This paper examines assumptions underlying the competency-based training paradigm which has now been adopted for any courses accredited in any Australian State as a vocational course. These assumptions are analysed from a number of perspectives. Economic assumptions are made explicit and challenged; and the legitimacy of assumptions about the nature and roles of education and knowledge is criticised. The competency-based training paradigm is taken as an example of how legitimated terminology both empowers and enslaves (disciplines) both adherents and critics. Then, the competency-based training paradigm is criticised in terms of its own rhetoric, using cognitive theory, where it is argued that the skilled, adaptable and innovative work force sought by the government will not be delivered by the practices which are flowing from its policies.

It is suggested that, until assumptions which are impelling competency-based training are made problematic, the concept of skills will not be construed appropriately. It is proposed that values implicit in current vocational educational policies be debated further and reviewed, in order that the vocational education and training sector achieve important community goals.

INTRODUCTION

Each State government in Australia has recently signed an agreement entitled the National Framework for the Recognition of Training (NFROT) which came into effect on 1 August, 1992. This agreement, among other provisions, enforces the adoption of competency-based training (as defined by the National Training Board) and the adoption of National Training Board standards as they are progressively developed for occupations, for all vocational courses accredited by State accreditation authorities. Thus the agreement commits all State governments to competency-based training. Competency-based training has been the policy of the Commonwealth Government since the publication of Skills for Australia (Dawkins and Holding 1987). In this paper, then, the use of the term the government's skill formation policy refers to the policy of all state governments and the Commonwealth Government to adopt and implement competency-based training as defined and promoted by the National Training Board (1991, 1992).

The Australian Government's skill formation policies have arisen as a response to its perceptions that Australia has lost its relative international trading position. The Government believes that this economic situation is caused by a lack of appropriate skills in the work force. To overcome the problems, it has spearheaded the restructuring of industrial awards in pursuit of broader skills. As an integral part of award re-structuring, it has introduced competency-based training, which it believes will develop a skilled and adaptable work force which, in turn,
will innovatively add value to our primary and manufactured goods and to our services, so that we will be internationally competitive (Dawkins 1988; Dawkins and Holding 1987; Minister for Employment, Education and Training 1989. The same argument is made by instrumentalities created by the government (e.g. The National Training Board 1992).

These policy aims with their focus on educational outputs and economic goals are not unique to Mr Dawkins, the Australian Government or even government in general. For instance, the wording of occupational classifications in the Australian Standards Framework (The National Training Board 1991) closely parallels the wording used to describe the five National Vocational Qualifications proposed in the British White Paper on education and training for the 21st century. (Secretaries of State for Education and Science, Employment and Wales 1991). Similarly in the United States, the re-authorization of the Perkins Act is prompted by such concerns as the relevance of vocational education to economic imperatives (e.g. see Raizen 1989). Moreover, internationally, the discussion about skilfulness and cleverness is increasingly being led, not by educationalists (who seem to be bystanders), but by governmental spokespersons outside education, and by those who purport to represent industry. In fact, teachers and trainers are seen primarily to be implementers.

In this paper, the aims of the government’s skill formation policies are outlined. Then, assumptions underlying governmental policy are analysed from a number of perspectives. Firstly, the economic assumptions are made explicit and alternative views are presented. Secondly, the roles assigned to knowledge and education are challenged in terms of the values orientation which underlies them. Here the limitations of a technicist (Kemmis with Fitz Clarence 1986) orientation to curriculum development are contrasted with rival orientations which the government has ignored such as a cognitivist orientation or a critical orientation. Thirdly, the ways in which the government has used official discourse to impede debate about its vocational educational policies are outlined. Fourthly, the irony of the government’s position is addressed in terms of cognitive theory where it is argued that even if the assumption about economics, knowledge and education were correct, and its discourse justified, competency-based training (CBT) will not deliver the goals the government has set for itself. Fifthly, it is argued that those who advocate competency-based training mistake the nature of curriculum development, and that the adoption of what Fullan (1981) would call a programmed or fidelity approach to curriculum development is unlikely to succeed.

It is argued that even the softer lines taken on employment-related key competencies by the Mayer Committee (1992a, 1992b, 1992c) and the position of those who argue for the attributes which underlie competencies (Gonči, Hager & Oliver 1990) are inadequate. While broadening the notion of competence, each still fails to overcome the problem of presentism and the technicist orientation of competency-based training.
AIMS OF THE GOVERNMENT SKILL FORMATION POLICIES

Since 1987, the Australian Government has consistently argued that the key to better living standards is

.. . greater domestic production of high value added goods and services which are traded internationally (Dawkins 1988, p.1); for which the country needs a highly skilled and flexible labour force (Dawkins 1988, p.1); and broader and higher level skills, at all levels of the design, production, management and marketing processes (Dawkins and Holding 1987, p5), for example:

• vocational competence and adaptability of skills (Dawkins and Holding 1987, p.7);
• less measurable skills on which future prosperity depends - life-time learning, enterprise and initiative, pursuit of excellence, communication skills, teamwork and responsibility (p 9); and
• broad and transferable skills, and attitudes which equip the workforce to adapt to and influence change (p 9).

These aims and the ideas underlying them dominate statements of the Commonwealth Government and policies of federal boards established by the government (e.g. see Minister for Employment, Education and Training 1989; National Board of Employment, Education and Training 1989b; The National Training Board 1990, 1991, 1992). The development of the nominated skills is regarded as the primary role of education (especially vocational education). The concepts underlying these policies have been modified over the last five years so that the call is now for both intellectual and manual 'competence'.

. . . being clever is as much about our capability to be manually dexterous, technically proficient and industrially innovative as it is about being intellectually excellent . . .

Cleverness is not purely about grappling with theoretical matters. Indeed there is nothing clever about a nation that is not capable of implementing bright ideas and that does not have the dexterity or know-how to deal capably with problems in the work place and in industry.

(Dawkins 1992, p 9).

Together with the promulgation of these policies, there has been established a growing infrastructure for the entrenchment and enforcement of the CBT paradigm, with the creation of:

• the National Training Board, and Competency Standards Bodies which approve competencies for each industry;
• the signing by all State governments of the National Framework for the Recognition of Training (NFROT). This framework puts into effect the decision that no course will be accredited by state Accreditation Councils, at the levels of Certificate, Advanced Certificate, Associate Diploma or Diploma, unless:
  - the course is documented in competency-based terms, and incorporated national competency standards
- assessment is undertaken in terms of performance criteria, and
- there is provision for recognition of prior learning;
- the establishment of the VEETAC Working Party on the Implementation and Administration of Competency Based Training; and the Australian Committee on Training Curriculum (ACTRAC) to ensure national development and implementation of competency-based curricula.

All of these bodies work to the definition of competence as follows:

*Competence comprises the specification of knowledge and skills and the application of that knowledge and skill within an occupation or industry level to the standard of performance required in employment.*

(The National Training Board 1991, p.18).

While some of these bodies state that there are important vocational attributes outside demonstrable performance, the requirement that curricula be documented in this form is now entrenched and enforceable through accreditation.

The result is that all State governments have now determined that all vocational courses must be expressed in CBT terms before accreditation. Various government-sponsored reports argue that such a move is also necessary, at least for core abilities, in schools and higher education (e.g. see Carmichael 1992; Finn 1991; Mayer 1992a, 1992b).

In this paper, it is asserted that the equation made between economic and educational goals, the values which have been adopted, the assumptions about the nature and role of knowledge, and the conceptions of cognitive structures, their acquisition and their use are all debatable, and need closer analysis. In the following sections of this paper, these assumptions are analysed and criticised.

ECONOMIC ASSUMPTIONS

The government's economic imperatives have been adopted without a declaration of any supporting philosophical position. Rather, they are based on assumptions that do not treat as problematic any important economic questions such as the scarcity of physical resources, the definition of economic growth, the growth of the managerial, scientific and technological intelligentsia, and capital accumulation (e.g. see Harvey 1990).

From the consideration of such questions, one would expect associated questions such as whether more, and more efficient, exploitation of physical resources is desirable. As Kell (1992) drawing on Jones (1982), Coombs (1990), Apple (1987) and Gorz (1989) argues, there are alternative assumptions on which one can build economic policy, e.g. we may need to reduce our excessive use of resources, and learn to do less with less in a 'post-industrial conservator society', rather than more with less, or more with more.
It needs to be debated whether the secret to our success as a nation lies in our continued exploitation of scarce physical resources, adding economic value before export, in competition with other countries, all trying to do the same thing. We need to decide if the spectacle of farmers ploughing into the earth crops they cannot sell, and killing sheep no-one wants to buy, stockpiling wool no-one wants to use is sensible or responsible, in a world (even in our own country), where vast numbers of people are starving, poorly clothed and poorly housed. We also need to decide if we can live with the destruction, alienation and polarisation that this approach is producing in our society. We need to decide if, rather, governmental economists should find the key to economic success in solutions which value conservation, sensitivity, cooperation, caring, sharing, valuing leisure and activities which add quality to our lives, supporting small scale enterprise, and pursuing interests unable to be defined or taught as competencies. Then we need to relate such aspirations to the goals of vocational education.

At the same time, we need to question an exclusive focus on micro-economic reform which may lead to future employment being available only to a small core of highly paid, well trained professional and technical elite, with the remainder of jobs being casual, part-time and de-skilled. Moreover, even if the economic goals could be legitimated, the equation between these goals and the development of a skilled and adaptable workforce cannot be assumed.

While the economic perspective is important, this is not what I want to analyse in detail in this paper, other than to indicate the nature of the assumptions and the need for them to be challenged, especially because of their implications for the goals of vocational education. I will explore in a later section how the institutions resulting from economic assumptions have shaped our abilities and knowledge about ourselves, in our seemingly gentle and caring society (Foucault 1979a; Marshall 1990).

ASSUMPTIONS ABOUT THE NATURE AND ROLES OF EDUCATION AND KNOWLEDGE

The second perspective concerns assumptions about the nature and roles of education and knowledge, implicit in government policy. Clearly, the government views the sole role of vocational education as being preparation for economically productive activity. It does not regard as problematic such questions as:

- What is the purpose of (vocational) education?
- Who should be afforded the opportunity to provide input to the content of (vocational) education?
- At which goals should courses be directed?
- What relationships are there among individual, industrial and social goals; and what values underlie these goals?
- What knowledge is implicit in these goals? (Stevenson 1989)

Indeed failure to answer such questions adequately has led to a situation where different philosophies seem to underpin different categories of courses offered in the TAFE sector, with legitimacy couched in such different terms as meeting the
skill needs of industry, meeting individual needs for self-fulfilment and meeting the needs of society. Even the Finn (1991) Committee has drawn attention to these differences and argued that TAFE should abandon students in personal enrichment courses. While the proposed solution is insensitive to the needs of groups undertaking such courses, it allows attention to be drawn to philosophical tensions. Similar questions arise about the artificiality and inapplicability of an economically constructed interface between higher education and technical and further education (Stevenson 1987).

The scientistic or technocratic (Kemmis with Fitzclarencce 1986) assumptions underlying the government's equation between economic goals and the role of knowledge would be rejected not only by critical theorists but also by critics of critical theory, for example Brookfield (1992), (who distances himself from the singular ideological commitment of some critical thinking) and Lyotard (1984) (who objects to the sufficiency of consensual norms for legitimacy in critical theory). And of course this rejection of purely technocratic goals has been common in general education since the time of Dewey (1916) (e.g. see Tanner and Tanner 1975).

While it is easy to reject purely utilitarian or instrumental concepts of general education in the name of the need for a broad education, a focus on the individual, and a focus on the nature of knowledge itself, it is more difficult to make the same arguments for non-school post-compulsory education and training. Of course, when one does not offer the same arguments for non-school education and training, the differentiation itself defies the logic underpinning the view of general education. For instance, it is hard to sustain a view that the education of apprentices should be primarily concerned with the acquisition of the skills needed in the work place for economic productivity, and yet insist that the needs of 15-17 year olds in schools are more legitimately concerned with such goals as negotiating meaning and preparation for a wider proactive role in society. Here, it is claimed that the philosophical bases of vocational education need debate rather than a single orientation being adopted.

The value of education in the government's adopted CBT paradigm lies entirely in being able to train students to perform in ways pre-scripted by industrial representatives on Competency Standards Bodies. As indicated above, critical theorists have labelled such an approach technicist (Kemmis with Fitzclarencce, 1986). In adult learning theory, this approach would be called technological (Blachford 1986; Millar 1991), or training and efficiency (Boud 1987). It is concerned with performance, efficiency, modernisation, moulding, instruction and improving production. There is no room to overcome meaninglessness, barbarism or oppression; no room to emphasise growth, initiation into new forms of knowing or empowerment; no room for the educator to see the primary role as one of support, conversation or conscientisation; no room for such goals as wholeness, ability to make judgments or ability to take action to improve or transform society; and no consideration of such values as acceptance of others, reason or freedom. (See Millar 1991). Are all of these irrelevant to work or the roles workers adopt in our society? Are all these irrelevant to adaptability,
innovativeness, flexibility, teamwork, responsibility, pursuit of excellence, communication and initiative?

It could be argued that the approach advocated for the development of competency standards for the professions (Gonczi, Hager and Oliver 1990; Masters and McCurry 1990) are superior to that used by the National Training Board for vocations. However, while these former approaches recognise and emphasise the importance of underlying attributes such as knowledge and understanding, they are nevertheless technicist in that they rely on the derivation of competence solely from occupational practice.

Apparently, in the government’s view, the role of vocational education is to reproduce - reproduce practices in industry, adapt to changes in industry generated by others, reproduce social classes, reproduce injustice, disempower dissidence, and shape and discipline the population. Clearly, for the government, the only form of legitimation of content to be taught or learned is approval by spokespersons for industry. This view of knowledge and education impedes the consideration of the wide range of needs and concerns of students in vocational education - in fact any needs outside of the narrow vocational goals associated with reproducing industry and relationships among workers in industry.

THE USE OF KNOWLEDGE IN THE EXERCISE OF POWER AND CONTROL

The third perspective for analysing assumptions underlying the government’s policies is that of power and control. The national educational agenda is explicitly about what is called reform - that is the government has openly declared that its agenda is to bring about, in education, a greater emphasis on performance on prescribed tasks and an alignment of that performance with perceived economic needs. As Barry Jones (1982) would say, this is education for ‘outer life’ rather than ‘inner life’. However, what is not declared is that a substantial part of the movement in that direction will be controlled through the institutionalisation of language, and that reform is used in the ‘reform school’ sense rather than the ‘reformation’ sense.

The notion that discourses and practices shape and render us governable (Ball, 1990; Foucault 1979b) seems to be confirmed by analysis of the terms we find in governmental reports. Consider the following legitimated words for the development of the attributes and abilities which are required for the work place:

- The word ‘training’ now has the status almost of a generic term encompassing such ‘less general’ concepts as ‘education’, ‘growth’ and ‘development’;
- The term ‘competencies’ has become a generic term for knowledge, skills and applications. (See The National Training Board 1991);
- ‘Skill’ is taken to include all levels of manual, motor, perceptual, intellectual and social procedural knowledge (The National Training Board 1991). And, of course, there is something axiomatic about such attributes being observable and measurable as outcome performances, at the level of specified criteria, called competency standards;
• ‘Adaptability’ connotes multi-skilling, i.e. the possession of multiple sets of skills *usually at the same level*; and the transfer of credit from one learning situation to another. The even newer legitimated words for such individual development are ‘broadskilling’ or ‘upskilling’, where upskilling refers to the acquisition of a competency which comprises approved performance in a higher occupational category.

Further, there are the words for the nature and purposes of the education and training system, itself - ‘skill formation’, ‘credit transfer’, ‘training delivery’, ‘delivery units’, ‘providers’, ‘quality control’, ‘recognition of training’, a ‘level playing field’, and ‘reform’.

A clear example of how old vinegar has been served in new bottles is in the focus on competency. Despite protestations that competency-based education is not Taylorist, Skinnerian (Skinner, 1954) or Magerian (Mager, 1962), in all cases, it refers to observable and measurable outcomes. In all cases, the literature asserts that the processes whereby these demonstrable abilities are acquired are not important. Rather, the curriculum development secret lies in being able to construct objectives which:

• describe outcomes in terms of performance;
• express measurable criteria against which performance can be assessed; and
• are not vague or general;
all in the best Taylorist tradition.

Drawing on Foucault (1974, 1981, 1982), Ball (1990, 1992) would designate this approach to change as the use of power-knowledge (knowledge developed by the exercise of power and used in turn to legitimate further exercises of power). He draws attention to how current economic theory has enabled governmental control of populations, to achieve political obedience and a docile, useful workforce for the demands of capitalism and the state; and how the creation of associated institutions has led to the development of knowledge which both empowers and enslaves the person-subject holders of that knowledge (Ball 1990).

From an analysis of contemporary governmental action in the United Kingdom, Ball (1992) argues that the nationalisation of curriculum development, standardisation, and pedagogical decision making affects all message systems of education (Bernstein 1971): they increase the technical aspect of teachers’ work, reducing professional elements; they reduce spaces for professional autonomy and judgment; and they impose standardisation on curriculum practice.

It is clear, then, even from a cursory analysis, that a combination of similar related terms from management and from educational psychology literature have been adopted and applied to education and training to legitimate what is called ‘reform’. Those who transact in these terms are empowered in the new order. They acquire the required concepts and can enact the required actions. At the same time, they are disempowered, or as Foucault would say, imprisoned by the institution which the terminology creates. The terminology, itself, renders the paradigm unassailable. The discourse circumscribes what is admissible within its boundaries (Harvey 1990). There is no room for discussions of the nature of
knowledge and its construction, the role of values in society, the nature of work, the effects of technology on society, power and control, ideology and so on. In addition, criticism is not accepted whenever it uses terminology which lies outside of official discourse (education, freedom, fulfilment, problem-solving, qualities, learning, students, conceptual understanding, higher order thinking, cognitive processes, knowledge, debate).

The nature of official discourse in the era of competency-based training, then, renders those who adopt the paradigm unable to perceive the relevance of educational thought outside the paradigm, or to relate it to the paradigm. It also impedes those without an exclusive focus on observable and measurable learning outcomes from communicating about values and concepts of the role of knowledge which lie outside the paradigm. As a result, criticism and other research are often labelled irrelevant, or out of touch, or too ‘academic’. That is, they are constructed as ‘other’, thus rendering such critique without any value in current educational debate.

It is of considerable concern that the official language used in the era of competency-based training renders adherents unable to encompass in their thinking, knowledge developed over decades of educational research and writing; and that such disempowerment has occurred, almost predictably, in cycles over the last century. Indeed, patterns in the language used in education can be related to patterns in educational concerns. Table 1 makes these patterns clear (Stevenson 1992b).

UNDERLYING COGNITIVE STRUCTURES

Finally, I want to criticise the government’s skill formation policies in their own terms. That is, I want to ask the question, even if the economic goals were appropriate, and even if the role of education were to assist in securing those economic goals, is the competency-based training paradigm, and its associated paraphernalia, the approach which will deliver an internationally competitive, skilled and adaptable work force? The basis I will use for examining the equivalence between policy and likely educational outcomes is cognitive psychology.

As outlined above, the government’s educational goals are a ‘highly skilled and flexible labour force’ (Dawkins 1988, p.1); and broader and higher level skills, ‘at all levels of the design, production, management and marketing processes’ (Dawkins and Holding 1987, p.5).
Table 1: Historical Patterns of Concerns in Education (Stevenson, 1992b)

<table>
<thead>
<tr>
<th>Indicators of educational debates</th>
<th>Indicators of national and international governmental concerns</th>
<th>Indicators of Australian vocational educational concerns</th>
<th>Concepts of educational goals</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Depression, 1890</td>
<td>Emergence of mechanics institutes and schools of arts</td>
<td>Stimulus-Response Associationism (Thorndike 1906)</td>
</tr>
<tr>
<td>Individual Development 1: Fullest intellectual and social meaning of work (Dewey 1916)</td>
<td>World War I</td>
<td>Technical colleges in departments of education</td>
<td>Beyond specific skills to problem-solving ability: meaning</td>
</tr>
<tr>
<td>Relevance of Education 1: Scientific efficiency (Bobbit 1924; Charters 1924)</td>
<td>Post-war reconstruction; Great Depression</td>
<td>Use of technical colleges in the war effort</td>
<td>Routinised automated manual dexterity</td>
</tr>
<tr>
<td>Individual Development 2: Tyler 1949</td>
<td>Post-war reconstruction</td>
<td>Financial depravation of technical education</td>
<td>Plurality of legitimate outcomes</td>
</tr>
<tr>
<td>Relevance of education 3:</td>
<td>Depression, 1983</td>
<td>Fast, responsive occupational needs analyses (Blachford 1986)</td>
<td>Functional competence at work</td>
</tr>
<tr>
<td>Individual Development 4 and Empowerment: Critical Theory in Adult Education (e.g. Boud 1987; Brookfield 1988)</td>
<td>OECD Report on Competencies Needed in Working Life (OECD 1980)</td>
<td>Life skills, participation and equity, social justice</td>
<td>Freedom through learning, empowerment; adaptability, creativity, innovativeness;</td>
</tr>
<tr>
<td>Relevance of Education 4: Industry driven education</td>
<td>High levels of youth unemployment</td>
<td>Competency-based training (The National Training Board 1990, 1991) national skill levels, credit transfer, consistency</td>
<td>Observable, measurable performance to industrial standards</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Integration of post-compulsory education and training (Finn 1991; Mayer 1992a, 1992b)</td>
<td></td>
</tr>
</tbody>
</table>

96
While the government, especially through the work of the Mayer (1992b) Committee, seems to be gradually recognising that such attributes comprise not only expertise in handling immediate and familiar tasks, but also expertise in solving the problems which make new tasks and situations unfamiliar, it does not seem to understand the learning implications. Specifically, it continues to ignore research findings that adaptability involves transfer, and that transfer requires:

- deep conceptual understanding, especially understanding which enables recognition and categorisation of problems (Collins, Brown and Newman 1989; Glaser 1984; Gott 1989); and the application of personal and social epistemologies about what learning and knowledge are (Greeno 1989);
- specific automatic routine procedures (Anderson 1982; Scandura 1981), not only for routine execution but also for use in tackling known categories of problems;
- higher order analytical and problem-solving procedures (Anderson 1982; Scandura 1981; Evans 1991; Stevenson 1986a, 1991); and
- higher order executive procedures (Evans 1991; Stevenson 1986a, 1991).

Nor does the government seem to recognise the importance of learning processes in developing these attributes. It seems to reject research evidence that the development of competence in the form of expertise and adaptability requires an emphasis on problem-solving, in the learning tasks and processes, so that:

- the complexities of real life situations are encountered and approached as problems (Gott 1989; Glaser 1984; Lave 1989);
- there is an intermingling of propositional (a rich knowledge base) and higher order procedural structures (general cognitive skills) so that they become associated (Perkins and Salomon 1989);
- problem categorisation occurs (Chi, Feltovich and Glaser 1981) in a culturally influenced way (Pea 1987); and
- higher order procedural knowledge is developed (Stevenson 1986b).

The government has also ignored evidence that transfer is weak when one relies on the ‘low road’ (Perkins and Salomon 1989, p.22) (extensive and varied practice of a skill to automaticity, applied to conceptually similar situations by response or stimulus generalisation). It does not advocate the ‘high road’ which depends on deliberate mindful abstraction of principles, and general strategies for their use in problematic situations. Even if the ‘low road’ were adopted by the government, natural situations, like the work place in which the government has so much faith, do not meet the required conditions of much practice, in a large variety of situations, in order to lead to a high level of mastery and near-automaticity. As Perkins and Salomon argue, general heuristics that fail to make contact with a rich domain of specific knowledge are weak; but when a domain-specific knowledge base operates without general heuristics it is brittle—it serves mostly in handling formulaic problems.

If the government recognised the importance of learning tasks and processes in developing the cognitive structures which are the key to its economic goals, it could not adopt CBT which devalues such processes and focuses exclusively on the development of attributes which can be demonstrated and measured as observable performance on prescribed tasks. Its assumption that CBT, as presently conceived, can deliver these attributes is unsound.
A further flaw in the government's approach, from a cognitive perspective, is its failure to emphasise the sociological aspects of cognitive transfer. That is, as Pea (1987) argues, transfer should be regarded as an interpretive problem. Firstly, it involves socio-culturally defined decisions about the appropriateness of transfer for particular purposes, tasks and thinking situations. Secondly, the perception of similarity between a prior situation and the current one are read as texts with multiple possible interpretations according to the thinkers' culturally-influenced categorisation system of problem type. There is no room in the government's approach for such individual differences when seeking to develop the ability for transfer. Rather, pre-specified standards for observable performance are set, and achievement is expressed only in these terms.

Furthermore, the government supports modularisation of vocational education. The disaggregation of knowledge which this entails also has serious implications for transfer (Stevenson and McKavanagh 1992). It de-emphasises and leaves to chance, acquisition of knowledge needed to summarise, integrate and synthesise separate modules; and knowledge which transcends or draws upon separate modules.

Even the progress made by the Mayer Committee (1992b) in highlighting the skill and understanding which underpin key areas of competence is unlikely to be enough to promote the emphasis required on learning tasks and processes, while constrained by CBT prescriptions. Like the work of Gonczi, Hager and Oliver (1990), the Committee has asserted that 'performance is underpinned not only by skill but also by knowledge and understanding, and that competence involves both the ability to perform in a given context and the capacity to transfer knowledge and skills to new tasks and situations' (p.4). It regards competencies as 'mindful, thoughtful capabilities' (p.5). An interesting feature of the Committee's differentiation of strands into performance levels is the set of criteria used for each strand, with frequent use of such ideas as complexity, familiarity, supervision, variety, and control, confirming that an underlying characteristic of differences among levels is differences in the requirement to solve problems, independently. This is a welcome improvement to the National Training Board's 1991 terminology which focuses almost exclusively on overt behaviour. However, it is unlikely to be enough because of the persistent determination that competence be assessed exclusively in terms of observable performance on tasks which represent industrial standards. That is, the reification of industry as a source for curriculum remains a problem, locking concepts of competence into industrial practice. With this comes the problem of presentism where the thrust towards contemporary industrial practice overshadows the preparation of individuals for uncertain vocational futures or the preparation of the individual to criticize and improve contemporary vocational practice.

CONCLUSIONS

This paper has outlined the essential aspects of the government's skill formation policies and has argued that the assumptions underlying the economic goals, the role assigned to knowledge and to education, and the government's exercise of power and control need criticism. These assumptions have been challenged and it has been argued that, even if the policies were appropriate, their attainment
would be jeopardised by the competency-based training paradigm, and its associated structures such as modular curricula.

Economic assumptions seem not to have been debated and seem not to take account of the nature of a post-industrial conservator society. From the discourse which is used to deliberate upon education, assumptions can be classified as technological, technicist or scientistic, legitimated through the institutionalisation of a new kind of language. This exercise in power and control can be related to similar episodes over the last 100 years. For instance, the power of the construct of relevance, in legitimating adopted emphases, has led to a distortion in the concerns of vocational education and assessment, in particular, in TAFE (Stevenson, in press).

Thus, it is not only the case that government policy on skill formation is linked to outdated economic goals, it is also the case that the government has adopted a view of education and knowledge which is technological or technicist, which serves to prescript learners, and which has become an ideology which disempowers both its adherents and critics. It renders, unproblematic, questions about the nature and purpose of vocational education and education in general.

And finally, even if the thrust of the government were appropriate, the associated educational paradigm has blinded those within the paradigm to the contribution of cognitive science to knowledge about the educational tasks and learning processes which would achieve the government's goals. Thus, the policies are condemned in their own terms. Where such reports as those of Mayer may advance the need to emphasise a wider range of cognitive structures in key areas of competence, this move is inadequate in addressing the misconceptions underlying government policy.

Where then is the way forward? What is needed is a more deliberative working through of the questions ignored in current policy e.g. equations between economic goals and education, the role and content of courses, and the role of courses in society. Processes such as these are more likely to lead to more appropriate governmental goals and a greater congruence between goals and actions. The future of technical and vocational education depends on more open debate and this requires less circular legitimation of discourse. Without such re-conceptualisation, misconceptions will be entrenched, protected by discourse, and lead to an irrelevant sector.

REFERENCES


Foucault, M 1979, Governmentality, Ideology and consciousness, 6, 1-21.


Greeno, J 1989, A perspective on thinking, American Psychologist, 1 (44), 134-141.


Kemmis, S with Fitzclarence, L 1986, Curriculum theorising: Beyond reproduction theory, Deakin University, Geelong.


Mager, R F 1962, Preparing instructional objectives, Fearon, Belmont, California.


Rogers, C 1969, *Freedom to learn*, Merril, Columbus, Ohio.

Scandura, J M 1981, Problem solving in schools and beyond: transitions from the naive to the neophyte to the master, *Educational Psychologist*, 16(3), 139-150.


The National Training Board 1991, National competency standards: Policy and guidelines, National Training Board, Canberra.
