COSTING TRAINING AND ASSESSMENT

— ISSUES PAPER —
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Prepared for

The Assessment Centre for Vocational Education

by

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COSTING TRAINING AND ASSESSMENT: ISSUES PAPER

Feedback Form

THE CENTRE:

The Assessment Centre for Vocational Education was established to provide products and services to assist the quality assessment practice in vocational education and training. The Centre's activities contribute to informed discussion and assist the formulation of state and national policies on competency based assessment.

THE REPORT:

This Issues Paper was commissioned to give some insight into significant issues in the costs and benefits of competency based assessment, helped by information on current practice.

BACKGROUND:

As a result of agreements between all States and the Commonwealth, training and assessment within vocational education courses, will, more and more, be competency based. There is, however, a concern that without careful planning, approaches might be taken to competency based assessment that unnecessarily divert resources from effective teaching and training. There is also a concern that policy decisions are being made in the absence of information.

COMMENTS:

This paper raises issues for discussion.

Is the paper easy to read?

Are the issues clearly stated?

How relevant is background information?

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Thank you for your feedback.

PLEASE RETURN THIS FORM TO:

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1. Introduction

1.1 The rationale for this paper

There are three reasons why the costs of competency-based assessment need more attention.

The first and most obvious one is that cost analysis can provide the information to enable decisions on policy, administrative procedures and practice to be made on a rational basis. It has the potential to help TAFE colleges teach and assess as effectively as possible, within the constraints of a fixed government grant. It can help enterprises understand what they actually spend on training, and it may help them spend less to achieve the same ends. More generally, coupled with other information on inputs and outputs, it can help answer the question for the community of “exactly what are we paying for and what are we getting?”

The availability of data does not, of course, guarantee its use in the formulation of policy or in daily practice, but it at least provides the possibility.

A second reason why this area is important is to increase the awareness of practitioners of the relevance of costing issues and the effect that they have on all aspects of education and training. Trainers and teachers have not traditionally been concerned about cost, nor have they been paid to be—although this is changing with devolution of budgeting in many public systems. Their prime concern is with educational benefits, normally defined in the individual sense, and normally in isolation from the broader issues of work-effectiveness and societal context. On the other hand, administrators and policy-makers are under considerable pressure to do more with less, and cost and contextual factors play an overarching role. Ways of helping practitioners to think about costing issues should help the two sides work more effectively to produce better systems.

This is currently needed to put in perspective the expectations of what will be achieved by competency-based assessment. To quote the British Training and Development Lead Body’s guide (1992) for implementing a particular set of standards:

“Ideas that do not fulfil their promises are soon rejected. Enthusiasm for the standards and the idea of ‘quality performance’ are necessary to convince others and to get action. It can be dangerous, however, if it leads to overstatement of the benefits. ... The standards specify what is expected of people. They will not solve all your problems.”

1 For example, a British study showed that firms spent over three times as much on training as showed up in their accounts (Deloitte 1989).

2 This is particularly important given the equivocal answer to the question of whether vocational education and training itself, as carried out in Western societies, is cost-effective in the broad macro-economic sense. A recent review by Lewin (1993) concludes that it may or may not be, depending on the context and the criteria. Given such ambiguities, it is perhaps not surprising that governments are showing an increasing interest in how public funds are spent on such activities.
The third reason arises from the fact that costing processes are about models of education and training—they are not, primarily, about economics. A study of the costs of a particular model will inevitably lead to all concerned learning more about what they are doing and questioning why. No examination of costing issues is going to provide unequivocal answers, but it may lead to a questioning of the relative importance of various objectives and an exploration of the different ways they can be attained.

Our level of understanding of costing issues, however, is lower than our understanding of any other aspect of competency-based assessment. As is the level of activity: in a recent survey, only 3% of UK firms reported making a cost-benefit analysis of training (Deloitte 1989). The last few years have seen the development of expertise in standards development, curriculum, staff development and, to a lesser extent, assessment; but there has not, until now, been the opportunity to develop expertise in costing. Not only is there little expertise, but there is much disinformation and a lack of some basic understanding: examples abound of costing studies carried out which ignore important factors, of simplistic lists of items to be considered, and so on. Drake’s landmark 1982 review of the literature stated that:

“Defective theories, unsuitable research designs, and inadequate reporting abound. Evidence is sometimes not much better than anecdotal…” (p.103)

There is little to suggest that the picture has changed much in the last decade.

1.2 Scope of this paper

This paper is primarily concerned with the costs of competency-based assessment. However it is obvious that assessment is normally a component of an integrated training-and-assessment strategy, so although the main focus of the paper is on assessment, it will inevitably concern the costs of training as well.

A more difficult decision has been whether to restrict the paper to costing issues alone or whether to include a consideration of cost-benefit analysis. As explained later, the costs of a particular activity depend on the approach that is used, which in turn is governed by the outcomes or benefits that one wants to achieve. For this reason the dependence of costing on outcomes underlies much of the discussion, and a section has been included on how the costs of training and assessment are affected by the outcomes desired.

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3 The one other area that requires more attention is the perpetually difficult area of the relationship between industry and education and training providers.
2. The issues

Given the comments above, it is necessary to clarify the questions that cost studies might help with.

2.1 What are the questions?

Firstly, let us be clear what the questions are not. This paper assumes that one of the questions is not whether the benefits of the change to a national framework based on competency-based training and assessment has been worthwhile. Even if this question could be answered (which is unlikely, given the number of simultaneous changes in Australia's vocational education and training system and the impossibility of separating out any one of the interrelated variables) the level of broad agreement about the underlying intentions of the initiatives and the amount of investment so far makes it unlikely that any of the partners would feel such a study was worthwhile.

Another question not to be addressed is whether vocational education and training results in higher productivity or greater organisational effectiveness. The circumstances under which cost-benefit analyses of that type can be validly carried out are extremely restricted; a later section of the paper considers what the benefits might be, but not with the intention of trying to prove or measure the link between training and productivity.

So, given that, what are the questions? They are different for different groups:

a. Enterprises

Enterprises already involved in competency-based assessment need the means to analyse the outcomes in terms of their needs, and to set these off against the costs.

Heavy duty clothing manufacture in Yorkshire

A factory in Yorkshire employed about 200 people to make heavy duty clothing—jeans, boiler suits, and overalls. In 1965 the firm introduced a new training scheme. This entailed a thorough course of training for instructors, a detailed analysis of jobs, and the provision of a comprehensive training manual. The innovation was practised for two years, and in mid-1967 the old methods were resumed. A subsequent cost-benefit analysis, however, showed that the new training scheme was highly cost-effective, with a benefit ratio of 8:1.

If this is done there is more chance that various alternatives will be evaluated on their merits. (unlike the example in the box, thirty years old but still relevant) so that there is:

"...not the production of an exclusive criterion for making decisions about training, but a means of improving the accessibility, quality, and relevance..."
of information with which management has to make a judgment." (Drake (1982) p.106)

This example (reprinted from Thomas, Moxham and Jones (1969) with minor changes to the text) graphically shows the need for the learning process that should be a result of a cost-analysis exercise, which would, presumably, have led to a different outcome.

Enterprises not yet involved in competency-based assessment, on the other hand, need information to help them decide whether, and at what level and in what way, to implement competency-based assessment. This will need to be a conscious decision as a relatively large re-orientation will be needed which will be likely to involve educational, personnel and industrial issues and may well touch organisational issues as well. As it will rarely, if ever, be possible to prove a link between a particular training approach and improved productivity, organisations will benefit from guidance which will enable them to estimate the costs for particular outcomes compared to the costs of current training and assessment arrangements.

b. Providers of education and training

Training providers need to know where the greatest costs lie, how much leverage there is in them, and how they can develop more cost-effective (not just cheaper) systems. This will require the development of methodologies and protocols.

c. Individuals

The costs incurred by individuals are often neglected in cost studies of training situations. However these costs can be substantial, as recent studies of the amount of time spent by applicants for RPL has shown.

2.2 What types of cost studies have been undertaken?

Previous analyses of costs can be categorised as either "cost-benefit" studies (in which all the costs and benefits can be measured in dollar terms) or "cost-effectiveness" studies (in which it is not possible to measure all variables in dollar terms). Whilst cost-effectiveness studies are often more appropriate to education and

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4 Just for interest it should be added that, after the cost-analysis had been carried out and the results presented to the company, it then re-initiated the innovation as a permanent feature!

5 The Yorkshire example described in the box did just that, although it was a very unusual case in that it was a one-off innovation that occurred in the absence of other changes and then finished, with the old methods being resumed. At the present time in Australia it is likely that any change to training and assessment methods will be taking place together with other innovations—e.g. a reconception of the role of professional trainers vis à vis supervisors, accreditation of training courses, changes in attitudes to training, multiskilling—and often as part of a larger change in work organisation.

6 Much of the discussion in Australia has focused on the introduction of competency-based training and assessment into TAFE systems. This is in marked contrast to the UK, in which further education colleges have played a relatively minor role as just one of many training providers, and there has been much more emphasis on the implementation of competency standards within companies. The way in which this has been implemented has led to considerable problems and a low level of confidence in the new qualifications.
training activities, they carry an in-built disadvantage in that it is then difficult to compare approaches that have different outcomes.

A recent study of different models of apprentice training (Dess (1991) is an example of a cost-effectiveness study; it compared the effectiveness of achieving particular outcomes.

The last major flurry of activity in cost-benefit studies of an educational innovation was in the field variously described as audio-visual aids or instructional technology, in which many studies were carried out with various degrees of care and rigour throughout the '60s and '70s. These studies normally showed that a particular innovation, in a particular context, at a particular time, did or did not provide value for money. Concerning the broad question of whether, in general, training was more cost-effective with an increased investment in audio-visual technology, the answer was inevitably "it all depends". There is no reason to expect any different answer to the same question asked of competency-based assessment.

More recently, cost-benefit studies have been undertaken of different models of apprentice training (Taylor 1989); of the effects of alternative training strategies (Thomas 1969), of the effects of vocational 'academies' in schools on student retention by Stern et al. (1989), of special access programs in the US, and of the difference between structured and unstructured on-the-job training (Jacobs 1994).

A more detailed summary of different modes of cost analysis is given in the paper *Costing Issues—Technical Notes*.

3. Consideration of outcomes

Much of the work done on competency-based assessment so far has been to do with the development of standards, preparation of new curricula in TAFE colleges and other training providers, followed by the introduction of a competency-based approach in some professions and industries, and some particular enterprises. There has been little opportunity, so far, for examining the outcomes. However, it is necessary to think in these terms. The reason for this is not that it is often possible to measure the benefits, but that the costs of any activity depend on how it is carried out, which in turn depends on the desired outcomes. Thus any consideration of costs must consider outcomes as well.

In doing this, the most important point is that any discussion of outcomes, or benefits, needs to acknowledge that there are no generally-agreed models for the link between training/assessment and the extent of learning, personal benefit, social benefit or, in companies, with organisational effectiveness and productivity. This is not the place for a detailed explanation of the futility of such studies, but the reasons broadly focus on the difficulty of attributing particular outcomes to a certain training and as-
essment strategy, or, in many cases, to any training whatsoever, and on the danger of trying to measure benefits by concentrating on easily-measurable outcomes, especially as the most relevant ones are often the most difficult to measure. There is also the issue of causality: does training lead to higher productivity, or is it just that more productive companies spend more on training as part of their personnel policy?

A national retail pharmacy chain

Boots the Chemists (UK) piloted a staff development program to a particular competency level, with an associated qualification within the national framework, for new employees in 100 of their stores. A comparison was then made between the stores running the new program and other stores. In addition to a number of benefits that are difficult or impossible to quantify:

- better motivation
- performance to a higher standard, because assessment was more effective and more frequent
- new staff appreciating working for a company that awarded a recognised qualification

The company also claimed the following measurable benefits:

- an increase in productivity differential by 5 to 20% against local area controls
- a reduction in staff turnover by 14%

The boxed example is included to indicate the sort of gains that enterprises might hope to be able to document; however it has not been possible to discover what assumptions were made and what factors taken into account or ignored in order to obtain the productivity increase figures and staff turnover figures stated.

3.1 Who benefits from what?

Just as a cost analysis must take care to attribute the costs to the parties that bear them, a necessary part of analysing the outcomes is clarifying which party benefits from which outcomes. This is partly because most outcomes benefit more than one party, and this needs to be acknowledged, and also because it must be made clear that some benefits to one party might be expense of another—e.g. career progression.

In addition to these concerns, Shackleton (1993) has added a number of problems related to the "human capital" metaphor (the different use that some processes make of physical capital rather than human capital, economies of scale for larger companies, and substitution of some types of capital for others), the difficulties of measuring returns (the use of team work, the fact that the returns from training may take place over several years with the link to training becoming increasingly tenuous, the fact that different individuals respond differently to training) as well as the fact that training performs a number of other functions apart from its obvious one (screening, suppressing competition in the labour market, and other social/political objectives). All of these will confound attempts to draw a direct link between training and productivity.
of an individual to a different company would benefit the individual and possibly the economy but obviously not the host company. These distinctions can be seen in Figure 1.

![Diagram showing the benefits of training to enterprises, training providers, and individuals.]

Figure 1. Who benefits in what ways

What is significant is the number of items in the "overlap" areas: that is, almost all the benefits accrue to more than one party.
3.2 Possible benefits of competency-based training and assessment

The possible benefits of competency-based training and assessment can be expressed under eight headings:

... to enterprises

a. **Better quality control—personal and organisational**

A competency-based system offers the means of appraising the competence of individuals, both in the workplace and prior to entering by measuring outcomes against objective standards. It also provides support to the quality objectives of the organisation. Looking at this issue from a negative perspective, the situation described as “drawing down” is familiar to many in industry: technicians are used to check routine problems on a day-to-day basis, for which they are over-qualified, to compensate for the low levels of training of intermediate-skilled workers (Steedman, Mason and Wagner (1991). This then leads to the problem of the “low skill equilibrium”, in which shared modest expectations of employees and employers concerning the capabilities of employees creates a self-perpetuating situation.

b. **“Buying into the national system of the future”**

Advocates of the role of competency-based systems in the future also point to the likely development of national industry standards, and the development of a comprehensive framework of training, assessment and certification.

... to providers of vocational education and training

c. **A more coherent and relevant provision of training**

... to individuals

d. **Proof of competence**

The obvious benefit to individuals is the proof of competence (described by Saunders, Fuller and Lobley (1990) as “exchange value”)—experience that can be “cashed in” for increased internal and external status, mobility and salary. Thus the benefit of competency-based assessment is often seen as resulting in career development, access to further training, or other opportunities for those who may otherwise not have had them.

Related to this benefit is that which relates to the use of educational providers as selection devices, mentioned above in relation to employers.

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8 Some of these items have been taken or adapted from lists given in Crowley-Bainton and White, (undated, 1993?) and Bell and Alcock (1990).

9 Related to this is the role that competency standards might play in selection. To quote Drake (1992): “Economists are perfectly familiar with the assertion that educational institutions act primarily as an imperfect means of promoting the acquisition of skills and knowledge. They are filters rather than factories.”

10 This slightly over-the-top expression was coined by Bell and Alcock (1990) in an NCVQ publication.
...to all parties:

e. **A better-integrated training, assessment and certification system**

Such a system, ideally, will be closely linked to the requirements for work performance—either as defined by the enterprise itself or by a competency standards body with significant industry input. This will lead to better knowledge of the skills held in the workforce due to greater systematisation of documentation.

f. **Better use of the skills of individuals**

This will arise partly as a result of (a), and partly because of the opportunity for the recognition of competencies gained by individuals in a variety of formal and informal settings. This assists at all stages of employment: from allowing greater confidence in the criteria for recruitment, to career development, to succession planning. Apart from the obvious benefit in terms of optimum use of individuals, the increased motivation this provides can itself both increase effectiveness of staff and lessen turnover.

g. **More effective training**

Within a competency-based system, there is greater likelihood of training being better targeted by using performance-based standards as the basis of training needs analyses. It is also possible to evaluate its impact with a certain specificity. Furthermore, training of supervisors and managers to assess workplace competence may contribute to supervisory and management quality.

h. **Changes in the system**

The preface to a recent report on skill formation (Hilary C Pennington, in the Preface to Vickers (1994)) has spoken in terms of “using standards to drive change”. Although this was written in the American context, there is no doubt that the competency standards movement has caused considerable change in Australian vocational education systems beyond its immediate ambit.

3.3 **Two watchpoints**

The first word of caution concerning the above list is that it represents the possible benefits. It needs to be emphasised, that none of these benefits are automatic, and they will be considerably affected by the quality of the implementation. In addition, not all of the outcomes listed above come at once, and it is important for an organisation to stage its development of such a system with an analysis of the costs of each stage of implementation in tandem with the expected outcomes.

Secondly, there is one benefit that it is unreasonable for anyone involved in assessment of competence (training providers or enterprises) to expect. There is no way in which the development of standards can make trivially easy the act of valid assessment of skills, attributes, or knowledge that are intrinsically difficult to judge. The existence of well-written standards which reflect the needs of individuals and the industry can make such assessment somewhat more easily codified and increase the chance that it will be valid, but it will not necessarily make it easy. Difficulties should be expected, as a matter of course, in assessing many advanced management competencies, attributes such as judgment or the possession of appropriate values,
and some aspects of knowledge and understanding. This fact is so obvious that it should not need stating, but its inclusion here reflects a concern that many people with an incomplete understanding of competency-based assessment, and an assumption that it means ticking boxes, assume that the development of standards will enable everything to be assessed easily.

4. Calculation of costs

4.1 Factors affecting costs

The costs of assessment are not fixed: they can be raised or lowered according to the outcomes required and the implementation strategy chosen. They will be affected by the following factors:

a. the objectives

The cost will be affected primarily by the objectives which the assessment is to meet—e.g. “what level of competence is sufficient in this situation?”;

b. the assessment procedures

Examples of ways in which the choice of assessment procedures can affect the cost are:

— How precise do assessments need to be?

Debling and Stuart (1992), among others, make the point that the precision required in assessment will vary according to circumstance and occupational area. They suggest that the scale of investment should reflect the value of avoiding or reducing the chance of critical failure, and the potential of that occupational area to contribute to productivity or cost reduction.

— What is deemed to be an acceptable level of confidence in the result

For example, at the enterprise level, Bloch (1993) quotes an example from the Textile Clothing and Footwear industry in which language interpreting during assessment is carried out by the peers of the person being assessed: “the cost of employing interpreters for each assessment was balanced against the ‘risk’ involved in allowing a fellow-worker to participate in the assessment process and possibly assist the candidate.” At the national level, the last few years have seen considerable discussion about a “low skills equilibrium” into which the UK is alleged to have fallen—under which a low level of training leads to an under-skilled workforce which leads in turn to a lower expectation on the part of employers of the responsibilities that they expect employees at various levels to accept. One of several examples is that given by Prais, Jarvis and Wagner (1991) in a comparative study of productivity in English and German hotels.
The approach to measurement of competence

For example, will an “atomistic” approach (“ticking the boxes”) or a holistic approach (an integrated assessment scheme) be used in assessing trainees against competency standards? (An explanation of the way that holistic assessment has been used in certain professions is found in Gonczi (1994)).

Exactly how will RPL assessments be carried out?

(The Assessment Centre for Vocational Education is presently carrying out a series of nested projects on the costs of RPL.)

Minimising the costs of competency-based assessment

Several authors have suggested ways in which costs can be minimised at no sacrifice to quality. They involve the following principles:

- having competence demonstrated in the most appropriate place—e.g. on-the-job or off-the-job
- making the assessment only as precise as it needs to be for the occupational area and the level of qualification
- collecting as much evidence as possible from the same assessment tasks—for example, a carefully-constructed holistic approach may result in more and cheaper information about a learner’s competence
- limiting the number of times similar competences are assessed
- designing assessment tasks in which the learner can play a role in the gathering of information for the assessment (e.g. the portfolio approach to RPL)
- supporting assessors via staff development and well written information
- ensuring record-keeping systems are of appropriate simplicity or complexity

c. The level of commitment

For a company, a critical factor will be the level of resource commitment that it wants to make; this is a strategic decision which will impact considerably on costs. Its commitment may be “progressive” (involved in industry discussions and the development or adaptation of standards), “cautious” (monitoring developments across the industry and implementing a pilot study) or “passive” (monitoring..."

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11 This list has been compiled mainly from suggestions made by Francis (1993) and Debling and Stuart (1992). Francis also supplies examples of cost-effective methods that can be used.
competitors and making necessary adjustments. Internally, costs will be affected by the administrative arrangements—for example how quickly backlogs of staff are to be processed.

These factors, and the effect they will have on costs, emphasise the need for studies to be of cost-effectiveness, not merely cost. The question to be addressed is “Can a better assessment be made for the same cost?” or “Can an equally good assessment be made for less cost?” (Hawes 1990).

4.2 Assumptions in the analysis of costs

Although it is often assumed (correctly) that analysis of the benefits of education and training is highly subjective, the same is not normally assumed of cost calculations. It should be. Cost analysis does not offer less subjectivity and less use of judgment: it offers a greater quantity of information, and it offers more relevant information; this can then lead to more systematic and open judgment about the use of resources for training. Often, however, cost studies and cost-benefit studies make superficial, unstated assumptions about the costs involved. Some of the most important watchpoints are:

- Costs are not objective—the calculation of costs is a subjective activity, with the results dependent on the assumptions made.
- Costs are not always financial.
- Costs and their associated benefits always take place within a defined timescale.
- Opportunity costs are not always what they seem—the real cost of the time of those involved in training, for example, will be affected by whether they would otherwise be idle, whether there is temporary over-manning, or whether the costs can be assumed to be low for other reasons.
- Education is not the same as vocational training—if comparisons are to be made between programs that train to the same level in terms of specific skill, but which have different amounts of more general skills, this will need to be taken into account.

For the above reasons it is vital that all cost analyses specify exactly what assumptions have been made and how sensitive the results are to these assumptions.

A more detailed summary of the general principles of cost analysis, and its assumptions, is given in the paper Costing Issues—Technical Notes.

12 These terms come from Dent Lee Witte (1991), in a document developed for the UK Banking Lead Body, which was responsible for developing competency standards.
4.3 Types of analysis

There are two approaches to cost analysis. Control studies compare the costs and benefits of a particular "sample" (which is subject to a particular innovation) with a "control group". Before-and-after studies do not use a control group, but compare the results of an innovation with the previous results. Although control studies are potentially the more accurate, in practice it is normally difficult if not impossible to achieve a situation in which there is both a "true" control and in which the only difference between them and the sample is the change under study. For this reason it is likely that most studies will be of the "before-and-after" type. These studies, however, suffer from the difficulty of comparing like with like, as in most cases there is inevitably a change in the outcomes, thus confounding any comparison of costs. (In fact, as it is hoped that competency standards will bring with them more effective assessment and better-defined outcomes, it would be strange indeed if the outcomes were exactly the same as before.)

Mention should also be made of aggregate studies—studies which use, for example, national statistical data and average earnings to draw general conclusions, and which ignore what actually happens in training. The literature is unanimous that at this stage of our understanding, aggregate studies have only a limited benefit, often producing ambiguous results. There is, in fact, a danger of them giving a misleading picture of the costs of training: too much depends on factors such as the actual conditions, the training objectives, the labour market conditions, not to say peculiarities of occupation. Much more work needs to be done at the micro level, by people with a good understanding of the actual conditions under which training and learning actually occur, before aggregate studies will be able to inform us about the picture in the economy or whole industries—we need, in short, to get inside the "black box." As Drake states:

"...critical features of a training process, inside the black box, are rarely reported by analysts, never controlled for, and may—through variation—invalidate the generalisability of the conclusions of a cost-effectiveness study."

To put it another way: the more micro-level the study, the less remote the effects are likely to be from training, and the less uncertainty there is about cost allocation (for example, see Cumming 1971).\(^{13}\)

Aggregate studies do have a purpose—they are useful in pointing the way to questions that need to be addressed, information that is not available, or to research issues. In the same way, State-to-State and international comparative studies are useful in suggesting questions that need to be addressed, but not for direct use in policy and planning.

5. Issues and suggested studies

The main message in this paper is that better cost analysis can contribute significantly to the effectiveness of vocational education and training. This does not require a complicated economic treatment: it does, however, require careful analysis with a full knowledge of all the variables inherent in training and assessment situations. This will not produce exclusive criteria for making decisions, but it will provide, as Drake has said, "a means of improving the accessibility, quality, and relevance of information with which management has to make a judgment" (Drake 1982, p106).

5.1 The issues

The main issues are:

a. *the scale of competency-based assessment*

There is little or no information available about the scale of competency-based assessment—in particular, we do not know what sort of commitment of time is involved State- or nation-wide in the thousands of assessment tasks that occur daily.

b. *information about cost-effectiveness*

Information is needed on:

* how competency-based assessment results in more valid or more effective assessment;

where the greatest costs lie; and

* how sensitive costs and benefits are to changes in particular aspects of assessment.

\(^{13}\) An example of this can be found in the operation of the training market in the UK. Due to deregulation and a low level of controls and quality measures, and with funding of training providers being tied to the number of people per year trained and assessed as "qualified" (in competence terms), a concern has been expressed by many is that this will result in colleges only accepting as students those who, they feel, have a good chance of qualifying in minimum time (for example, Steedman (in press 1994?). This is one variable that would be likely to be picked up in a micro-level cost study but would most likely be missed in a macro-level study.
c. **lack of experience**

Although the possible methods and approaches are relatively straightforward, there is a lack of experience in applying them to vocational education and training contexts.

If these issues were addressed, enterprises and training providers would be in a better position to address the underlying question: “what can be done to minimise cost while maintaining quality?”

5.2 **Suggested research**

To address the above issues, three complementary activities are suggested, as outlined below:

a. **the scale of competency-based assessment**

A “map” should be prepared to include data on the total extent of competency-based assessment\(^{15}\) in TAFE NSW—the number of students involved, the number of courses (or activities within them), and how they are distributed, and the form in which assessment is recorded. (There will be no attempt to carry out a comparable study on assessment in industry; this could be contemplated later if thought worthwhile.)

b. **information about cost-effectiveness**

A number of case-studies should be carried out on particular training activities—both in industry and in the NSW TAFE system. A caution is necessary here: as described previously, these studies will rarely be comparing like with like. In fact, as it is hoped that competency standards will bring with them more effective assessment and better-defined outcomes, it would be strange indeed if the outcomes were exactly the same as before.

Particular focus areas will need to be:

- **The benefits of competency-based assessment**
  
  For example, examining critically the list of possible benefits above and the extent to which they apply in particular cases.

- **Information on key sensitivities**
  
  - i.e. variables that will affect cost (e.g. scale of assessment operations, policies/requirements on record-keeping); this could best be done by picking several areas in which there are different cost structures and arrangements
  
  - description of “hot spots” — factors which are particularly important in

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\(^{14}\) The development of the ideas in this section was helped by discussions with Dr Phil Mackenzie of ACER, whose contribution is gratefully acknowledged.

\(^{15}\) This may well raise a definitional issue, which will need to be resolved.
influencing the cost of c.b.a.
— analysis of approaches taken by equipment vendors.

Teachers'/trainers'/assessors' roles and time
As the main resource involved is teachers'/trainers'/assessors' time, an examination will be carried out using
— diaries
— interviews
to gather data on the absolute scale of time commitment, and to check on conjunction of events.

This should also help to clarify the relative importance of supervisors' roles as assessors vis-à-vis their substantive roles, and the implications of this.

c. lack of experience
The case studies suggested above will, in time, generate robust methods of costing— not only for competency-based assessment but in education and training generally—which can be easily applied within TAFE systems and industry. Even on the many occasions when the exact results of a cost analysis are not transferable to a different college, a different company, a different occupation, the methodology can be, enabling this sort of analysis to occur routinely.

This will enable procedures and materials to be developed, aided perhaps by structured staff development. This will, in turn, lead to an increased knowledge of costs, understanding of processes, and an appreciation as to how variations in them can affect the outcomes of training.

5.3 Concluding comments
Over twenty-five years ago a book on cost-effectiveness analysis claimed that we needed to be able to achieve "better combinations of relevance and arithmetic" (Quade 1967). The need to develop such procedures in vocational education and training is still there, but is achievable. However, only when this is done will the various stakeholders be in a position to interpret the available information and engage in informed discussion about various alternatives: assessing effectiveness as well as assessing costs.

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16 Equipment vendors have a well-defined interest in carrying out effective training: provision of effective training will minimise the number of callouts under guarantee, and lead to customer goodwill. Practices of equipment vendors could repay study as they have a well-defined and discrete commercial motive for training. (I am grateful to Gregory Wurzburg of OECD for this suggestion.)
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