

Measuring educational outcomes: Vocational education and training

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About the research

Measuring educational outcomes: Vocational education and training

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This paper was presented to the NatStats08 conference *Working together for an informed Australian society* in November 2008.

The vocational education and training (VET) sector has a long tradition of measuring and reporting outcomes. The public face of this is the *Annual national report of the Australian vocational education and training system* published (and tabled in the Commonwealth Parliament) since 1994. The reporting framework has undergone a number of changes corresponding to revision in high-level strategies developed by the former Australian National Training Authority (ANTA).¹ This, however, is about to change. The catalyst for a radical examination of the reporting framework is the Council of Australian Governments' (COAG) reform agenda. This reform agenda is shaking up the funding relationships between the Commonwealth and the states and will place increasing reliance on measuring and reporting outcomes as distinct from focusing on the resources used (that is, inputs).

In this paper, I provide a history of performance measurement for the VET sector, beginning with the creation of the Australian National Training Authority and ending with what we know of the current reforms. As well as describing the various measures, I discuss the challenges that are thrown up by indicators. I conclude with my suggestions for indicators for the vocational education and training system.

¹ In 2005 the Australian National Training Authority was abolished and its functions assumed by the Department of Education, Science and Training (now the Department of Education, Employment and Workplace Relations).

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History

The Australian National Training Authority was established in 1992 by *the Australian National Training Authority Act 1992 (ANTA Act)*. Under ANTA, three national strategies were developed to provide direction and a performance-monitoring framework.

The first national strategy for vocational education and training, *Towards a skilled Australia*, was released in 1994 to cover the period 1994–98.

The strategy was developed around four themes:

- Objective 1.1²: Responsiveness, so that diversity, choice and cooperation was maximised between the full range of training providers—public, private and industry
- Objective 1.2: Quality, so that those achieving at the highest standards are supported and incentives are offered to others to reach those standards
- Objective 1.3: Accessibility, so that all Australians who want and need training can get it
- Objective 1.4: Efficiency, so that value for money and accountability are emphasised and administrative arrangements are streamlined and simplified.

The performance measures were:

- KPM 1.1 Actual versus target student load
- KPM 1.2 Module load completion rates
- KPM 1.3 Training completion numbers
- KPM 1.4 Average cost per student contact hour.

The second strategic report to provide direction for vocational education in Australia was *A bridge to the future* (1998–2003).

The five key objectives of this strategy were:

- Objective 2.1: Enhancing mobility in the labour market
- Objective 2.2: Equipping Australians for the world of work
- Objective 2.3: Achieving equitable outcomes in VET
- Objective 2.4: Maximising the value of public VET expenditure
- Objective 2.5: Increasing investment in training.

² In order to make it easier to keep track of the objectives and indicators as they changed with new versions of the national strategy, we adopt the convention of the first digit representing which strategy. So objective 1.1 is the first objective of the first national strategy.

This strategy had an expanded number of indicators:

- KPM 2.1: Skill outputs produced annually within the domain of formally recognised vocational education and training
- KPM 2.2: Stocks of vocational education and training skills against desired levels
- KPM 2.3: Employers' views on the relevance of skills acquired through vocational education and training
- KPM 2.4: Student employment outcomes and prospects before and after participation in vocational education and training
- KPM 2.5: VET client groups' participation, outputs and outcomes
- KPM 2.6: Public expenditure *per publicly funded output*
- KPM 2.7: Public expenditure *per total recognised output*
- KPM 2.8: Total expenditure on vocational education and training.

Although each key performance measure looks at only one particular performance aspect, when considered together, they were intended to provide a comprehensive picture of the outputs, efficiency and effectiveness of the vocational education and training system.

In regards to the third objective, there were also five identified equity groups for which close monitoring of participation, outputs and outcomes occurred. These were women, Indigenous people, people of non-English speaking background, people with a disability and people from rural or remote areas.

The final national strategy created by ANTA, prior to its demise, was *Shaping our future*, which had the following objectives:

- Objective 3.1: Industry will have a highly skilled workforce to support strong performance in the global economy.
- Objective 3.2: Employers and individuals will be at the centre of vocational education and training.
- Objective 3.3: Communities and regions will be strengthened economically and socially through learning and employment.
- Objective 3.4: Indigenous Australians will have skills for viable jobs and their learning culture will be shared.

Six key performance measures (KPMs) were created:

- KPM 3.1: Student participation and achievement in vocational education and training
- KPM 3.2: Student employment outcomes and satisfaction with VET
- KPM 3.3: Employer engagement and satisfaction with VET
- KPM 3.4: VET outcomes for Indigenous Australians
- KPM 3.5: Community engagement and satisfaction with VET
- KPM 3.6: VET system efficiency.

What is very noticeable about the three national strategies is how few of the objectives have lasted the full period. As can be seen from box 1, only the equity objective is common to all three strategies. Three of the themes—efficiency, quality of training and workforce quality—are common to two out of the three strategies.³ The remaining themes—community strength, being client driven, responsiveness—featured in only one of the three strategies.

Box 1 Summary of objectives

Objectives	Strategy	
Equity	1	Access for all Australians
	2	Achieve equitable outcomes in VET
	3	Indigenous Australians having skills for viable jobs and a shared learning culture
Efficiency	1	Value for money, accountability, administrative arrangements streamlined
	2	Maximising the value of public VET expenditure
Quality of training	1	Support high achievers/incentives to reach standards
	2	Increase investment in training
Workforce quality	2	Enhance mobility in the labour market
	2	Equip Australians for the world of work
	3	Highly skilled workforce to support global economy
Community strength	3	Strengthen economically and socially
Client-driven	3	Employers and individuals at the centre of VET
Responsiveness of providers	1	Diversity of choice and cooperation between public, private and industry training providers

The first very noticeable thing about the indicators is that they do not map particularly well to the objectives. Box 2 categorises the indicators according to four headings: efficiency, inputs, outputs and outcomes. These headings are common to indicator systems and tend to suggest that the indicators were developed by people with experience in indicators rather than coming from the objectives themselves. Indeed, one could be forgiven for thinking that the indicators were developed largely independently of the objectives. The fifth heading—equity—cuts across the inputs, outputs and outcomes and is probably best thought of as a particular cut of the other categories. Another comment is that some of the objectives appeared to be elusive (in particular, being client-driven and providers being responsive) and none of the indicators appears to relate to them. Finally, it should be noted that the indicator for community strength—KPM 3.5: Community engagement and satisfaction with VET—was abandoned because it proved to be impossible to collect.

³ Including the quality of training theme is arguable. Is ‘increasing investment in training’ about quality or quantity?

Box 2 A classification of the indicators

Efficiency measures	KPM 1.1:	Actual versus target student load
	KPM 1.2:	Module load completion rates
	KPM 1.4:	Average cost per student contact hour
	KPM 2.6:	Public expenditure <i>per publicly funded output</i>
	KPM 2.7:	Public expenditure <i>per total recognised output</i>
	KPM 3.6:	VET system efficiency
Inputs (participation in training)	KPM 2.8:	Total expenditure on vocational education and training
	KPM 3.1:	Student participation and achievement in vocational education and training
Outputs (skills acquired)	KPM 2.5:	VET client groups' participation (outputs and outcomes)
	KPM 1.3:	Training completion numbers
	KPM 2.1:	Skill outputs
	KPM 2.5:	VET client groups (participation), outputs (and outcomes)
Outcomes (meeting the needs of the economy and the community)	KPM 3.1:	(Student participation) and achievement in vocational education and training
	KPM 2.2:	Stocks of vocational education and training skills against desired levels
	KPM 2.3:	Employers' views on the relevance of skills
	KPM 2.4:	Student employment outcomes before and after
	KPM 2.5:	VET client groups (participation, outputs) and outcomes
	KPM 3.2:	Student employment outcomes and satisfaction with VET
	KPM 3.3:	Employer engagement and satisfaction with VET
	KPM 3.4:	VET outcomes for Indigenous Australians
	KPM 3.5:	Community engagement and satisfaction with VET
Equity indicators	KPM 2.5:	VET client groups' participation (outputs and outcomes)
	KPM 3.4:	VET outcomes for Indigenous Australians

Current developments

The Council of Australian Governments (COAG) created the working group on the productivity agenda (PAWG), which promises to rewrite the objectives of the training system and associated indicators. While PAWG also covered issues related to early childhood and school education, our interest is the objectives developed for the training system (skills and development). Four goals have been set:

- Objective 4.1: That the working-age population has gaps in foundation skills levels reduced to enable effective educational, labour market and social participation.
- Objective 4.2: The working-age population has the depth and breadth of skills and capabilities required for the twenty-first century labour market.
- Objective 4.3: The supply of skills provided by the national training system responds to meet changing labour market demand.
- Objective 4.4: Skills are used effectively to increase labour market efficiency, productivity, innovation, and ensure increased utilisation of human capital.

The following KPMs have been chosen to measure progress against these goals.

- KPM 4.1: Proportion of the working-age population at literacy level one, two or three.
- KPM 4.2: Proportion of 20 to 64-year-olds who do not have qualifications at or above a certificate III.
- KPM 4.3: Proportion of graduates employed after completing training, by previous employment status.
- KPM 4.4: The percentage of graduates with improved employment status after training.
- KPM 4.5: The number of hard-to-fill vacancies.
- KPM 4.6: Proportion of people employed at or above the level of their qualification, by field of study.

These KPMs map closely to the four objectives: KPM 4.1 links to Objective 4.1; KPM 4.2 links to Objective 4.2; KPM 4.3 and 4.4 link to Objective 4.3, and the final KPMs link to Objective 4.4. What is interesting—by comparison with the indicators for the earlier national strategies—is that there are no indicators of efficiency, and no indicators of inputs. All the measures focus on outputs and outcomes, and the output measures do not, as is more conventional, look at what the system is producing directly. Rather, they focus on characteristics of the overall population.⁴

This approach is a radical departure from the earlier approaches. Whether the indicators are up to the task that has been set will be a matter for the future. The concepts embodied in the four

⁴ The indicators do not explicitly mention equity. However, there is an understanding that the indicators will be cut by various sub-groups, although this may stretch the available data in some cases.

objectives are complex and it is difficult to come up with a small number of easy-to-compile indicators that will do justice to the objectives.⁵

Some ruminations on indicators

The development of indicators is difficult. Often objectives are difficult to define in a way that invites measurement. Data are rarely good enough to support precise measurement. Indicators must be simple to explain. In developing a set of indicators I point to the following issues.

The first issue is clarity of objectives. As can be seen from the earlier discussion in which objectives changed significantly over a relatively short period, the objectives for the VET sector are by no means obvious. Compared with the health sector, for example, objectives can be contested. Is the objective of the VET sector to produce qualified workers? Or should it be about improving the productivity of the workforce? Or is a key objective to be flexible and respond to client demands? Compare this with the health sector, where most would agree that the health sector should be concerned with improving the health of the population.

The second issue relates to indicators. I list a series of relevant attributes.

Relevance: do the indicators relate to objectives? It is always tempting to measure what is measurable.

Tractability: indicators must be able to be compiled. For example, KPM 3.5 proved to be totally intractable and was abandoned.

Confounding factors: indicators need to relate to objectives, but often there are confounding factors. For example, the number of skilled vacancies is a perfectly reasonable measure of the extent to which the training system is meeting the needs of the labour market. However, there are confounding factors such as the state of the economy and inadequate working conditions and wages.

Disaggregation issues: policy may dictate that special attention is given to sub-groups, but the data may not be up to the task. An obvious case here is indicators for Indigenous people, where measurement issues are very difficult.

Unintended consequences: if resources are allocated on the basis of indicators, then there is the risk of perverse behaviour. For example, if high completion rates are rewarded, then providers may have an incentive to lower standards or to exclude those who are more difficult to teach.

Avoiding the hard issues: in VET, collecting data from private providers on private training has not yet been achieved, and hence they have been excluded from indicators to date. Similarly, relative wage rates are relevant to measuring the value of qualifications, but they are more politically difficult because there is a reluctance to say that qualifications are not valuable even though they are not rewarded in the labour market. Completion rates would appear to be important and these have proved difficult to calculate.

Robustness: if indicators are used to allocate resources, then the indicators must be robust so that unfair allocations are not made on the basis of poor-quality measures. In this regard, it should be remembered that indicators 'indicate' and labelling them 'measures', as in KPMs, provides the potential to give them a status they do not deserve.

⁵ I need to declare a conflict of interest here. NCVER was asked to provide advice on a number of proposed indicators. In that advice a rather larger number of indicators were proposed, some of much greater complexity. The working group selection concentrated on indicators that are relatively straightforward.

Indicators are not a substitute for analysis: the world is a complex place and it is naïve to believe that policy outcomes can be adequately assessed through simple indicators.

Simplicity is not always a virtue: policy-makers tend to like simple indicators. However, simplicity is not always a help to understanding. For example, indicators are often calculated for the whole population, but age-specific measures can be more useful. Indicators at a whole-of-population level are influenced by changes in demographic shares, and therefore can be misleading.

Karmel's indicators

We have seen that the objectives and the indicators for VET have been many and varied over the last 15 or so years. I thought it would be interesting to start with a clean sheet of paper and see what I come up with and then see how this compares with what we have seen.

First, I need to define the objectives. I would have two: a skilled workforce and an equitable training system. By a skilled workforce I mean a workforce that is productive; a more skilled workforce means a more productive workforce, not a more qualified workforce. By an equitable training system I mean one which provides opportunities and good outcomes for specified groups of the population. That is, a 'socially inclusive' system which benefits all.

I would have indicators under three groupings: outcomes, equity and efficiency.

Outcomes

If we think of VET as adding to human capital, then we would want to know the rate at which Australia's human capital is increasing. Indicators about the proportion of people with qualifications are an obvious measure. However, such a measure is very partial. In particular, qualifications are of no use if they do not attract a return. So I would be looking for evidence that vocational qualifications are valued in the workforce. The measures of this are employment rates and wage rates. With some trouble these can be combined into a measure of workforce quality (akin to the Australian Bureau of Statistics [ABS] measures of factor productivity).

Thus my indicators would be:

- qualification levels in the working-age population
- relative employment rates (by qualification type)
- relative wages (by qualification type)
- overall quality of the workforce.

These are stock measures and will move fairly slowly. So it would be sensible to supplement them with measures associated with the output of the training system. What I have in mind here are indicators such as:

- proportion of graduates⁶ who improve their employment position (for example, not employed to employed)
- proportion of graduates who report that their training is relevant to their current employment.

In terms of equity, I would be looking at three aspects: participation, qualification levels, and return to those qualifications. The first two of these are perhaps necessary conditions, but they

⁶ We would also differentiate between those who have completed their qualification (VET graduates) and those who have not completed a full qualification (module completers).

are not sufficient for a socially inclusive training system. Equity will only be satisfied if the group in question is reaping the rewards of participation. So my indicators would be:

- proportion of target population participating in VET
- numbers of graduates from the target population
- employment outcomes from graduates (and others who have completed their training but not completed a qualification). These employment outcomes would be compared with outcomes from the target population but without training, and with outcomes from similar graduates from the wider population.

Efficiency

Efficiency is a difficult concept. While the ratio of outputs to inputs is an obvious measure, it does not automatically include a quality dimension. Quality is difficult to measure, but student satisfaction provides a plausible indication. Another obvious measure is the completion rate. However, such a rate is of more relevance to some groups rather than to others. For example, we know that outcomes are generally better for people who are upgrading their qualifications, but not necessarily for those who are broadening their skills. Thus completion rates of new entrants to the labour market are most likely to be of more importance than completion rates of older people, who may or may not be upgrading qualifications.

So my indicators of efficiency would be:

- unit cost of provision of training per completed module/unit
- student satisfaction
- qualification completion rates for people up to 24 years
- qualification completion rates for those with no post-school qualification.

My suggestions have some similarities with indicators used to date. Employment outcomes, student satisfaction, and unit cost measures have all been published for many years. The main difference in my selection is the use of relative wages and relative employment rates, and the lack of participation rates (apart from equity groups). The latter is also a feature of the indicators proposed by the working group on the productivity agenda (PAWG), which relate primarily to the population rather than participation in training.

My emphasis is driven by a view that there is an optimal amount of training and that too much training can be a poor use of resources. Thus I am looking for indicators that reflect improvements in the quality of the workforce which go further than measuring numbers of people with qualifications. The supply of people with skills must be appropriate for labour demand rather than an end in its own right. The PAWG indicator KPM 4.6 relating to appropriate skill usage is also trying to address this.⁷ I also have not included an indicator to measure the VET system's responsiveness (which is the aim of KPM 4.5: hard-to-fill vacancies). This is because such indicators tend to be confounded by economic conditions and therefore give little evidence on the VET sector as such. This is an example of where more sophisticated analysis is needed rather than simple indicators.

⁷ I did not include this indicator because overskilling is a complex issue. One problem is that there are significant boundary effects. For example, an individual with a very low-level qualification, by definition, will be working at that level or higher. Similarly, an individual with a very high-level qualification will typically be working at that level or lower.

A final comment

My personal view is that indicators are most useful when they aid understanding. In most cases, indicators ‘indicate’ rather than measure precisely. They should provide sufficient information to provoke questions, and we should not be too concerned when they fail to provide easy answers. If this argument is accepted, then governments should be wary of tying resource allocations to simple indicators. Rarely are they robust enough to be the basis of funding decisions. In the same vein, indicators should only be a start; they do not take the place of detailed and thoughtful analysis.

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