Chapter Two

Reform, changes and transformation: Perspectives on the implementation and evolution of CBT

2.1 Overview

The decision to implement a uniform program of competency-based training in Australia was founded on a belief that it could assist in making Australian workers more skilful and adaptable, and more able to meet the demands of an increasingly competitive global market. It was claimed that only through having a competent workforce would Australian enterprises become import-competing and export-oriented. However, it is clear that other goals, such as making educational institutions and educators more accountable were also on the agenda as key policy goals at this time. Those individuals (and institutions) who were to be responsible for the development and implementation of CBT were to be also subject to it. As the decade of CBT has advanced and the arena of vocational education has widened, the role of CBT has gone from reforming vocational education to managing the increasingly widening provision of vocational education through a diverse field of providers.

This chapter reviews the significant body of literature on CBT and related matters and argues that the role of CBT in managing vocational education provisions has subsumed its primary educational purposes. Moreover, the role of CBT and its purposes within vocational education have been transformed during the decade of CBT. Supporters and critics are often divisible on the basis of what they see is the purpose of CBT. Particular sets of interests represent different viewpoints in the contested terrain of educational policy and practice. It is probably fair to say that nothing has divided the vocational education community so much as the implementation of CBT. From division can come healthy debate and progress, yet these qualities seem to be largely absent in the debate which has set institutions within VET against one another and marginalised professional discussion. One of the causalities in the decade of CBT has been tolerance to critical debate within VET. In this chapter, a discussion of the unfolding implementation of CBT is cast within a range of literature. Its focus is primarily on sources that have a basis of evidence or informed thought. Not well represented in this review are the views and ideas of the practitioners and policy-makers who worked to implement or resist the implementation of CBT. Some of these voices are captured in the empirical work accompanying this study.
The structure of this chapter is as follows. Firstly, in keeping with the focus of this evaluation, the antecedents of the competency-based training movement in Australia are discussed, including the establishment of an industry institutional context. In the next section, the changing institutional context of vocational education, comprising the movement from a TAFE-based system to a broader field of vocational education and training, or VET, as it has come to be known. Components of this discussion include the construction of a training market and a shift in the role of CBT from reforming TAFE to managing VET. In the final part of this section, current shifts, including the institutional shift from industry to enterprises, are discussed in terms of the role of CBT as a means for organising educational provisions. In the second part of this review, the issue of the educational worth of CBT is discussed. What the discussion below aims to do is to examine the dual concerns of this study and the changes in institutional relationships brought about by the implementation of CBT, and to make judgements of its educational worth.

2.2 Institutional Framework: The competency movement and vocational education

For the purposes of this project it is necessary to initially consider distinctions between CBT itself and the broader CBT movement that has become associated with the reform of vocational education in the last decade. However, there is no single view about what is CBT and what comprises the ‘CBT movement’. Views are formed by both disciplines and categories of experiences. For example, psychological definitions characterise CBT as behaviouralist with its emphasise on measurable behaviour as a means of understanding individuals thinking and acting (e.g. Bijou 1990, Mager 1962). Certainly, commentators such as Foyster (1990) and Thompson (1991) were referring to CBT as being behavioral. Thompson (1991) defined competencies as they were being introduced into Australian vocational education, in terms of the skills to be performed, standards of performance and conditions for performance thereby reiterating what Mager (1962) states as the qualities of behavioural objectives. Yet, cognitive theory proposes that observable behaviour cannot account wholly for how individuals think and act and are likely to do so in circumstances other than those where behaviour is discernible. From a sociological perspective, CBT is seen as a means of viewing policy as social control (Jackson 1993, Porter et al, 1991, Law 1994). Other views hold that external influences such as the CBT movement are only a part of the transforming role of teachers (Seddon 1997). Beyond, these disciplines, policy analyses define the ‘competency movement’ as a set of interrelated policies and practices aimed to reform vocational education (e.g., Lundberg 1994, Harris et al 1995). It seems the broader CBT movement has evolved and been transformed during the last decade. However, behavioural influences and centralised models of curriculum have a long tradition in Australian vocational
education. Indeed, it is held that CBT has and continues to characterise and define vocational education (Moran 1997).

From a review of reports and literature at the time of CBT’s introduction (DOLAC 1989, Foyster 1990, Harris Barnes & Haines 1991, Thompon 1991, Watson 1991, 1993) it seems that its essential elements were that teaching, assessment, progression and certification are to be based on competency-based outcomes. Hence, the development of competency standards were used to specify what was to be taught, how students would progress, how and against what they were assessed and offered certification. So the essential elements were competency standards, prescriptive syllabi, modularised materials, the existence of standards against which work is assessed and of procedures which aligned competency standards with curriculum documents and certification of courses. The National Training Board’s definition which became something of a motif states that:

A competency comprises the specification of the knowledge and skill and the application of that that knowledge and skill …to the standards of performance required in employment. (NTB 1992 p10

So included part of CBT are the accreditation and registration processes. In sum, competency-based training is exactly that; a view of instruction and assessment primarily concerned with measurable performance or competencies. To be measurable these competencies require stated in a form that articulates performance, standards and conditions (Mager 1963). So, closely associated with CBT are instruction and assessment that are concerned with demonstrable performance. For example, being able to recite times tables or conduct a physical task are demonstrable behaviours. The reference to ‘training’ implies either a concern to avoid the term education or to highlight the applicability of competent performance. The development of national standards and uniform curriculum documentation and resources can be seen as closely associated with CBT and a goal of uniform national implementation.

The broader competency movement, however, refers to a raft of associated procedures aimed at securing the reform of and responsiveness from the vocational education system. The parameters of this movement are constantly changing, whereas the essentials of CBT remain more constant. For instance, at it inception CBT was only to be applied to trade courses (Watson 1991), but later encompassed all courses in TAFE. A broader goal about responsiveness in terms of meeting the curriculum needs of industry and then, more recently, enterprises also reflects changes in focus. Also, part of the CBT movement is a relationship between self-pacing and CBT. There remain
distances between these processes, although there was probably an intention that over time they would become more closely linked and enacted (Watson 1991).

From a psychological perspective, competency-based training is clearly founded in the behavioural view that emphasises the identification, observation and measurement of human behaviour. Behaviouralists argue that it is not useful to speculate on the hidden processes that occur when individuals think, act and learn (Bijou 1990). Rather, they suggest that observable behaviour offers the most certain basis for knowing and making judgements about human behaviour, with performance being the favoured benchmark. Central to this purpose are behavioural objectives that are used to guide (direct) instruction and also make judgements about individuals’ behaviour. This approach claims to offer an objective approach through the quantification of performance by behavioural objectives (Mager 1962). Such qualities are obviously attractive to those interested in securing uniformity and accountability to external standards, such as responsiveness to national industry standards (Jackson 1993, Stevenson 1995). Advocates of reform in vocational education have adopted this approach because it presents demonstrable evidence that the desired learning outcomes have been achieved (NTB 1992). Given, the recurring demands for accountability in times of economic or social distress (Stevenson 1995), it is perhaps understandable that vocational education authorities are drawn to a methodology that offers the promise of enhanced control over what is taught and assessed. Moreover, in the broadening field of vocational education where, increasingly, provisions are enacted by instructors who lack professional preparation, such prescriptions are seen as welcome, especially by those individuals who have new-found responsibilities for training others. It has been found that novice teachers are also comforted by the security of detailed prescriptions for their teaching practice (Brady 1995). So whereas an experienced educator may reject the imposition of such prescriptions as a challenge to their autonomy, novices may be assured by such prescriptions. However, it is important to acknowledge at this point that the competency movement was no stranger to Australian vocational education in 1989. Hence, to consider the antecedent conditions it is important to acknowledge the place of CBT within vocational education in at that time (Blachford, 1986, Sandery 1985).

Although this inquiry examines the implementation and contribution of CBT from 1989 to the present, this period is really one of consolidation of what had already occurred. Behavioural approaches and the use of behavioural objectives have been the traditional means of stating curriculum intents within vocational education in this country since at least the mid-seventies (see
Behavioural objectives have long been used to establish benchmarks for criteria-based assessment and otherwise guiding vocational educational provisions in Australia. There was a Competency-based Teacher Education (CBTE) program being offered by Hobart and at the (then) South Australian College of Advanced Education. Prior to 1989, state-based curriculum documents utilised behavioural objectives to guide curriculum development, instruction and assessment (e.g. see RATE guidelines). The classification of courses was based on the kinds and frequency of the behavioural objectives used as course intents. For example, in Queensland, the classification of courses (e.g. Certificate or Associate Diploma level) were determined by the frequency with which particular verbs were used within statements of educational intent (objectives) in Bloom’s taxonomy (see Gronlund 1981). For example, an Associate Diploma was required to have a certain frequency of statements of intent (behavioural objectives) with verbs such as ‘synthesize’, ‘analyse’, etc, whereas lower level awards (e.g. Certificate) were permitted a greater frequency of ‘define’ and ‘describe’ taken as demonstrating lower level behaviours. In Victoria, the modularisation of standard state-based syllabi and associated learning guides had a long competency-based tradition in the trades areas (Mealyea 1985). Indeed, much of what had been common practice in Victoria (e.g. CBT formats, modularised curriculum components (e.g. the Instructional Systems Model), CBT-based resource materials) (Blachford 1986, Mealyea 1985, Sandery 1985) was held as a model for other states and the territories to follow. It was no surprise that the first national CBT centre was established in Victoria. It was proposed that this Centre would advise others and disseminate information about the implementation of CBT. It was almost obligatory for representatives of other states and territories to visit Richmond College to observe the exemplar there. This exemplar featured a ‘skills supermarket’ with flexible entry and modularised courses which would permit its clients to come in and select modules and then progress through a self-paced program of study. So the antecedent conditions were not uniform in the two states, with Victoria enjoying a greater familiarity with many of the initiatives that were to be implemented nationally. Moreover, from the Victorian experience came concerns about the transition from CBT to self-pacing. Many states, Queensland included, who balked at the prospect of transferring to a self-paced approach to vocational education delivery, were concerned about the costs that changes to the infrastructure would incur.

1 My copy of Bloom’s taxonomy has annotations that date back to 1984. These annotations were used to link objectives of particular orders to the category system (A - B - C - D) used by TAFE Queensland at that time to classify course levels (S. Billett).
The genesis of the behavioural tradition within vocational education was associated with, and in part attributable to, its low standing, with vocational practice being perceived commonly as focused on routine and predictable tasks. This perception is even found within the educational community. Stenhouse (1975), while rejecting the appropriateness of behavioural objectives for compulsory education, suggests they had great utility for describing and judging vocational tasks. This view is similar to one advanced more recently to contest the introduction of CBT into the Australian higher education sector (Pennington 1992). Unfortunately, these views underestimate the complexity of vocational knowledge through assumptions that those in professions engage in a higher order of thinking than those working in vocational tasks at the trade or non-trade levels. This assumption seems to be quite commonly held and has been reinforced by government-sponsored frameworks that claim to identify differentiation in the nature of knowledge required for work. The eight levels of the Australian Skills Framework (ASF) (National Training Board (NTB) 1992) suggest a different ordering of complexity at different levels of worker classification. This depiction is as curious as it is incorrect. Firstly, different levels of routineness and complexity of tasks are offered in this framework. Yet a uniform CBT approach is prescribed to secure and assess the knowledge within at least six of its levels. (The other two are the domain of higher education.) However, while stating different levels of complexity of work activities in this framework, the only educational consideration is duration of course, not a differentiated focus on instruction, educational intent, and assessment to secure and appraise the knowledge required for those activities. Evidence suggests that all categories of workers (including professional) engage in similar patterns of routine and non-routine activities regardless of the level at which they are classified (Billett 1993). That is not to say they do not have specific domains of knowledge which they need to develop or that those domains may not be of differing orders of complexity. However, it is incorrect to assume that ‘unskilled’, non-trade, trade, paraprofessionals and professionals engage in qualitatively different kinds of thinking and acting when conducting their work. All categories of workers are required to engage in activities that require combinations of routine skills, higher orders of procedures and deep conceptual knowledge (see Stevenson & McKavanagh 1992). So the rationale for the introduction of CBT was perhaps premised on misunderstandings about the demands of vocational practice and the complexity of vocational knowledge. Indeed, the characterisation of vocational practice as routine and predictable, when compared with professional practice, seems to persist today. However, as developments in our understanding about expertise have increased and as clearer understandings about workplace requirements are identified, it becomes clear that if skilfulness and adaptability is to be realised, vocational education has to prepare workers who are “able to generate and
evaluate skilled performance as technical tasks become complex and as situations and processes change; reason and solve technical problems; be strategic, innovative and adapt” (Stevenson 1994:9). A wealth of empirical work in cognitive science, some of it undertaken in this country, is available to support this contention (eg., Evans & Butler 1992, Stevenson 1986).

It is not accurate to describe certain levels of workers as engaging in routine thinking and acting, catered for by a prescriptive approach to current practice. Regardless of what level workers are categorised at, they require higher orders of procedural knowledge to complete everyday tasks in the workplace. The issue here is that CBT is unlikely to be able to develop or assess this capacity as it is concerned with demonstrable behaviours, rather than the procedures which underpin that performance. Foreshadowed here, and elaborated upon below, is the view that behavioural approaches alone are inadequate for describing and organising curriculum to develop the forms of knowledge that permit individuals to undertake everyday work activities. In accepting the behavioural approach, thirty years of cognitive psychological research into understanding complex thinking and acting and the nature of expertise appears to have been ignored. Importantly, criticisms of this kind are not only coming from researchers. Many employers have reported difficulties in equating what workers do in their workplace or in categorising workers to just one of the ASF levels, because their activities often transcended these levels. In part, this concern led to a consolidated request by the peak bi-partite groups (ACI and ACTU) to move away from this framework (ANTA, 1993). This request appears not to have been accepted.

The point here is that competency based and behavioural approaches to education have had a long tradition in Australian vocational education. They were not novel or innovative when implemented nationally with a greater and concerted government effort from 1989 onwards which sought uniformity. What changed was the strengthening of the use of this approach. The changes included: (i) having national rather than state-based highly specific formulae for curriculum, instruction and assessment; (ii) adhering to national industry standards as a basis for curriculum development and practice; (iii) removing graded passes; (iv) tightening compliance arrangements through accreditation and institutional frameworks; (v) using behavioural benchmarks for associated assessment tasks (e.g. credit, recognition of prior learning) and; (vi) modularising curriculum components under national CBT frameworks. These moves appear to be undertaken in pursuit of national uniformity and associated policy goals, rather than offering CBT as an innovative educational practice. Hence, commentators have viewed these changes as being driven by a concern for control over and management of vocational education rather than quality
of educational outcomes (Jackson 1993, Stevenson 1995). The aim of the changes to institutional practice was initially toward a nationally uniform provision of vocational education. That is, it was about changing the institutional context in which vocational education was practised. Indeed, policy interventions of this kind, when initiated by government, are aimed at reshaping the frameworks of other institutions (Stretton & Orchard 1994). So as institutional frameworks (norms and values) are transformed, so are the practices within them.

Changes to the institutional frameworks are likely to have profound implications for practice. Institutions are viewed as sets of norms which patterns the behaviour of those who act within them (Cammack 1992, Law 1994, Research School of Social Science 1995). These social practices are not about socialisation, but established bases for behaviour. Individual choices occur within the context of social practice and include both ‘conscious and unconscious choices’ (Law 1995). In the case of instructors within VET, the key emphasis is upon educational practice; orchestrating, managing and judging teaching and learning and the associated organisational and cultural infrastructure to sustain that practice (Connell 1995). So concerns about institutional practice are central to an appraisal of the influence of CBT on Australian VET. The degree by which institutional frameworks and hence educational practice have been transformed is central to this investigation. For instance, Baverstock (1996) proposes that, for the teachers she investigated, the implementation of CBT brought with it frustration, the feeling of disempowerment, and concerns that attempts to measure student performance were subordinating teaching and learning. Despite this, she questioned whether much had changed at all in the teachers’ practice. The following sections discuss the transformations in the institutional contexts of VET brought about by CBT.

2.2.1 Developing the industry institutional context
The reification of CBT that took place in the last decade followed a particular course. Firstly, government established national industry standards (e.g. NTB 1991, 1992) which reflected the requirements of national industrial awards, and also the mandated national consensus (Lundberg 1994). This was extended to the formation of national committees who organised national curriculum documents. As noted above, the term industry here refers to the spokespersons for the sector of industry that comprises the public and private enterprises. These spokespersons were bi-partite reflecting the interests of employers (peak employer groups) and employees (unions) within each industry sector. As well as their representation on peak policy and regulatory bodies such as the NBEET and NTB, these bi-partite interest were to comprise the membership of
industry training advisory boards (ITABs) which function at both the state and national level. So, within each industry sector, the overall framework and procedures for enacting vocational education provisions - the decision-making bodies that comprised of industry representatives - were constituted at both the state/territory and national levels. Hence, the process is often described as being ‘industry-led’. In fact, they were industrial relations led. Hence, vocational education was subordinated to industrial interests and conflicts. For example, in the late 1980s and early 1990s a range of entry level training programs did not progress because no industrial representation existed. However, the frameworks in which advice and decisions were made were themselves constrained by government policy. For example, these spokespersons were not permitted to decide whether CBT, national standards, RPL or the like were suitable for their sector. Rather than being industry-led, these spokespersons for industry were co-opted and complicit in the implementation of government policy, albeit with strong bi-partite support. As evidence, note the simultaneous and almost complete movement of vocational education out of state education departments and into industry or industrial relations departments that occurred in the early 1990s. Note also the example above of ‘industry’ concerns about the Australian Skills Framework (ANTA 1993). The processes were government-led, supported by its industry partners. This process which purports to be inclusive was in fact quite the opposite. It represented corporatist interests. Individuals with educational expertise seemed to have been displaced from the decision-making processes during this period. This change was likely justified in seeking more demand-side responsiveness from the VET system. Hence, educational input was to be focused on realising what industry demanded. In keeping with this view teachers were to become characterised as being ‘implementers’ of the content and outcomes that others had decided upon.

The position of the unions, as representatives of labour, is particularly curious given their opposition to Taylorist prescriptions earlier in the century. These prescriptions are the workplace organisational analogue of CBT (Billett 1995). Even more curious is that, in support of the corporatist approach to curriculum development and implementation approach, unions were complicit in attempts to remove the discretion of fellow unionists (e.g. teachers) (see section on industry versus enterprise for more discussion) (Billett 1995). So it seems that government policy, which was focused on micro-economic reforms, drove the so-called ‘industry-led’ process, albeit by complicit corporatist bi-partite interests. This suggests that institutional concerns associated with control were privileged over the quality of educational practice (Jackson 1993). Those with

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2 Note the recent reversal of this decision in some states (e.g. NSW and SA), as the policy and institutional context is transformed again (e.g. from concerns with rationalisation of government departments).
educational expertise were largely excluded from the policy advisory processes. So, within the tri-partite processes of decision-making, existing knowledge about educational practice required to achieve governmental goals was ignored. Educators were perceived to have failed to have delivered appropriate vocational education provisions. Industry leadership was required to secure a responsive vocational education system which could deliver to industry a flexible and adaptable workforce. Equally, it seems the policy advisory processes ignored decades of work into how best to develop skilled workers.

To balance the argument, government was seeking to secure policy responses to eroding economic circumstances and chose to enlist those interests which it believed would best help redress these circumstances (Moran 1997). Baverstock (1996) suggests that government was responding to negative international appraisals of its performance in the field of education and training which also offered an orthodoxy associated with perceptions of failure on the part of the education system and the need for greater responsiveness to industry. This orthodoxy was aligned to changes in views about economic orientations which emphasised the market and private good as a precursor or superordinate to the common good and which were adopted by a Federal Labor government. Unions were also seeking to advance the interests of their membership and others by advancing wider participation in VET. Indeed, one of the key outcomes of the training reform which followed was a concern to broaden the provisions of VET to groups who previously would not have had access to training provisions. The widening of the field had the corresponding effect of broadening the field of providers and provisions as much of the TAFE infrastructure was bound to historical associations such as trade courses. Consequently, to make VET provisions available to a broader group of workers, workplace learning arrangements, industry-supported Skill Centres and specialist provisions emerged. In Queensland, to meet the needs of workers in industries such as coal mining, secondary processing, chemical production, plastics and metal coating, these diverse modes of providing vocational education were established.

In order to consider the transformations in the institutional context it is useful to map aspects of the changing social, political and economic context within which an evaluation of the contribution of CBT might best proceed. Therefore, in the next section, analyses, of the changing institutional context, is presented under the two headings: From TAFE to VET, and From Industry to Enterprises.

2.3 The Changing Institutional Context
2.3.1 From TAFE to VET

Significant changes in the institutional context have occurred within vocational education and training since 1989 and the commencement of the move to implement CBT uniformly. These changes have resulted in transformations to its institutions, purposes and subjects, and can be conceptualised as moving from TAFE to VET. In 1989 vocational education in Australia comprised mainly that which was being offered through the nation’s TAFE colleges. Now, in 1998, the provision of vocational education has been extended to include high schools, workplace-based arrangements, private providers, community providers, programs in agencies concerned with the labour market (e.g., Skillshare) and group apprenticeship schemes. Together, these diverse provisions now comprise the nation’s VET system, of which TAFE is the most significant component. Currently, most states are in the process of separating the providers (including TAFE) from the principal purchaser, the government. Open tendering for VET courses is seen as broadening the range of VET providers with states such as Queensland and Victoria having hundreds more registered providers of VET than a decade ago (Anderson 1997). So the field of VET providers is now much broader as are the requirements for its provisions. Therefore, whereas in the early 1990s an investigation of the contribution of CBT to VET might have been restricted to its influence within TAFE colleges, it must now account for the broader VET field. The broadening of the VET field has been a deliberate policy goal to offer the provision of vocational education outside of TAFE colleges. Concerns about shifting the cost of industry training from the public to the private purse (e.g. Deveson 1991) were influential in seeing moves to have accredited programs made available in workplaces and encouraging private provisions into what became termed a more ‘open training market’ (Anderson 1997).

Early in this shift it was seen as important to offer accredited courses in settings outside of TAFE to improve and broaden access. It followed that the accreditation agencies in each state and territory were separated from the TAFE system to aid their impartiality, and facilitate the broadening of VET provisions. At this time, TAFE colleges were required to address the same accreditation requirements as private and industry-based providers in demonstrating their wherewithal to offer courses. TAFE colleges were to be just another ‘provider’. Any registered provider could offer courses in the training market, but they and the courses they wished to offer have to be accredited. The accreditation processes included mandatory adherence to industry prescriptions, CBT methodology and associated practices (e.g. modularisation, RPL etc). So while opening up the training market, mechanisms were enacted to ensure that the preferred mode of instruction and assessment played a key role in managing the VET system. Adherence to CBT
became a uniform requirement for the accreditation of courses and their provision. From the focus on CBT as a means of reforming TAFE in 1989, it became a management tool for the burgeoning field of VET.

Significant changes to institutional practices were guided by CBT. The modularisation of curriculum components (e.g. text-based modules and learning guides) based around CBT prescription were offered as a means of making the provision of vocational education more flexible. This was held to permit greater flexibility in modes of provision such as self-pacing. Supporting self-paced approaches was the development of text-based resources that students were to work more autonomously. This had consequences for teachers’ (instructors) practice including developing these materials and maintaining their currency, and simultaneously dealing with students at a range of points of progress. For students, this approach often meant learning to work in a more autonomous manner and developing a capability to use these resources effectively. Students’ ability to read or to manage the requirements of text based instructional media became important to their success in VET courses. Mealyea (1985) has indicated that such provisions significantly disadvantaged those students with weak reading and comprehension skills. The findings of more recent work implicitly support these concerns (Crump et al 1997). So there were changes in the institutional practices of both students and teachers emerging from modularisation of CBT-based material.

2.3.2 Marketisation

More recently, the training market has been intensified with the introduction of market-based approaches (Anderson 1997, Moran 1997). Tendering processes have been used to distribute vocational education funds on a market basis. This has extended further the non-TAFE provision. Each year, funds that were previously reserved for the public provision of vocational education programs (through TAFE) are increasingly being made available through tender in some states. Although TAFE institutions currently capture the majority of these funds they must compete with each other and other providers through competitive tendering. So increasingly, community and commercial providers now operate in competition with TAFE institutes. Moreover, there is discussion about contracting out the accreditation process to private providers. This move indicates a reduced concern with national uniform standards and for accreditation to be associated with other factors (such as market-based concerns). The issue here is that since the time of the reification of CBT there has been a shift from TAFE as the virtual sole provider to a widening field of providers. This shift is towards the development of a vocational education and training
system which is disparate and differentiated in its goals, focus and procedures, albeit through an approach that emphasises uniformity as a key goal. For instance, the purpose and goals of the current provisions are not always consistent with the nomenclature ‘vocational education’.

Vocational education might be thought of as necessarily being concerned with developing occupational or vocational knowledge that permits individuals to practice their vocations across circumstances of their employment. However, the manifestations of this goal are unlikely to be uniform. Consider, for instance, the differences in outcomes desired by an enterprise based VET program, one offered to school students or one offered for the long-term unemployed.

Understandably, when enterprises are funding their own employee training they emphasise the specific needs of their enterprises (Billett 1993a, Billett & Hayes 1998, Catts 1996). Consequently, training might be enterprise or even equipment specific. Although a specific and short-term work-based training program may have unintended broader outcomes, these might be quite different from those that result from a course that seeks to develop individual attributes which are transferable within and across occupational activities. Industry has expressed concerns about this kinds of goals (Billett & Hayes 1998). Equally, the provision of vocational programs in schools might be about an introduction to the world of work, rather than developing specific vocational skills. Programs targeted at assisting the unemployed may have an employment start, rather than a specific vocational outcome as their goal. Hence, as the field has broadened there has been less clarity about unified and ‘industry’-related goals and purposes for this sector. Even the objects of this sector have changed. It is perhaps imprecise to refer to employees who are engaged in a work-based program or in one that seeks to develop the self-esteem of the recently retrenched, as ‘students’.

Consequently, changes in provisions of vocational education have transformed key relationships between individuals engaged in programs and those who assist their learning and make judgements about their progress. Individuals’ goals are unlikely to be uniform. They may be about being able to increase remuneration, learning to use specific pieces of equipment, or an employment start as much as preparation for a vocation. Take, for example, the aspirations of five prospective students for clerical courses were asked what they wanted from the course.

1. A good job, which is not in a factory and pays well so I can buy a house.

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1 It is acknowledged that with increased specialisation there may well be need for very specific and even equipment specific provisions of vocational education (e.g. aircraft mechanics and pilots). This is a transformation in the way vocations have traditionally been viewed and prepared for.
Partner wants to retire from train driving in 5 years time and drive trucks. She wants to be the bookkeeper for this business.

Has been in catering for the last 10 years but was made redundant last year. She enjoyed some short computer courses and decided to work her way up the ladder.

Daughter is in now in high school and will need to know how to use computer. It is important that she can show her because daughter has a learning disability.

Completed a course last year, Cert. in General Ed. for adults, and decided she wanted to do another course. She is new to the region and hopes to meet people and get some work in office admin, even as a volunteer. She has not been in the workforce for 20 years and wants to bring herself up to current standards and get over her fear of computers. (Billett & Hayes 1998)

Also, the different types of experiences furnished by schools, workplaces, colleges, community settings, and different target audiences for vocational education emphasise the diversity of the enacted curriculum in the VET sector and its changing institutional context. Hence, the changing context has seen major shifts in the focus of vocational education provisions.

2.3.3 From reform of TAFE to management of VET

It is important to identify the origins of the broadening of VET provisions as this illustrates the changing institutional context. It has been proposed by a number of commentators that CBT was introduced as a tool to organise and reform the activities of teachers in TAFE (Jackson 1993). It was suggested in governmental documents that teachers and TAFE institutions had failed to serve industry with the appropriate level of skilfulness required to be internationally competitive (e.g. Dawkins 1988). Policies that sought to make Australia more globally competitive placed vocational education at the centre of its strategies. Given its importance, vocational education was held to be too important to be left to teachers (Dawkins 1988). Therefore, industry advice became privileged in educational decision-making and the role and discretion previously afforded to teachers was reduced. Vocational teachers were to be implementers of programs designed by others, and premised on national industry standards (Billett 1995, Killen 1990). As a raft of recent studies have demonstrated, this ‘top-down’ approach to the implementation of vocational education curriculum resulted in dissatisfaction and disaffection with the very individuals who were supposed to implement this approach with uniformity - teachers (e.g. Baverstock 1996, Cornford 1996, Killen 1990, Robinson 1993, Roux-Salembien et al 1996, Rushbrook 1997, Ryan 1997, Simon 1996, Smith 1997, Smith & Nagle, 1995, Williams et al 1997). Baverstock (1996) for instance, concluded that teachers were experiencing frustration and a loss of control, a lack of clarity about standards and confusion about the focus and frequency of assessment, and a belief
that students’ learning was subordinate to their assessment. Significantly, it seems that this
disaffection has extended to concerns by TAFE teachers where initiatives are now seen as threats
to, or unwelcome reform of, their work, such as that which led to resisting flexible delivery
because of its associated with government directives (Smith et al 1996).

Adherence to national prescriptions demanded an approach to instruction and assessment that
offered the prospect of uniformity of implementation - it had to be ‘teacher proof”\(^4\). Competency-

\(^4\) In the early 1990s, within the Queensland state training policy branch, it was initially stated that
workplace provisions of vocational education would be exempt from CBT because its key focus was on
reforming TAFE.

-based training and assessment was seen to provide such an approach. So at one level there was an
expectation that the implementation of CBT would lead to provisions of vocational education and
training that were uniform and consistent with national industry mandates (e.g. national standards
- national curriculum). Underpinning this was the use of national industrial awards as the basis for
other government initiated micro-economic reforms to workpractice (see section below).

However, with the widening of vocational education provisions, the scope of the managerial task
became more complex. With VET provisions extending into schools, workplaces, community and
private providers, CBT became the means by which national industry prescription was managed
through a nationally consistent approach to the accreditation of courses; the National Framework
for the Recognition of Training (NFROT). The adherence of teachers and the broadening
 provision of vocational education prescription to industry mandation transformed the role given
to CBT by government. So, the transformation was from reform of teachers’ practice and TAFE
provisions to management of a national VET system. At the same time, greater differentiation in
the goals and purposes of VET programs suggest that rigid uniformity premised on national
industry prescription may not suit this emerging diversity. These national prescriptions may

\(^4\) In the early 1990s, within the Queensland state training policy branch, it was initially stated that
workplace provisions of vocational education would be exempt from CBT because its key focus was on
reforming TAFE.
to realise government policy associated with vocational education uniformity on the one hand and flexibility in provisions on the other. Interestingly, it seems that co-opting the market to secure goals inevitably leads to government losing control (Ball 1990). Therefore, it seems that one of the key mechanisms employed by government to manage and reform VET provisions may well be diminished by market-based reforms. Certainly, the uniformity of industry-determined outcomes, by which TAFE was valued in the earlier phases of the training reform has been dissipated by the recent focus on enterprises.

Some of the implications for the three subprojects arising from this discussion are as follows.

For curriculum development the goal of a CBT system was instituted initially with uniformity and adherence to national prescription in mind. Much of this was associated with highly detailed behavioural objectives (Athanasou, Pithers and Cornford, 1993). Most teachers were not involved in decisions about the use of the CBT approach (Cornford 1996). They were asked to merely implement what others had decided. The question here is whether (a) such an approach is desirable and (b) if CBT was capable of delivering uniformity and adherence as intended by its sponsors. The second point questions whether such prescriptions are the most useful means of promoting national consistency and at the same time permitting flexibility in addressing diverse and emerging needs. These concerns address both institutional practice and the educational worth of this approach. More recently, CBT’s role has changed to become the basis for uniformity within a broad field and an emerging curriculum model that seeks to tailor national prescriptions more to local needs (e.g. Training Packages). Simultaneously, localised and enterprise-based requirements are eroding the need for national uniformity, perhaps to the degree that any notion of uniformity, regardless of its desirability, is being threatened. Consequently, it is necessary to examine both the degree by which uniformity can be realised and what this means for curriculum practice.

For assessment practice the concern is whether assessment could be valid and reliable under these circumstances. Teachers remain uncertain about what is expected because of a lack of guidelines and guidance (Baverstock 1996) To what degree is it possible to assess nationally determined outcomes as either competent or not competent? The broadening range of purposes and goals of vocational education programs (e.g. for long term unemployed, returnees, new starters, advanced learners) suggest that the bases for making judgements in programs are likely to be different even though they are supposed to be uniform. In a range of cases, reliability is likely to be jeopardised
given the context in which assessments have been conducted. The prospect of tried methods of securing reliability (e.g. moderation) becomes remote when assessment takes place in quite different contexts with combinations of the preparedness of the individuals who will make those judgements and the differences in the circumstances in which that assessment will take place. Moreover, to what degree is CBT about the assessment of students, rather than their learning (Baverstock 1996; Biggs, 1994)? It seems curious that given the concern with uniformity and reliability, policy has had so little focus on orchestrating these processes (e.g moderation processes), instead relying on supposedly objective assessment benchmarks which are aimed to direct assessment practice (1997). Yet, do the criteria furnished by behavioural objectives really permit judgements to be made against national standards? Other concerns also persist. For example, standards of excellence are unlikely to be fostered if competence is accepted at the minimal level (Cornford 1993; Ryan, 1997).

For instructors the shift to a broader VET system involves the broadening of roles of those who are expected to implement with uniformity. It raises the question of whether being mere implementers of programs developed elsewhere and centrally, and by others, is desirable or possible when addressing the needs of students and situations in these widening options for practice. It is unlikely that these requirements have been, or are going to be, accounted for in uniform national prescription. Is it possible for educators to be mere implementers of curriculum or are they always going to be modifiers and developers, to use Marland’s (1976) terms? For example, to what degree are the requirements of individual enterprises or schools, let alone individuals, likely to be uniform? As the field of vocational education has broadened from TAFE to VET, the roles of teachers have become less clearly defined and the ability to be mere implementers may become redundant. Overwhelmingly, surveys of teacher satisfaction with CBT report findings associated with lack of involvement, obscured goals and concern about the pedagogy which CBT champions (Lilley, 1997). Significantly, suspicions formed with the implementation of CBT have extended to other initiatives such as flexible delivery (Smith et al 1996). This then raises the important issue of whether what instructors are doing is associable with what its sponsors expect. A number of studies (e.g. Simons 1996, Smith & Nagle 1995) suggest that teachers are confused and uncertain about what CBT is and their practice is unlikely to have changed significantly. Smith (1997) suggests that what is taken as a pure CBT approach has not been adopted widely (Van Berkel, 1997).
In the next section, decentring in the institutional context is discussed as the focus is shifting from industry to enterprises.

2.4 Centre to de-centred: from Industry to Enterprise

Another key transformation that has taken place in the last decade is the elevation and subsequent erosion of the standing of ‘industry’ leadership (Billett & Hayes 1998). There are now moves to a more deregulated and, it seems, enterprise-focused curriculum arrangements such as those found in the Training Packages. This approach may grant greater discretion and autonomy to the practitioner. Born out of the then DEET’s industry classification, provision of vocational education was from 1989 onwards organised on the basis of industry sectors. These sectors were organised under industry classifications and managed by national and state-based ITABs. The archetype used was the Metals industry. This industry offered a hierarchical career structure of apprentice, tradesperson, advanced tradesperson, and paraprofessional engineers. Indeed, the Metals industry was perhaps foremost in its demands for reform of the vocational education system. It was part of the bi-partite mission to Europe in 1988 that furnished the basis for the reforms which began in the following year (Harris et al 1995). It was also central to the award restructuring process that linked national industrial agreements, such as the National Metals Award, to VET provisions (NSW TAFE 1990). Unlike the United Kingdom, which used occupation as the basis for delineating the provision of vocational education, Australia settled on industry categorisations (National Training Board 1991, 1992). It seems that the close linkage with national industrial awards - another key area of reform - and the model of the Metals Industry Award influenced this choice. Throughout the early part of the ‘decade of CBT’, agencies and procedures were established which sought to gain consent to and advance national industry uniformity. These included the National Training Board, Australian Committee of Training Curriculum, and the Standards and Curriculum Council of ANTA. Also, procedures for the development of national standards was managed by industry based Competency Standards Bodies as the peak national organisations able to submit standards (National Training Board 1992). The metals industry model was used extensively by the National Training Board in frameworks such as the Australian Skills Framework. Interestingly, the Metals industry never managed to negotiate a set of national standards for itself, being doggedly resisted by particular industrial interests that were concerned by domination of other interests. So, although this archetype offered a clear career path, its cross industry occupational basis caused problems in developing national standards.
As part of the move for a national VET system, the Australian National Training Authority (ANTA) was established in 1993. This organisation is quite atypical in the Australian public sector, having a managing board comprised of federal and state ministers, thereby aiming to transcend the usual state-federal divide. It has established itself as co-ordinating, and, some would argue, controlling, the national organisation of VET. Its adherence to the CBT methodology has been unswerving. In recent debates about amalgamations between higher education and TAFE institutes, Moran (1997) has stated that what sets these education sectors apart is CBT. Moreover, in transformations to curriculum development, frameworks that accept a situational component and negotiation - the Training Packages - remain firmly entrenched in a CBT format. Given the apparent disregard for understandings of learning theory, it seems curious that a single orientation to instruction and assessment features so strongly and is used to distinguish differences between higher and vocational education. Hence, commentators conclude that this choice is premised on lingering concerns with accountability of practitioners. However, in this instance it may well be using CBT as an anathema that will keep higher education at arm’s length from CBT. First, CBT was offered as a fundamental plank of the training reform agenda and now it is being proposed as a means to distinguish between educational sectors.

So the initial institutional context associated with CBT was focused upon the needs of industry. The rise of the ‘industry’ model saw the development of a range of national standards, national core curriculum and policies and practice which had uniform applicability across the nation (as discussed earlier). Such a centralised system privileged the voice of industry spokespersons. Although modelled on the tripartite model of engaging capital, labour and the state, the centralised and corporatist approach to VET became quite exclusive. There were few avenues for other voices to be heard in this model. It seems that the voices of teachers, researchers, commentators and even enterprises were not welcome, particularly when they questioned the corporatist view. Yet in their determination to implement policy goals, it often seems that the industry spokespersons for enterprises were more aligned to the requirements of government policy than those enterprises they represented. The placement and funding of ITABs under government auspices leaves open the prospect of closer alliances with governmental concerns that those of the industry they serve. For instance, take the policy on non-graded passes within CBT. It seems that enterprises often want to know more than whether their apprentices/trainees or potential employees are competent. Employers want to know how their employees or prospective employees compare with other students. Yet those who speak on their behalf seem to have ignored this request for quite some time. Only in recent times, perhaps with the easing of
centralised control has some softening of this position been acknowledged\(^5\) (Rumsey 1997).


Students also seek to have their performance recognised in ways other than a non-graded pass. Take another example. It has taken repeated concerns over time by enterprises that the national industry-premised modules have failed to address their needs for consideration of the more flexible Training Package approach to be adopted. Doubtless, the emerging decline in sponsorship by enterprises of entry-level training (STB 1995), the lack of reference to training arrangements in enterprise-based award agreements (Guthrie & Barnett 1996, Misko 1995), and the preference for shorter entry-level training options (Billett et al 1997) has eventually prompted this action. It seems that there is a tension in the role of representatives of industry. This is because they are funded by government to be the spokespersons for and deliverers of government policy, rather than as advocates for the enterprises that they are presumed to represent.

The institutional context is still currently changing, as are institutional practices. Recently it seems -- perhaps for the reasons mentioned above -- that the enthusiasm for a national industry focus has declined or is being modified. Four key factors seem to underpin this change in the institutional context. Firstly, with the change of federal government and the collapse of the accord has come a period of tension between organised labour and government. Hence, bi-partite arrangements are under strain. Secondly, there has been a significant shift from a reliance on national industrial awards to enterprise based arrangements (Misko 1996). The use of national prescriptions has been undermined in the contemporary basis that is being used to establish work organisation and as a consequence, structured VET provisions. For example, reference to structured VET provisions is largely absent in most enterprise agreements (Callus 1994, Guthrie & Barnett, 1996, Misko, 1996). It has also become clear that a system modelled on the Metals industry approach was inconsistent with the needs of other industry sectors whose workforces were not organised hierarchically and whose movement was likely to be sidewise and transcend industry sectors. With the move away from uniform national industry mandation, the need for a teaching and assessment approach that is premised on the delivery of uniformity and adherence to national prescriptions become redundant. This is significant for CBT as its main rationale is founded in supporting national industry standards and a uniformity of VET practice. Thirdly,

\(^5\) Note the work reported by Rumsey (1997) which is occurring in Western Australia and ACT. In these places, trails of graded assessment are progressing. For example, a graded approach to reporting
with the use of market interventions within VET, the perceived ability to control tightly is lost (Ball 1990). There are clear tensions between an approach which demands fidelity to centralist prescription and one that emphasises providers’ ability to address needs of clients (Billett & Hayes 1998). Fourthly, essentially the centralist approach seems to have failed to secure the very goals that were set out in the national training reform agenda - to increase the quantum and quality of VET and to secure greater sponsorship (Billett et al 1997). It is clear that there has been a collapse in the provision of entry-level training and a preference for short-term traineeship-type arrangements than the longer duration apprenticeships (State Training Board 995, 1997). Few enterprise agreements contain reference to structured training and fewer still stipulate links between training and remuneration increases as was the case in the national industrial awards (Guthrie & Barnett 1996).

At this time, it seems the corporatist and centralist approach to VET is in decline. The Training Packages approach sponsored by ANTA seems to reflect the concerns about a de-centring. Latitude in negotiating the content of training is now permissible, although CBT is mandated in these curriculum arrangements. However, overall, some of the shifts in the institutional context seem to be undermining the rationale upon which CBT is premised. There is even a drift back to realignments between the VET systems and schools under state government departments which is indicative of changing priorities and movement away from central prescription (e.g. Victoria, SA and NSW). The ANTA - state agreement has also been re-negotiated which weakens the role of the centre, and further erosion is desired by some state systems. In all, its seems there is a de-centring taking place which is currently most evident in the drift from an ‘industry’ to enterprise focus. With this shift comes inherent dangers of adhockery and piecemeal approaches which is evident in the United Kingdom (Billett 1997b). There, evaluations of the recent attempts to reform entry-level training have revealed that these initiatives entrench difference and adhockery in arrangements for learning, certification and remuneration (Ernst & Young 1994, 1995). These outcomes have led to, amongst other things, the further disadvantaging of the very target group for which the initiative was intended (Billett 1997b). Equally, the concerns about reliability for assessment arising from these initiatives were expressed in the public domain by a raft of distinguished educators. So the adoption of these measures may not be in the long term interests of individuals, enterprises or industry. These dangers are particularly likely to be the case when this shift is associated with a deregulated market-based approach.

competency based assessment ("pass with merit") is being trialed. (WADT 1997) and similar arrangements are part of the assessment policy at the Canberra Institute of Technology (CIT 1996).
Recently, it has been postulated that there needs to be correction in a drift to an enterprise-focused VET provision to include the legitimate concerns and needs of individuals and the regions in which they live as well as those of enterprises and industry (Billett 1997 et al). Hence, the prospect for the future is a broader role for the vocational educator in designing, developing and evaluating curriculum provisions that address more situational needs, and a support role by vocational educators working with local TAFE institutes. It is proposed that vocational educators’ practice seems set to be extended into determining and developing curriculum to address localised needs that takes them beyond being mere implementers. However, it remains to be determined whether the constraints applied during the ‘decade of CBT’ have inhibited the development of the wherewithal of vocational educators to address these changing demands.

This transformation in the institutional context has provided changes for institutional practice and foreshadows more change in the future.

**Curriculum practice** - shaped initially by detailed national industry prescription. Currently, a move to address local and regional factors is emerging. Such factors are of a different kind than those that can be best handled by industry prescription. Situational factors, such as determining students’ needs and aspirations are not easily stated as behavioural outcomes. The tighter the defined objectives the greater the need for them to be negotiated at the local level if they are to be pertinent. The move to address this situation will need to be accompanied by curriculum practices that seek to address flexibility and adaptability. As is discussed below, this is a shared goal across vocational education, and one that finds support from individuals, industry, enterprises, researchers, teachers and government.

**Assessment** - based on adherence to industry prescription in the form of behavioural objectives that are proposed as being able to address vocational practice, regardless of the circumstances of its implementation. Conversely, a move to highly deregulated enterprise focused system may make reliability highly problematic. Although a non-graded assessment has been demanded by industry (pass/fail) there are problems of acknowledging excellence, which are reported as being of concern to employers and students (Rumsey 1997). The motivation of students, particularly those seeking to gain access to higher education, is impaired. In Rumsey’s (1997) report it is stated that both the states involved in this investigation are considering the implementation of criterion-based-based grading (p.23). Moreover, in this survey, of all the nation’s states and
territories only Tasmania was not considering some form of grading. There is difficulty in distinguishing between performance when based on behavioural objectives. How can reliability and validity be fashioned in a system which might have enterprise-based or situational factors to consider. Validity and reliability are likely to be transformed by situational factors. There is also the important question about the kinds of knowledge which are being assessed through a CBT approach and which are not (Biggs, 1994). In what ways are the forms of knowledge required for flexibility and adaptability (e.g. Stevenson & McKavanagh 1992) reflected in assessment practice?

Instructors - may be dis-empowered and de-professionalised by national industry-based prescriptions. Most educators were excluded from the process of deciding about the CBT approach (Cornford 1996). The ‘mere implementers’ role is not adequate for addressing curriculum and instruction whether concerned with uniform implementation or not. Current demands for flexible delivery and the tailoring of course through Training Packages suggest quite a different role of teachers. However, it seems that the full potential of the instruction cannot be fully realised if constrained by the competency methodology. Perhaps the dependency on prescriptive curriculum practice may have constrained the capacity of vocational educators to discharge this more comprehensive role.

Having considered some of the factors in the changing institutional context and their impact upon the three areas of institutional practice, it is necessary to consider the second level of analysis - that of the prospects for securing skilfulness and adaptability through CBT - its educational worth.

2.5 Skilfulness and adaptability: division in a shared goal

Common to policies of state and federal governments, and shared by many commentators, is the view that the skilfulness and adaptability of the nation’s workforce contributes to its economic standing and development. Hence, the overall goal for vocational education in seeking to develop skilfulness and adaptability is shared by most parties. This goal has national, industry-wide, enterprise-specific and individual implications. If individuals possess the forms of knowledge that permit them to be skilful and adaptable, they have a greater prospect of pursuing their personal career goals and can contribute to securing government’s national economic goals (Billett in preparation). They may also be well placed to work across an industry if their knowledge is robust enough to transfer across enterprises with similar occupational activities or, for another
instance, to self-employment. For enterprises, the skilfulness of its employees offers the prospect of them being able to successfully tackle non-routine as well as routine workplace tasks, which includes successfully confronting innovations and developments (Rowden 1995, 1997). For industry, the ability to transfer across and within enterprises in the industry sector is important as is maintaining and developing the skilfulness of industries’ workforces. However, despite this common goal, the imposition of CBT as a means of securing skilfulness has been highly divisive within vocational education. For many commentators and practitioners, CBT alone is incapable of realising the desired skilfulness and adaptability sought by its sponsors.

Founded in the behavioural tradition of identifying observable and measurable behaviours, CBT is held to be useful for workplace tasks which are of a specific, superficial and observable kind (Bijou 1990, Hogben 1970, Sandery 1985). However, three decades of research within the cognitive perspective, has concluded that CBT is not well placed as model of instruction or assessment for anything beyond that which is highly measurable (e.g. routine, predictable and superficial) (Hogben 1970). Take for example, safe working practice. This is a basic, but essential, requirement of vocational practitioners. Yet it is very difficult to write a behavioural objective which can address this most basic of requirements for safe and effective work practice. Part of this difficulty is in being able to identify the range of conditions for practice. Even if a highly specific objective was written, to cover a particular tasks (e.g. use of a cutting machine), it would not be possible to know whether operators could transfer their knowledge safely to another kind of machine. The concern here is whether the student assessment could take into account the procedures they use in identifying another cutting machine and consider how to use it safely. Then, there is the issue of dispositions (values, attitudes and interest) as defined by Perkins, Jay and Tishman (1993). Would the individual deploy the appropriate attitude to ensure the use of a safe procedure? It is unlikely that such a disposition can be captured by a behavioural format or judged through a single performance (Billett 1997a). In addition, confidence that one performance could be used as a predictor of subsequent dispositionally driven performance is unlikely or in other circumstances (e.g. a different type of cutting machine). Gleeson’s (1993) study indicated that the dispositions associated with learners developing work identities were not being addressed in CBT approaches to curriculum. Yet, it is commonly understood that employers require particular sets of attitudes (Kingsland & Cowdroy 1993). So while CBT has utility for routine aspects of work practice, the cognitive literature holds that alone it is not a sufficient basis for instruction, curriculum development and assessment for developing flexibility
and adaptability. Yet even Rumsey’s (1997) recent report to government on assessment procedures emphasises measurability.

As CBT focuses on outcomes it denies the importance of the processes which furnish these outcomes. Whilst performance or outcomes (being able to do something) are important, it is the way individuals use knowledge that is more predictive of an ability to apply knowledge in circumstances and situations which are different from those in which the knowledge is learnt or initially performed. For example, in most instances the first act of transfer is from the place where knowledge is learnt (e.g. the classroom) to other situations (e.g. the workplace). In what way can measurable performance in a classroom setting predict transfer elsewhere to other situations or tasks? Equally, in addressing workplace tasks it is individuals’ use of their knowledge structures (processes) that is the strongest predictor of success. With a lack of emphasis on the very processes that underpin thinking and acting in curriculum intents (aims, goals and objectives), these process considerations are ignored. It is important to note that the transfer of individuals’ vocational knowledge is not just about it being portable to other workplaces. Changes within workplaces or changes to the individuals’ roles require transferable knowledge.

Whereas behaviouralists emphasise observable behaviour, cognitive theory has for the last thirty years been focusing on the internal processes of thinking and acting (e.g. Anderson 1993, Ericsson & Smith 1991, Glaser 1990, Newell & Simon 1972). Central to this inquiry has been the differences between the knowledge possessed and its use by experts and novices. Although unable to make the process of thinking observable, three decades of evidence emphasises the use of knowledge structures in achieving tasks and in learning. Recently, the understanding furnished by cognitive theory has been augmented by contributions of social and cultural theory that proposes that knowledge is sourced and influenced by external factors. This augmentation notes the reciprocal and interpretative nature of the relationship between individuals and their thinking and acting (Rogoff 1995). How individuals respond (think and act) is not uni-directional as behavioralists would have us believe. These differences are bound in the processes which individuals use to understand the knowledge with which they interact. This suggests that there is a need to account for the situatedness of learning, the fact that expertise is not unitary but is determined by the particular consequences where individuals engage in activities (Billett 1995). Again, this view reinforces the importance of a more situated approach to curriculum that is negotiated rather than mandated centrally and of learning processes which are focused on the
means by which individuals’ construct knowledge, such as problem-solving, rather than through didactic teaching alone.

The cognitive and social-cultural perspectives share a common constructivist view. That is, individuals are held to be meaning makers, who shape and interpreting the stimuli they experience. In contrast to earlier views, which held that individuals internalise knowledge provided by an external source, the constructivist view proposes that individuals construct their understanding through a process which is analogous to problem-solving. Both perspectives value problem solving as a means of instruction. This contrasts with views that posit the learner as a passive recipient of knowledge sourced elsewhere. For instance, McKavanagh and Stevenson (1994) have shown that students in TAFE settings who are pressed into problem-solving activities they are more likely to construct higher forms of procedural knowledge, than those who participate in more didactic forms of instruction. It seems that interactions with peers and teachers, as well as appropriately sequenced tasks, are likely to develop and hasten the development of the higher orders of knowledge required for performance. Consequently, instructional processes focusing solely on outcomes may not address such procedural concerns. Moreover, sociocultural theorists suggest that collaborative problem-solving with a more expert other, when undertaking authentic activities, supported by the indirect guidance of social and cultural practice is most likely to develop the knowledge required for performance in particular situations (Collins, Brown & Newman, 1989). Research in workplace learning has supported many of these contentions (Billett 1996). However, when the requirements by which vocational courses are to be accredited are examined they make no reference to these concerns. They refer mainly to adherence to industry mandations and CBT formats (e.g. VETEC 1992).

Hence, at the centre of an evaluation of the efficacy of CBT is a debate between perspectives which emphasise human behaviour with reference to either internal processes (cognitive) and its relationship to social circumstances (socio-cultural theory) or external manifestations of behaviour (behaviouralist). However, there is some consensus in the educational psychology community that the key aspects of the behavioural view have now largely given way to more contemporary views (Thomas 1990). This development has also seen the description of psychology as a science that seeks to understand behaviour transformed into one seeking to understand the mind.
Behaviouralism still holds an important place in the development of routine skills in areas associated with disability, sports coaching, the rote learning of important knowledge which has no algorithmic frame (e.g. the alphabet) and also where knowledge is usefully learnt in this way (times tables). However, beyond these areas, other insights are commonly held necessary to inform about how humans think and act.

It is unlikely that compulsory education or higher education will willingly embrace behavioural approaches to education as its limitations are broadly recognised in these sectors. That VET is an exception only adds to the view that it is pragmatic, concrete and superficial - which it is not. Perhaps it is little wonder that students seek higher education alternatives to VET as their first preference. The cognitive view, in highlighting the significant role of higher orders of procedures, emphasises the role of processes in thinking and acting. Moreover, the cognitive literature furnishes accounts of the knowledge types required for expert performance (Stevenson & McKavanagh 1994, Stevenson 1994). The products of this literature can be used at least as a basis for appraising the prospects for the development of robust knowledge through the CBT approach to curriculum and instruction.

A clear depiction of the distinction between process and outcomes and the apparent contradictions between what governments want and the means by which they seek to achieve that can be found in the NTB’s 1992 definition of competence. The NTB state:

*The concept of competency focuses on what is expected of an employee in the workplace rather than on the learning process; and embodies the ability to transfer and apply skills and knowledge to new situations and environments.* (NTB 1992:29)

The complications and contradictions here are multifold. Firstly, what is expected of an employee is likely to be highly differentiated from workplace to workplace. Vocational practice is founded on situational expectations (Beven 1997, Stevenson 1996). It is acknowledged that expertise in one enterprise is likely to be inadequate in another and indulgence in a third (Billett 1995). For instance, being a successful waiter, hairdresser, or clerical worker is not premised on uniform requirements, except at the very abstract level (e.g. determine what clients, customers and colleagues want and seek to provide that product service). Rather, what it means to conduct food service in a particular restaurant, dress hair in a particular salon or work in a particular clerical situation has particular situational factors that are the basis for performance. Therefore, judgements about actual performance are likely to vary from situation to situation. Secondly, in
embodying transfer and adaptability, yet denying the importance of the processes that permit these attributes, this definition ignores on extensive research within cognitive psychology over the last thirty years.

Lest the work within cognitive psychology be dismissed as ‘curiosity research’, it is noteworthy that much of it has been funded by military and industry sources in the USA in the search for understanding best performance for military and commercial purposes. (e.g. Lesgold, Gott, Glaser etc). Indeed, a criticism of this work is that it has been too closely aligned with such pragmatic interests and that it has had a deleterious influence on compulsory educational policy. What the cognitive literature suggests is that the development of higher order procedures and richly associated conceptual knowledge is the most likely basis for individuals’ knowledge being robust. For instance, it is fair to say that the US military had previously favoured behavioural approaches to learning. However, given the increasingly indeterminate and uncertain theatres in which they now operate and the nature of the equipment they use, they can no longer rely on the routine and the predictable (Gott 1994). Rather, they are seeking novel approaches to addressing their problems. In doing so they are turning away from a dependence upon behavioural prescriptions. Equally, the increasing competitive and uncertain circumstances that enterprises find themselves trading in demand creative and adaptive behaviour for many tasks (Rowden 1995). As noted above, many of more pragmatic HRD practitioners in the United States have disowned behaviourist approaches (Carnevale 1995, Tang & Cheung 1996, Wall & Jackson 1995). Hence, some of the institutional practices which are being maintained in this country seem at odds with transformation in practices elsewhere which are based on more current understandings of how individuals learn and re-deploy knowledge.

This view suggests that it is necessary to examine curriculum documents and materials such as those used for accreditation procedures to determine the types of knowledge they depict and value in order to determine:

(i) the degree to which these documents emphasise outcomes and content that are likely to secure adaptability and skilfulness;
(ii) to what degree the benchmarks provided for assessment purposes are useful for making judgements about the skilfulness and adaptability are likely to be obtained;
(iii) to what degree the experiences mandated in accreditation frameworks emphasise the knowledge required for performance; and
(iv) to what degree is there evidence that CBT has or has been unable to secure these forms of knowledge (more specific)?

From the above it seems the concerns for the projects are as follows.

**Curriculum Development** in what ways does the model of curriculum development and instructional environment lead to the sorts of activities that are likely to secure the kinds of knowledge required for skilfulness in the workplace? Can a CBT based curriculum guide the learning arrangements to secure these forms of knowledge, and if so in what ways. By emphasising measurable outcomes of learning (behaviour) important process skills are being addressed. Included in this category are the dispositional dimensions of practice, which are important for the values and attitudes associated with performance to be constructed (Billett 1997a, Gleeson 1993).

**Assessment** - Will the assessment processes being used in CBT permit judgements about the forms of knowledge required for workplace performance which are flexible and adaptable? There is a concern that even the first basis for transfer may not be addressed in assessment practices based on measurable performance in school-like activities. Hence, the validity of assessment associated with behavioural processes is questioned. CBT has been held to be more of an assessment system than one concerned with improving cognitive skills (Barratt-Pugh 1996). Quantitative assessment may encourage students to merely reproduce knowledge rather than develop structured reflective argument (Biggs 1994).

**Instructors’ role** To what degree has CBT permitted or inhibited instructors to secure in their students the knowledge required for adaptability and flexibility? Understanding the process of the development of expertise is central to the development of quality instructors (Cornford 1993). Instructors using the competency-based approach will not be addressing enterprises needs if they are unable to develop critical thinking skills (Fields 1996).

The sections above have provided a commentary on some of the issues associated with the changing institutional structures resulting from CBT and its educational worth. Arising from this review are the needs to appraise further some of these ideas. In the next chapter the methodology that builds upon the work here is advanced.

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