LH Martin Institute

For Higher Education Leadership and Management

# The quality of teaching in VET – framework

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## Vision

Quality teaching is the core of quality assurance and development in Australian vocational education and training, as it should be for all education sectors. The preparation of vocational teachers equips them to teach at a high quality and the attraction, recruitment, support and retention of teachers supports quality teaching. Vocational education and training institutions meet their important reporting and accountability obligations that assure governments and the public that funds are spent responsibly in accordance with government requirements and that government policies are followed. Beyond those important reporting and accountability requirements vocational education institutions' quality improvement concentrates on maintaining and improving the quality of teaching, and this informs strong continuing teacher development.

Quality teaching is the core of quality assurance and development in Australian vocational education and training because the quality of teaching is one of if not the most important factor in students' learning. The quality of students' learning strongly influences their attainment and their work performance as graduates. Quality teaching is the core of institutions' quality assurance because teaching is their most important activity. Teachers are also institutions' most valuable resource and are usually their biggest item of expenditure. Concentrating on quality teaching maximises the community's investment in vocational education, as in other sectors.

Quality teaching is what acknowledged experts in the field (the profession) say teachers should know and do as specified in teaching standards. Teaching standards articulate sound principles of teaching practice. They describe in terms meaningful to teachers what they do and the challenging educational aims they are trying to achieve. Standards apply to the different contexts in which teachers work. Standards prescribe the standards to be met, not how they are met. Measures of the quality of teaching concentrate on and what teachers should know and be able to do and the quality of the opportunities they provide their students for learning (Ingvarson and Rowe, 2008).

## Introduction

This is the third publication from a project to research and make recommendations on the quality of teaching in vocational education and training; on teacher qualifications and continuing professional development of vocational education teachers; the impact teaching has on the quality of vocational education students' experiences and student outcomes; and how this can be evaluated. The project is funded by the Department of Education, Employment and Workplace Relations, managed by the Australian College of Educators and conducted by the LH Martin Institute at the University of Melbourne.

The first publication of this project was *The quality of teaching in VET – literature review*[1]. The literature review contextualised the project, identified issues that needed further investigation and shaped the questions the project team explored with participants. The second publication *The quality of teaching in VET – overview* presented the findings of the project's research with different people concerned with vocational education and training. It reported peoples' perceptions of the nature of vocational teaching and the kinds of vocational education teacher qualifications and continuing professional development that are needed.

This, the project's third publication, develops a conceptual framework for evaluating the quality of teaching in vocational education and training, teacher preparation and development programs, the experience of vocational education students and their outcomes. It will be followed by a report reviewing existing frameworks and it will make recommendations on these. The project will also produce a paper presenting a range of options, models and proposals for public discussion before the final report, which will propose models for the preparation and continuing development of vocational education and training teachers, and for appropriate evaluation frameworks and quality indicators.

The project team will continue to consult extensively throughout all stages of the research, and the findings will be reported to participants and interested parties as part of the process of developing the final report and recommendations. Each report is a different stage of the project and should be considered holistically as different chapters of a final report.

## The project's conceptual framework

The project developed the conceptual framework set out in figure 1 to illustrate the many factors which influence the quality of teaching in vocational education and training and hence the complexity of evaluating it. Starting at the foot of the figure we note that vocational education and training institutions select teachers from a pool of candidates prepared with entry level qualifications. Institutions provide the organisation and institutional environment in which teachers are led, mentored,

[1] All project reports are available from the Australian College of Educators website: https://austcolled.com.au/announcement/study-quality-teaching-vet viewed 30 August 2010.

appraised, rewarded or sanctioned, and in which teachers' development is encouraged and supported.

All of these factors affect the quality of vocational teaching. For example, an institution's ability to identify, attract, motivate, develop and retain excellent teachers heavily influences the quality of teaching the institution provides (National Academy of Education, 2009: 1). Darling-Hammond (2000:1) found for school education that 'policies adopted by states regarding teacher education, licensing, hiring, and professional development may make an important difference in the qualifications and capacities that teachers bring to their work'. The first report discussed staff recruitment and institutional responsibility for preparation and support for new teachers in broad terms. This report considers only staffing factors external to vocational institutions – the suitability of teachers' entry level qualifications and continuing development programs, which we have called generally teacher development. These are coloured yellow in figure 1.

Next we observe that the quality of teaching is affected by the curriculum or content that is to be taught, the pedagogy or teaching method chosen, and by the class sizes, classrooms, workplaces and other facilities available for teaching. Teachers may influence these to varying extents. A 'resourceful' teacher is able to garner resources for their teaching and use the resources available inventively. Highly skilled teachers with enough time and appropriately resourced may develop or adapt curriculum well suited to their students, and use the pedagogies most appropriate for their students, the curriculum and the resources available. But many of these factors are largely outside teachers' direct influence. Again, while they are highly relevant to the quality of vocational teaching they are outside the scope of this project.

Third, we note that students' preparation, motivation, engagement and aspirations influence the quality of teaching greatly. Some are also influenced by the quality of teaching. We all recall a teacher who inspired and motivated our study and who developed our aspiration for further education. Some of these factors may be influenced not by the teacher but by the institution. Some institutions may select students who are prepared well and seem strongly motivated. But most vocational institutions have reasonably open access and teachers welcome a considerable diversity of students. The first report discussed the consequences of the increasing diversity of vocational education students for teachers and for institutions. It concluded that being an industry expert was a necessary but no longer a sufficient condition for being a vocational education teacher; they also had to be pedagogic experts if the learning needs of vocational education's increasingly diverse students were to be met. However, while these factors are relevant to the quality of teaching, they are nonetheless outside the scope of this report because its focus is on developing a conceptual framework for evaluating the quality of teaching and teacher development in vocational education.

Finally, we note that teaching in vocational education and training is often evaluated by student satisfaction, student attainment and outcomes, and the satisfaction of the employers and of vocational education graduates. These are therefore considered extensively in this project, particularly in subsequent reports. However, this report will argue that these factors do not measure the quality of teaching as directly as would be desirable and that ideally other measures would be developed.

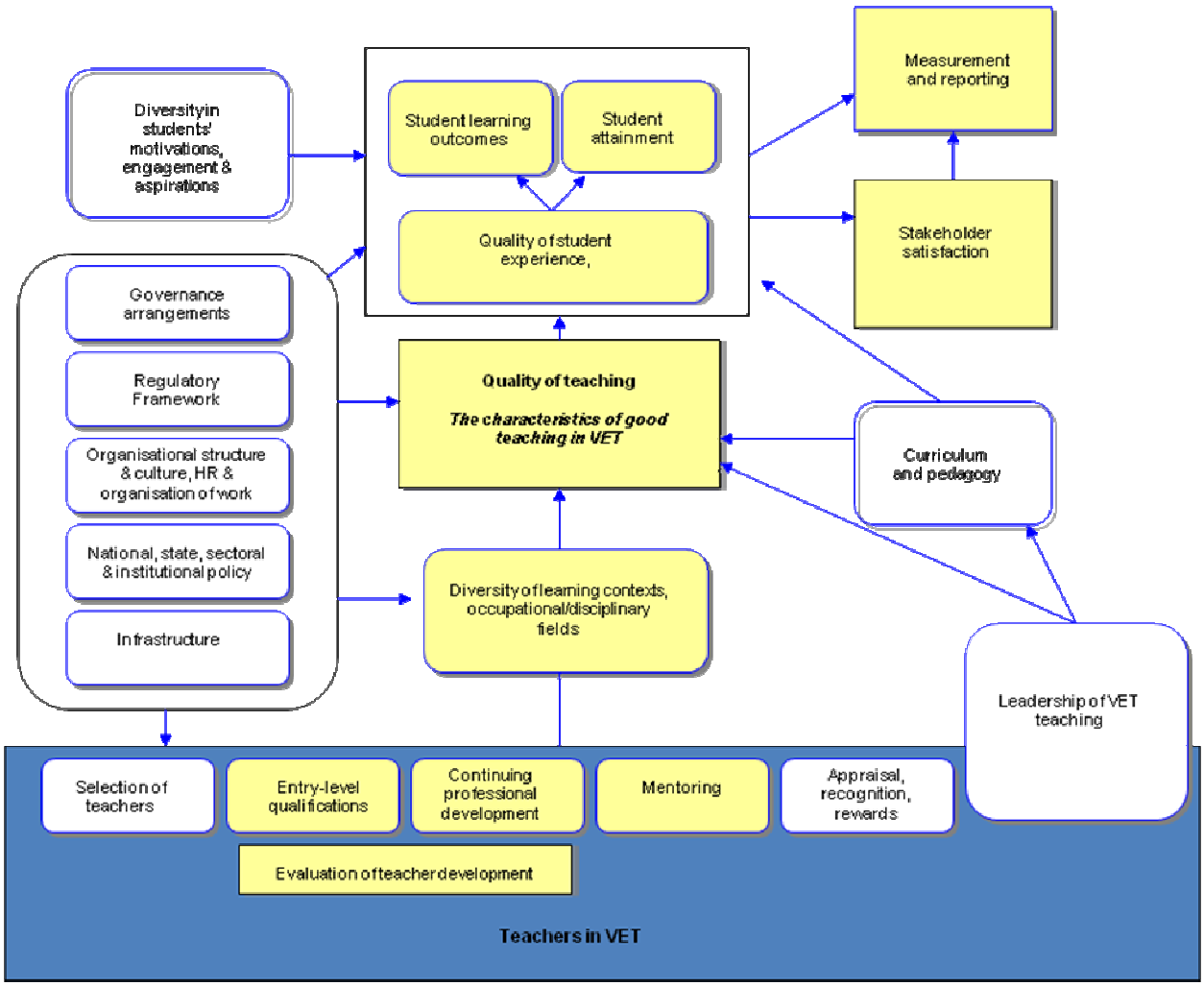


**Figure 1: conceptual framework for the study of the quality of teaching in vocational education and training[2].**

While figure 1 identifies several factors that affect the quality of vocational education, it by no means identifies them all. In a survey for the National Centre for Vocational Education Research of international perspectives of quality indicators in vocational education and training Blom and Meyers (2003: 45) identify 22 elements of quality of vocational education and training.

Even though the framework described in figure 1 is described as the conceptual framework for the study of the quality of teaching in vocational education and training, it may be readily generalisable to all education provided in institutions such as schools and universities. Thus, the provision of well accommodated and equipped institutions is a current issue in the quality of school education and the identification, attraction and retention of high quality teachers is currently an issue in higher education.

[2] Graphic by Richard James and Kerri-Lee Harris.

But the framework is more salient for vocational education and training than for other sectors of education because of vocational education's close relation with work, which is its dominant if not sole purpose in Australia. School education develops pupils as citizens and for further education, the liberal arts and sciences in higher education develop students' expertise in their discipline and for further education, and applied higher education develops students as professionals and for further education. While school and higher education have vital social roles, these are mediated in Australia by stable and well accepted institutions such as school curriculum bodies, certification boards, occupational associations and discipline associations.

Australian vocational education and training has bodies that may play a similar role such as industry skills councils, some fields have occupational associations and fewer have licensing boards. But these bodies have not developed a social mediating role as strong as their vocational education analogues in some other countries and certainly not as strong as their analogues in school and higher education. Furthermore, Australian vocational education has under-developed roles in preparing graduates for a career in their chosen occupation let alone for citizenship, and for further education. So institutes, program heads and particularly teachers have a greater role in mediating the social role in vocational education than they have in school and higher education. Hence factors external to vocational education institutions such as the needs of work, workplaces' support for education and the availability and quality of apprenticeships and other extended work placements have a bigger effect on the quality of teaching and learning in vocational education and training than in the other sectors. Likewise external factors such as graduates' immediate usefulness at work, their employment outcomes and employers' satisfaction have been more significant indicators of the quality of teaching in vocational education than in other sectors.

While vocational education must retain its orientation to work, perhaps there are other and more direct indicators of the quality of teaching in vocational education and training than those currently used in Australia. These are discussed and the extent to which these can be realistically applied in Australia is also considered.

## Implementing the vision

Australian vocational education and training is a long way from being able to implement the vision described in the opening of this framework, even were it agreed. Most of this paper describes a framework for evaluating the quality of vocational teaching that may be developed and implemented over the next 5 to 10 years. But before proceeding with that it is worth sketching how the vision may be implemented to set a long term goal towards which more immediate action may be directed. The vision would need a vocational education profession, standards and a means for the profession to certify achievement of those standards.

### A vocational education profession

> All professions are conspiracies against the laity.
>
> (George Bernard Shaw, 2009 [1913], Act 1)

Clients may evaluate the effectiveness of some services despite having no expertise in the field. Thus, a customer may evaluate whether shoes or a suit is well made despite knowing little about the highly skilled occupations of shoemaking or tailoring. But there are several occupations which can be evaluated only by people with the relevant expertise. In most circumstances clients may rely on the service provider's employer and perhaps some supporting government regulation to assure them of the quality of the service they seek. Thus, most patrons don't know the chefs of the restaurants that they patronise or the pilots of the planes in which they fly and would have difficulty judging the quality of a chef or a pilot, but they correctly rely on the combination of government regulation and the chef's and pilot's employers to assure them of a service of appropriate quality.

In most cases the interests of clients, service providers and their employers coincide sufficiently to require no further assurance of quality. Government regulation and legal remedies protect clients against incompetent or unscrupulous service providers and employers. But there are some circumstances where this alignment of interests and government regulation isn't sufficient. One circumstance is where the employer doesn't have the expertise to judge the competence of their employee. A restaurant owner or manager may not have the expertise to judge the quality of a pastry cook. In this case the consequences of choosing a poor pastry cook - a collapsed meringue or a flat sponge – aren't so significant that the judgement can't be made by trial and error. But in other cases such as the competence of an airline pilot there needs to be an additional mechanism to protect against possible failures.

A second circumstance where the interests of the service provider, employer, customer and public don't align sufficiently to protect the client's or public's interest is where there is a conflict of interests between the employer and the client or public. Thus, a hospital's interests in minimising costs of medications may conflict with its patient's interests in having the most effective medication available. Most patients aren't able to

judge which medication is most cost effective for them. They therefore rely on the hospital's pharmacists and physicians to prescribe the most cost effective medication notwithstanding their hospital employer's interest in minimising costs. Another example of this misalignment of interests is where a client, their lawyer and the lawyer's firm would all be advantaged by destroying or suppressing unfavourable evidence relevant to a forthcoming trial. But it is clearly contrary to the public's interest to have evidence suppressed. The courts therefore impose a duty on lawyers to prefer the interests of the public over their own and those of their client or employer.

These 2 circumstances are grounds for expert practitioners to exercise judgements independently of their client and employer. Setting occupational standards is also best made by expert practitioners independently although in consultation with employers and other interest groups. Employers seek to minimise the cost of their staff by maximising the number of people who are qualified to do the work they seek and to minimise the cost of gaining those qualifications. Thus employers seek to minimise staff training and other restrictions to entry to practice. Unions seek to maximise qualifications and other restrictions to entry to practice to maximise wages and other conditions for their members. In many occupations these different interests may be resolved by the normal processes of industrial negotiation. But in some occupations the risk or consequences of incompetent practice are too great to leave to industrial negotiations, and in other occupations industrial negotiations haven't established sufficiently high occupational standards and qualification for entry. Arguably vocational education is one such occupation.

Judging whether practitioners meet occupational standards is also best made by expert practitioners independently of employers and other interests. Employers appoint, reward and promote staff according to their contribution to the employer's interests which may be related to but does not necessarily coincide with their occupational expertise. Thus, a vocational education institution may promote or appoint a teacher to be a program leader or head of school because they are good at organising programs which are attractive to students and employers or because they are good at managing staff and budgets. This is entirely appropriate, but is not the same as recognising teachers for the quality of their teaching. There are also many circumstances where a manager has the expertise to evaluate a staff member's contribution to their employer's interests, but does not have the expertise to judge the staff member's occupational expertise.

The occupations that are sufficiently specialised or technical, or where the consequences of incompetent practice are very serious, are often identified as professions. Professions are self perpetuating elites as George Bernard Shaw implied, but they are the only institution that society has for advancing the interests of the public independently of employers, unions and other interests aside from that of the profession itself. Therefore it is desirable to foster the development and role of a profession in every specialised occupation including vocational education, while seeking to limit each profession's advancement of its own interests above those of the public. Thus, Karmel (1973: 123) wrote as chair of the interim committee of the Australian Schools Commission –

> A mark of a highly skilled occupation is that those entering it should have reached a level of preparation in accordance with standards set by the practitioners themselves, and that the continuing development of members should largely be the responsibility of the profession. In such circumstances, the occupational group itself becomes the point of reference for standards and thus the source of prestige or of condemnation . . . in Australia teachers as an occupational group have had few opportunities to participate in decision-making. Their organisations have been traditionally more concerned with industrial matters, including those that affect the quality of services offered, than with the development of expertise, which has been seen as primarily the responsibility of the employer.
>
> (Karmel, 1973: 123)

## Vocational teaching standards

One of the first actions of a profession is to establish standards for admission and progression in the profession. This is a long, iterative, consultative and participatory process for new professions. For example, despite Karmel's encouragement in 1973, there wasn't a major attempt to establish a professional association for school teachers until the mid 1990s, which didn't succeed. The most recent attempt is the establishment of Teaching Australia in late 2009 (Ingvarson, 2010: 48 - 49). Professional standards are specialised, not generic.

> Research on the nature of expertise across many occupations shows that expertise is domain specific, not generic. In medicine, for example, researchers found that expertise in diagnosis cannot be separated from the field of medicine in which the diagnosis is being carried out. The same is true with expertise in teaching. Teachers' knowledge and expertise is largely specific to particular subject domains and levels. What accomplished teachers of science know and do is different from what accomplished teachers in other fields know and do.
>
> (Australian Science Teachers Association Inc and Monash University, no date: 5)

This point is elaborated by Ingvarson (2010: 64) –

> Research indicates that teachers are necessarily specialists in terms of what they can teach well, and with experience they tend to become increasingly specialised. Expertise in teaching, as in most professions, is 'domain specific', not generic (Brophy, 1991; Hill, Rowan & Ball, 2005; Shulman, 1987). These differences in the nature of teacher expertise are not trivial. Accomplished primary teachers of early numeracy concepts, for example, are just as much specialists in their field as accomplished high school teachers of

> senior mathematics are in theirs. Without this level of detail, standards are of little use as a guide to professional learning.
>
> Generic standards also provide a limited guide to developing assessment tasks suitable for professional certification. What kinds of opportunities to learn, for example, should highly accomplished high school drama teachers be able to show they have provided to their students over extended periods of time? Are they the same as those that highly accomplished teachers of science should be able to show they can provide? A valid set of standards needs to be clear about what will be assessed. If a standard says that teachers should have 'broad and deep knowledge of the content they are expected to teach', what does that mean exactly about, for example, the mathematical knowledge a primary teacher should be able to demonstrate? If it cannot be described, teachers cannot know on what basis they are to be assessed, nor will it be possible to train assessors to make consistent judgements. Standards need to point clearly to observable features of accomplished knowledge and practice, without specifying how teachers should teach.
>
> (Ingvarson, 2010: 64)

A good example of teaching standards is the *National professional standards for highly accomplished teachers of science* (Australian Science Teachers Association, 2009: 3) which describes professional knowledge, practice and leadership –

> 1 Professional knowledge
>
> Contemporary and authoritative professional knowledge and understanding of:
>
> 1.1 students and the factors that influence learning and development
>
> 1.2 teaching science
>
> 1.3 effective pedagogies, assessment and reporting
>
> 1.4 a wide range of resources, including interactive technologies, and their use in teaching and learning
>
> 2 Professional practice
>
> Exemplary professional practice which includes:
>
> 2.1 building effective relationships and managing complex interactions
>
> 2.2 creating and maintaining engaging and intellectually challenging learning environments
>
> 2.3 planning, implementing and evaluating rigorous and inclusive learning programs
>
> 2.4 using assessment and constructive feedback to inform teaching and learning

2.5 communicating effectively with different audiences using a range of strategies

3 Professional leadership

Active and influential professional leadership to:

3.1 contribute to school planning, development and management

3.2 encourage professional learning, critical reflection and professional discussion, drawing on evidence to improve practice

3.3 build an environment of confidence, resilience and success

3.4 contribute to the development and renewal of the profession

(Australian Science Teachers Association, 2009: 3)

These standards were development over 15 years of consultation and commissioned research. In 1994 the Australian Science Teachers Association commissioned a study (Ingvarson, 1995) of international experience in establishing teaching standards (Australian Science Teachers Association Inc and Monash University, no date: 26). In 1999 the Australian Science Teachers Association established a project with Monash University jointly funded by the association and the Australian Research Council to develop a national voluntary system of professional certification of teachers whose practice has attained high standards set by the profession. The project invited science teachers to apply for membership of a national science standards committee to develop the standards and 15 highly regarded teachers were selected representing all jurisdictions and territories, and all school systems (Australian Science Teachers Association Inc and Monash University, no date: 27). The work was guided by a joint workshop on professional standards held in 2001. A draft was published for consultation amongst science teachers in 2002 and a final draft was submitted to Teaching Australia in 2009.

## Certifying achievement of vocational teaching standards

The Australian Science Teachers Association has not yet implemented its standards. However, an example is provided by the US National Board for Professional Teaching Standards. While the board's standards were developed by expert teachers and researchers in teaching, the methods for assessing against those standards were developed by assessment development teams consisting of other expert teachers and specialists in educational measurement. Teachers who wish to be certified as expert teachers provide 2 types of evidence. The first is a portfolio comprising videos of classes, samples of pupils' work and documented contributions to the profession and school community outside the classroom. The second part of the evaluation teachers attend an assessment centre for 3 hours where they respond to 6 exercises on-line designed to gather evidence about their subject matter knowledge and pedagogical content knowledge (Ingvarson, 2010: 20 -1). This is a form of peer evaluation which is described in a later section.

## Current evaluations of vocational institutions' quality

It is worth reviewing 2 current methods for evaluating vocational institutions' quality, the *Draft AQTF 2007 excellence criteria for registered training organisations* and the Institute for Trade Skills Excellence's star rating scheme.

### AQTF excellence criteria for registered training organisations

In December 2007 the National Quality Council (2007a, 2007b) published *Draft AQTF 2007 excellence criteria for registered training organisations* and *Draft AQTF 2007 excellence criteria guide for registered training organisations*. These propose criteria and a process for institutes to voluntarily submit themselves for recognition as quality committed or outstanding. Institutes would conduct a self review and submit an application for national recognition which would be evaluated by an external expert panel. Applications would be evaluated against 5 criteria:

Leadership

*Governance*
Defined management roles and responsibilities, ethical and responsible decision making, financial reporting with integrity, and effective recognition and management of risk.
*Strategy development and implementation*
Established strategic direction and purpose, relevant and effective policy development, and effective implementation of appropriate strategic plan.
*Supportive work environment*
A culture of excellence, a set of values to support creativity, collaboration and innovation, and social and environmental responsibility.

Learning and assessment

*Planning and design*
Industry and community involvement, teaching/training expertise, and learning pathways.
*Development and delivery of learning and assessment programs, strategies and resources*
Innovation and flexibility, technology support, and responsiveness to clients.
*Review and evaluation of learning and assessment*
Well-designed and well-understood processes for proactively engaging with clients, stakeholders and other best-practice organisations locally, nationally, and beyond to continuously improve training and assessment services.

People development

*Management of the workforce*
Future-directed workforce planning, best practice recruitment strategies and a high-performance culture.
*Staff motivation and learning*

Targeted and sustainable staff development, leadership opportunities and training.

*Staff participation*

Collaborative decision making for building high-performing teams.

Relationship management

*Client relationships*

Internal and external client relationships, targeted market research, and communication and marketing strategies.

*Industry and community capacity building*

Productive and mutually beneficial relationships with industry, other registered training organisations and local communities and building learning communities in workplaces.

*Alliances and partnerships*

Fostering, creating, and managing strategic alliances.

Integrated information management

*Management and protection of resources and assets*

Use of sustainability indicators, effective infrastructure and equipment management, and protection of intellectual property.

*Information and knowledge management*

Systematic management and dissemination of core policies and procedures, using evidence-based research, and ensuring knowledge sharing and dissemination.

*Management and improvement of processes*

Setting and realising targets, strategic collection and use of data for continuous improvement, review of organisational performance and benchmarking.

*Measurement, analysis and review of organisational performance*

Management reviews, data and information availability and benchmarking (National Quality Council, 2007a).

The draft excellence criteria guide provides for the elements of the criteria possible actions, outcomes, evidence and measures. Most of the criteria and their elements are about managing parts of an institute's activities. For example, the guide says that developing and delivering learning and assessment programs, strategies and resources could include engaging stakeholders, using technology, providing online access to resources and staff, benchmarking products and introducing innovative and flexible assessment practices (National Quality Council, 2007b: 16). These actions are more about managing the learning-teaching process than developing its educational core.

Likewise the draft guide says that developing staff could include analysing internal skills, building staff competencies . . . drawing on a range of techniques, such as coaching, mentoring, industry release, work shadowing, participation in networks and communities of practice, effective team work and continuing learning and development (National Quality Council, 2007b: 16). The draft's encouragement of continuing development and participation in networks is good, but there is no reference to upgrading or even updating teaching qualifications.

There doesn't seem to be a final version of the *Draft AQTF 2007 excellence criteria for registered training organisations* and excellence criteria don't seem to have been developed for the 2010 Australian quality training framework. There doesn't seem to be a web site recording which institutes have been recognised as quality committed or outstanding. Indeed, there seems no indication that the excellence criteria have been developed or used nationally beyond the 2007 draft. However, some jurisdictions use their adaptations of the draft criteria to judge their annual provider awards.

## Star rating scheme

The Institute for Trade Skills Excellence (2009a) was established in 2006 with funding from the Australian Government to promote and advance learning, teaching and training in Australian trades education and to elevate the status of traditional trades and trades education as career choices. It operated a star rating scheme which awarded 1, 2 or 3 stars to institutes upon application according to their concentration on the needs of businesses and students, the quality of teachers and resources, and empowerment of businesses and students. Institutes were evaluated by industry experts (Institute for Trade Skills Excellence, 2009b).

The quality of teaching and learning was assessed by institutes' employment of teachers who have current knowledge, recent industry experience, a good understanding of the skill and workforce issues confronting industry and leadership amongst peers; by the maintenance of industry networks; by the maintenance of training and education networks; and by the provision of state of the art equipment (Institute for Trade Skills Excellence, 2009c). Again, the star rating scheme had very little educational content. The Institute for Trade Skills Excellence is no longer active following the end of government funding.

## Possible means for evaluating the quality of teaching

In 2006 the Victorian Qualifications Authority commissioned a study of possible measures for assessing registered training organisations. The study reviewed recent work on quality assurance and measurement of vocational education and training in Australia and overseas and consulted over 500 people in 29 forums on 9 potential measures of the quality of registered training organisations. The 9 measures were:

1 students' engagement with their learning;

2 students' perception of the quality of their teachers;

3 students' satisfaction with their educational experience;

4 students' perception of how much they have learned;

5 graduates' destinations;

6 staff engagement with core educational and organisational processes;

7 employers' and industries' perceptions of the quality and effectiveness of training and the competence of graduates;

8 completion rates; and

9 reviews of assessment instruments and processes (PhillipsKPA, 2006: ii).

The study proposed to collect data for these measures from a survey of students, of staff and of employers and industries. The study recommended 5 measures: student engagement, students' perception of the competences they acquired, employers' satisfaction, graduate outcomes and module completion (PhillipsKPA, 2006: v). These were later reduced to 3 measures of student engagement, employer satisfaction and competency completion (Coates, 2009: 520). The usefulness of the evidence from those measures for evaluating vocational teaching is reviewed in the next report.

This section considers a narrower issue than that investigated in Victorian Qualifications Authority study, the possible means for evaluating the quality of teaching. It describes and briefly discusses 8 possible means: peer review, students' satisfaction, students' attainment, graduates' outcomes, graduates' satisfaction, graduates' performance, employers' satisfaction, and productivity. In considering each possible method separately it concludes that no one method is a satisfactory on its own to evaluate the quality of teaching.

## Measures and indicators

Before considering how the quality of teaching may be evaluated it is worth reiterating the distinction between measures and indicators. Assume that a work safety representative wished to ensure that they had enough safety footwear of the appropriate size for their institution's staff. One method would be for the work safety representative to measure each employee's feet. This would be time consuming and expensive to collect, but may be needed if the safety footwear needed to fit employees' feet exactly. A somewhat less expensive method would be to ask each employee to measure the size of their feet. Employees' measurement of their feet size is likely to be less accurate than measurement by a skilled footwear fitter – employees' measurements are likely to have a bigger measurement error than those by a footwear fitter.

A third and much cheaper alternative would be to ask employees their shoe size. Employees' shoe size isn't a measure of the size of their feet – it isn't even an inaccurate measure of foot size. But it is an indicator of foot size. Employees' shoe size may be all that is needed to ensure that protective footwear is mostly of the appropriate size, for example, if the protective footwear were safety socks. Assume that shoe size designates safety socks that are too small 1% of the time and too big 1% of the time. The shoe size indicator is thus accurate for the work safety representative's purpose by plus or minus 1%. This would probably mean that the institution would have to keep more safety socks than if it had an accurate measure of their staff's foot size, but this may still be cheaper than measuring every employees' feet to determine the exact number of safety socks to keep.

Curtis (2010: 9) discusses the difference between indicators and measures. In the survey of international perspectives of quality indicators in vocational education and training mentioned earlier Blom and Meyers (2003: 14 – 17) have a short section on quality indicators where they distinguish between indicators and measures. They note that –

> Indicators are signs that are evidence of the presence or absence of particular qualities. While they may be qualitative or quantitative in form, it is the latter which are more generally applied in the reporting of system outcomes and outputs. . . . It must be remembered that indicators are just that—they are *indicative* of a certain state, not descriptive of the entirety.
>
> (Blom and Myers, 2003: 14 – 15, original emphasis)

## Peer review of teaching

One way of evaluating the quality of teaching is direct observation of the teaching by someone competent to evaluate its quality. This is often called peer review of teaching, although people other than peers (other teachers) may be competent to evaluate teaching quality. Australia used to have school inspections which included inspectors' direct observation of teaching, but school inspectors have long gone and peer review of teaching is not used systematically in any sector of education in Australia. However,

there is some interest in peer review of teaching in Australian higher education (Harris et al, 2008; Crisp et al, 2009) and peer review of teaching is used extensively in UK school and further education, the UK analogue of vocational education and training.

Peer review has the advantage of a direct evaluation of the activity being evaluated. It therefore seems valid on its face. However, different evaluators exercise different judgments and this variability or inconsistency of judgement may make the evaluation unreliable if fine judgements are sought. Peer review would have to be moderated to ensure consistency of evaluation, with the moderation needing a stronger external element the greater the reliance on peer review to make fine judgements of teaching quality. Ingvarson and Rowe (2008: 22) report that assessors for the US National Board for Professional Teaching Standards undertake a week's training and are invited to start scoring in subsequent weeks only if they reach a high level of consistency in scoring benchmark entries. Two scorers, using validated standards-based rubrics, independently each example of a teacher's teaching (which is submitted on video) until they consistently agree.

Peer review is labour intensive and so may not be the most efficient way of evaluating the quality of teaching. But it can be highly effective and there may be ways to use it selectively to gain many of the benefits of peer review and support without the high cost of an extensive system.

## Students' satisfaction

Another possibility is to ask students about the quality of their teaching, or more commonly, their satisfaction with their teaching. This has some cogence since students are the direct recipients of teachers' services; if students are completely dissatisfied with their teaching its effectiveness seems at least doubtful. Student satisfaction therefore seems an important part of the evaluation of teaching and has been investigated at least since 1929 (Remmers, 1929) and extensively since the middle of the 20th century (Feldman, 1976). However, it is not evident that students are competent to evaluate teaching and student satisfaction alone is not a complete evaluation of teaching.

For example, the workplace safety unit in the automotive industry retail, service and repair training package (NTIS, undated a) says that one of the hazards to which work teams may be exposed is repetitive work. Assume that a teacher overlooked this hazard and so students were not taught to identify repetitive work as a possible hazard. Students are unlikely to know that their teacher missed this potentially important hazard, and they may not learn of the hazard until after several years' work when repetitive strain injury becomes apparent. Furthermore, students' perceptions of teaching quality may be conditioned by their expectations, which may differ for different (types) of students (Bélanger and Longden, 2009: 336). So d'Apollonia and Abrami (1997) argue that student ratings should be used to judge teaching effectiveness only on a broad 3 point scale (exceptional, adequate, or unacceptable).

On the other hand, many studies have found that –

> under appropriate conditions, students' evaluations of teaching (SETs) are (a) multidimensional; (b) reliable and stable; (c) primarily a function of the instructor who teaches a course rather than the course that is taught; (d) relatively valid against a variety of indicators of effective teaching; (e) relatively unaffected by a variety of variables hypothesized as potential biases (e.g., grading leniency, class size, workload, prior subject interest); and (f) useful in improving teaching effectiveness when SETS are coupled with appropriate consultation.
>
> (Marsh and Roche, 1997: 1187)

Marsh and Roche (1997: 1187) argue that effective teaching and student evaluations are multidimensional – no single criterion of effective teaching is sufficient. Student satisfaction is therefore used extensively in Australian vocational and higher education as at least one measure of the quality of teaching. However, the extent to which student satisfaction surveys are used to improve practice is not clear. The UK's Learning and Skills Improvement Service (2010) has published extensive resources on student involvement on its web site. The UK's further education white paper (DfES, 2006: 37, 64) expects all colleges to publish and monitor strategies to involve students and the Learning and Skills Council (2007: 20) has published a handbook for the further education sector on developing a student involvement strategy which includes a section on involving students in quality improvement. The framework for excellence, the UK government's performance assessment tool for further education colleges, sets out a standard and criteria for collecting and responding to students' view (Skills Funding Agency, undated).

This suggest that attention should be devoted not to refining existing and developing new measures of student satisfaction, but using them effectively in informing quality teaching.

## Students' attainment

One possible way of evaluating the quality of teaching is to examine students' attainment or assessment results. The reasoning is simple: if students are taught well they will perform well in assessment. This is clearly not true in traditional education since many students evidently learn without being able to demonstrate this well in assessment. Ingvarson and Rowe (2008: 14) note that 'Although it seems plausible to use student learning outcomes as a measure of "good teaching" and a basis for measuring teacher quality, the direct relationship between good teaching and learning outcomes is uncertain'.

Many have argued for competency based assessment because it bridges the gap between learning and performance in an assessment task. Furthermore, in principle assessing a student's competence is not only assessing the success of their learning which is of indirect interest to employers, it is also assessing the student's competence in a work skill which is of direct interest to employers. However, Hager (2004: 413)

emphasises that competence and its development are logically different categories. Hager (2004: 412) argues that there needs to be a clear distinction between:

1 performance and its outcomes;

2 the underpinning constituents of competence (capabilities, abilities, skills); and

3 the education, training or development of people to be competent performers.

Hager (2004: 413) argues that Australia's introduction of competency based training was intended to cover all 3 items but in fact it only really dealt with the first. He argues that 'By attending to the first item and assuming that this also took care of the second and third ones, NTRA [the national training reform agenda] has resulted in a deeply flawed VET system'. His view is that while it is possible to describe precisely performance and its outcomes, this is not possible for the underpinning constituents of competence (capabilities, abilities, skills) (Hager 2004: 413). He stresses that development of competence and competence itself are logically different categories. The relevant education, training or development outcomes are different from performance outcomes (Hager 2004: 413).

If this is true competency based education is no better than other forms of education in bridging the gap between learning and performance, although it may retain other important advantages. It therefore shares the complexity that Bélanger, Charles and Longden (2009: 323) observe of education generally: 'Although teaching effectiveness cannot be separated from learning outcomes, isolating learning outcomes as an independent and valid measure of teaching effectiveness is problematic due to the variation of students' key characteristics and other external factors'.

Nonetheless, evaluating teaching by students' assessment results has a long history in school education. In 1862 England adopted payment by results which linked teachers' pay to their students' results in external examinations and this was adopted by Australian colonies soon thereafter. However, it had an adverse behavioural impact – it stimulated behaviour which maximised performance on the measure but did not meet educational goals and indeed had perverse outcomes. Payment by results was ended in Victoria in 1902 and was ended in all Australian States within a few years.

Interest in evaluating teaching quality by student attainment has revived recently. In 1999 the Australian Council for Educational Research was funded by the Australian Government to develop the higher education graduate skills assessment. The test is 30 multiple choice items that take 2 hours and writing tasks of 1 hour. The test seeks to measure critical thinking, problem solving, interpersonal understandings and written communication (ACER 2001: vii, 1). The test is not popular with students who do not want to attempt another test with no apparent benefit and it has not been supported by institutions because it doesn't test achievement in areas that interest them. An evaluation of the higher education graduate skills assessment found no statistically significant variance in scores by institution (Hambur, Rowe, and Luc, 2002: 50-2) and so the test would not be useful to assess institutions' teaching or overall performance because it doesn't discriminate between them.

Australian governments have administered the National Assessment Program – Literacy and Numeracy to pupils in years 3, 5, 7 and 9 since 2008. NAPLAN testing and the publication of results for each school has been controversial, yet it is strongly supported by governments and has influenced the Australian Government's allocation of funds. Because of its significance NAPLAN has reportedly had the type of adverse behavioural impact that led to the ending of payment by results a century go. Some schools reportedly asked weaker students not to attempt the test and one school reportedly released questions to their pupils before attempting the test. Nonetheless, NAPLAN is still strongly supported by both major parties: it was started by the former Coalition national government and is strongly supported by the current Labor government. It may therefore be a model for introducing attainment tests in vocational education and training. The desirability of introducing such a test in vocational education is discussed later.

PISA, the program for international student assessment, has been successful and may also be a model for vocational education and training. PISA is a worldwide test of 15-year-old school children's scholastic performance coordinated by the Organisation for Economic Co-operation and Development. The first PISA assessment was carried out in 2000, following its progenitor the trends in international mathematics and science study which was started in 1995. PISA is conducted every three years, each time concentrating in rotation on reading, mathematics and science. PISA is administered by 30 OECD countries including Australia and by some 30 other countries. It supports robust comparisons of the performance of school systems internationally, although the Australian Government suppresses publication of Australian results by school system.

PISA's success led the OECD to conduct a feasibility study for the assessment of higher education learning outcomes, known informally as 'the higher education PISA'. The feasibility study was started in 2010 and is currently developing assessment frameworks and instruments which it plans to test towards the end of this year and report in July 2011. Developing assessment instruments for big international tests takes a long time. The OECD (2010) says that depending on the results of the feasibility study a full-scale AHELO could be launched by 2016. A vocational education PISA would support international comparisons of vocational education students' attainment but results wouldn't be available for at least a decade.

Despite these difficulties student attainment retains interest as a way of evaluating teaching quality because of the attraction of the simple formula that teachers' good teaching should result in students' good learning and hence good assessment results. However, as we noted when considering the conceptual framework for the study of the quality of teaching in vocational education and training shown in figure 1, there are many factors that intervene in or mediate the relation between teaching, learning and student attainment. Some of these factors can be controlled, but the most important factors of students' preparation, motivation, engagement and aspiration can be influenced but not controlled. This is because education is co-produced between the teacher and the student: students' attainment depends as much on their attributes as their teacher's.

One way of addressing this, at least conceptually, is to measure what is known as education value added. It is relatively easy to admit high achieving students and

graduate them with good results, but it is much harder to achieve the same results with students who have more modest educational backgrounds. But if one could test students on entry and test the same students again on completion one could calculate by how much they have increased their educational attainment, thus measuring education value added. The former Australian minister for education Julia Gillard (2010) envisaged just such a use of NAPLAN results with the introduction of a unique student identifier.

The minister didn't elaborate, but one can imagine finding that a group of pupils were assessed in the middle performance band when they took the NAPLAN test in year 3. The unique student identifier would allow one to track the pupils' performance anonymously in their subsequent tests in years 5, 7 and 9. Pupils who perform above the middle band in subsequent NAPLAN tests appear to benefit from or indicate education value added. One may then examine the characteristics of the schools that seem to contribute to education value added to see what improvements may be transferred to other schools.

But Australia is a long way from introducing a measure of education value added in vocational education and training. To evaluate the quality of teaching in the workplace, say, for example in teaching units of competence on workplace safety, it would be necessary to introduce a test taken by students upon entering the program which is sufficiently specific to assess students' potential learning in workplace safety. The very large number of competences included in many training packages would impose an onerous testing burden on students, teachers and the sector as a whole. The tests taken by students upon completing the program would have to be assessed externally or be heavily moderated externally to establish confidence in the measurement of education value added and avoid the gaming that NAPLAN tests have apparently encouraged.

Rather than test potential and actual achievement in every competence in a training package it may be appropriate to introduce entry tests and a strong external validation of exit tests for just a few competences of particular interest in each training package. This would be technically feasible and would be more practicable than comprehensive entry and exit testing, although it would still add a big extra testing burden. But it would require a standardisation of assessment that has so far not been considered desirable or appropriate in vocational education. It may also have adverse behavioural effects, for example, encouraging institutions to devote undue attention to the competences used to measure education value added and neglect other competences.

A theoretic possibility is to test general competences such as communication, problem solving and teamwork rather than the specific competences included in training packages. This possibility remains theoretic because the transfer of so-called generic skills is severely limited as contexts change (Hager, 2004: 429). Communication, for example, is highly specific to its context. Thus, in automotive industry retail, service and repair good communication in a workshop often does not transfer to successful communication in the front office, as many people find when trying to understand a mechanic's explanation of their car's repairs. Volmari et al (2009: 18) argue that 'Competence is context-dependent (trialogical learning). Thus its assessment is linked to the prevailing valuations and the operating environment'. The common terms in which general competences are expressed mask the differences they are trying to

surmount. Consequentially general competences either become so rooted in their immediate context that they are not transferable to other contexts or become so general that they lose their direct relevance to the workplace (Moodie, 2010). Most tests of general competences or skills end up assessing peoples' general aptitude or IQ which is of only indirect interest in vocational education.

## Graduates' outcomes

A common way of evaluating the quality of teaching is to examine graduate outcomes. Successful graduate outcomes are commonly understood to be gaining (better) employment or proceeding to further study. The argument is that graduates who have been well taught are more attractive to prospective employers or are more successful in further study. Graduates' success in getting employment depends on their field since employment demand differs greatly by field. Employment demand also differs markedly by level of qualification. So comparisons would have to be made by field and level, for example, certificate IIIs in business services. Employment demand also varies by region so it may be necessary to correct for regions' different economic structure and growth.

While the quality of teaching is probably a factor in graduates' outcomes it is surely not the only important factor. Graduate employment rates are also affected by the institution's overall quality, reputation, links with employers, the quality of the institution's careers service and a teacher's effort and skill in placing their graduates. That is, strong graduate outcomes may owe a lot to a teacher, but not so much to the quality of their teaching as to the quality of their graduate placement. It seems very difficult to separate and control for all of these factors. Graduate outcomes are better indicator of overall performance than of teaching quality, although even for that measures would be specific to each level within each field and would have to be corrected for region.

## Graduates' performance

Another possibility is to evaluate teaching by graduates' work performance. The supposition is that a graduate who has been taught well will perform well at work. But if there is an appreciable gap between a teacher's teaching, a student's learning and a student's performance in assessment, there is an even bigger gap between teaching and a graduate's work performance. Just as a student's learning is affected by their previous educational attainment and their personal characteristics, so a graduate's work performance is affected by their previous work experience and their personal characteristics. Work performance is also affected by the way in which it is organised, the behaviour of fellow workers, the equipment used and the workplace's facilities. Work performance is also crucially influenced by how well it is rewarded and supported by mentoring, supervision and training. It would be extremely difficult to control for or separate all these factors to make graduate performance a useful measure of teaching quality.

## Graduates' satisfaction

Graduates' satisfaction is used extensively to evaluate the quality of teaching. Graduates are thought to have a better appreciation of the quality of their teaching than students because they understand better the field in which they have been educated and its application in work. However, even if graduates could recall the teaching in each of their units of competence it would be onerous to expect them to evaluate each unit separately. Surveys therefore ask graduates about their satisfaction with their teaching overall. It also seems likely that graduates' overall impression of their teaching is influenced more by their more recent experience, that is, by the teaching in their later units. So graduates' satisfaction is a useful measure of the quality of an institute's teaching overall, but does not evaluate the quality of teaching of individual units.

## Employers' satisfaction

There have been several attempts to evaluate the quality of teaching from employers' satisfaction, but there seems to be insurmountable methodological obstacles to developing a reliable method. Consider an employer in textiles, clothing and footwear which recruits 3 graduates of the same training package in a year, each from a different vocational education institution. The employer observes that its new recruits perform differently, but how does the employer know the extent to which these differences are due to the characteristics of the recruit, their vocational education institution, their teaching in their vocational institution and other factors?

It seems reasonable to consider the performance of graduates recruited over a period greater than a year, say all the employers' recruits of graduates of a training package over 3 years. If the employer has 3 recruits from each of 3 institutes this would be a very small population from which to draw any conclusion about the quality of the institutes' education, let alone their teaching. Even if that were sufficiently robust, we have information about the quality of teaching in only 3 institutes. Another employer may be able to evaluate the quality of teaching in 3 other institutes, but without some form of moderation there is no assurance that the employers are judging similar criteria at a similar standard.

This difficulty isn't solved by considering the evaluations of big employers who may have several recruits from numerous institutions. Recruits of big employers typically have different supervisors, possibly at different sites, who may exercise different judgements. This will be moderated to the extent that the employer has a common employment policy, but again this would need to be checked to have any confidence in the employer's evaluation.

These methodological problems haven't been solved in other countries or in other sectors. Employers' satisfaction ratings have been used in higher education, for example in the Times Higher Education world university rankings at least until 2009, but neither the Times Higher Education nor its survey group QS Quacquarelli Symonds has demonstrated that it has solved the methodological problems with its method.

This is not to argue that employers' satisfaction mightn't be very useful indicators of the quality of teaching in more limited circumstances, for example, where the employer commissions an institute to offer a program to its staff. Nor does it argue against the usefulness of employers' satisfaction in evaluating the quality of vocational education generally. The difficulties arise when one tries to identify a part of an overall educational experience (such as teaching) and when one tries to compare the performance of one institute with another.

## Productivity

Many commentators claim that a workforce is more productive if it is more highly skilled and from this one may infer that a workforce is more productive if it has benefited from high quality education, and in particular, high quality teaching. But surprisingly in view of the confidence with which the productivity benefits of training are claimed, there is little if any empirical evidence to support the claim (Wolf, 2002; Grubb and Lazerson, 2005). This is because productivity is determined by the interaction of multiple factors and so far it has not been possible to separate the factors to calculate the contribution of education and higher skills.

Individual employers often report productivity gains from their staff's increased vocational education. They are able to report a reduction in workplace hazards and accidents, for example, and infer confidently that this is due to staff training because they observe a change in their staff's behaviour and know that other relevant factors have remained unchanged. But thus far researchers have been unable to convert these observations of individual employers into a systemic measure to compare institutions and their teaching. So evaluating the quality of teaching from its improvement in workers' productivity doesn't seem feasible for the foreseeable future.

## Summary of possible measures of teaching quality

The 7 possible means for evaluating the quality of teaching we have considered are illustrated in figure 2. The figure shows that peer assessment is the most direct evaluation of teaching quality, but we noted the variability and cost of peer assessments. The other measures are successively more removed from teaching, the activity being evaluated, which makes it successively more difficult to isolate the effect of teaching from the several other factors that affect student attainment, graduate outcomes and graduates' performance. So while data on students' attainment are relatively inexpensive to collect, it is hard to separate teaching from the several other factors that affect attainment. Surveys of the satisfaction of students, graduates and employers are well established in Australian vocational education, and while each is valuable, each has limitations which make them unsuitable as the sole measure of the quality of teaching. Satisfaction surveys are best used in combination with other measures of teaching quality.

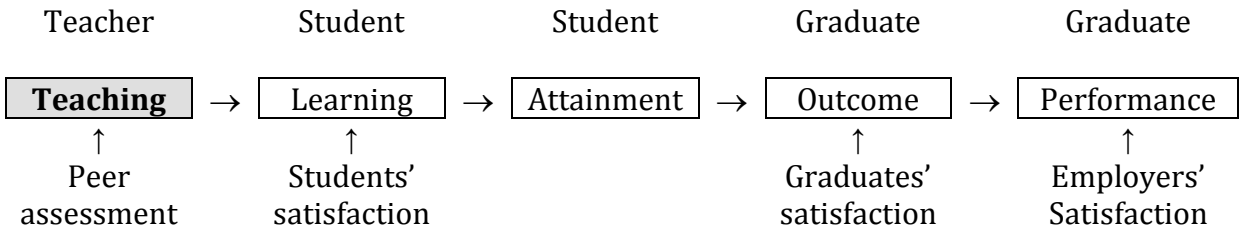


**Figure 2: main possibilities for evaluating the quality of teaching**

The next part considers how the quality of teacher development programs may be evaluated.

## Teacher development

Readers will recall that the conceptual framework in figure 1 used the term teacher development to refer to both entry level qualifications for teacher preparation and continuing professional development. Somewhat different considerations apply to preparatory and continuing development programs, and these will be considered separately where appropriate.

There are several benefits from evaluating education just by its outcomes measured by student assessment results. Educational institutions can be much more flexible in their inputs and educational processes. Indeed, if a sufficiently robust measure of educational outcomes is used inputs and processes may be ignored. A good measure of educational outcomes also allows one to compare the education received from different institutions and even from different countries, as we have seen the program for international student assessment allows for junior secondary education and the international English language testing system (IELTS) allows for English language skills. Thus far the only method available for measuring educational outcomes sufficiently robustly to allow one to ignore educational inputs and processes is the externally set and marked examination. External exams have disadvantages, however. They impose a uniformity of expectations on exam candidates and thus on their educational inputs and processes, hence allowing inputs and processes to be ignored. It is also hard although not impossible to make external exams reflect the different contexts in which they may be taken or the different contexts in which the educational achievement they assess may be applied.

External exams that cover all the important areas of students' learning are at one end of a continuum of methods of assessing a student's learning. They require the least trust in the students and teachers engaged in the teaching-learning. At the other end of the continuum is students' self assessment of their learning. To accept a student's self assessment one would have to have a high level of confidence in their ability to assess their own learning. Along the continuum is the teacher's assessment of their students' learning. This, too, requires substantial trust – in this case in the teacher's ability to relate their assessment to the system's norms and to distance themselves from their students' and their own interests. Teacher assessments may be supported by methods of moderation and standardisation which have different levels of influence of external assessors. As the influence of external assessors increases reliance on teachers' assessments falls.

Like most other tertiary education programs, teacher preparation programs for Australian vocational teachers are at about the mid point of the continuum of methods of assessing a student's learning. Neither vocational nor higher education has many external exams at one end of the continuum, nor do they have sole student or staff assessment at the other end of the continuum. Both sectors rely mostly on teacher assessments with varying levels of moderation. So it is not sufficient to evaluate teacher preparation programs by their assessment results alone: it is necessary to evaluate these programs' inputs and processes as well as other outcomes. This is a common

conclusion: education is often viewed as involving inputs, processes and outcomes (Coates, 2009: 520).

There are several measures of **inputs** to a tertiary education program:

> the level of the preparation of students since better prepared students have higher attainment and are thus understood to be better graduates;
>
> the qualifications of the program's teaching staff;
>
> the program's funding and staff:student ratio;
>
> the program's level;
>
> the program's duration;
>
> the library resources and the adequacy of laboratories and equipment needed for the program;
>
> information and communication technology resources to support a course management system, electronic communication and access to electronic resources used in the program; and
>
> facilities for teaching and for students' private and group study and interaction.

Another possible input measure of the quality of a program is the number of units students attempt to complete their qualification. If a program's nominal duration is 1 year's equivalent full time study but students take 1.5 years to complete it this suggests that students are attempting many units they are not completing successfully, which prima facie seems inefficient. This inefficiency may be due to a combination of enrolling students in units they are not adequately prepared for, poor teaching, poor student support and poor assessment. Conversely, if the average student completes in 0.5 years a program that nominally takes 1 year this prima facie seems highly efficient, suggesting that students are given full credit for their previous learning and pass most of the units they attempt. It may also indicate lax standards, of course, and an average consumption of units so below a program's nominal duration would invite investigation of its assessment.

There are also several measures of a program's **process**:

> the quality of its curriculum;
>
> the variety and appropriateness of the teaching methods or pedagogies used in the program;
>
> the quality of teaching;

the number of teachers' contact hours which limit the amount of time teachers have for preparation, individual interaction with students and student assessment;

the alignment of assessment with learning goals;

the availability and use of assessment frameworks and marking guides;

the extent of sharing of experiences with assessment, internal moderation of assessment and external moderation of assessment.

There are several measures of a program's **outcomes** in addition to students' assessment results:

completion rate;

short term successful graduate outcome such as relevant employment or further education within 6 months after completion;

short term graduate satisfaction within 6 months of completion;

medium term successful graduate outcome such as relevant employment or further education 5 years after completion;

medium term graduate satisfaction 5 years after completion.

The accreditation of higher education medicine and engineering programs is very rigorous and examines these and several other inputs, processes and outcomes in considerable detail. Typically an accreditation panel visits the department seeking (re)accreditation for up to a week to interview students, teachers, the university's senior management, graduates and employers; inspect the department's facilities; and review students' work and the department's assessment. Higher education's programs in accounting, architecture, law, nursing, psychology, social work, early childhood and school teacher education and many other areas are also accredited externally, with varying levels of rigour. For example, a recent examination of procedures for assessing and accrediting teacher education programs found that they are generally weak as quality assurance mechanisms (Ingvarson et al., 2006). But all external accreditation bodies review inputs and processes as well as a program's outcomes.

## Entry qualifications

Ingvarson and colleagues' (2006) review of national and international trends in the accreditation of teacher education found that there are over 200 teacher education programs in Australia but that little is known about the relative effectiveness of these programs. Furthermore, Ingvarson and colleagues found that the assessment and accreditation of Australian teacher education programs are generally weak as quality assurance mechanisms: none is based on outcome measures of the quality of graduates or their competencies. Ingvarson et al (2006: 69) argue –

> A major task for accreditation agencies now is to ensure that there are valid and reliable measures of outcomes. These need to take multiple forms to ensure reliability. They can include portfolio entry tasks, measures of content and pedagogical content knowledge, classroom observations, reports of school principals, student evaluations, among others.
>
> (Ingvarson et al, 2006: 69)

This is also an issue in the US. Former US Secretary of State for Education Arne Duncan (2009) complained –

> Less than a handful of states and districts carefully track the performance of teachers to their teacher preparation programs to identify which programs are producing well-prepared teachers – and which programs are not turning out effective teachers. We should be studying and copying the practices of effective teacher preparation programs – and encouraging the lowest-performers to shape up or shut down.
>
> (Duncan, 2009)

A relatively parsimonious evaluation framework would be feasible for Australian vocational education initially in view of the newness of the evaluation of vocational teacher education qualifications, the lack of data available on vocational education staff and the relative weakness of the quality assurance mechanisms for vocational teacher education qualifications. The measures used initially should cover inputs, process and outcomes.

### *Input*

*Student entry*. There should be minimum student entry qualifications for admission to the teacher education program. The entry qualifications should specify the preparation students need to have a good opportunity of completing the program; they should not go further to specify entry requirements to the profession. The entry qualifications, as with vocational teacher education programs generally, should recognise that people enter the profession from a variety of routes with different levels of preparation. Nonetheless, programs should be given flexibility to admit a modest proportion of students who do not meet minimum entry requirements, say a 3 year average of 10% of their intake.

*Teacher qualifications*. There should be minimum qualifications for staff to teach vocational teacher education programs. The Australian quality training framework requires teachers to be qualified in the training package they are teaching but no higher. This is a consistent application of the principles of competence based training. But it is not consistent with general expectations nor probably with best practice, with the practice of vocational education in other countries nor with the practice in other sectors.

If one were organising an inhouse seminar on identifying workplace hazards one could choose as presenter one of several possible staff who had completed a relevant training package and thus who were deemed competent in identifying workplace hazards. But one would usually choose as presenter the worker who had relevant organisational responsibility or who had the most expertise because one is aiming to develop in staff not competence to satisfy the minimum standards, but performance to the best of their capacity which hopefully exceeds minimum competence.

The minimum qualifications for staff to teach vocational teacher education programs should therefore exceed the qualification they are teaching. It is appropriate to adopt the general expectation in higher education that teachers of vocational teacher education programs should have a qualification in a relevant field 1 Australian Qualification Framework level higher than the qualification they are teaching. This is not saying that teacher education programs should not be based on competences. It is consistent with a view that institutions offering vocational teacher education programs should have the flexibility to adopt whatever curriculum and assessment method they choose that meets the program's accreditation requirements. But it is saying that if a competence based method is used teachers should be assessed as competent at 1 AQF level higher than the program they are teaching.

As with the students' minimum entry requirement, the requirement for teacher qualifications should recognise that teachers of vocational teacher education programs come from different routes and backgrounds. Because the requirement that teachers of vocational education teacher education programs should have a qualification 1 level higher than the program they are teaching would be new and an increase in current requirements, there should be a transition period to allow institutions to adjust.

*Program's level*. A minimum level should be specified for vocational teacher education programs. This is a complex and contentious issue and is considered at length in the options paper to be produced.

*Program's duration*. A normal minimum duration of vocational teacher education programs should be specified. This would in any case be required by the new Australian qualifications framework. The Australian Qualifications Framework Council's (2009: 2) qualifications type descriptor for certificate IV (level 4) specifies a notional duration of 0.5 – 2 fulltime equivalent years with this note: 'there may be variations between short duration specialist qualifications that build on skills already acquired and longer duration qualifications that are designed as entry level requirements for work'. In many cases it is appropriate to require a normal minimum duration longer than that specified by the Australian Qualifications Framework Council. For example, school teacher registration requires a minimum of a bachelor program of 4 years' duration, which is above the minimum notional duration of 3 – 4 years specified in the qualifications type descriptor for bachelor degrees. The minimum duration of vocational teacher education programs is also contentious and will also be considered in the options paper to be produced.

### *Process*

*Curriculum*. Vocational teacher education programs should be evaluated by the relevance of their curriculum which might be expressed as the knowledge and the skills they seek to develop in vocational education teachers.

*Quality of teaching.* There should be a measure of the quality of teaching, which might initially be a student satisfaction survey. Such a survey should not only determine the extent of students' satisfaction with teaching and other important aspects of their program, but collect information that would help institutions improve students' satisfaction. For example, a survey instrument might include an opportunity for students to express free text comments which can be collated and parsed electronically.

*Alignment of assessment with learning goals.* Vocational teacher education programs should be evaluated by the extent to which they align their assessment with the learning goals they specify for the program.

*Shared assessment*. Vocational teacher education programs should also be evaluated by the extent to which they share experiences with assessment, conduct internal moderation of assessment and conduct external moderation of assessment since this establishes confidence in assessment standards. Vocational teacher education programs should model strong practice in this most important part of any educational program.

### *Outcomes*

Many desirable measures of programs' outcomes are expensive or difficult to collect and so should be evaluated for vocational teacher education programs only if they are collected as part of institutions' general operations. For example, graduates' medium term satisfaction and outcomes 5 years after completion would require a new survey which may rely on old addresses for many graduates and so have a low response rate. Extra measures may be needed to follow up non respondents for whom a current address is known and careful analysis may be needed to interpret results from a survey with a low response rate.

A program's completion rate is also a potentially useful measure of its quality because it is a combination of the program's pass rate or how successful the program is in getting students to the desired standard and of its retention rate or how successful the program is maintaining students' interest and commitment over the duration of the program. However, completion rates require programs to collect longitudinal data on students, which is difficult for enrolment systems which are established to collect 'snapshot' data at a census date, normally a few weeks into each teaching semester. Using completion rates to evaluate vocational teacher education programs should therefore await any general introduction of completion rates.

The outcomes of vocational teacher education programs should therefore be evaluated by measures that are already generally collected:

short term successful graduate outcome such as relevant employment or further education within 6 months after completion; and

short term graduate satisfaction within 6 months of completion.

Vocational education and training authorities could implement an evaluation framework for vocational teacher education programs directly if the programs were offered as a vocational education qualification. However, vocational education authorities could not implement an evaluation framework directly for any vocational teacher education program offered as a higher education qualification, whether it is offered by an institution which also happens to be a registered training organisation or otherwise.

So if an evaluation framework is introduced for vocational teacher education programs some mechanism will be needed to recognise acceptable higher education programs. This would effectively be a process for accrediting vocational teacher education programs. It would be strange to require some but not other vocational teacher education programs to be accredited, so an evaluation framework implies accreditation of vocational teacher education programs. Such an accreditation process would establish some minimum standards and higher expectations that applied to all vocational teacher education programs regardless of the sector in which the qualification were offered.

## Continuing teacher development

The US National Academy of Education (2009: 6) found that US school districts spend an average of 3% of their budgets on the continuing development of school teachers, mostly on substitute teachers or for experts to provide training. However, the Academy argues that –

> Much of this money is squandered, however, because it is not focused on helping teachers address the specific learning needs of their students. Most basically, teachers need to be deeply knowledgeable about the subjects they are teaching, as well as the pedagogies most effective in teaching those subjects. Research suggests there are some key features of effective professional development for content teaching:
>
> - It focuses on deepening subject matter knowledge specifically for teaching, including understanding how students learn and the specific difficulties they may encounter in mastering key concepts;
>
> - It involves enough time for significant learning (for example, a course or program of 40 or more hours distributed over 12 or more months);

- It is coherently related to what teachers are being asked to do and builds on what teachers already know and are able to do;

- Educators are actively engaged, rather than just listening to a lecture or watching a demonstration; and

- Teams of teachers from the same school participate and learn together, enabling them to support each other in using what they have learned.

> Evaluations show that professional development in which teachers learn new content – as well as how to teach it – benefits both students and their teachers. These features, based on analyses of "best practices," a growing body of research, and surveys of teachers, provide a good starting point for further exploration.
>
> (National Academy of Education, 2009: 6, footnotes omitted)

While this conclusion is about continuing teacher development in another sector in another country, it offers a goal and perhaps a guide that may be fruitfully considered for Australian vocational education. But it assumes a scale of continuing teacher development that far exceeds what is offered for vocational teachers in most Australia states. At least initially, a far more modest program is more suitable for evaluating Australian vocational teacher development activities.

Ingvarson, Meiers and Beavis (2005: 3) note that continuing development of school teachers may include:

> workplace learning through action research, coaching and mentoring;
>
> institutional learning to facilitate understanding of research findings and best practice;
>
> online learning;
>
> participation in formal award programs; and
>
> conferences and seminars.

Some of the projects Ingvarson, Meiers and Beavis (2005) reviewed were conducted over extended periods of time, others were conducted in single sessions, and others used a combination of organisational structures, such as an initial workshop before a school-based project. The quality of formal qualifications may be evaluated by similar measures to those used to evaluate the quality of initial teacher education programs.

Ingvarson, Meiers and Beavis (2005: 4) report that the school teacher development projects funded by the Australian Government that they reviewed were required to commission an external evaluation which considered:

(a) the nature and extent of the participation of teachers from specified target groups;

(b) participants' satisfaction with the quality of the programs;

(c) the extent to which the program achieved its outcomes and objectives;

(d) the contribution of the program to improving and expanding pedagogy;

(e) the contribution of the program to improving student learning outcomes in schools;

(f) the extent to which the program enhanced the status of teaching (Ingvarson, Meiers and Beavis, 2005: 4).

Ingvarson, Meiers and Beavis (2005: 5) note that, as with initial teacher education, the effectiveness of continuing teacher development is influenced by several background and contextual factors. They derived from their reading of the literature the conceptual framework for their evaluation of continuing teacher development programs shown in figure 3.

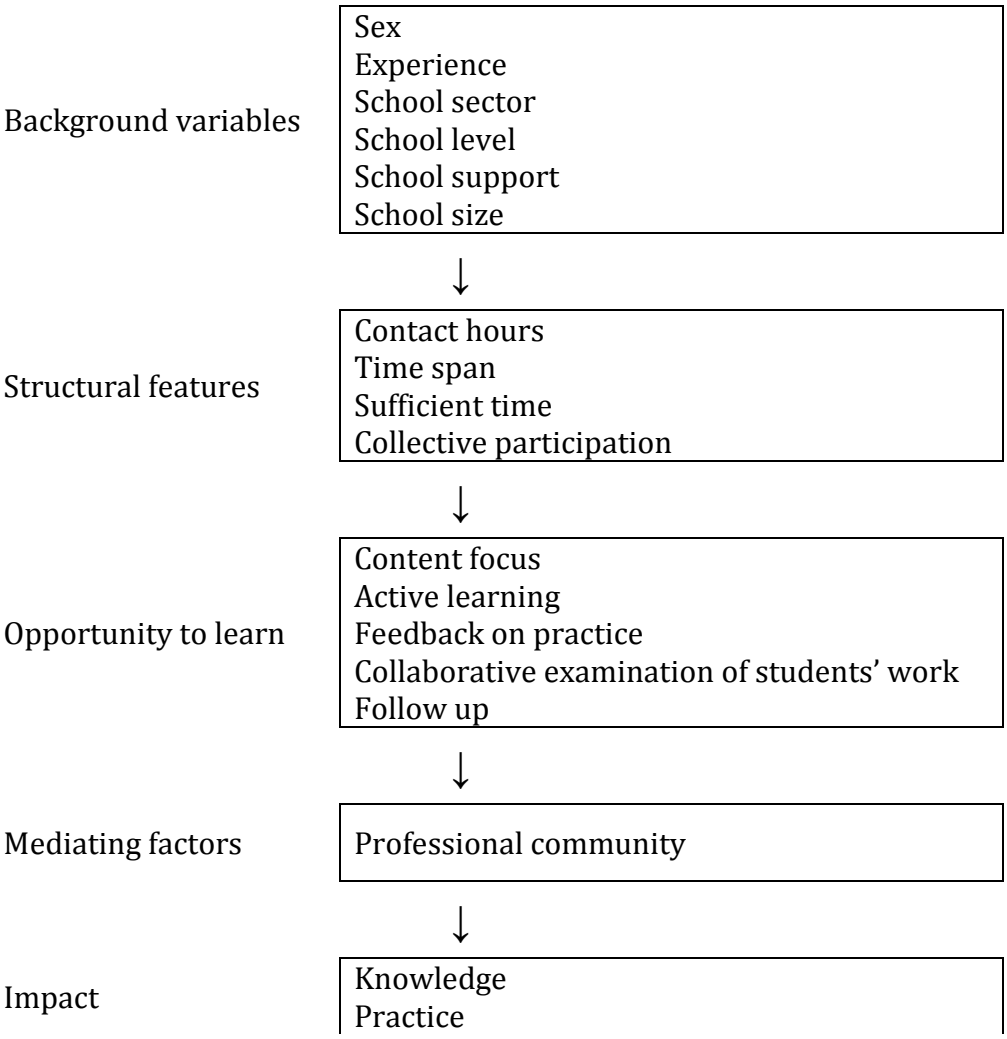


**Figure 3: Ingvarson, Meiers and Beavis' (2005: 6) conceptual framework for their evaluation of continuing teacher development programs**

Source: adapted from Ingvarson, Meiers and Beavis (2005: 6) figure 1 relationships between structure, learning processes and impact of professional development programs.

Ingvarson, Meiers and Beavis (2005: 8) included in their evaluation of teacher development activities a content focus because research on professional learning finds that it 'is more likely to improve student learning outcomes if it increases teachers' understanding of the content they teach, how students learn that content and how to represent and convey that content in meaningful ways'. By active learning Ingvarson, Meiers and Beavis mean professional development programs that draw teachers into an analysis of their current practice in comparison with professional standards for good practice. Effective programs also draw teachers into close comparison of what their students are learning in comparison with what students of that age and circumstance are capable of learning (Ingvarson, Meiers and Beavis, 2005: 8).

Ingvarson, Meiers and Beavis (2005: 8) report that 'effective integration of new skills requires programs to have a clear theoretical foundation supported by research, modelling in real settings, and opportunities to practice the new skills and receive feedback from a coach or supporting teacher'. They report that few participants in the programs they evaluated 'received assistance and feedback in their classrooms during the critical and difficult implementation phase when they were trying out new practices' (Ingvarson, Meiers and Beavis, 2005: 8).

Ingvarson, Meiers and Beavis (2005: 9) emphasise strongly teachers' collaborative examination of student work –

> Effective professional development programs lead teachers to examine their students' work in relation to external reference points or standards. Hawley and Valli's (1999) review of research rates this feature as a critical component of effective professional learning programs. It has become clear over recent years that teachers gain a great deal of valuable learning from opportunities to examine student work in collaboration with colleagues - especially their own students' work, and in relation to standards for what students should know and be able to do. Collaborative analyses of student work opens up many avenues for teachers to de-privatise their practice and learn from each other. It also leads to deeper understanding of student learning outcomes and greater discrimination about what counts as meeting those objectives.
>
> (Ingvarson, Meiers and Beavis, 2005: 9)

Ingvarson, Meiers and Beavis (2005: 4) collected information on each part of their model by surveying 3,250 teachers who had participated in over 80 different development programs. They found that of all the variables in their model the

opportunity to learn or process variables had the biggest effect on individual program outcomes (Ingvarson, Meiers and Beavis, 2005: 12). Ingvarson, Meiers and Beavis (2005: 12) found that the most important influence on reported impact on practice apart from knowledge is the extent to which individual programs provide many opportunities for active learning and reflection on practice.

They found that the professional community was significant in mediating the impact of development programs on the reported level of impact on knowledge and practice –

> The extent to which a professional development program influences knowledge and practice, as reported by teachers, is enhanced by the extent to which that program also strengthens the level of *professional community* in the school; that is, the extent to which it increases opportunities for teachers to talk about the specifics of their teaching practice and student learning, share ideas and support each other as they attempt to implement ideas from the professional development program. The extent to which programs influenced the level of *professional community* activity was enhanced to the extent that their designers built in active learning processes, follow up and opportunities for collaborative examination of student work. (Ingvarson, Meiers and Beavis, 2005: 12, original emphasis)

Ingvarson, Meiers and Beavis (2005: 15) also found that the level of school support 'has substantial, though indirect effects on the extent to which program outcomes are achieved'.

They evaluated the Australian Government quality teacher program which received a total of $159.2 million of which $97.2 was allocated to professional learning projects (Ingvarson, Meiers and Beavis 2005: 3). This is rather more than is allocated to national development programs for vocational education teachers and perforce the evaluation vocational teacher development programs starts from a more modest base. The quality of teacher development activities may be assessed by a combination of these criteria.

*Content.* Substantial activities should cover content and pedagogical content knowledge because as we noted above, this is likely to improve student learning outcomes. This would allow for some specialisation of activities by field.

*Coverage*. Is there evidence that the activities presented cover the needs of the profession?

*Accessibility*. Activities should be presented in a way that is accessible to most of the profession. This might be achieved by using a variety of delivery methods including face to face sessions outside the capital cities and distance education techniques including online activities.

*Participant satisfaction*. Participants in continuing development activities should be surveyed frequently, say at the end of a sample of activities, to determine their satisfaction with the activity they have just completed, with the overall program of

activities, and to collect their suggestions for future activities which would inform an evaluation of the coverage of the program.

## Conclusion

This report opened with a vision for evaluating the quality of teaching that relied heavily on Ingvarson and Rowe's (2008) formulation of teaching standards. It then reviewed common methods for evaluating the quality of teaching – peer evaluation, students' satisfaction, student attainment, graduates' outcomes, graduates' satisfaction, employers' satisfaction and graduates' productivity. It found that while many of these measures are useful none is an adequate measure on its own.

The report then applied the available and feasible measures to the evaluation of the preparation and continuing development of vocational teachers. The report argues that the combination of the measures proposed would be a good start to evaluating the quality of vocational teaching, vocational teacher education and continuing vocational teacher development.

But the report did not develop Ingvarson and Rowe's notion of teaching standards. Ingvarson and Rowe's (2008: 18) example of a good teaching standard is from the Australian Science Teachers Association. There doesn't seem to be an analogue for vocational teachers. The process for developing a vocational teachers' standard is the subject of a subsequent report and should be a medium term goal for vocational education.

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