

Discourses and practices of competency-based training: implications for worker and practitioner identities

PAULINE JAMES

The University of Melbourne

From the perspective of a social theory of learning, this paper explores discourses and practices associated with competency-based training (CBT) in industry. Drawing on data from a national evaluation of competency-based training in Australia, implications for the formation of identities of workers (or trainees) and vocational education and training (VET) practitioners are discussed, particularly in relation to an increasing recognition of the importance of lifelong learning for workers, and knowledge-making and innovation within enterprises. It is argued that discourses surrounding CBT relate particularly to the importance of developing 'procedural, technical knowers' rather than 'reflective problem-solvers', and 'standardized, adaptable workers' rather than 'innovators' or 'initiators'. Thus CBT often seems to preclude the kind of transformative learning that could potentially lead to social and technological innovation in the workplace and enriching personal and cultural change. Moreover, while some discourses surrounding CBT relate to 'empowered, committed workers', it appears that the lived experience of working life may sometimes contradict these claims. In relation to training personnel, some VET practitioners do appear able, using CBT as a springboard, to exercise professional judgement and creativity and instigate transformative and, indeed, critical learning programmes. However, for others, identities as 'deliverers' of a standardized curriculum seem to have been formed, potentially an experience of deprofessionalization. Some discourses and practices associated with CBT, then, appear to be neither in the best interests of workers, practitioners and the community, nor of individual enterprises and industry as a whole. A rethinking of arrangements for, and conceptualization of, competency-based training in the workplace is discussed.

Introduction

Competency-Based Training (CBT) has been a powerful feature of Vocational Education and Training (VET) reform agendas in Australia over the last decade. It is characterized by pre-specified training and assessment outcomes and standards based on industry requirements within a system of credentials at a number of levels (the Australian Qualifications Framework). CBT has also evoked considerable debate (see, for example, Hager 1995, Stevenson 1995, 1999). Smith *et al.* (1997: 69) noted, however, that little empirical research had been conducted

Pauline James is an Associate Professor and Principal Fellow in the Faculty of Education at the University of Melbourne, Parkville, Victoria, 3010, Australia. Her recent publications include: 'Student concerns and competency-based training: difficulties and coping strategies in vocational courses' (2000), *Australian and New Zealand Journal of Vocational Education Research* (8, 1–30).

into CBT as practised in industry and individual enterprises, and the study on which this paper is based sought to remedy this situation.

Conducted in 1998 and entitled 'Evaluating the contribution of competency-based training', this was a national study, funded through the National Centre for Vocational Education Research (NCVER) in Australia (Mulcahy and James 1999a). Its purpose was to undertake a multi-dimensional evaluation of CBT within enterprises, investigating the extent to which CBT was meeting the requirements of its many stakeholders (e.g. industry, employers, training personnel and workers), and contributing to the quality and flexibility of vocational learning and working life. What kinds of knowledge were being privileged and marginalized through this training, and how were the discourses (defined here as ways of ordering the world through making meaning), and practices associated with CBT, shaping the learning occurring within workplaces? As a corollary, then, how might such discourses and practices influence worker and practitioner identities?

In relation to learning, Wenger (1998: 5) describes identity as 'a way of talking about how learning changes who we are' creating 'personal histories of becoming in the context of communities'. Workplaces constitute community sites, where engaging in working and learning activities necessarily shapes participant identities. Given the changing nature of work and workplaces, many of which increasingly require people to become knowledge-workers and innovators (Owen 1999), the importance for 'survival' in the workforce of identity formation consistent with lifelong learning is becoming increasingly recognized (Kearns *et al.* 1999). Here, lifelong learning is associated with personal responsibility for updating skills and knowledge throughout the life-span, and requires effective learners who can understand their learning processes (Cornford 1999a) and are willing and able to embark on new endeavours and examine new perspectives. Therefore exploring how particular curriculum contents and arrangements for learning, and the discourses surrounding them, might contribute to the development of such identities is an important task for researchers.

What kinds of identities, then, are likely to be developed through competency-based training (CBT) in industry and how constructive are they, both for workers themselves and for the enterprises in which they participate? How transformative, in a positive and critical sense (James 1997), does such training appear to be? Can it enable workers to develop new perspectives that enrich their lives and open up new opportunities for 'becoming'? In addition, if identities formed at work are carried over into other aspects of workers' lives, is this likely to have a positive or a negative influence on the community as a whole? As Garrick (1998) points out, if values in learning contexts are purely instrumental, for example, ignoring friendship, care, empathy and community responsibility—focusing exclusively on the requirements of individual and company competitiveness—then this is likely to be socially and personally detrimental. How also do identities of training personnel, and their own professional and personal development, appear to be influenced by CBT?

This paper sets out to explore the implications of CBT for worker and VET practitioner identities, particularly in relation to the discourses surrounding CBT and the types of learning arrangements and contents that CBT affords. Firstly, an outline of the major conceptual framework adopted in exploring these issues is presented, followed by a brief description of the research methods employed in

the evaluation. Next, evidence of a number of different identity constructions in the discourses surrounding CBT, together with the practices of CBT, are presented, and their implications for identity formation are discussed. This account also includes views of industry personnel about the consequences of CBT for worker identities, whether desirable or undesirable, together with their experiences within a competency regime. Lastly, a brief exploration of some implications of this analysis for the design of workplace learning is provided, in view of the advantages and disadvantages of CBT apparent from this study. It is argued that, while CBT may well assist in shaping a number of quite positive identities for both workers and training personnel alike, other identities on offer appear to be limiting—for the people involved, the community generally, and for individual enterprises and industry as a whole.

Conceptual framework: transformative learning and identity formation

Wenger (1998: 215) writes: ‘Because learning transforms who we are and what we can do, it is an experience of identity... not just an accumulation of skills and information’. He also distinguishes between education and training, describing ‘education’ as transformative, but ‘training’ as only formative. Transformative learning, then, involves opening ‘new dimensions for the negotiation of the self’ (Wenger 1998: 263), and is an essential component of lifelong learning. Yet, since many industry workers voluntarily abandoned formal education early in their lives, capacities for such learning cannot be assumed. Thus, viewed from this framework, any discussion of industry-based learning arrangements and content, such as CBT programmes, need to consider identity issues.

Tennant (1999: 22) writes: ‘Identity work...involves the construction and continual reconstruction of narratives or stories about one’s life...jointly authored by the individual and his or her culture’. However, Wenger’s social theory (1998) of learning adds further dimensions to this statement. Indeed, Wenger (1998: 151) notes that ‘Who we are lies in the way we live day to day, not just in what we think or say about ourselves’—or, indeed, in what others say about us and the roles we are assigned. Narratives of self are thus ‘reifications’ in discourse, projections of meaning, or abstractions and labels, in which our understandings are given form. Reifications are often perceived as having a reality of their own, as ‘things’ existing independently of the experience that produced them. Wenger (1998: 59) describes them as ‘aspects of human experience and practice...congealed into fixed forms and given the status of object’ (for example, formulae or written instructions to encapsulate procedures). Such reifications, however, can never completely capture all the dimensions of participation. Yet they are in constant interplay with experience, an interplay through which learning and identity formation occur.

Therefore, the interplay between *reifications* of competence in competency standards (and in the discourses surrounding them), and the *experience* of participation in competency-based training and assessment, will shape identities of competence within the communities in which we engage. Other particularly important experiences in identity formation (Wenger 1998: 149) include: our memberships in some communities but not others, our past history and potential

futures (our learning trajectories), and our means of negotiating local ways of belonging with global ways, that is, with broader styles, discourses and social structures.

Moreover, identities are said to form within a dual process comprising what Wenger labels as 'identification' and 'negotiability'. Identification involves the experience of associating with or being marginalized by particular people, as well as seeing ourselves as compatible with some groups or discourses but not others. It thus involves participation *and* reification. Negotiability, on the other hand, 'refers to the ability, facility, and legitimacy to contribute to, take responsibility for, and shape the meanings that matter within a social configuration' (Wenger 1998: 197). As such, negotiability is related to issues of power. Further, this dual process of identification and negotiability operates through three modes of belonging termed engagement, imagination and alignment. Each mode can be experienced as liberating or narrowing, depending on the circumstances. Hence, Wenger (1998: 188) writes: '...our identities form in this kind of tension between our investment in various forms of belonging and our ability to negotiate the meanings that matter in those contexts'.

These concepts will be illustrated further in exploring the data presented in this paper. However, some examples of questions asked of the data, and expressed through this framework, are as follows. In 'delivering' CBT, to what extent are training personnel able to negotiate their own meanings in relation to outcome statements? What power do they have to modify and adapt the 'global' curriculum to 'local' concerns and issues? Do they align themselves completely with the competency standards laid down, or do they see them as a partial representation, a reification of competencies, but negotiable within the experience of professional practice itself? For workers, what identities are being reified in the discourses of CBT, and to what extent do workers appear to align themselves with such discourses? How is engagement in the forms of learning required in CBT likely to influence workers' understanding of their current competence and potential futures? What kinds of learning trajectories does CBT apparently create? As well as learning the 'correct' procedures for accomplishing a task, is there space for innovation, for imagining other ways of operating? Are learning resources and activities in CBT likely to stimulate the imagination of workers, developing alignments beyond a particular enterprise? To what extent is CBT developing the necessary competence to participate effectively beyond the local community, for example, through the acquisition of portable skills?

Research methods

The study was designed in two main parts: a telephone survey of training managers throughout Australia and eight detailed case-studies of CBT in different types of enterprise.

For the telephone survey, 195 company training managers (or equivalent personnel) were each interviewed by telephone for approximately 20 minutes. Companies contacted were located in both metropolitan and regional areas of Australia and were selected largely from the four major industry sectors of Manufacturing, Services, Construction and Agriculture, Forestry and Fishing. Companies varied according to size (small—1–19 employees; medium—20–99

employees; large—over 99 employees) and a balanced sampling by size of establishment, location, State/Territory and industry was attempted and, for the most part, achieved. Almost all companies sampled had been using CBT for at least one year although, for the most part, ‘training packages’ (Billett *et al.* 1997, Comyn 1998), a feature of the current system, had not yet been introduced. These ‘packages’ dispense with curriculum content as ‘endorsed’ or prescribed components and focus rather on industry competency standards and assessment guidelines—with learning strategies and curriculum as ‘non-endorsed’ components.

Eighty-two per cent of the companies surveyed were using national competency standards, said to be particularly helpful in ensuring the portability of skills. However, as many as 42% were also using accredited, enterprise-specific standards, said to be highly relevant to training in a particular enterprise but, perhaps, being less amenable to transfer. Information and opinions were gathered using an interview protocol consisting of open-ended questions relating to the purposes of competency-based training, its uses and effectiveness in each enterprise, any issues arising from the training and advantages and disadvantages associated with its adoption.

For each of the eight case-studies, undertaken in diverse enterprises differing according to the criteria described above, data gathering involved observation of the delivery of a module or part of a training package over a number of sessions, together with in-depth, semi-structured interviews with six key enterprise personnel. These personnel usually included the company manager, training manager, supervisor, practitioner/trainer and workers/trainees. An observation schedule was generated focusing on trainers’ practices in delivering and developing the training programme, its outcomes and trainee responses. Interviews focused on programme development and implementation practices, and the relationship between competency standards, learning and other programme outcomes.

What follows, then, are data from both the telephone interviews and case-studies that illustrate reifications of identity for workers and practitioners in the discourses of competence surrounding CBT. As workers and practitioners align with these discourses, identities are likely to be influenced and changed. In addition, examples of particular forms of participation in CBT, as reported by industry personnel and/or witnessed by the researchers—and likely to modify the direction of identity formation—are presented. These are discussed in the light of concerns expressed both in the data and the academic literature. Unless identified as data from one of the case-studies, quotations are taken from records of interview from the telephone survey.

Towards the formation of worker identities

Towards procedural knowers: ‘they really know how to do it’

The identity most frequently accorded to employees as a result of undertaking CBT programmes was that of a ‘procedural knower’, a person who ‘really know[s] how to do it’, and who can perform at a specified standard, rather than just having ‘got a pass mark at school’. The dominant theme throughout the comments from training managers is summed up in the following two statements: ‘In the

workplace, [we] want people to do a certain job' and '[CBT is] focussed on that task versus all the theory side'. Indeed, where trainees were being sent 'off the job' to undertake their training (e.g. to TAFE—Technical and Further Education Institutes), concerns were expressed that 'It might push people through, but it's not really competence. Can pass but cannot apply knowledge in workplace'. In addition, it was reported that 'Competencies must be linked to what workers actually do or else they see it as an academic exercise', indicating the similar perspective adopted by at least some of the workers themselves. One training manager confessed:

When I came out with a tertiary qualification I thought I was it and a bit: it only takes a week to work out that you know nothing. CBT doesn't leave people at the end of the course knowing nothing.

Thus to claim to 'know' was to be able to 'do' or to 'perform' one's knowledge, with knowledge being linked directly to performance on a task. Indeed, a discourse of 'performativity' (Garrick 1998: 101) pervaded many workplaces, with knowledge being valued for its immediate usefulness only. A competent person, within this framework, requires no further knowledge.

Billett (1998), in contrasting procedural with conceptual (or propositional) knowledge (knowing 'how' and knowing 'that'), argues that deep conceptual knowledge, grounded in the negotiation of meaning in a particular context, is an important basis for novel problem-solving and transfer between settings. Such transfer involves disembedding knowledge from one context and transforming it in another. Bailey and Merritt (1995: 30) distinguish between two models of skill: a skill-components model and a professional model. In the former, skills and skill standards are defined in terms of workers' specific duties and tasks while, in the latter, they are structured within a framework of broad-based workplace scenarios rather than specific practices—more in line with a professional and autonomous view of work. Indeed, they argue that if workplaces are to become more innovative, then skill standards should be broadly based and specific skills seen in the context of broader work functions.

Thus CBT, particularly using enterprise-specific standards, might well lead to 'finish[ing] up with a person who is tailor skilled to your business', but unable to imagine possibilities for change or contribute to social or technical improvements. Such workers are on a formative, but not a transformative, learning trajectory. Training in specific skills, to the exclusion of broader perspectives, leaves little room for the development of capacities for lifelong learning. As one training manager commented, particularly of enterprise standards, 'there is a risk that you could make a guy so narrow that you could make them unemployable in any other industry or organisation', and another commented in relation to management training: 'But national standards can't pigeon-hole everyone...it can reduce innovation. CBT can't be used for everything. We need to be careful how it's used'.

Buck (1997: 96) explains that companies always have activities that cannot be totally regulated and planned. Rather, he argues for the development of workers who can deal effectively with changing situations, that is, those possessing a 'situation-oriented ability to act'. Knowledge and practice are thus seen to be emergent (Wenger 1998: 96). Yet, there was little evidence in the data that CBT

lends itself to developing non-routine problem-solvers or innovators, people who might help to shape the work environment and work processes. Within a performative discourse of competence, little space is accorded to such identities.

In addition, the limitations of the reification of competence in competency standards is illustrated by the case-study from Western Australia. This described a logging company (Timberco) in which safety issues were of paramount importance. Detailed work instructions had been devised, forming a set of behavioural objectives and competency standards. No-one was allowed to deviate from these instructions and training was a matter of how to use the machines. While recognizing the relevance of such training and an improved safety record, nevertheless, it was also seen as narrow and restrictive. One trainee described his practice of modifying procedures, based on the tacit and experiential knowledge acquired through his work. If he saw a possible improvement, he would act on it. However, such innovative activity could not be officially recognized. For assessment, he was required to conform to what the work instructions specified, hence devaluing his engagement as an improver and innovator and denying any legitimacy to the new procedures developed.

Nonaka and Takeuchi (1995) propose that innovative breakthroughs often occur through making explicit the links between, on the one hand, tacit and experiential knowledge (often informally acquired) and, on the other, conceptual knowledge. In Wenger's terms, workers negotiate new meanings through engagement, generate and reify such knowledge for others and develop identities as problem-solvers, or indeed, problem-setters, within their communities of practice. Competence, in this view, is not simply a product of learning but a learning resource.

Showing how informal learning (here, home-based training) can act as a resource on which CBT is based—potentially leading to the development of positive identities through engagement—a grains farmer commented:

CBT supplements home-based training but is not a substitute [for it]. . . . CBT does not provide trainees with the confidence of those who learn via home-based training. . . . a family member often knows how it [farm machinery] works before they are old enough to drive it and so finds developing the machinery skills not overpowering, not near as frightening.

Similarly, an interviewee from a small Architectural firm in Tasmania described CBT as 'a much more applied type of learning', which relies upon the learner bringing a body of knowledge and skill (including tacit and experiential knowledge) to the learning situation for learning to be maximized. Indeed, it seems that many types of knowledge, and the ability to use them, are crucial to the knowing through engagement on which genuinely competent performance and competent identities are based.

In addition, only through extensive experience can real proficiency or expertise be developed (Cornford 1999b: 268), that is, the ability not merely to follow the rules but to modify them judiciously. Competence in a CBT regime, however, often fails to recognize the time required for skill development, particularly when workers are inexperienced and unprepared (Cornford and Beven 1999). Thus, they may be 'ticked off' as competent but fail to respond effectively to unforeseen contingencies. One training manager, for example, referred to this as a safety issue, explaining: 'Workers get a certificate of competence after a two day course

for forklifts, during which participants actually spend twenty minutes on a forklift'. In other areas too, the 'risk that people will be pushed through too quickly' was noted. Competence, as reified in credentials, may thus belie the requirements for effective engagement, perhaps leading to a false impression of capacities and skills.

Similarly, many training managers expressed concern about privileging the 'technical' in CBT, to the exclusion of exploring values and developing personal qualities. The judgement to engage in 'right' action (Stevenson 1997: 86) was seen as very important but a capacity not amenable to simple measurement procedures. For example, in the logging industry, it was said that comprehensive environmental care training was neglected and, in Health Services, that CBT fails to acknowledge that training there is to produce 'assertive, informed carers'. Another person said: '[to] be a nurse you have to like people and this is something that you can't measure'. In this way, many training managers drew attention to personal aspects of identity, since that 'reflects in how everyone approaches their work'. In the Hospitality industry, the story was similar. 'CBT assesses competency, but not attitude. However, attitude is fifty per cent of the job'.

Thus, more 'holistic' training appears to be required, recognizing multiple dimensions of a competent identity, including the technical, social, cultural and personal, not only as outcomes but as training resources. Only then is such training likely to be transformative and lead to a capacity for learning throughout life.

Towards standardized workers: 'can't tell one guy from another'

As already described at Timberco, and consistent with much of the data, a major goal of CBT appeared to be conformity. This involved rule following rather than understanding, bench-marking rather than innovation and 'singular ways of performing' (Garrick 1998: 65) rather than acknowledgement of differences. For example, one training manager from a large, Victorian construction company commented of CBT: 'It takes the guesswork out of training, provides guidance and clear rules'. Similarly, at 'Community', a case-study construction site training Aboriginal people in the Northern Territory, an on-the-job trainer explained: 'I demonstrate exactly what is a competency and then show them exactly what it is that they have to achieve to be competent'. Hence CBT becomes a 'standardized reification to connect to the world and the organisation of work in terms of narrow procedures' (Wenger 1998: 169). Workers are neither encouraged nor expected to improve upon work processes. Moreover, it was thought *desirable* that training should be standardized. As a supervisor at Timberco said: 'You know that one person's training is going to be exactly the same as the next person's training', thus eliminating any reference to cultural and personal differences.

Reduction in the need for supervision was seen as a particularly important CBT outcome, with records of training reifying workers' skills and competencies to perform. Through a CBT system, workers are 'known' to be competent. At Plantco, a Queensland nursery and case-study site, the company manager commented: 'To be competent means that they can do all the tasks that are on their job sheets without the need of constant supervision and correction'. A training manager reported: 'Now a skills register is used by the company and if a person is listed on that register the interviewer is confident that the interviewee

has those skills'. CBT also has the administrative infrastructure to provide greater surveillance of the workforce. Thus '[CBT] provides a means to report back to management and clients about safety, Occupational Health and Safety, meeting quality issues and client needs'. As Usher and Edwards (1994: 109) observe on the basis of a Foucauldian analysis, CBT can be seen as a system of accountability, ensuring a measure of compliance and control over the workforce. In industry settings, such control is driven by human resource management practices—performance planning and appraisal, and recruitment and selection processes. Moreover, standardization can be seen not only in training for technical skills. A training manager from a large, Victorian, construction company explained:

The company also conducts a corporate coach programme. Staff are required to undergo a behavioural (personality) test and based on their results they will be required to undergo coaching in particular behaviour.

Hence the potential is clearly evident for the suppression of 'behaviours' and values deemed incompatible with the company ethos. Only certain workplace identities are recognized as appropriate, and these must align with particular forms of engagement.

Standardization was not applauded by all training managers though, particularly in relation to assessment practices that failed to reward outstanding performance. As a number of people commented: 'Can't tell one guy from another ... just pass or fail'. 'No stars and heroes'. 'Stifle[s] those who want to perform'. 'No differentiation between people;...no grading'. 'Producing a nation of mediocrity'. Of course, no design for learning can ever totally determine practice (Wenger 1998: 229). Yet, in many workplaces, CBT's excessive reliance on reification appears to inhibit negotiability, thus reducing opportunities for rich, transformative learning.

Towards adaptable, committed, productive workers: 'it's all about getting orders out and learning while you do it'

While standardizing workers and training them in correct procedures, CBT was seen to have an additional role in industry. This was to encourage *adaptability* among workers, developing the competence to *manage* workplace change. Such change was often associated with quality assurance and occupational health and safety requirements, increased competitiveness and entrepreneurship, and the introduction of new technologies and techniques. Hence flexibility *within* workplaces through multi-skilling and cross-skilling was stressed, as well as flexibility *across* workplaces through the development of portable skills. 'Commitment' and close alignment with the company 'vision' were also seen as essential in developing these new-style businesses. However, even within this view, learning is still seen as a means to furthering routine productivity—rather than in enhancing knowledge-making or encouraging novel problem-solving (see also Mulcahy and James 1999b).

Thus, a training manager in a large construction company in Victoria explained: 'Staff are expected to be able to keep up and get ahead of modern

expectations, particularly in the area of quality assurance and safety'. Further, a manager from a medium-sized, horticultural company in rural Tasmania noted that he expected training to facilitate 'the ability for all employees to adapt to change...to build in flexibility where people are committed...hearts and minds stuff'. Others commented, 'A happy worker means a happy workplace—CBT helps us work towards getting this balance' and '[The investment in CBT] results in company loyalty'. Again, a human resource development discourse is apparent in these statements. Here it is associated with valuing workers, increasing their sense of belonging to the organization but still in the interests of flexibility and productivity (Garrick 1998: 61). Illustrating such loyalty, a trainee at a small construction company, Manteena, a case-study site in the Australian Capital Territory (ACT), said proudly: 'We live by our quality and CBT is helping to maintain that'. While creating 'happier workplaces' and workers is hardly to be decried, encouraging such alignments is *potentially* exploitative (Garrick 1998: 73). Moreover, certain identities that play out beyond the workplace may be somewhat negative. Thus excessive competitiveness may be stressed at the expense of more inclusive values, 'extending more deeply into the person' (Garrick 1998: 62), and changing aspects of the self. As noted earlier, identification with company values is required of these workers, but with little accompanying encouragement for negotiability and improvement.

The link between productivity, competitiveness and the type of competency standards used was also seen as crucial. A South Australian manufacturer reported that: '[We chose national standards] because they were national, gave us the accepted standard and employees workplace flexibility when moving state to state, or workplace to workplace'. Yet often, particularly in small businesses, enterprise-specific skills were greatly valued and were developed to a level such that the business stays competitive. For example, at Plantco, the company manager commented: '[in-house competencies] might be totally irrelevant [outside the company]. I hope they would be', potentially limiting opportunities for alignment with a wider world.

At Council, a case-study site in South Australia, major changes in staff identities were actively being sought, encouraging greater competitiveness and entrepreneurial capacities. Cultural change was underway. For example, the acting Chief Executive Officer described these changing workers as follows: 'I mean we have plumbers, carpenters, who now come to us and say: "Right here's our business plan...we want to work out of home, we want to set up a van...just like our opposition would"'. He continued:

I mean we've got a vision that when contestability comes we can actually be so skilled up and knowledgeable...that we can...take on work from surrounding councils and make a profit for the ratepayers of the city of X and reduce the reliance on rates.

As a trainee from Council commented of her training, '...you have to extend yourself—meeting new people, going new places'. Thus Council's future was seen to depend on such changes, as well as on acquiring specific procedural knowledge. Team work was seen as particularly important to Council, as to the development of many businesses—though the development of team skills was

often seen to reside outside the province of CBT. As the training manager from a large, light manufacturing company in Victoria commented:

You can make robots of people with CBT. [I] am looking to put brain food in there so that people can manage their work more effectively. Brain food might include team work, conflict resolution skills and so on.

Similarly, at another case-study site, Bathurst, a small wood-turning, manufacturing company in New South Wales, the manager explained:

Being competent means having the skills we need right here, but it is much more than that. A person could have the skills but not gel at all with the others at work—that's a useless situation, nothing really gets done well at all. If, however, someone can develop skills knowing where they fit in with others, how their skills will contribute to getting a job to completion, and how their skills are valued by other workers, then we will see real progress. To us, that's what being competent is all about: developing skills that are meaningful for everyone on the team.

In general, then, the data revealed a preference for the formation of a particular type of expertise, described by Ellström (1997) as *adaptive* rather than *developmental* (see following section). Adaptive expertise emphasizes competencies for handling routine tasks that are frequently recurring and is important where predictable responses are required, for example, in preparing a quality product in record time. At Bathurst, the manager noted: 'We are a very reactive business. We're not so proactive. If a customer wants an order today, they want it today...not in two weeks time'. Similarly, he presented a particular view of learning and productivity:

While we are getting the jobs done, they [the trainees] are also learning about the reality of urgent orders. I don't have to stop learning at work—it's all about getting orders out and learning while you do it.

Learning was acceptable, but only as an accompaniment of productivity. Illustrating what Garrick (1998: 86) describes as these 'primacy of production' values, a light manufacturer in Queensland commented:

Trainees/apprentices often were indoctrinated at TAFE into thinking they were learners and not producers. After seven weeks away [on block release] they came back with [the] wrong attitude.

On the whole, workers were neither encouraged nor expected to redefine learning or work tasks in relation to the competencies, nor anticipate any possible alternatives for engagement. They were, however, expected to 'react' to changing circumstances. Candy and Matthews (1998: 13) describe anticipatory learners as those who explore opportunities for new learning and who constantly scan the environment in an attempt to predict and imagine what possible future directions might be. A trainer might enable such participation by suggestions such as 'Let's try this' or 'What if...?', recognizing that tasks often change during engagement,

potentially leading to the development of different competencies or outcomes. Thus, within this framework, learner-workers are actually encouraged to shape change processes rather than adapting to reified requirements. Few companies contacted in the evaluation appeared to engage in such learning, though one that did is described in the following section.

Towards problem-solving/innovating workers: 'a group of individuals who can be proactive'

The company manager at Plantco, when asked whether CBT encourages innovative practices (e.g. problem solving or creative thinking), replied:

Not much...there's no innovative work or learning practices or problem solving ... until you get into the really high levels and our people are only at level three. Creative and critical thinking?...they've got a syllabus to learn and be competent in skills. No, it doesn't really apply.

Thus, particularly at lower levels for which CBT is seen as especially appropriate, the negotiation of meanings through imaginative processes, or alignment with other ideas and methods, if they occur at all, go unacknowledged. However, while emphasizing the importance of correct procedures at Plantco, there was some encouragement of research and investigation. For example, a trainer there explained:

Part of the competency based training that we provide is about observation and being able to delve and find information... But if they have a holistic view and they can see that there's something different about a plant, they can start to investigate and find out why it's different and that's what we try to train them to do.

Ellström (1997: 268–269) describes the concept of 'competence-in-use', a relational view of competence as a dynamic, changing entity—not fixed or contained within a specific task—but, rather, 'mediating between the potential capacity of the individual and the requirements of the job'. Here, the focus is on 'learning processes and proactive behaviour by individual[s] or collective actors' (Ellström 1997: 266). Ellström (1997: 270) describes *developmental expertise*, in contrast with *adaptive expertise*, the former involving,

...continuous experimentation and innovative activity on the part of employees during ongoing activities in everyday work... In practice, this means a continuous movement between routine and non-routine work as well as between well-defined, repeated tasks and poorly understood, rarely occurring problem situations.

Consistent with Bailey and Merritt's (1995) work, in Ellström's view, innovation is seen as socially organized, continually shaping and reshaping working life.

The managing director of a medium-sized, manufacturing company in Victoria, another case-study site, Carco, explained his position thus:

...a competent person is a person who is knowledgeable and skilled in the task that he or she does, but also is aware of the tasks that their colleagues do wherever they are in the company. That makes them competent to relate to decisions, questions, issues that arise, other than other tasks they've done.

Similarly, a trainer in the company described what he aimed to achieve for the shop floor workers in the training programme:

...a group of individuals who can be proactive within their company and therefore can achieve a better workplace for themselves...for the benefit of the company and themselves. ...I want people at the end of it to come out being proactive....

The design for developing 'proactive' identities in this company was described as 'project work'. In the module observed by the researchers, small groups of workers identified workplace problems, researched relevant issues and pertinent technical information, and managed themselves in seeking potentially viable solutions. Trainers and others, usually from within the company, though not exclusively, were organized to assist them in achieving their goals. At the end of the training module, each group presented a written and verbal report to the assembled managers and engineers of the company. It was therefore essential to establish a good case, increasing the chances of having their problem solutions accepted. Thus many facets of the person were engaged in such a programme, with abundant implications for transformative learning. Indeed, the training was also designed to improve worker-management communication, attempting to overcome the kind of boundary relations in this area (Wenger 1998: 168) in which each side tends to stereotype the other—a negative aspect of identification through processes of alignment. A change in such communication, harnessing the 'peripheral wisdom' from the shop floor (Wenger 1998: 216), is said to release social energy and promote innovative thinking (Nonaka and Takeuchi 1995). As one trainee noted, 'it makes you feel equal to management, this training course. The gates are open. You can go as far as you can...'.

Of his increasing capacity to diagnose difficulties and solve problems, another trainee commented wryly: 'I even surprise myself sometimes'. And a supervisor noted the results of this training with appreciation, as follows:

They're finding the problems a lot earlier. ... They're solving those problems before the model starts up. ... They seek people to help them, they come up with ideas, new ways of doing things.

While discussing within the programme the new management vision (including increasing the company's competitiveness), a trainer noted:

What we do in our programme is discuss some of those issues and listen to diverse views. We certainly encourage people to have their own point of view in relation to those things even though they may not be the sort of thing the company would encourage them to have. So I guess we provide an opportunity for people to express and explore their own relationship to those values and I think that's really important.

Thus competence development at Carco included a values dimension, one clearly embedded in its social and cultural context, but involving active negotiation, not simply compliance. In addition, volunteers from those undertaking an earlier training module in this programme spent some weeks with an Aboriginal community, sharing newly acquired skills and knowledge and also improving cultural understanding, in the process becoming ‘educators’ and ‘brokers’ across communities (Wenger 1998: 109).

This programme, then, sought to develop a collective capacity to reflect, and to act wisely and skillfully in the workplace (or other) environment. It appeared to be transformative and educative (see also Mulcahy 2000), emphasizing worker involvement in company decision-making, but premised on a basis of knowledge and skill. It afforded ample opportunities for imagining alternatives—anticipatory learning rather than providing ‘correct’ answers. Rather than adapting and reacting to complex, dynamic situations, the focus here was on the ability to reshape them. Its aim, among other things, was *developmental expertise*, thus contributing substantially to skills of life-long learning and the formation of identities as innovators and problem-solvers. However, CBT itself was not the ‘driver’ of this programme (see later section on the reprofessionalized trainer) and therefore it cannot be argued that CBT supports such expertise.

Towards motivated, credentialled workers: ‘Getting their skills recognized on the job is what really counts’

Much of the telephone interview data related to worker motivation, and all reports from the trainees interviewed for the case-studies were very positive about CBT. Those who participated in it valued it enormously. Indeed, the sense of belonging and the recognition that such training afforded appeared to have improved morale and created a feeling of pride and achievement among workers. Trainees valued their national credentials both as a passport to other workplaces and as an expression of their competence and skills. For those lacking other formal qualifications, the so-called unskilled or semi-skilled, such recognition, sometimes through the system of Recognition of Prior Learning (RPL), appeared especially important. Thus, new learning trajectories were being created through credentialling, providing opportunities for *identification* with the broader system beyond the enterprise.

The following statements were made. ‘Encouraging and good for morale as they can see what they are achieving; recognition of their work and experience.’ ‘[National standards] build professional esteem of workers. Develop a sense of belonging to a national system’. ‘Employees feel [they] have competitive edge; won’t be behind the times’. ‘When it works you gain people who are enthusiastic about their work, understand its value and their contribution’. ‘[CBT leads to] higher self-esteem’ and ‘greater job-satisfaction and pride’. ‘[CBT provides a] pathway for keen people’. ‘Keeps workers on the track and happy that they are seen as developing’. Such views were endorsed by all of the workers interviewed.

At a supermarket that is part of a national retail chain in Tasmania, another case-study site, Storeco, a trainee said proudly: ‘So say if I ever left here and moved interstate for some reason, I can say “I can do that”...“This is what I have done”...It’s recognized training’. At Plantco, another trainee commented that,

with credentialled training, 'you're much more likely to get a better job...for yourself'. Such alignments with the national system can thus 'amplify our power and our sense of the possible' (Wenger 1998: 180). Similarly a trainee at Bathurst volunteered:

It's great to have your skills recognized. Sometimes just a nod of the head tells you that you've done it well. Other times, when you get a real rap you feel really good. I've done other courses where I never knew how I was going until the end. I come to work here, work, learn and every day leave feeling that people are seeing change in me and in what I do. ...You know you can do the job, but it's really important that you have other people reminding you that you can do it.

A trainee at Manteena agreed, saying:

The time we are with Manteena gives us really great training. ... I get asked about why I do things the way I do, how I do things. I can ask questions without feeling stupid and we only ever tick the boxes at the end of a day, or a week. It's a good feeling. I know I'm learning the skills and I'm learning about the construction industry.

Moreover, people previously unsuccessful at school (and there are echoes of this in the statement above), need not be afraid to engage in such training. 'It's not book learning, they can actually go and do it'. 'CBT is a really active, hands-on thing—people love that'. Thus, while in some ways appearing narrow and rigid, such training can develop identities of competence for those for whom studies at school were disempowering. With pride, the manager at Manteena described one of his previously 'unskilled' trainees from a non-English-speaking background, as follows:

Have a look at [him] over there. He has worked in the industry for ever and a day. Everyone knows him and everyone wants him to work for them...He has never done an apprenticeship, never been in a classroom to learn a trade, never done any formal training...We started to look at the skills he had already and matched them up against competency standards. If he let us go on and on, I'm sure he'd end up the most qualified construction worker in the country. He's now got a record of his skills, he's on a higher wage and he's now training our workers...You know what? English is about his third or fourth language but that's not what CBT looks at. We're not using CBT or assessment to test and develop his English language are we? His language is sound enough to allow him to do the work really well—that's it. No barriers, just acknowledgement of skills and ability. He's the one to watch!

It is sometimes difficult to determine the extent to which the reported effects of CBT are the result of introducing training per se, the excellence of the practitioners, or the competency system in particular. CBT may, in many companies, be the first and only form of training that has been offered to workers. However, at Plantco, a trainer commented:

I think the recognition process has probably contributed more [to trainees' skills and knowledge] than some of the training that we've provided because it's given the trainees a focus, it's given them an orientation, and it's given them a bench-mark...to work on and something else to aspire to.

In relation to *negotiability* in the formation of identities, CBT was said to engender a sense of empowerment through self-responsibility and result in greater self-knowledge in the area of skills and capacities. The following comments were made. '[CBT] allows for people to be responsible for [their] own learning'. '[CBT] requires people to be active learners'. 'Trainees learn at their own pace'. 'The workers get paid directly for their level of competency, so they're more willing to say where they need help'. 'People feel more empowered as they value the skills and knowledge obtained'. 'Staff use it as a tool to manage upwards, telling supervisors that they need certain skills, and hence training'. 'People are much more aware of what they can do and what they need to work on' and they 'enjoy learning together'.

Whether the CBT system is genuinely empowering, involving real opportunities for worker/learner negotiability, is a moot point. A human resource development discourse is again evident in these comments. Here, it includes the possibilities of offering monetary rewards for training undertaken, empowerment, ownership and self-responsibility (Garrick 1998: 62). It may be that 'being responsible for [one's] own learning', and knowing oneself, actually means self-surveillance in the service of the enterprise (Usher and Edwards 1994: 110, Usher *et al.* 1997: 113). Learner 'responsibility', as used with CBT, usually implies self-management towards predetermined goals. In addition, 'ownership', while arising out of an increasing sense of power, often involves greater self-investment in work processes and further commitment to and alignment with the purposes of the workplace. As noted before, this is potentially exploitative.

Indeed, some training managers reported experiences quite damaging for identity formation. In a climate of redundancies, a system of accountability can become a weapon of management, accompanied by resistance to training and a lack of communication.

Now workers are no longer keen to be assessed, they are scared of it, suspicious of it and openly aggressive. Whenever assessment is suggested the workforce believe that redundancy is the real reason for the assessment. As a result, workers are not game to say what they can't do, or are having trouble with. (Large construction company, Victoria).

Wenger (1998: 181) describes such experiences as 'a violation of our sense of self that crushes our identity'. In addition, pathways for workers are not always available. As the training manager in a medium-sized services organization in Queensland commented of CBT:

Now everyone is able to achieve to [a] high level, there is an expectation that they can continue to move up, but [there are] only two supervisor positions to thirty staff who want to apply.

Similarly, motivating workers by linking the achievement of competencies to pay rises and bonuses was not always successful. Indeed, it was reported as 'hell on

wheels' in one company, because of the industrial relations difficulties subsequently created (see also James 2001). Under this system, workers were also said to undertake training primarily for the money, rather than for personal and professional development. In a large metals company in Western Australia the training manager commented: 'We don't link competencies to pay—consider that a “dash for cash” mentality'. Moreover, several training managers thought the way the competencies were documented could be disempowering for some workers. 'Employees can be overwhelmed by the size of the task—number of competencies needed to be achieved'.

Part-time, casual workers, an increasingly high proportion of the Australian workforce, do not, on most reports, receive as much training as full-time staff. Where training was offered, as some training managers noted, it was either not taken seriously or it was rejected—quite deliberate strategies of avoidance perhaps (Wenger 1998: 169). Without a valued learning trajectory, or an alignment with the company, training beyond the immediate task might well appear futile. In addition, regional (and some small) companies reported considerable difficulty in accessing appropriate training at reasonable cost. Indeed, a training provider noted that some trainees are disadvantaged in country areas, where they are taken on 'for the subsidy', without being given suitable on-the-job support. Thus, while providing recognition for many vulnerable workers, including some with disabilities or with literacy and language difficulties (James 2001), the marginalization of some workers is also apparent in CBT, contributing to negative identities through lack of opportunities.

Towards the formation of trainer identities

Seddon (1997) and Rushbrook *et al.* (1996) suggest that the considerable increase in external forms of accountability with the introduction of CBT, and the apparent imposition of standardization, have challenged practitioners' 'traditional core of... professionalism: curriculum and pedagogy' (Rushbrook *et al.* 1996: 133)—with the potential for disempowerment and feelings of alienation. Yet, as Rushbrook *et al.* (1996: 134), note:

One of the paradoxes in the implementation of national standards has been the extent to which they have created space for individual teacher interpretation of the curriculum. Rather than standardizing practices and outcomes, the situation several years after the process started is that diverse approaches and interpretations persist.

Still, competencies are often seen as prescriptions rather than guidelines (Mulcahy 1996). Evans and Butler (1992) also reported some trainers in TAFE losing confidence in their own embodied skills as a training resource when faced with the reified knowledge presented in a CBT instructional manual. Below, some data are tendered supporting the case that, at least among industry-based trainers (though not necessarily TAFE practitioners), both deprofessionalization and reprofessionalization have occurred in relation to their engagement with CBT.

Towards the deprofessionalized trainer: 'it has to be to that work instruction there'

As expected, CBT was thought to be most helpful to practitioners with little prior experience of training. These might be in-house trainers who have risen from the ranks, with no formal training qualifications other than 'train the trainer' (a short, competency-based programme of initial teacher training), and with little knowledge of learning theories or curriculum models on which to draw. They expressed appreciation of the structures and apparent standardization provided by CBT. Thus, a trainer at Storeco remarked:

I mean each trainer could ask different questions.... I mean we could all be getting something different, expecting different things from the person in training, whereas this gives us all a guideline...which you need when you're new.

However, these structures often appeared to influence the conduct of training, such that outcome statements precluded room to manoeuvre and to negotiate new meanings for the benefit of trainees' learning. At Timberco, a trainer explained of the instructions to which he worked:

...it says what's written in this is what you'll train them to and that's it... I can change it [the instruction], yes for sure...but it has to be changed before I can train them... If I am training someone, it has to be to that work instruction there and any changes to be done must be done before I train those people.

Such reliance on reification appears clearly excessive. Indeed, even those with an understanding of appropriate pedagogy were often constrained by standardized methods to comply with 'reified institutional requirements' (Wenger 1998: 179). Thus the training coordinator at Timberco commented of trainers in the company as follows:

...they have done the 'train the trainer' course, they have got all these good ideas about involving people to improve the learning skills but then when it comes to the shop floor you get the guy sitting down, you give him the work instructions, [and say] 'read through this, and in ten minutes time I will give you a test on it'.

Some training managers thought standardization very positive. 'Standardizes classes and instructors all [the] same standard and [the] same approach used' (see also earlier section). Yet, it was a matter of considerable angst to others, who thought that, rather than attending to matters of learning, trainers were becoming more like 'record keepers' instead, with 'CBT approaches requir[ing] a high level of administrative effort'. It may be tempting to 'blame' trainers, for allowing themselves to become mere ciphers within the system. However, one's identity within a particular enterprise community is likely to influence profoundly any space for negotiation with respect to CBT standards. A company manager who understands, respects and legitimates one's efforts may be crucial (see also Garrick 1998, on the dilemmas faced by human resource development personnel

in an industry setting). Hence it appears that the limitations of reification need to be acknowledged more openly and the knowledge of such matters disseminated more widely.

Towards the reprofessionalized trainer: 'respond[ing] to the company and to the needs of individuals'

Changes to trainers' work were not necessarily a source of complaint. Most of the case-studies revealed a high level of job satisfaction, especially for practitioners working extensively within a particular enterprise, or delivering training across a number of like enterprises. Indeed, a number of trainers reported opportunities for considerable personal as well as professional development and change. For example, a trainer at Plantco thought that the introduction of CBT had contributed to such development and associated identity change as follows:

It's probably made me more adaptable, more tolerant and more organized and made me plan better. It's also meant that I've had to do a fair bit of work so that I've got the qualifications for some of the subjects that we run.

Indeed, Waterhouse and Sefton (1997: 271) explain the kind of practice that develops in what they describe as 'a critical enterprise-specific approach to education'. This involves 'co-production of knowledge', in which,

...industry competency standards are attained through a programme that: respects the knowledge that workers already possess; develops a collective knowledge through sharing; generates new knowledge from the workplace; and encourages critical analysis.

In similar vein, one training provider noted: 'When standards are used as a bureaucratic instrument, they're a waste of time but when they're used to create a dialogue they're fantastic'. The importance of practitioner reflection was stressed by a training provider servicing the needs of nurses in rural areas. CBT was described as an 'excellent way for staff to reflect upon their practice' and foster critical questioning. Indeed, a variety of forms of pedagogy were reported by such trainers, including action learning, workplace-based scenarios that stimulate imagination and anticipatory learning, and adult learning strategies that acknowledge prior experience and skills. Thus the professional identities and wisdom of some practitioners were being brought to bear, very constructively, in response to local contexts (see also James and Mulcahy 2000).

Further to this, a trainer at Carco commented on the work conducted there:

Well, actually we discussed the sorts of issues that they [the company] thought were important, concerns they had about development of people on the floor and those sorts of issues, then developed a training programme on the basis of that...My belief is that I sort of respond to the company and to the needs of those individuals and to the context and I'll account for them [the competencies]. It seems to me the competencies as written are my reporting and accountability requirements...The people to whom I am really

answerable are the individuals participating in the programme and the company. And those other stakeholders such as the union.

Only after the programme was developed was it checked against the competencies laid down. Reconciling local and global requirements in this case therefore involved using competencies as a backdrop to training and particularly as a reporting mechanism, while still maintaining and developing an identity as a professional educator. Indeed, trainers in this company had developed a 'brokering identity' (Wenger 1998: 109), spanning boundaries across the communities of practice of different enterprises, and importing new ideas and professional skills—as well as brokering the divide between management and workers within the company.

It therefore appears that the success of CBT in areas beyond specific skill learning may well rely upon the expertise of practitioners, who exercise professional judgement in developing, reinterpreting and in supplementing the standard training programme in the interests of all concerned. Such work involves transformative learning, not only for workers but also for practitioners. To this extent, CBT can be said to provide some opportunities for renegotiating workplace identities and encouraging and developing lifelong learning capacities.

Conclusion

According to the data collected in this study, the discourses and practices of CBT lend themselves to particular forms of identification and negotiability for workers. Through these processes, identities of workers in relation to learning, knowing and working are likely to be shaped in particular directions in the workplace, according to the opportunities for engagement, imagination and alignment that are on offer. Almost all these discourses and practices appear to have some positive and negative aspects, depending on the circumstances. Thus, creating more productive, adaptable, committed, procedural knowers, who are aware of 'correct' procedures and who feel valued and more confident through the recognition and portability of their skills, might appear to be a highly desirable contribution of CBT. The downside to this, however, is the lack of attention given to developing well-informed and critically reflective problem-solvers, who innovate both for the improvement of working life, as well as productivity. The potential for CBT to create vulnerable, exploited workers, constantly under threat from disparaging assessment and subsequent redundancy, is ever present and, apparently, in some cases realized.

For practitioner identities, the situation is similarly complex. Inexperienced practitioners, especially, appear to value CBT guidelines, aligning themselves with standards, but failing to imagine possible alternatives. Experienced practitioners, on the other hand, may find themselves trapped in forms of engagement that they know to be inadequate, becoming ciphers and record keepers, rather than educators and enablers. Yet, where practitioners have the power and legitimacy to negotiate their own meanings, a rich curriculum may emerge, leading to innovation and change.

In writing of a 'design for learning', Wenger (1998: 232) points out that opportunities are needed for expertly managing the tensions between participation and reification, identification and negotiability, the designed and

the emergent and the local and the global. Such a design is a ‘proposal for identity’ (Wenger 1998: 235). Thus structures and frameworks, the reifications that are portable across boundaries, are still needed for both workers and practitioners, to maintain constructive alignments and experience their positive effects within a global system. Yet professional trainers need to be given the power and the legitimacy, both from policy makers and company managers, to engage in ‘translation work’ (Wenger 1998: 186). This involves more than ‘tailor-making’ a worker for the business, but instead, imagining many new possibilities for learning, reflecting on training outcomes and exploring new activities—in the interests of workers’ lifelong learning, as well as enterprise development and improving productivity. Without alignment to the global system, however, negotiability for the local context may well become ‘freedom in isolation’ (Wenger 1998: 208).

However, as Wenger (1998: 208) notes, ‘identification without negotiability is powerlessness’. Thus, what is designed both globally and locally needs to be seen as emergent, with outcomes, in many cases, reaching beyond the stated competencies. Indeed, as Laird and Stevenson (1993) recommend, perhaps a set of general aims, with suggestions for reaching them, might well be more appropriate than the detailed outcome statements that are presented in the training packages (Comyn 1998). Reification is necessary, but behavioural, prescriptive and often limiting expectations are not. More attention to process and curriculum (the non-endorsed components of the training packages) seems to be required.

Moreover, workers need to be encouraged to contribute to knowledge-making themselves, both individually and collectively. Training should also acknowledge and explore the values appropriate to working life—other than those of efficiency and effectiveness. Thus workplaces can become recognized as sites for transformative learning, that open up new possibilities in the negotiation of identities and support the development of capacities for lifelong learning. As Wenger (1998: 154) writes, identity is ‘something we constantly renegotiate during the course of our lives’, struggling to reconcile its numerous layers and facets. Industry training can and should contribute constructively to this renegotiation.

Acknowledgement

I would like to acknowledge the work of Dr Dianne Mulcahy (who originally instigated this project and with whom it was jointly managed and led by the author), together with all the interstate researchers who undertook case studies and who supervised the work of telephone interviewing: Llandis Barrett-Pugh, Helen Bound, Elaine Butler, Ken Bridge, Michelle Dickson, Brunella Novello and Philip Wall. I also acknowledge the National Research and Evaluation Committee of the NCVER in Australia for funding this research.

Notes

A short, modified version of this paper entitled: ‘Building learning communities in industry: the contribution of competency-based training’ (2000) was published in Conference Proceedings (Vol. 2), Eighth Annual International Conference on Post-Compulsory Education and Training, *Learning Together, Working Together* (Brisbane: Griffith University, Centre for Learning and Work Research: 265–273).

References

- BAILEY, T. and MERRITT, D. (1995) Making sense of industry-based skill standards (University of California, Berkeley: National Center for Research in Vocational Education).
- BILLET, S. (1998) Transfer and social practice. *Australian and New Zealand Journal of Vocational Education Research*, 6, 1–25.
- BILLET, S., COOPER, M., HAYES, S. and PARKER, H. (1997) VET Policy and Research: Emerging Issues and Changing Relationships. Report to the Victorian Office of Training and Further Education (Internet Document at <http://www.ofte.vic.gov.au/planning/vetpol/drivers.html>).
- BUCK, B. (1997) The dual system and qualification needs of small- and medium-sized enterprises. In L. McFarland (ed.) *New Visions: Education and Training for An Innovative Workforce* (University of California, Berkeley: National Center for Research in Vocational Education), pp. 93–100.
- CANDY, P. and MATTHEWS, J. (1998) Fusing learning and work: changing conceptions of workplace learning. In D. Boud (ed.) *Current Issues and New Agendas in Workplace Learning* (Adelaide: National Centre for Vocational Education Research), pp. 9–30.
- COMYN, P. (1998) Training packages: opportunity or threat? In Conference Proceedings (Vol. 2), Sixth Annual International Conference on Post-Compulsory Education and Training, *Vocational Knowledge and Institutions: Changing Relationships* (Brisbane: Griffith University, Centre for Learning and Work Research), pp. 59–69.
- CORNFOR, I. R. (1999a) Learning-to-learn strategies: neglected aspects of life-long learning policy formulation. In Conference Proceedings (Vol. 5), Seventh Annual International Conference on Post-Compulsory Education and Training, *Changing Practice through Research: Changing Research through Practice* (Brisbane: Griffith University, Centre for Learning and Work Research), pp. 111–122.
- CORNFOR, I. R. (1999b) Skill learning and the development of expertise, in J. Athanassou (ed.) *Adult Educational Psychology* (Sydney: Social Science Press), pp. 263–290.
- CORNFOR, I. R. and BEVEN, F. A. (1999) Workplace learning: differential learning needs of novice and more experienced workers. *Australian and New Zealand Journal of Vocational Education Research*, 7, 25–54.
- ELLSTRÖM, P.-E. (1997) The many meanings of occupational competence and qualification. *Journal of European Industrial Training*, 21, 266–273.
- EVANS, G. T. and BUTLER, J. (1992) Expert models and feedback processes in developing competencies in industrial trade areas. *Australian Journal of TAFE Research and Development*, 8, 13–32.
- GARRICK, J. (1998) *Informal Learning in the Workplace: Unmasking Human Resource Development* (London: Routledge).
- HAGER, P. (1995) Competency standards—a help or a hindrance? An Australian perspective. *The Vocational Aspect of Education*, 47, 141–151.
- JAMES, P. (1997) Transformative learning: promoting change across cultural worlds. *Journal of Vocational Education and Training*, 49, 197–219.
- JAMES, P. and MULCAHY, D. (2000) Competency-based training and beyond: action research and reflective practice in vocational education and training. *Educational Action Research*, 8, 517–534.
- JAMES, P. (2001) The double-edge of competency training: contradictory discourses and lived experience. *Journal of Vocational Education and Training*, 53, 301–324.
- KEARNS, P., McDONALD, R., CANDY, P., KNIGHTS, S. and PAPADOPOULOS, G. (1999) *VET in the Learning Age: The Challenge of Life-long Learning for All* (Vols. 1 and 2) (Leabrook, South Australia: National Centre for Vocational Education Research).
- LAIRD, D. and STEVENSON, J. (1993) A curriculum development framework for vocational education. *Australian and New Zealand Journal of Vocational Education Research*, 1, 71–93.
- MULCAHY, D. (1996) Performing competencies: of training protocols and vocational education practices. *Australian and New Zealand Journal of Vocational Education Research*, 4, 36–67.
- MULCAHY, D. (2000) Turning the contradictions of competence: competency-based training and beyond. *Journal of Vocational Education and Training*, 53, 259–280.
- MULCAHY, D. and JAMES, P. (1999a) Evaluating the Contribution of Competency-Based Training (Leabrook, South Australia: National Centre for Vocational Education Research).
- MULCAHY, D. and JAMES, P. (1999b) Knowledge-making at work: the contribution of competency-based training. *Australian and New Zealand Journal of Vocational Education Research*, 7, 81–104.
- NONAKA, I. and TAKEUCHI, H. (1995) *The Knowledge-Creating Company: How Japanese Companies Create the Dynamics of Innovation* (Oxford: Oxford University Press).
- OWEN, C. (1999) The link between organisational context and learning in the workplace: some implications for processes of structural reform. In Conference Proceedings (Vol. 1), Seventh Annual International Conference on Post-Compulsory Education, *Changing Practice through Research: Changing Research through Practice* (Brisbane: Griffith University, Centre for Learning and Work Research) pp. 86–95.

- RUSHBROOK, P., SEDDON, T., ANGUS, L. and BROWN, L. (1996) Teaching and managing in TAFE: some preliminary outcomes of an ethnographic study. In Conference Proceedings (Vol. 3), Fourth Annual International Conference on Post-Compulsory Education and Training, *Learning and Work: The Challenges* (Brisbane: Griffith University, Centre for Learning and Work Research), pp. 129–137.
- SEDDON, T. (1997) Education: deprofessionalised? Or regulated, reorganised and reauthorised? *Australian Journal of Education*, 41, 228–246.
- SMITH, E., LOWRIE, T., HILL, D., BUSH, T. and LOBEGEIER, J. (1997) *Making a Difference? How Competency-Based Training has Changed Teaching and Learning* (Wagga Wagga: Charles Sturt University).
- STEVENSON, J. (1995) The political colonisation of the cognitive construction of competence. *The Vocational Aspect of Education*, 47, 353–364.
- STEVENSON, J. (1997) Legitimate learning. *Australian and New Zealand Journal of Vocational Education Research*, 5, 67–72.
- STEVENSON, J. (1999) An Australian review of published vocational education research. In Conference Proceedings (Vol. 3), Seventh Annual International Conference on Post-Compulsory Education, *Changing Practice through Research: Changing Research through Practice* (Brisbane: Griffith University, Centre for Learning and Work Research) pp. 89–99.
- TENNANT, M. (1999) The development of identity in the adult years, in J. Athanasou (ed.) *Adult Educational Psychology* (Sydney: Social Science Press), pp. 9–24.
- USHER, R. and EDWARDS, R. (1994) *Postmodernism and Education* (London: Routledge).
- USHER, R., BRYANT, I. and JOHNSTON, R. (1997) *Adult Education and the Postmodern Challenge: Learning Beyond the Limits* (London: Routledge).
- WATERHOUSE, P. and SEFTON, R. (1997) Teachers at work: utilising professional teaching skills in industry settings. *Australian Journal of Education*, 41, 262–275.
- WENGER, E. (1998) *Communities of Practice: Learning, Meaning and Identity* (Cambridge: Cambridge University Press).