Three strategies for the assessment of competence

Introduction

The agenda for the reform of the Australian Vocational Education and Training System is now well established (VEETAC Working Party on the Recognition of Training, 1991). Furthermore, Australian TAFE authorities are now committed to the introduction of competency-based training systems for all recognised courses (Kinsman, 1992, p 25).

There are, however, a number of issues which remain largely unresolved about the nature and implementation of competency-based vocational education and training. One of the most important of these arises from the general lack of agreement concerning appropriate strategies for the assessment of competence. Another is concern about appropriate methods of monitoring student/trainee progress and recording competence achieved.

It is generally accepted that the success or failure of a competency-based system will depend ultimately on the quality of the assessment methods employed and on the methods of monitoring student progress and recording competence achieved. On these matters, though, the official Australian sources have not been particularly forthcoming.

The VEETAC Working Party on the Recognition of Training says little more than that assessment methods should be appropriate. ‘Courses submitted for accreditation shall include assessment methods and demonstrate their appropriateness to the course’ (1991, Appendix 2).


It is likely, however, that what program developers and teachers require is more specific guidance on ways in which these principles might be applied and some examples of competency-based assessment in operation. They require an understanding also of the problems and pitfalls associated with competency-based assessment.
Consequently, the aim of this paper is to examine three strategies for the assessment of competence and to illustrate these through an analysis of assessment programs in operation. The programs are drawn from an investigation of competency-based training programs in operation in TAFE colleges, industry and various training institutions in Australia and Great Britain carried out by the author during 1992. The analysis brings out the strengths and weaknesses of each strategy as well as some of the problems associated with competency-based assessment and the procedures which must be adopted if the sought after principles of sound assessment are to be applied.

The assessment of competence

The assessment of competence is generally viewed as a process of obtaining evidence on performance by one or a number of means and making judgements on the basis of that evidence about an individual's competence to meet certain prescribed standards.

This is the view expressed by The National Council for Vocational Qualifications in Great Britain. According to this body, assessment of competence can be thought of as 'the process of collecting evidence and making judgements on whether or not performance criteria have been met' (Guide to National Vocational Qualifications, March 1991, p 21). This appears to be the accepted view also underlying most official CBT documents in Australia (VEETAC, 1993, p13).

If this view of assessment in relation to competence is accepted, however, three fundamental questions follow which must be answered before a valid and reliable assessment program can be developed:

1. What forms or types of evidence should be sought?
2. How much evidence is required?
3. Where should the evidence be provided? (or who has the responsibility for making the judgements?).

Answers to these questions will determine the shape and size of the assessment program.

The assessment strategies outlined in this paper take different approaches on these questions. They are different because they base their judgements about competence on different forms and amounts of evidence and they adopt different procedures for the obtaining of this evidence. They are different also because they are based on
different views of competent performance and they face different practical problems in obtaining the evidence required.

Strategy no 1: Assessment based on samples of performance

One major strategy for the assessment of competence in common use is based on what might be thought of as samples of performance. In other words, the major evidence of competence is derived from samples of performance on especially set up assessment events such as practical tests, exercises and simulations. These are generally supported by what the NCVQ refer to as 'supplementary evidence' from written and oral questions and multiple-choice tests, etc (National Council for Vocational Qualifications, 1991b, p22). The practical assessments are designed to measure the technical or performance aspects of competence. The written and oral tests are usually designed to measure underpinning knowledge and understanding.

This approach to assessment requires that criteria are worked out for each assessment event on which judgements about competence are based. Assessments based on these criteria are generally made on a pass-fail basis. Students are generally assessed individually when they are ready and judged as 'competent' or 'not competent'. Complex records of progressive achievement are required as individual retries may be allowed on assessment events until competence is achieved. This approach is generally found of course in formal college or off-job training settings and often carried out on behalf of industry.

The assessment strategy employed in the Hairdressing Certificate program at Box Hill College of TAFE, Victoria, exemplifies this approach. Assessment in this program is based on the observation of samples of job performance carried out on especially designed practical tests or tasks which involve the basic operations of hairdressing (cutting, styling, waving, colouring and basin service). These are supported by supplementary evidence from theory tests which assess underlying knowledge. The assessments are generally based on individual elements of competence such as 'shampoo and condition hair'. Theory tests are generated and marked by a computer program (80 per cent pass rate is required). Students are allowed three tries before being 'locked out' for further instruction. Practical tests employ check lists of performance criteria which are also generated by the computer program. They usually follow the theory test and are checked off by the teacher. When all
requirements of an element are satisfactorily completed, students are recorded as 'competent' for that element. In addition there are so-called 'retention tests' or assignments at regular intervals and a final assessment which attempt to draw together and integrate a number of elements. Records are computer managed and records of progress are available to students. These are based on a management chart which outlines the requirements for the course.

This approach to the assessment of competence is typical of most college-based or off-job programs. Validity depends on the extent to which assessment events do in fact assess the relevant elements of competence to the standards prescribed. It also depends on the quality and range of facilities at the college and the capacity of the college to simulate real workplace conditions and events. Reliability depends on the usual factors which effect criterion-referenced assessment such as the quality of the assessment items, objectivity of marking, adequacy of marking guides, checklists, etc.

There are however certain problems which are peculiar to this approach.

The first is a tendency to fragment or atomise the assessment of competence and to assess many separate elements at the expense of more holistic assessment. At Box Hill this problem is tackled through the inclusion of the so called 'retention tests' which draw together a number of elements into an integrated task such as 'a full basin service'. A similar strategy was observed at Tea Tree Gully College, South Australia, in a course in Business Studies. The course in question employs a so-called 'Mini Business Project' which extends over several weeks and draws together elements such as business planning, budgeting, marketing, pricing and producing a product and maintaining accurate financial records.

A second problem arises from the complex and time-consuming recording of progress which is required to keep track of competence achieved and not achieved, number of successful and unsuccessful tries and retries for all students and all elements of competence. (Not to mention the impact on the reliability of the assessment which may result from retries on the same test.) This problem is particularly taxing for teachers in those colleges where these records are maintained manually. Box Hill College, like most colleges which employ some form of self-paced learning, tackles this problem by means of a computer-based management system which maintains a progressive record of progress for all students which is available to students and teachers at all times. In the experience of this author,
some system of computer-managed learning and assessment appears to be the only efficient and cost-effective method of providing adequate records of progress whether a college employs self-paced learning or not.

The third and most fundamental problem, however, arises from the difficulty experienced by most off-job assessment systems in making valid judgements about workplace competence on the evidence of one successful performance of a job or operation in a college setting. The recent National Assessment Research Forum Report makes this point quite strongly when it says that 'decisions about an individual's attainment of units of competency should be largely derived from evidence of performance in the workplace and should be made by workplace assessors' (1993, p20). To overcome this problem, colleges may have to establish co-operative arrangements for integrated work-based assessment like the so-called collaborative training partnerships which have been established between education and industry in Great Britain.

Strategy no 2: Assessment based on natural observation in the workplace

A second major strategy for the assessment of competence observed in operation is one which is based on what the NCVQ calls 'performance evidence from natural observation in the workplace' (National Council for Vocational Qualifications, 1991b, p22). In other words, the major source of evidence on which judgements about competence are made is the observation of natural or routine performance in the workplace. This approach is typified by multiple observations of natural or routine work performance on all elements of competence. It requires hierarchies of assessors to ensure quality control and complex tracking and recording of competence achieved. The approach is most often found of course in industrial on-job training settings and may be supported by off-job components.

The assessment strategy employed in the training program in Electrical Fitting and Instrument Control at ICI Botany, New South Wales, exemplifies this approach. Assessment of the on-job component of this program is based on the observation of work performance. It is carried out by supervising tradespersons each time a trainee does work in one of the competency areas as part of the 'normal daily work routine'. Records of each experience are maintained using a system of computer-scanned record or story cards. The record cards carry details which identify element of
competence involved, major unit of competence, related units, degree of complexity of task, criticality of task, time taken and degree of involvement of the trainee (Dutneall and Said, 1992).

Record cards are verified by supervising tradespersons and a craft development officer who has a mentoring responsibility for the trainee. Because it is realised that the quality of work experience varies, learning values in point form are assigned to each experience based on the criteria listed above and these are allocated to the appropriate area of competence. When a preset number of points is exceeded, that is, when a competence area has been practised successfully many times, the trainee will be judged as 'most likely competent in that area'. (One-off assessments are also available for auditing and appeals, and for the recognition of prior learning.)

This example represents a thoughtful approach to the assessment of workplace competence. The system appears to have face validity as the performance being assessed is real workplace performance under real conditions and is related to the units and elements of competence set out in the statement of standards. It is holistic assessment in that it is based on real work which generally requires the integration of skills, knowledge and attitudes. It takes account of the problem that some instances of job performance may be far more complex, critical or time-consuming than others and avoids the criticism which is often levelled at off-job assessment that judgements about competence are not adequate if based on one instance of performance.

However, the extent to which such a system is reliable, fair to all trainees and generally practicable and cost-effective will depend on a number of factors. These include:

- adequate quality control to ensure consistency across assessors;
- the quality and range of workplace experience and training which can be provided;
- sensible decisions about the number of observations of performance required to make reliable judgements about competence.

A more fundamental problem for workplace assessment though, is the one raised by the National Assessment Research Forum Report. That is, 'Does the workplace assessor or supervisor simply accept the competency decisions made by the formal institutional training provider involved? ... or is the workplace assessor or supervisor expected to assess achievement of each Unit of Competency?' (1993, p 20). These questions concerning the relative roles of industry and institutional providers of training such as TAFE and FE require...
resolution if successful integration of assessment and training is to be achieved.

Strategy no 3: Assessment based on evidence from prior achievements

A third major strategy for the assessment of competence is one which is based on what the NCVQ calls 'evidence from prior achievements' (National Council for Vocational Qualifications, 1991b, p22). In other words, judgements about competence are based chiefly on the recognising, assessing and accrediting of prior achievements and learning through devices which document this achievement such as a portfolio of evidence. The portfolio may be supported, of course, by evidence from supplementary sources such as interviews, oral and written questions, simulations, etc.

This approach is more likely to be used to assess higher levels of competence where natural observation of performance in the workplace may not be a viable option. It is also more likely to be found in training agencies prepared to offer alternate routes for accreditation. The strategy is quite common in Great Britain for the assessment of higher level competency standards such as those in management training and training programs for assessors and verifiers.

The assessment strategy employed in the training program for managers offered by Thames Training, a semi-commercial training and development centre of the University of Greenwich, exemplifies this approach. This program views management competence as the ability to perform management functions in the workplace together with the skills, knowledge and understanding which underpin such performance. The main source of evidence of this competence is provided in a portfolio of evidence. The primary function of the portfolio is to organise prior learning experiences and achievements into a manageable form ready for either 'action planning' or 'accreditation'. The framework for organising the evidence is based on the Kolb Experiential Learning Cycle. The process of accrediting competence is seen as a process of personal and professional learning development (turning experience into learning).

The process involves a series of stages. These include a start up workshop to audit current competence, collection of direct and indirect evidence of competence, development of the portfolio where competence is documented, submission of the portfolio to an
accredited assessor and final assessment interview for the accreditation of competence. The process may be supplemented by oral and written tests of underpinning knowledge and understanding and sometimes by simulations.

This approach to the assessment of competence results from a desire to offer an alternative and more accessible route to accreditation which is more closely related to real workplace performance than traditional tertiary courses with their emphasis on time serving, academic reading and traditional examinations. It provides an interesting alternative method of making judgements about workplace competence on the basis of evidence from past achievements rather than on the basis of traditional sources such as direct observation. (It is assumed that the direct observation of day-to-day management functions, such as the settlement of an industrial dispute or the drafting of a management plan, are not viable options.)

The strategy employed by Thames Training would appear to have face validity in that every step in the process and all decisions made are related to the units and elements of competence in the relevant set of standards. To ensure that the required standards are reached, however, steps would have to be taken to ensure that the process of evidence collection and documentation was not simply a file-keeping exercise. Appropriate academic standards and levels of intellectual rigour would need to be maintained.

To enhance reliability, candidates would have to be trained in documentation and reflection techniques and assessors would need to be experts in the facilitation and assessment of these techniques. The reliability of judgements would be enhanced further, of course, by the inclusion of evidence from supplementary sources such as interviews, oral and written questions and simulations.

Conclusion

It is worth restating that the assessment of competence is all about obtaining evidence on which valid and reliable judgements about competence might be made. Jack, Goodman and Newbery remind us that 'evidence of workbased performance and of relevant, underpinning knowledge and understanding are both necessary in order to demonstrate full competence capable of being sustained across a range of contexts' (1993, p 22).
The strategies examined in this paper provide alternative approaches to the obtaining of this evidence, given different types and levels of competence being assessed and different practical circumstances. They also serve to highlight some of the difficulties and problems associated with the assessment of competence and bring into focus some of the procedures which must be followed to ensure that the principles of sound assessment are adhered to.

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References


Dutneal, R and Said, R 1992, Competency based training—an ICI case study, Unpublished Paper, ICI Botany, NSW.


Testing Times


