrast, the consumption model emphasises the pleasure that individuals derive from undertaking a course at a particular institution, which may depend on the content of the course, campus amenities and on-campus activities, plus characteristics of the surrounding area.

From the Student Outcomes Survey data (table 8), it is clear that investment motivations are important. From those surveyed between 2005 and 2008, the vast majority, across all fields of education, report investment motivations as the primary reason for undertaking a VET course.[10] In the majority of cases, students are said to be motivated to find work, improve their skills or to reskill. However, the emphasis on investment motivations does vary across fields of study, with around 22% of arts and 27% of mixed-field students reporting other motivations being of primary importance.

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[10] It should be kept in mind that the reported motivations for studying are elicited six months after course completion and may be influenced by the student outcomes. Ideally, this information would be collected at the time study is undertaken.

Table 8   Main reason for studying

	Sci.	IT	Eng.	Arch.	Agr. & env.	Hlth	Educ.	Man.& com.	Soc. & cult.	Arts	Hosp.	Mix.	Sub. only
	%	%	%	%	%	%	%	%	%	%	%	%	%
Find work	27	21	16	22	11	12	9	19	21	19	23	15	12
Voluntary upskill	20	27	29	26	34	31	36	36	24	18	24	17	25
Compulsory upskill	15	4	32	29	25	29	26	14	15	2	23	9	21
Reskill	17	8	6	8	8	13	11	9	14	15	8	5	5
General skill	9	26	9	7	13	6	8	14	11	24	12	28	20
Other	14	14	7	6	10	9	11	8	15	22	10	27	17
No. of respondents	1 502	9 430	46 443	16 077	15 474	13 293	12 974	58 149	32 917	10 066	24 115	24 517	4 525

Source: Student Outcomes Survey, 2005–08.

An important point to note is that, while investment motivations dominate, there are a range of desired labour market outcomes that may be of interest to prospective students. From table 8, it appears that there is a broad spread of labour market motivations, including finding work, career progression (voluntary upskill and general skills) and a change of career (reskill). This indicates that students may be interested in a range of different labour market outcomes from VET, including wage progression, employment prospects and the types of jobs graduates find.

The strong emphasis on employment motivations for studying suggests that students would value information on post-study employment outcomes highly in making decisions on courses and providers. Another argument for using outcomes is that they also reflect the value that employers place on the skills acquired. All else being equal, for a given field of education, the greater the average wage and employment rates from a provider, the more closely the skills developed from the course meet the needs of employers. Although employment outcomes are the prime motivation, other motivations, such as to gain access to another course, are still important. Therefore, other outcomes, such as enrolment in further education, are also important information to students. The Student Outcomes Survey does include this type of information.

To derive measures from the Student Outcomes Survey for student use, a number of issues need to be resolved. First, while there is information on provider type (that is, TAFE, other government, ACE and private provider), there is no publicly available information on individual providers. Second, information on key labour market outcomes is only collected six months after completion, with limited information on the longer-term outcomes. Third, more information is needed on employment outcomes after completion. Fourth, to evaluate course outcomes across provider types, more contextual information needs to be available, adjusted for differences in students across courses and providers.

These issues arise because the Student Outcomes Survey was not designed for the purpose of evaluating courses across providers; rather, it was designed to produce broad sector-wide indicators for public accountability purposes. One of the main uses of the survey is for deriving annual indicators for publication in the Annual National Report of the Australian VET System to address two (out of six) key performance measures (ANTA 2004). These two key performance measures are:

✧ the level of student employment outcomes and benefits after training and their satisfaction with their training program

✧ the extent to which Indigenous Australians engage with and achieve positive outcomes from vocational education and training.

Using and developing quality measures from the Student Outcomes Survey

The focus of this section is on the use and development of the Student Outcomes Survey to derive quality measures for students to use in making decisions on courses and providers. However, we point out that developing such measures does not discount their use for public accountability purposes. In fact, some of the recommendations to develop the survey dataset will assist in public reporting, such as reporting on the benefits of VET required under the Annual National Report and against Council of Australian Governments (COAG) objectives under the National Agreement for Skills and Workforce Development (Council of Australian Governments 2009). In developing Student Outcomes Survey data for use by students, it is pertinent to examine possible uses for the data. Below are a few examples of how similar data are used in other sectors for the same purpose.

A first point of comparison is the information provided to prospective higher education students in Australia in the *Good universities guide*. The *Good universities guide* provides students with an overview of information on institutes, their campuses and the courses offered (including information about VET providers). More importantly, it provides a 'scoreboard of comparisons' on fees, entry requirements and course outcomes across all institutes where a particular course is offered. Course outcomes includes the percentage of graduates in employment in the year after completion, the destination of graduates, starting salaries and student course satisfaction ratings.

A similar 'scoreboard' approach has already been adopted for VET in British Columbia in Canada (BCStats 2008) by using information from the Diploma, Associate Degree and Certificate Student Outcomes (DASCO) Survey. As well as including information on student characteristics (including student work and study history, gender, age and reasons for enrolling), the publication includes information on key graduate outcomes, including satisfaction with various aspects of the course, overall satisfaction with course, employment rates and wage rates and hours worked (see appendix B for an example of a scoreboard for the Justice Institute of British Columbia). Unlike the scoreboard approach in the *Good universities guide*, the approach used for VET in British Columbia only includes outcomes for the institutes as a whole by comparison with the average across all providers in British Columbia and no comparisons are made at the course level.[11]

Recommendation 1: Adopt a scoreboard of post-study outcomes to measure quality

A scoreboard of study and post-study outcomes from the Student Outcomes Survey would help Australian VET students make better decisions on the best course for their needs, which in turn would reward providers who best meet these needs. Such a scoreboard may include average outcomes by provider and field of education for:

✧ the main reason for doing the training

✧ proportion taking further study and types of further study

✧ current employment and earnings compared with before study

✧ occupation and industry of employment after study and job satisfaction

✧ relevance of training to their post-study job.

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[11] Hoeckel et al. (2008) also provide examples in the US states of Arkansas and West Virginia, where information on the quality and effectiveness of VET programs is available for public review.

To provide robust estimates of such variables by course and provider would require a larger sample than that currently obtained for the Student Outcomes Survey.

Accompanying outcome information with relevant course and provider information (similar to the *Good universities guide*) will help students more easily make comparisons. Course information may include content, course fees and course length, while provider information may include campus amenities and services, transport and information on governance, such as participation and awards received from the AQTF voluntary Excellence Criteria program.

Because it takes time to gain a true picture of any labour market benefits from education and training, any outcomes should be measured over time. For example, for those who are already in employment when they undertake VET, the employment benefits may not be transmitted, in the form of higher wages and/or increased job retention, until years after completion. Similarly, employment rates measured in the first year after graduation may reflect the efforts of providers to find their graduates work placements, which may not necessarily reflect the quality of the training.

A criticism of using outcome measures is that they do not take into account differences in the characteristics of students who graduate from different courses. For example, there is much criticism of average school exam results published each year in the United Kingdom because clearly the performance of schools is not just a measure of the quality of the education, but a measure of the ability of the school graduates (Goldstein & Myers 1996).

Such criticisms are relevant when comparing outcomes across individual VET providers. There are marked differences in ability and employment and education history among VET students. In response to increasing competition, individual providers, especially small private providers, are specialising in meeting the needs of specific clientele (Ferrier, Dumbrell & Burke 2008). Segmentation in training markets means that differences in training outcomes across providers is likely to be influenced not only by the quality of the training, but also by the characteristics of the students. For example, using raw post-training employment rates as a measure of quality will over-inflate the performance of providers who specialise in providing 'in-house' training to company employees, compared with providers who specialise in delivering courses to new school graduates.

If differences in average outcomes among providers are not valid measures of quality—driven by differences in region or graduate characteristics rather than differences in course quality—then such indicators may reduce the benefits from providing students with quality information. In particular, it would reward providers who take the students with the best employment prospects, which may lead them to bias their student intake, shift their location, or pressure poor students to exit prematurely. Therefore, methods of analysis that control for the characteristics of the student cohort must be employed.

Recommendation 2: Validate the use of post-study outcomes as a measure of quality

Validating the use of the measures will provide confidence that labour market outcomes are a measure of course quality, which will ensure that students choose the best courses and that providers of the best courses are rewarded. Validating the use of average labour market outcomes involves testing the extent to which differences in average outcomes are due to differences in course quality, as opposed to differences in other factors unrelated to quality, such as differences related to students and local opportunities available to students. A simple way of doing this would be to tabulate the average characteristics of students across providers (for given courses) and employment rates in the regions where providers operate. This is a crude approach, but it may highlight whether more detailed analysis is warranted. If more detailed analysis is needed, regression analysis would be the best approach. Regression analysis allows the effects of provider type on labour market outcomes to be measured, independent of a range of observed student and regional characteristics that may also be significant. However, a downside of this approach is that it is more time-consuming and would require more information to be collected on respondents in the Student Outcomes Survey, such as information on their work and education history. If average employment outcomes are not valid

measures of course quality, then the use of more sophisticated regression techniques may be the only way of producing outcome measures that are comparable across providers.

An alternative, but less attractive approach to validating outcomes, would be to include contextual information on the provider's region and their graduate characteristics into the scoreboard (which is the approach used for comparing VET providers in British Columbia). For example, the average unemployment rate may give students a measure of the employment conditions in the region in which the provider operates, and average employment rate prior to study may help students judge the extent to which the course helped graduates find work. A limitation of this approach is that it puts the onus on students to synthesise the information and make judgments on how outcomes should be appropriately adjusted. While this may be a quick and easy option, it makes comparisons more difficult for students.

Recommendations for developing the Student Outcomes Survey

To adopt a 'scoreboard' framework for measuring quality, regardless of whether and how the measures are validated, we suggest a range of changes to the Student Outcomes Survey data collection. The recommendations below are ordered from highest to lowest priority, where recommendation 3 is likely to be the easiest to implement and 6 the most difficult.

Recommendation 3: Include provider information in the collection

Although information regarding the name and location of the institute is collected, as reflected in the Student Outcomes Survey cover letter sent to each person who completed recognised vocational training in the previous calendar year, this information is discarded and not made publicly available. With provider information included in Student Outcomes Survey dataset, a natural progression for the dataset would be to link it to administrative information collected by the institutes, such as information on the courses (such as their completion rates, attendance rates, contact hours, average class sizes) and information on the individual students (such as attendance records, whether study is full-time or part-time, expenditure per student, staff–student ratios, completion rates and academic history). This information would provide important information which could be used to put outcome information into context or used to validate the use of labour market outcomes. Linking the survey to provider administrative data may also provide a useful tool for analysing the factors that lead to favourable outcomes.

Recommendation 4: Collect more information on students and their labour market outcomes

While the Student Outcomes Survey currently asks individuals about earnings (Q29), it is categorical (eight possible categories ranging from '$1–$79 per week' to 'more than $1500 per week') and not in its most useful form, especially if making comparisons across providers for a given course (where differences may be small). There are many examples of surveys that ask respondents to give their income in dollars, with high response rates, such as the Household Income and Labour Dynamics (HILDA) Survey and the Graduate Destination Survey (GDS).

To be able to validate the use of outcome measures used as part of a 'scoreboard' approach, or at least to put the outcomes into perspective, more information on the nature of the students is required. For example, more information is needed on employment history, marital status, living and caring arrangements, place of residence (to control for differences in employment opportunities of graduates) and work experiences while studying. These factors may affect post-study employment outcomes, and to the extent that they differ across courses and providers, need to be accounted for when comparing post-study outcomes.

Recommendation 5: Increase the sample size and survey response rates

For robust scoreboard information for specific courses across providers there needs to be a review of the current sampling method, in particular, a larger sample and a higher response rate.

Recommendation 6: Expand the survey to include information on private fee-for-service courses

Without information on private fee-for-service courses, it is difficult for prospective students to evaluate all the available options, especially students who may not be eligible for a publicly funded position, such as overseas students. Information on private fee-for-service is also required for public accountability, for example, reporting against Council of Australian Governments' objectives, such as the proportion of graduates employed after completing training by previous employment status.

Recommendation 7: Add a panel dimension to the Student Outcomes Survey

At present, the Student Outcomes Survey attempts to measure the labour market benefits of training by using a single cross-sectional survey in the year following the completion of a module or qualification. While this is an economical way of evaluating the effects of training, it does not address an important related question: is employment obtained after training sustainable over time?[12]

One possibility would be to expand the one-off NCVER 'Down the Track' survey that followed up on the progress of respondents to the Student Outcomes Survey two years after the initial survey. In doing do, the Student Outcomes Survey would become a panel dataset conducted every one or two years, where the initial survey would elicit more contextual and historical information than in subsequent surveys. Subsequent surveys would focus primarily on employment and earnings, as well as job satisfaction. A large-scale panel dataset would capture the labour market dynamics of VET graduates more effectively.

Although it might be considered that there would be some overlaps with HILDA and the Longitudinal Surveys of Australian Youth (LSAY), sample sizes of VET graduates in these two panel surveys are often small and not conducive to VET-specific analyses. There is a precedent of more focused panel data surveys being conducted. For example, the Department of Education, Employment and Workforce Relations (DEEWR) began a five-wave panel survey of income support recipients in 2006 (the Longitudinal Pathways Survey) because the sample size in HILDA is too small to allow detailed analysis of the labour market dynamics of income support recipients.

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[12] This has also been identified as a weakness of data collection and research on VET in Hoeckel et al. (2008, p.28).

Conclusions

Reforms in the VET sector are moving it towards a more demand-driven model of provision, one where funding is linked more closely to the choices of students. To ensure that such reforms deliver good outcomes for students and employers, it is important that students have adequate information on course quality across providers. Economic theory dictates that, in markets where there is poor information on quality of goods or services, there is a risk that agents will compete on price at the expense of quality (McMillan 2004; Kranton 2003), as evidenced by effects of market reforms in the health sector in the United Kingdom (Propper, Burgess & Green 2004). There is evidence that market reforms in the Australian VET sector during the 1990s have activated such a 'commoditisation processes' (Anderson 2005).

To avoid any possible deterioration in quality in the face of further reforms, namely, the introduction of the Australian Government's VET FEE-HELP loan scheme, it is important that students are given adequate information on the quality of the courses provided by various providers. A recent OECD review on the Australian VET system emphasised this point and stressed the importance of making better use of the data from the Student Outcomes Survey (Hoeckel et al. 2008). According to Hoeckel et al. (2008), improving information on quality will enable prospective students to choose the course that best meet their needs. In this way, institutions are rewarded for the quality of their training and not just for reducing costs.

In this study, we examined the possible use of the Student Outcomes Survey dataset to fulfil this role. Analysis of the data on student perceptions of quality in the survey found very little variation between courses and between providers. While there may be a number of reasons explaining this, including problems recalling aspects of the course six months after completion, we argue that post-study outcomes such as employment and wage rates are more meaningful for students when making choices between courses and providers and provide a better measure of course quality. Further, outcomes are also a measure of the value that employers place on the skills developed from the training. All else being equal, the more favourable the labour market outcomes from training, the more valued the skills are to employers.

We recommend making information on student outcomes available as part of a 'scoreboard' of information on outcomes, courses and providers (recommendation 1), similar to the *Good universities guide* for prospective higher education students. Such a depository of information makes it easy for students to compare and contrast courses and providers. However, we acknowledge that such an approach does have its drawbacks. In particular, differences in the outcomes across providers may reflect differences in the regions and students serviced by providers, which may create perverse incentives for providers to bias their student intake, shift their location, or pressure poor students to exit prematurely. For this reason we suggest that raw outcome measures are validated against measures that control for differences in student characteristics and student opportunities across providers, such as output from regression models (recommendation 2). This would require additional information on student characteristics to be collected.

Adopting a scoreboard approach with validated outcomes requires the alteration and expansion of the Student Outcomes Survey. From easiest to most difficult, these recommended changes are:

✧ include individual provider information in the collection (recommendation 3)

✧ collect more information on students and their labour market outcomes (recommendation 4)

✧ increase the sample size and survey response rates (recommendation 5)

✧ expand the survey to include information on private fee-for-service courses (recommendation 6)

✧ add a panel dimension to the Student Outcomes Survey (recommendation 7).

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Appendix A

Table A1   Statements on the three aspects of course, Student Outcomes Survey 2005–08

On a scale of 1 to 5, where 1 is strongly disagree and 5 is strongly agree, how, on average, would you rate the following aspects of the training?

Teaching

My instructors:

1. had thorough knowledge of the subject
2. provided opportunities to ask questions
3. treated me with respect
4. understood my learning needs
5. communicated the subject content effectively
6. made the subject as interesting as possible

Assessment

7. I knew how I was going to be assessed
8. The way I was assessed was a fair test of my skills
9. I was assessed at appropriate intervals
10. I received useful feedback on my assessment
11. The assessment was a good test of what I was taught

Generic skills and learning experiences

My training:

12. developed my problem solving skills
13. helped me develop my ability to work as a team member
14. improved my skills in written communication
15. helped me to develop the ability to plan my own work
16. has made me feel more confident about tackling unfamiliar problems
17. has made me more confident about my ability to learn
18. has made me more positive about achieving my goals
19. has helped me thing about new opportunities in life

Appendix B

Figure B1 Scorecard for Justice Institute of British Columbia (from BCStats, 2008)

Justice Institute of British Columbia

INDICATOR		JIBC Former Students Value	N	All BC Institutions Former Students Value	N	Provincial Range Min-Max	Standard Deviation Value	Institution as % of BC Average (Index[3])	All BC Institutions[5] Standardized Value	Institution as % of BC Average (Standardized Index)
Respondents[1] -- All Programs										
Program of Studies — Program Type and Length										
In Applied Programs	%	94%	276	76%	12,375	32% - 100%	19%	124%		
In Arts and Sciences Programs	%	6%	17	24%	3,922	0% - 68%	19%	24%		
In Applied Program, 3 - 6 Months	%	88%	257	17%	2,799	0% - 88%	19%	511%		
In Applied Program, 7 - 12 Months	%	5%	15	31%	5,075	5% - 72%	19%	16%		
In Applied Program, 13 - 36 Months	%	1%	4 *	27%	4,337	1% - 47%	11%	5%		
In Arts and Sciences Program, Lower Division	%	6%	17	24%	3,922	0% - 68%	19%	24%		
In Applied Post-Baccalaureate Program	%	0%	0	1%	164	0% - 4%	1%	n/a		
Program Areas										
Agriculture, Natural Resources and Sci.Tech.	%	0%	0	2%	317	0% - 15%	4%	n/a		
Arts and Sciences	%	6%	17	24%	3,922	0% - 68%	19%	24%		
Business Management	%	0%	0	14%	2,273	0% - 54%	11%	n/a		
Communications	%	0%	0	2%	250	0% - 4%	1%	n/a		
Computer and Information Services	%	0%	0	2%	318	0% - 6%	2%	n/a		
Construction and Precision Production	%	0%	0	10%	1,567	0% - 33%	10%	n/a		
Education and Library Services	%	0%	0	5%	736	0% - 18%	5%	n/a		
Engineering, Electrical and Electronics	%	0%	0	6%	902	0% - 16%	4%	n/a		
Health Related (see also Nursing)	%	76%	222	10%	1,621	0% - 76%	17%	762%		
Legal and Social	%	18%	54	5%	881	1% - 53%	11%	341%		
Mechanical and Related	%	0%	0	6%	1,035	0% - 17%	5%	n/a		
Nursing	%	0%	0	4%	700	0% - 20%	5%	n/a		
Recreation, Tourism, Hospitality and Service	%	0%	0	6%	1,027	0% - 22%	7%	n/a		
Transportation	%	0%	0	0%	68	0% - 2%	1%	n/a		
Visual, Performing and Fine Arts	%	0%	0	4%	680	0% - 22%	5%	n/a		
Attributes of Survey Respondents — Demographics										
Female	%	33%	98	54%	8,788	33% - 81%	11%	62%	71%	47%
Male	%	67%	195	46%	7,502	19% - 67%	11%	145%	29%	229%
Age at Time of Survey (Years)	Median	31	280	24	16,280	22 - 43	5.08	129%	32	97%
Aboriginal %		4%	12	5%	775	2% - 83%	18%	87%	5%	76%
Main Reason Enrolling										
Job Skills	%	55%	161	43%	6,939	23% - 56%	10%	128%	53%	105%
Credential %		18%	52	32%	5,124	18% - 57%	11%	56%	23%	79%
Credential and Job Skills	%	24%	71	21%	3,447	17% - 31%	3%	114%	23%	106%
Other Reason	%	2%	7 *	4%	580	0% - 7%	2%	67%	2%	126%
Prev. Educ.										
Had previous post-secondary education	%	78%	229	47%	7,594	26% - 79%	15%	167%	62%	127%
Prev. Work *Of employed:*										
Had Current Job Before/During Studies	%	59%	168	32%	4,173	20% - 59%	10%	184%	34%	173%
Completed Requirements for Program Credential	%	98%	282	78%	12,515	52% - 100%	16%	126%	94%	104%
Overall Satisfaction										
Main Reason for Enrolling Met (4=Completely)	Scale 4-1	3.44	291	3.35	16,076	3.17 - 3.62	0.11	103%	3.53	97%
Overall Satisfaction with Studies[2]	Scale 4-1	2.97	286	3.36	16,188	2.97 - 3.60	0.13	88%	3.40	87%
Skill Development — Program Helped Develop Skills to:										
Write Clearly and Concisely (5=Very Well)	Scale 5-1	3.34	161	3.99	13,505	3.34 - 4.50	0.22	84%	4.03	83%
Speak Effectively	Scale 5-1	3.56	200	3.97	13,259	3.56 - 4.39	0.17	90%	4.06	88%
Work Effectively with Others	Scale 5-1	3.95	279	4.24	15,447	3.87 - 4.63	0.17	93%	4.26	93%
Analyze and Think Critically	Scale 5-1	3.93	284	4.22	15,841	3.93 - 4.39	0.11	93%	4.23	93%
Resolve Issues or Problems	Scale 5-1	3.74	281	4.05	15,398	3.74 - 4.38	0.14	92%	4.09	91%
Use Mathematics	Scale 5-1	3.25	209	3.97	11,746	3.25 - 4.28	0.24	82%	3.73	87%
Use Computers	Scale 5-1	2.97	113	3.90	11,586	2.97 - 4.14	0.24	76%	3.71	80%
Use Other Tools & Equipment	Scale 5-1	3.92	263	4.12	13,774	3.81 - 4.38	0.19	95%	4.21	93%
Learn on Your Own	Scale 5-1	3.76	264	4.16	15,668	3.76 - 4.58	0.17	90%	4.17	90%
Read and Comprehend Materials	Scale 5-1	3.59	253	4.17	15,456	3.59 - 4.45	0.18	86%	4.16	86%
College Experience — Satisfaction with Aspects of the Program										
Quality of Instruction (5=Very Good)	Scale 5-1	3.97	292	4.23	16,227	3.97 - 4.53	0.13	94%	4.28	93%
Organization of Program	Scale 5-1	2.98	292	3.99	16,184	2.98 - 4.17	0.25	75%	3.93	76%
Fair Assessments (Tests, Papers)	Scale 5-1	3.27	289	4.14	16,207	3.27 - 4.43	0.23	79%	4.04	81%
Amount of Practical Experience	Scale 5-1	3.36	292	4.00	15,373	3.36 - 4.30	0.23	84%	4.01	84%
Textbooks and Learning Materials	Scale 5-1	3.40	293	3.86	16,153	3.40 - 4.17	0.19	88%	3.92	87%
Library Materials	Scale 5-1	3.19	178	3.72	12,151	3.19 - 4.02	0.19	86%	3.74	85%
Availability of Instructors Outside Class	Scale 5-1	3.29	270	4.15	15,215	3.29 - 4.48	0.25	79%	4.06	81%
Helpfulness of Instructors Outside Class	Scale 5-1	3.63	273	4.26	15,438	3.63 - 4.57	0.20	85%	4.19	87%
Quality of Computers and Software	Scale 5-1	2.81	162	3.92	11,845	2.81 - 4.12	0.27	72%	3.59	79%
Quality of Other Tools and Equipment	Scale 5-1	3.35	267	3.96	13,597	3.35 - 4.18	0.18	85%	3.92	85%
Total Number of Respondents			293		16,297					

Standardized by Program Mix[4]

JIBC	All BC Institutions

Justice Institute of British Columbia

		INDICATOR		JIBC Former Students		All BC Institutions Former Students		Provincial Range	Standard Deviation	Institution as % of BC Average (Index[3])	Standardized by Program Mix[4] All BC Institutions Standardized Value	Institution as % of BC Average (Standardized Index)
				Value	N	Value	N	Min-Max	Value			

Respondents[1] -- Arts and Sciences Programs

Further Education	Of Resp.	Currently Continuing Education	%	24%	4 *	77%	3,010	0% - 90%	23%	31%	77%	31%
		Taken Further Studies Since Leaving	%	29%	5 *	82%	3,202	0% - 90%	22%	36%	82%	36%
	Of Those Taking Further Studies	Satisfaction with Transfer Experience (5=Very)	Scale 5-1	0.00	0	4.11	2250	3.33 - 5.00	0.35	n/a	0.00	n/a
		Taken Further Studies at a BC Public Post-Sec. Inst.	%	60%	3 *	91%	2,925	33% - 100%	20%	66%	91%	66%
		Extent to Which Prepared for Further Study (4=Very)	Scale 4-1	3.20	5	3.38	3,089	3.20 - 4.00	0.18	95%	3.38	95%
Employment	Of Resp.	In the Labour Force	%	94%	16	72%	2,793	54% - 100%	12%	130%	72%	130%
		Employed	%	94%	16	66%	2,570	50% - 100%	13%	143%	66%	143%
	Of Employed	Employed in a Training-Related Job	%	88%	14	26%	665	0% - 100%	27%	338%	26%	338%
		Employed Full-Time, Training-Related	%	75%	12	14%	354	0% - 100%	26%	544%	15%	515%
		Employed Full-Time, Non Training-Related	%	13%	2 *	31%	808	0% - 100%	22%	40%	33%	38%
		Employed Full-Time (30 hrs or more a week)	%	88%	14	45%	1,163	37% - 100%	19%	193%	48%	183%
		Employed Part-Time	%	6%	1 *	49%	1,269	0% - 60%	18%	13%	52%	12%
		Unemployed (of those in labour force)	%	0%	0	8%	223	0% - 25%	7%	n/a	0%	n/a
		Gross Hourly Wage (main job)	Median	$39	13	13 $	2,123	$11 - $39	$8	304%	$13	304%
		Weekly Hours Worked (main job)	Median	38	15	25	2,416	20 - 40	7	152%	25	152%
Usefulness of Studies	Of Employed Full-time	Usefulness of Training in Getting New Job (4=Very)	Scale 4-1	3.00	4 *	2.32	636	1.00 - 4.00	0.66	129%	2.32	129%
		Usefulness of Skills/Knowledge in Performing Job	Scale 4-1	3.86	14	2.40	1,155	2.07 - 3.86	0.56	161%	2.40	161%
		Total Number of Arts & Science Respondents		17		3,922						

	JIBC	All BC Institutions

Respondents[1] -- Applied Programs

Further Education	Of Resp.	Currently Continuing Education	%	20%	54	28%	3,488	17% - 43%	8%	69%	17%	117%
		Taken Further Studies Since Leaving	%	30%	82	34%	4,185	22% - 49%	9%	88%	22%	136%
	Of Those Taking Further Studies	Satisfaction with Transfer Experience (5=Very)	Scale 5-1	3.44	9 *	3.91	1188	3.25 - 4.16	0.23	88%	3.66	94%
		Taken Further Studies at a BC Public Post-Sec. Inst.	%	56%	46	81%	3,404	50% - 92%	10%	69%	67%	84%
		Extent to Which Prepared for Further Study (4=Very)	Scale 4-1	2.96	70	3.46	3,875	2.96 - 3.67	0.16	86%	3.28	90%
Employment	Of Resp.	In the Labour Force	%	99%	273	90%	11,112	85% - 99%	4%	109%	95%	104%
		Employed	%	97%	269	85%	10,439	71% - 97%	7%	115%	93%	105%
	Of Employed	Employed in a Training-Related Job	%	80%	214	81%	8,404	68% - 86%	6%	99%	86%	93%
		Employed Full-Time, Training-Related	%	63%	169	68%	7,080	53% - 78%	7%	93%	73%	87%
		Employed Full-Time, Non Training-Related	%	19%	50	14%	1,478	7% - 22%	4%	131%	12%	151%
		Employed Full-Time (30 hrs or more a week)	%	81%	219	82%	8,563	72% - 93%	5%	99%	85%	96%
		Employed Part-Time	%	7%	18	14%	1,427	4% - 24%	5%	49%	15%	44%
		Unemployed (of those in labour force)	%	1%	4 *	6%	673	0% - 19%	5%	24%	2%	66%
		Gross Hourly Wage (main job)	Median	$22	204	19 $	8,838	$17 - $27	$2	119%	$20	108%
		Weekly Hours Worked (main job)	Median	40	233	40	9,937	35 - 40	2	100%	36	111%
Usefulness of Studies	Of Employed Full-time	Usefulness of Training in Getting New Job (4=Very)	Scale 4-1	3.38	89	3.47	6,322	3.14 - 3.65	0.14	98%	3.67	92%
		Usefulness of Skills/Knowledge in Performing Job	Scale 4-1	3.21	219	3.39	8,536	3.15 - 3.58	0.13	95%	3.49	92%
		Total Number of Applied Respondents		276		12,375						

	JIBC	All BC Institutions

* Relatively small sample size, interpret with caution.

1 Respondents are former students who have completed all or a significant portion of their program. TRU-Open Learning submits only those students who have fully completed their program.

2 This is a different response scale from previous KOI reports and results cannot be compared (see Section A for more details).

3 The "Index" is the institution value divided by the provincial value and multiplied by 100. Index values greater than "100%" indicate a higher than average institution value. Index values are "n/a" if there are no respondents in the category. All values are rounded, although calculations are done using several decimal places.

4 The data in these two columns are calculated the same way as the data in the un-highlighted columns (All BC Institutions Value and Index), **except** that the program mix of JIBC is used to weight the All BC Institutions Standardized Values. The Standardized Index therefore allows an analysis of how JIBC is performing compared to the rest of the institutions in the system **, if** they were to offer the same program-mix as JIBC. The methodology used to calculate these program-mix standardized variables can be found in Appendix 2.