THE FALSE WAR: COMPETENCY BASED EDUCATION AND ITS CRITICS

MAJOR PRESENTATION

by

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Introduction
The re-fashioning of the post compulsory education sector (PCE) in Australia is part of a world wide phenomenon. In almost all OECD countries this re-fashioning has included:

- an increasing interest from policy makers at the national level in vocational education and training (VET), and an attempt to increase numbers in VET
- attempts to develop partnerships between TAFE and other educational sectors and between TAFE and industry.
- the growth of private providers of VET and the creation of a post -compulsory education “market” with competition for students
- attempts to develop a variety of pathways or options for post compulsory students in schools which incorporate some elements of VET. (In NSW in addition to JSST there are now, joint industry /TAFE/ school courses, industry studies in the HSC, and joint industry specific courses with public or private providers. Then there are the options suggested in the White paper Working Nation)
- partnerships between schools and industry
- schemes to facilitate transfer from one level of education to another, and to facilitate the recognition of prior and experiential learning.
- the reorganisation of structures in education to give greater autonomy to individual institutions (and at the same time attempts to centralise the curriculum)
- increased accountability for educational institutions eg quality audits
- the blurring of the traditional distinctions between general and vocational education.
- the beginning of a blurring between TAFE and university education.
- the development of competency based education and an emphasis on teaching for “transfer”.

All these things will potentially have an effect on the curriculum development process in TAFE. For the first time in its history, colleagues in the other educational sectors are actually interested in what TAFE does. Departments of school education want partnerships, universities are prepared to grant advanced standing (but they are also preparing to protect their turf). Even the public are beginning to notice TAFE and to consider it as an alternative to university education. Thus the stakes are high. However, most people and particularly those in the other educational sectors don’t really know much about the nature of
vocational educational nor the educational practices that characterise a TAFE education. It is thus, important that the sector opens up to scrutiny its approaches to curriculum/pedagogy and assessment. It is the last of these issues we want to deal with in this paper. Specifically we will examine:

(i) the basis of the attack on competency based education (CBE) (always referred to as competency based training - in an attempt to belittle it)
(ii) the relationship between CBE and our increasing understanding about the nature of workplace learning and the development of expertise.
(iii) The importance of assessment in curriculum processes and how holistic competency based assessment could contribute to the goals of the curriculum.

Our overall argument is that (integrated) competency based approaches to curriculum and assessment will provide coherent and worthwhile learning experiences for TAFE students and will be seen to be doing so by colleagues in the other sectors. However we go further and suggest these approaches will provide these other sectors with ideas for improving their own curriculum. We suggest too that the basis of much of the criticism of competency based education ignores the fact that such approaches are compatible with recent research on the nature of workplace learning and with other approaches to improving the quality of learning such as developing reflective practice.

Attacks on CBE

The objections that have been raised against CBE are of three kinds:

* political/ideological. The essence of the argument is that one group, industry, has dominated the development of occupational standards. These standards are the basis of TAFE curricula which inevitably therefore is narrow and fails to represent the variety of interests in society
* theoretical - The argument is generally that CBE is behaviourist, narrow mechanistic and crushes incentive and excellence. Furthermore it ignores the complexity of human learning and specifically the insights currently being developed in the field of psychology.
* practical - That CBE is impossible to implement because it is too expensive and/or that experience has shown that only local curriculum development can succeed.

It is our contention that the theoretical and practical arguments against CBE cannot be sustained provided that we accept the integrated conception of CBE which has been advanced in various publications over the past few years (and
which has been taken up in many TAFE curriculum projects). These arguments are often a mask for the real objection to CBE - an ideological objection to the primacy of economic and industrial considerations in VET curriculum. The latter argument is not so much an argument against CBE in particular, as one against utilitarian curriculum in general. In fact the critics of CBE in advancing their theoretical objections have been engaged in a false war since CBE’s more thoughtful proponents accept the criticisms of the narrow approaches, use the insights provided by the new psychology, and accept the dangers involved in the implementation of national(modular) approaches to CBE. I suspect that where the proponents really differ from the critics is in their views about the degree to which VET curricula should specifically seek to do the same sorts of things as a general liberal education.

The widespread interest in PCE/VET is largely the result of a belief that the economies of developed countries are more knowledge based than in the past and that our capacity to remain competitive depends on the knowledge and skills of our workforce. Without increased levels of knowledge and skills our workforce will be unable to utilise the technologies and participate in the increased decentralised decision making necessary for national economic success. It is this economic/industrial thinking which has been behind the such VET reforms as the development of occupational standards, competency based curricula, national classification of occupations, equality of esteem for skills gained through work or in occupational settings.

One way of looking at these changes is that adopted by Stevenson in Australia(1993 and 1994) and a host of writers from the UK. They argue that the reforms of the type outlined above which are a result of this increased interest in VET are pernicious. However we believe that it is quite possible to accept these economic “imperatives” and to see them as leading to progressive and vastly improved TAFE curricula.

The implications for PCE/VET curricula of the economic changes outlined seem reasonably clear and the differences between education for the old era of mass production and the new era quite stark:

- there is a need to train more people than previously. In the mass production era there were a large number of unskilled jobs which required little training. PCE in schools was reserved for the elite who were to go on to university, while the majority left school early to take up low level jobs or specific job training at TAFE. Today, there are relatively (and probably absolutely) fewer
such jobs. New jobs are being created but they require higher skill levels. Thus we can no longer afford to educate a minority of our population at post compulsory level. There will be a need to provide a variety of pathways catering for individuals' differing strengths so that the vast majority can have the extended preparation needed to handle the workplace of the future. Implicit in this analysis is the suggestion that unemployment is at least linked with inadequate education if not always caused by it.

- the content of education should concentrate on developing for the whole cohort, higher order capacities of the type traditionally reserved for the elite and developed through general education. In the new era workplace according to Resnick (1987) there is the need for "nuanced judgement and analysis of complex situations according to multiple criteria...The thinkers task is to construct meaning and to impose structure on situations rather than expect to find them already apparent". Thus vocational education needs to become more general in its aims and liberal in its methods. General education too needs to consider how well it actually develops these capacities. In fact if this argument is followed to its conclusion, the difference between vocational and general education will be narrowed significantly- both are ways of trying to arrive at the same point but using different vehicles.

There is also the question of the relationship between the requirements of further lifelong learning and training and initial education and training. Initial PCE needs to provide a platform for lifelong learning.

Some have gone further to suggest that there is a need for a more careful analysis of the capacities needed in the workplace- things such as teamwork for example and the need to incorporate these in the PCE/VET curriculum. In addition there have been suggestions that there may be a need to reconsider the discipline basis of courses since they may inhibit problem solving and problem formulation.

It is unlikely that the critics of the changes to VET would be against the improvements to the VET curricula outlined above.

The point of difference is not in these reforms but in the claim that these aims are too limited. As Stevenson puts it, (quoted in Quirk 1994) "There is no room [in the current vocational curriculum] to overcome meaningless barbarism or oppression... no room for such goals as wholeness...ability to improve and transform society...no consideration of such values as acceptance of others reason and freedom" (p.64)

The suggestion that vocational curriculum should deal with such issues is outlined in another article (Stevenson 1994) which cites inter alia work on
Australian “desirable futures” concerned with moral responsibility, caring, provision of supportive networks and so on.

However, a belief in the desirability of a moral, caring society in which oppression and barbarism are absent, values which we share, need not lead to the conclusion that VET curricula should deal with such issues. In fact few of these values are dealt with in schools or universities except in a few subjects or courses. Where are the suggestions that medical degrees should seek to overcome oppression, or that mathematics courses in Schools should seek to overcome barbarism or meaningless? Wherever such degrees and courses have attempted to introduce general studies subjects which have such aims they have been monumentally unsuccessful.

More successful have been the integration of courses in ecology for engineers or sociology of medicine for Doctors which have more limited aims such as developing an understanding of the impact of their occupation on society. This is precisely the question of degree mentioned earlier. Competency based courses in TAFE have the potential to contribute to these more limited but important moral issues. Consideration of the need to accept others, the impact of an individuals occupational decisions on the environment, the ability to improve society through the carrying out of one occupation, are all compatible with, indeed they are a component of competent practice in most occupations. But it is going too far to suggest that the need to tackle barbarism oppression and meaningless is appropriate to such courses.

In summary the difference between the critics of CBE and its (more thoughtful) proponents is far less significant that its critics want to admit. For TAFE curriculum developers the issue is not whether they should aim at excellence, growth, coherence, interpersonal interactions - all of us accept that these are necessary-, but whether the aims of the VET curriculum should seek to do the same things as liberal general education curriculum as well as try to prepare individuals to be excellent in their occupations.

Theoretical issues

There are a number of issues here and not all of them can be dealt with in this paper. I want to deal with the various concepts of competence and the implications of research in workplace learning and the development of expertise
for TAFE curriculum. Even this limited aim can only begin to be explored in this paper.

Currently the typical preparation of a professional or para-professional has three aspects: The development of general, assumed to be generalisable, knowledge; development of occupational knowledge; and experience on the job. There is a great deal of variability as to how well these aspects are integrated in professional preparation. While there has been recently a good deal of interest in the role of the practicum (the experience aspect) and how it relates to the other aspects of professional education, there is still a good deal to be learnt about how to bring these aspects together into a coherent whole. It is not unfair to suggest that most universities, for example, have put their emphasis on the first two of these aspects and assumed that the mere provision of experience will enable the student to make the connections between theory and the world of practice. The success of the new vocational education will depend crucially on the way in which theory is integrated with practice: this is the key to the development of expertise and workplace knowledge. The starting point to develop this integration must be to look at professional/workplace knowledge. Outlined below are some of the principal approaches to this task.

The integrated conception of the nature of competence
The first and probably the most widely held conception of the nature of competence is task-based or behaviourist. In it, competence is conceived of in terms of the discrete behaviours associated with the completion of atomised tasks. Its aim is the transparent specification of competencies such that there can be no disagreement about what constitutes satisfactory performance. In effect the task becomes the competency, so that if, for example, a mechanic can replace a fuel pump or a teacher introduce a lesson s/he is said to possess the competency of fuel pump replacement or lesson introduction. This approach is unconcerned with the connections between the tasks and ignores the possibility that the coming together of tasks could lead to their transformation (where the whole is greater than the sum of the parts).

Evidence for the possession of the competency in this model is usually based on direct observation of performance.

Those who follow this approach tend to see the curriculum of education and training programs as being directly related to the behaviours/tasks specified in the occupation’s competency standards. In Australia and England, this approach
has been adopted by many of the industries who first developed competency standards, and is usually the model in people's minds when they attack the competency movement (as, for example, Ashworth and Saxton 1990, Field 1991, Magnusson and Osborn 1990, Collins 1991). While this model has the attraction of simplicity and the (false) hope of complete clarity, its weaknesses are easy to enumerate. As the authors above point out, it is positivist, reductionist, ignores underlying attributes, ignores group processes and their effect on performance, is conservative, a theoretical, ignores the complexity of performance in the real world and ignores the role of professional judgment in intelligent performance (see Preston and Walker 1993). As the later section of this paper on assessment issues argues, the hope of complete clarity about what constitutes successful performance is, empirically, a chimera. Thus this approach fails even in its own terms. Clearly this approach is inappropriate for conceptualising professional work and there are very serious doubts about its relevance to work at any level.

It is this conceptualisation which seems to have influenced the education and training agenda in the United States and Canada, at least in the early days of CBE/T.

The second model concentrates on the general attributes of the practitioner that are crucial to effective performance. Such an approach concentrates on the underlying attributes, eg knowledge or critical thinking capacity, which provide the basis for transferable or more specific attributes. Thus the general attribute of thinking critically, it is assumed, can be applied to many or all situations. In this model, competencies are thought of as general attributes, ignoring the context in which they might be applied. This approach has been popular in the management literature (see, for example, McBer 1978, Boyatzis 1982).

There are a number of problems with this approach. First, there is no certainty that generic competencies actually exist. The evidence from the novice/expert research (eg Chi et al 1981, Greeno, 1989, McGaw 1993) and from the critical thinking literature (eg Ennis 1989, Norris 1985) suggests that expertise (which can be characterised as high levels of competence) is domain specific. That is, individuals demonstrate little capacity to transfer expertise from one area of activity to another. Second, these general attributes are of limited help for those involved in the practical work of designing education and training programs for specific occupations. The logic of this model for curriculum development is that one would use the same educational activities to develop critical thinking or communication skills in, say, a medical laboratory course as in a social welfare
course. What would be more useful for curriculum developers would be the identification of what critical thinking and communication in the practice of laboratory technology and welfare are actually like. Indeed, given the findings from the novice/expert literature it will probably be necessary to identify the different types of critical thinking and communication skills in different branches of welfare and laboratory work. It is likely that the communication skills of welfare worker dealing with juveniles will be quite different to those dealing with the aged. Despite this evidence most university courses have concentrated on developing and assessing generic skills in the broad context of the profession/occupation inferring that these are the basis of successful practice in many contexts in the future. This is true to a lesser extent in TAFE courses where it could be argued that the balance between the generic and the specific have at least been considered.

The third approach, the integrated approach, seeks to marry the general attributes approach to the context in which these attributes will be employed. This approach looks at the complex combinations of attributes (knowledge, attitudes, values and skills) which are used to understand and function within the particular situation in which professionals find themselves. That is, the notion of competence is relational. It brings together disparate things—abilities of individuals (deriving from combinations of attributes) and the tasks that need to be performed in particular situations. Thus competence is conceived of as complex structuring of attributes needed for intelligent performance in specific situations. Obviously it incorporates the idea of professional judgment. This approach has been called the ‘integrated’ or holistic approach to competence (Gonczi et al 1990) and it is the conception that has been adopted by the professions and to some extent all occupations in Australia.

This approach is holistic in that it integrates and related attributes and tasks, allows for a number of intentional actions to occur simultaneously, takes into account the context (and workplace culture) in which the action takes place and allows for some intentional acts to encompass others ie is at an appropriate level of generality. Despite the fact that Biggs (1994) attacks the competency movement, his own definition of competence and the examples he gives of increasingly competent performance in wine appreciation, are perfectly with the integrated conception of competence advocated above and increasingly accepted by TAFE curriculum developers (see Johnstone 1993). As Biggs says of the highest stage of his developmental view of competence the ‘qualitative phase’: “These (earlier) aspects [ where one aspect of a task and then a number of aspects are
This integrated approach overcomes all the objections to the competency movement that have been identified in the literature by Biggs, Stevenson and many others. It allows us *inter alia* to incorporate ethics and values as elements in competent performance, the need for reflective practice, the importance of context and the fact that there may be more than one way of practising competently. The challenge for teaching then, is to mesh the subject knowledge base with the demands of practice, something which incorporates procedural and propositional knowledge along with meta control (Sternberg, 1985). This approach is perfectly compatible with the insights of what Quirk (1994) has called the ‘cognitive revolution’ in the study of learning.

**Workplace Expertise**

Another related approach to integrating different facets of professional preparation is to understand the nature of practical, workplace thought. This approach is exemplified in the work of Scribner (1984) who developed a model of practical thinking after two years research work in a milk processing plant, where she analysed the nature of repetitive blue collar tasks such as product assembly, inventory and pricing. She found the key characteristics of practical thinking to be:

1. **Flexibility:** variation in modes of solution/ flexible modes of solution
   According to Scribner, practical thinking is marked by *flexibility* - solving the same problem different ways yet with each way finely fitted to the particular occasion on hand. Drawing on expert-novice comparisons, Scribner notes that novices tended to rely on algorithms which produced correct solutions via repeated application of a single problem procedure. Experts, in contrast, displayed a repertoire of solution modes fitted to the properties of specific problems in changing task environments.

2. **Fine-tuning to the environment/ incorporating the environment into the problem solving system.**
   That is, skilled practical thinking draws aspects of the given environment, be they people, things or information, into the problem solving system. The physical environment does not determine the problem-solving process, but rather it is drawn into the process through worker initiative.
Counting routines, for example, were found to be precisely adapted to the shape of things to be counted: stacks of crates five high prompted counting by fives; six high, counting by sixes. Further, experienced drivers modified their arithmetic operations and problem formulation depending on whether they had on hand pocket calculators or pencil and paper. Workers even made mental “tools” of the environment - a stack of dairy cases becomes a counting unit, for example.

3. Economy: Effort-saving as an optimal solution strategy / effort saving as a higher-order solution.
Scribner sees effort saving as a higher-order thinking strategy, which entails the: psychological reorganisation of work task to reduce the number of physical or mental steps required for their accomplishment and/or to simplify steps that cannot be eliminated; it has nothing to do with efficiency of movement or other industrial engineering concepts.

In the dairy, least effort strategies were acknowledged as “cultural norms”. Individuals often explicitly described their active search for short cuts or easier ways to do a job. Product assemblers reformulated orders to save physical moves; inventory staff constructed mental representations for arrays that enabled substitution of short-cutting arithmetic procedures for lengthy processes of enumeration.

When asked why they adopted “least-effort” techniques, workers’ answers were consistent, and to the point: “We want to save our backs.” (Scribner 1984a:12)

4. Dependency on setting specific knowledge
One of the consistent results of expertise studies (ie those concerned with high levels of competence) has been the close correlation between expert performance and a high level of domain specific or setting specific knowledge.

Scribner reinforces this point forcefully as it pertains to the dairy: the hallmark of expert problem-solving lay in the fact that the experienced worker was able to use specific dairy and job related knowledge to generate flexible and economical solution procedures. Expert problem solving procedures were content-infused, not content free. (Scribner 1984a:39)

5. Problem Formation
By problem formation, Scribner refers to the process of formulating not simply solving problems. Formal problem solving models, she suggests, see problems as
"given", the intellectual work consisting of selecting and executing a series of steps which will lead to a solution (Scribner 1985:21). In contrast, practical thinking actually reformulates or redefines problems. Problems were recast in the dairy: unit price problems into case price problems; ‘take away’ problems to ‘add on’ problems (eg. 16-6=10 into 8+2=10); inventory men squared off irregular areas to transform counting problems into multiplication problems.

A final source for understanding workplace knowledge is the literature on the acquisition of expertise. The presupposition is that expertise is built upon the knowledge and skill gained through sustained practice and experience. In all studies there is an interest in documenting the performance capabilities or qualities of the expert. Not surprisingly the most common technique is to contrast the performance of experts with those of novices with a view to developing a model of the nature of expertise. This contrast is accomplished through a variety of techniques such as simulations (e.g. Lawrence, 1988), naturalistic observation (e.g. Scribner, 1986), perceptions of what constitutes expertise (e.g. Ford 1986) structured tasks of some kind (e.g. Chase and Simon, 1973; Ceci and Liker, 1986; Gentner, 1988), or verbal articulation of expert judgement (e.g. Schmidt et al 1990).

The best attempt at summarising these studies to date is that of Chi et al (1988), who identify the elements common to the notion of expertise.

1. Experts excel mainly in their own domains.
   Experts have a good deal of domain knowledge upon which their expertise is built and this cannot easily be transferred to another domain.

2. Experts perceive large meaningful patterns in their domain.
   The organisation of the knowledge base is such that 'meaning' operates at a higher order level (e.g. lower order data are 'chunked' into meaningful wholes. This is illustrated in studies of chess (Chase & Simon, 1973) typing (Gentner 1988) and taking inventory in a milk processing plant (Scribner, 1986).

3. Experts are faster and more economical.
   They can often arrive at a solution without conducting an extensive search (e.g. Schmidt et al 1990) and they are good at anticipating required actions and events (e.g. Gentner, 1988).
4. Experts have superior memory.
This capacity is restricted to a particular domain even if the domain itself is 'skilled memory' expertise is restricted to the problem types encountered in experience (Staszewski, 1988). Memory capacity is considered by Schmidt et al (1990) to be the key to medical expertise. Nearly all investigations make some reference to the superior memory of experts. It appears that the phenomenon of 'chunking' only partially explains this observation - even Chase and Simon (1973) observe that the master chess player recalls both larger chunks and more chunks (which they are at a loss to explain).

5. Experts see and represent a problem in their domain at a deeper, more principled level than novices.

Both experts and novices use conceptual categories, but those of the former are more 'principled' or 'abstract'. Certainly Ceci and Liker (1986) and even Gentner (1988) demonstrate this. There is some doubt cast on this by Schmidt et al's (1990) study.

6. Experts spend a great deal of time analysing a problem qualitatively.
That is, problem formation (see Scribner 1986) is a feature of how experts approach their task. This is especially the case with so called ill-structured problems where there is a need to create structure (e.g. building a home, writing a piece of music or an essay on a given topic).

7. Experts have strong self monitoring skills.
That is, they are aware of their errors, mistakes, and the need to re-evaluate solutions, they are more self aware and aware of the complexity of the problems confronting them.

The expertise literature, helps to sketch a picture of the meaning of workplace knowledge, and the general nature of what it means to be competent or expert in a work setting as opposed to a purely academic setting.

**Occupational knowledge**
Another approach has been to look at the nature of occupational knowledge in particular as a means of understanding how to integrate theory and practice in occupational development. Schulman (1987) for example, identifies the knowledge base of teaching as comprising the following categories:
• content knowledge
• general pedagogical knowledge
• curriculum knowledge
• knowledge of learners and their characteristics
• knowledge of educational contexts
• knowledge of educational ends, purposes and values
• pedagogical content knowledge

Carter (1992) summarises some of the major findings in the area of teachers' knowledge, for example:

• teachers' knowledge is practical and contextualised in the sense that it is knowledge of common dilemmas teachers face in classroom life
• teachers' knowledge is personal in the sense that they formulate and draw upon their personal understandings of the practical circumstances in which they work
• teachers' knowledge is constructed and invented from repeated experiences in accomplishing tasks

As can be seen, this kind of analysis sits comfortably with the findings on workplace expertise. Clearly more analysis of the knowledge base middle level occupations will help to confirm this general literature on expertise and the nature of the attributes outlined in the integrated competency approach can be combined.

Developing reflective and critical practice
There is not time to deal with this approach now but many of you will be familiar with the work of Schon (1983, 1987). He advocates a reflecting in action approach to professional work. Rather than the translation of theory into practice he suggests that successful practitioners use tacit and intuitive knowledge and practical action in a dialectical relationship. He suggests that this knowing in action should be developed into an epistemology of practice. This knowing in action can, he suggests, be developed through coaching and collaborative inquiry. Again this approach in compatible with the integrated competency approach outline earlier.

Implications for initial and continuing vocational education
Expertise as a guide to curriculum planning.
Perhaps the most important issue centres on the relationship between program planning and notions of what constitutes expertise in a particular domain. Should the way experts operate dictate the nature of education and training programs? That is, should we simply mimic the processes underlying expert functioning?
Obviously we need to have a notion of what constitutes expertise in a particular domain. But we also need to know something about the development of expertise. In all studies contrasting experts with novices a consistent finding is that there is a distinct qualitative difference in the way they function. The implication is that this qualitative shift is an important feature in the acquisition of expertise. Clearly one cannot be an expert without first being a novice and as educators, perhaps we should be as much concerned with teaching people to be novices as we are with teaching people to be experts. Having said this, it is equally important to know the process which makes possible the progression from novice to expert. At the core of this process is experience, but it is at this point that the literature on expertise begins to reveal some gaps. The question of the acquisition of expertise is not addressed sufficiently in the literature. Instead of continuing to compare ‘experts’ (much experience) with novices (little experience), it may be instructive to compare experts with non experts, non-experts being those who do not seem to have profited from extensive experience. In this way we can begin to map the way in which experts, as opposed to non-experts, utilise their experiences for learning. Thus from the perspective of curriculum while it is essential to provide some experience (or integrate real work with the off the job component of courses) mere provision of experience is not sufficient.

It is crucial to distinguish between expertise as an outcome and the acquisition of expertise as a process. For example in Chi et al’s (1988) summary of the generic qualities of expertise they note that experts are faster and more economical, partly because they do not conduct an extensive search at the data or information available. This does not imply that novices should be warned against conducting extensive searches of the data or urged to take short cuts. Quite the contrary, extensive searches of the data are presumably important at the novice stage, and in this sense expertise is built upon the experience of being a novice. As educators, however, we are concerned with how experience is used to become ‘expert’. Should the curriculum be ‘staged’ from novice to expert and based upon an analysis of the levels of competence at each stage? Or should some pedagogical method, like problem-based learning, be employed which mimics the workplace learning process, and therefore contains within it the seeds for the development of competence and expertise? We do not have answers to these questions. At the least we should be encouraging curriculum developers to experiment with some of these approaches. As Quirk has pointed out the use of problem based education in universities is now widespread and deserves to be evaluated. As Gonczi(1994) and Hager and Chappell (1993) have pointed out
problem based approaches are competency approaches par excellence as they seek to combine knowledge skills and attitudes in authentic or neat authentic situations.

Learning how to learn
The above leads to a second fundamental issue in connection with the literature on competence and expertise. Does there exist a generic ability to learn from experience or is the process of learning from experience specific to a domain of knowledge and skill? Quite clearly it is possible to identify generic aspects of learning from experience (eg the ability to observe situations, analyse events, ask questions about workplace practices), and indeed the concept of ‘learning how to learn’ has a special place in the education literature. However the research on expertise cautions us against programs which attempt to teach people to learn how to learn in a generic sense, without reference to a domain of knowledge and skill (i.e. learning how to learn as end in itself). Furthermore the meaning of learning how to learn takes on a different complexion when one is talking about this capacity in relation to experience: it is learning to observe, analyse events, ask questions, learn from others etc as opposed to the more academic learning how to learn skills which are more familiar.

The role of experience
Any program which is designed to facilitate the development of expertise in a particular domain should take into account the way in which experts in that domain were able to use their experiences for learning. Teachers need to understand the conditions under which experience can lead to expertise and the teaching methods which will facilitate any generic skills. These include the use of journals, learning contracts, critical incidents, case studies etc.

General life experience
A third area of interest to education is the way general life experience has an impact on the development of expertise. Even though expertise is said to be domain specific, many domains (e.g. management) demand highly developed social and interpersonal skills which may be acquired through general life experience. Also quite clearly general life experiences can not only shape the perspective’s or frames of reference one brings to the work environment, but may have an impact on specific aspects of practice (e.g. paediatricians or child care workers experiencing parenthood, marriage counsellors marrying or divorcing). The role of life experiences in enhancing workplace knowledge requires further exploration.
Assessment

Finally, the literature on expertise has implications for the way in which learning from experience is assessed. This is an important curriculum issue since we know the vital role assessment plays in what students actually learn (Boud, 1994).

Schmidt (1990) refers to literature which shows a decline in performance on certain measures of clinical reasoning among presumed medical experts (that is, compared with recent graduates). This is because these measures are directed primarily at the novice stage of expertise (i.e. an emphasis on all possible relevant knowledge in a particular presenting case) and fail to take into account the true nature of expertise. Assessment of prior experience for example, whether for entry to university study or for re-certification of overseas qualifications, needs to be based on a clear idea of what expertise means in a given domain. In the case of entry to university there are some further issues and problems relating to the curriculum and how this can best complement the expertise gained from prior experience (e.g. successful managers enrolled in a business course, successful trainers enrolled in a course on human resource development, successful artists enrolled in a visual arts course). The findings of tacit knowledge research warn us, however, that people know more than they can tell. (Howard 1988:5 confirms this fact, finding that there is not necessarily any link between skill at explicit and implicit memory tasks). Thus assessment procedures and methods must not grant undue bias to those more fluent verbally, more reflective and more able to argue their case than those perhaps equally skilled but less able to demonstrate their abilities.

Sternberg (1990), provides perhaps the best analysis of the way in which academic tests differ from tests which tap workplace or everyday knowledge.

1. In academic tests, problems are typically set and pre-defined whereas in everyday life problems need to be recognised and defined.

   The ability to recognise and anticipate problems before they present as problematic is a key skill in the world of work: it allows the development of contingency plans for different scenarios - e.g. how will a particular product be affected by an increase in sales tax or import duty? How will it be affected by a rise in the cost of maintenance and repair or in one of the associated components or fuels? This ability to ‘problem-find’ has been documented elsewhere (Arlin, 1986, 1990). In addition to finding the problem rather than having it preset, problems in the everyday world need to be defined by the problem solver. Many
academic test problems include instructions about the parameters of the problem: what it does and does not include, what to assume etc - this helps define the problem in a way which channels the problem solver in a certain direction - the direction which is being tested. In the everyday world problem definition is much more open ended. In teaching for example, where a student persistently disrupts the class by arriving late or by making derogatory comments, the 'problem can be defined in a number of ways. It may be defined as a psychological problem of the learner, or as having to do with teacher-student authority relations, or as a problem relating to the curriculum, teaching practices, group relation, and so on.

2. Most academic test problems are well structured and have a single correct answer whereas everyday problems are poorly structured and have alternative solutions. Many academic tests typically have a single correct or best answer. In everyday life the 'solution' is often to be found among several possibilities. For example, the decision on where to buy or rent a home involves quite a sophisticated analysis of the needs and resources of the people involved - public transport requirements, safety needs, locational advantages, the quality of the local schools, aesthetic preferences, budget restrictions, local rates and charges and so on. Invariably the result of such an analysis leads to a range of choices (among those of us who are fortunate enough to have a choice in such matters) rather than a single 'solution'. In addition, such decisions are often made on the basis of questions that have no apparent relationship to the matter at hand. To continue the illustration, one may decide not to purchase or rent a particular dwelling simply because one does not like the "feel" of the neighbourhood!

3. In academic test problems all the information is typically available to solve the problem whereas in everyday life all the information is rarely available. In adult life there is an imperative to act in the world - to make a decision or to commit to a particular course. However, rarely are our actions totally informed, and indeed there are occasionally conflicting information sources. This ability to act in the world with limited, ambiguous or conflicting information is, arguably, a characteristic of adult intelligence. This is particularly the case in milieus such as the business world where the range of inputs is vast and the degree of control exercised by any one individual is limited. A flood or coup in one country, for example, can send futures prices soaring in another. Such scenarios demand the ability to make the best possible decision grounded on the information available, combined with the intuitive wit to protect one's self from the full extent of losses brought to bear by an unforeseen crisis. Faced with the breadth of the unknown
in business it is no wonder that students consistently complain that university is no preparation for the world of commerce!

4. Problems on academic tests are typically decontextualised whereas everyday problems are contextualised.

By ‘contextualised’ I mean that all the variables operating are taken into account when approaching the solution to a problem—there are no variables assumed to be constant. It includes issues such as why the problem is seen as important, who will benefit from the solution, and the history of the problem. In facing the question of how to deal with a young person “at risk”, a welfare worker must take into account the complete background of the case. This analysis would include everything from the child’s carer’s housekeeping habits, through to issues such as drug or alcohol dependence, relationships with siblings, progress at school, the history and nature of the “risk” and the likelihood and timing of a satisfactory resolution to the matters at hand. In these types of case scenarios problems cannot be fruitfully approached without a detailed understanding of context.

5. The feedback from academic test problems is usually quite unambiguous whereas in everyday life the feedback obtained is often unclear and incomplete.

It is rare in everyday life to get explicit feedback on performance, unless, of course, it is unusually poor or excellent. A skill in adult life is to learn to operate with incomplete or unclear feedback on your performance. We learn at an early age that being told we are “good” at something can mean total satisfaction, complete disinterest or merely an unacceptable point of rest on the road to our parent’s true goal for us: excellence! At work and at home we continue as adults to face the same kind of mixed or partial responses to our actions and in time the mature adult learns to live with this certain lack of clarity. In contrast, test questions typically have one correct answer, so much so that many IQ tests are designed to be marked electronically.

6. Academic test problems are usually solved alone whereas everyday problems are often solved in conjunction with others.

There is often a demand on working life to solve problems in conjunction to others. When there is more than one solution there are bound to be competing interests and the solution finally adopted may be the one which receives the greatest support from your colleagues. Working in groups is now recognised as an intellectual ability and one that is increasingly valued by employers. (see for example, Business and Education Round Table, 1992) Where once management
theory encouraged individualism: the use of internal competition to boost output, the rise of Total Quality Management has seen a new interest in collaborative problem solving and supportive work groups. In such a situation, a high IQ score or the ability to excel in abstract problem solving will not necessarily be of value.

The overriding point Sternberg is making is that real life problem solving is by nature a far more open system than that found in the traditional school or college environment. Ambiguity, poor feedback, unclear problem boundaries, the vagaries of the relationships we have with others and many other factors all combine to constitute the very loose framework for our adult experience of intelligent action in the everyday world.

Thus if we want our students to be able to develop competence/expertise and if we want to assess whether they really are so, we need to reconsider the sorts of assessment events that we include in our curriculum documents. In general we need to think of authentic and holistic assessment both to guide our students learning and to assess them validly.

In summary, the literature on expertise and workplace competence has great potential for informing and guiding education practice. Firstly, it is important for educators to maintain a distinction between competence/expertise as an outcome and the acquisition of competence/expertise as a process. Secondly, it is important to understand and document how experts in particular domains have utilised their experience for learning. Thirdly, there is a need for a better understanding of how general life experience can have an impact on the development of expertise. And finally, assessments of experience should be based on measures which recognise its sometimes hidden nature.

**Conclusion**

Curriculum developers in TAFE need to take account of a bewildering number of issues many of which are identified in the Quirk paper. Some areas in which we need debate are:

1. What should be the goals of VET curriculum- what groups should determine these goals?

2. If competence and expertise in occupations depends on workplace experience how do we best integrate such experience into our overall curriculum model.
Should it be essential for all VET courses to include a workplace or practicum component?

3. How well have curriculum built in the insights of recent research in psychology- particularly the research on meta cognition and on the development of expertise?

4. How do we build assessment strategies into the curriculum which are compatible with the development of deep learning and our other curriculum goals?

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National Council for Vocational Qualifications Statement on All our Futures (see Smithers, below).


Myth No. 1 ('The Behaviourist Myth') holds that competency standards are founded on the view that competence consists in overt, observable behaviours. In fact competency standards in an occupation integrate tasks that need to be performed with the attributes a person must possess to perform them. Attributes such as knowledge, abilities, skills and attitudes. Thus competence is a construct that is not directly observable, rather it is inferred from successful performance. The implications of this for higher education will become clear by considering some further myths about competency standards.

Myth No. 2 ('The Complexity Myth') holds that not all human activity, even directly work-related human activity, fits the competence model. Hence, the argument runs, professional work is too complex to be captured completely in a set of standards. The conclusion is that competency standards are not appropriate for professional work. We accept the premises of this argument but deny that the conclusion follows from these premises. What is not being pointed out in this argument is that failure to capture the totality of an occupation is true of all assessment models. So competency standards make no claim to exhaust all facets of a profession, just as traditional entry procedures for professionals don't claim to be totally comprehensive. What a good set of competency standards does do is to provide a clear statement of what is considered to be important in competent performance in that profession. This is something which has been a long felt need of registering authorities and the like, thereby pointing to weaknesses in the present arrangements.

Myth No. 3 ('The Training Myth') holds that as a result of establishing competency standards, the corresponding courses that prepare people for the profession will adopt competency-based training. Academics are, of course, correct in their rejection of professional courses becoming a series of practical modules. However when competence is conceptualised via the integrated approach in terms of knowledge, abilities, skills and attitudes displayed in the context of realistic professional tasks, these consequences no longer follow. Rather than recommending the adoption of competency-based training, the integrated approach, by also emphasising requisite knowledge, abilities, skills and attitudes, offers powerful guidance for improvement of traditional courses in respect of content, teaching strategies and assessment procedures.
Competency standards also offer educational and assessment benefits. The competency standards themselves are a powerful guide to providers of professional education. However, it needs to be emphasised that they are not a curriculum document. So, e.g., entry level competency standards specify what new graduates should be able to do, but say nothing about how this state is to be achieved. Hence for providers there is as much flexibility as ever to decide what to teach, how to teach it and how to assess it.

Myth No. 4 ('The Central Control Myth') holds that competency standards are developed and controlled by government bureaucrats, e.g. the National Training Board. In fact, the philosophy behind the development of competency standards in Australia is that the profession or industry owns and develops the standards. In many cases university staff are active members of the professional body, hence they have strong representation on the body that owns and develops the competency standards. In all cases the professional body is a major stakeholder that is entitled to significant input into courses for their profession.

Since the competency standards are a powerful guide to providers of professional education without being a curriculum document, they provide common ground for discussion between providers and the profession that doesn’t exist currently. The lack of such common ground in the past has seen some University Faculties fragment into a series of specialist departments that compete with one another for funds, staff, etc. and thereby lose sight of the totality of professional practice. The competency standards will enable the relative roles of the providers and profession to become clearer in a mutually cooperative environment.

Myth No. 5 ('The Checklist Myth') holds that assessment of competence involves ticking off a checklist of observable behaviours. Given the complexity of professional work, this is seen as a futile attempt to achieve objectivity at the cost of sacrificing validity. We accept this as a criticism of the behaviourist task approach to competency standards. However when the integrated approach to competency standards is adopted, competence is not something that is directly observed. Rather, as pointed out above, competence is inferred from performance. This has the effect of placing assessment of competence in the same boat as other kinds of assessment in academic institutions in that procedures are available to maximise its validity and reliability.

(Myth No. 6 ('The Lowest Common Denominator Myth') is commonly put forward in relation to entry-level competency standards. It holds that because they prescribe minimum standards, they therefore discourage excellence by reducing everything to the lowest common denominator. A variant on this is that they promote deskilling.

These charges are no more logical than making the same claims about traditional examinations on the ground that there is a minimum mark for gaining a pass. More specifically, this myth is based on a complete misunderstanding of the nature of the standards. For the charges to have any substance, the standards would have to relate to tasks that admit of no degrees of performance, i.e. you can either do it or you can't. However in professional work, (and in most other kinds of work), such tasks are rare. Typically, the standards relate to tasks that admit of
many degrees of performance, as does the task of taking a traditional examination. In both cases the existence of a minimum satisfactory level of performance is consistent with a full range of performances from excellent through to fail.

Of course the expectation is that most graduates of professional courses will greatly exceed the performance levels specified by the entry-level competency standards, just as most entrants to the professional courses greatly exceed the entry requirements.

Myth 7 (Impracticalities of Assessment)
This holds that the costs of assessment of competence would prohibitive. In fact much assessment which takes place currently is assessment of competence. For example, before students are able to complete a course of teacher education they have to demonstrate competence is a wide variety of teaching competencies assessed by direct observation of teaching and by evidence provided by supervisors as well as through traditional examinations of knowledge.