The Use Of Competency Standards in The Design Of Curriculum.

A NSW Experience In Construction And Automotive Courses.

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This paper deals with the influence of competency standards on the development of curriculum. The study is based on an interview survey of a small sample of project managers of curriculum projects dealing with three sets of industry standards in Australia. While the research cannot be generalised to all competency standards, it raises issues that can be further researched.

The Use of Competency Standards

A desire to achieve global competitiveness through improving skills in the workforce has resulted in a number of countries (e.g. the UK and US) adopting competency (or skill) standards. There is no single definition or description of competency standards, as each country has adopted its own approach (NSSB, 2000). Nonetheless, competency standards can broadly be classified as benchmarks (generally national in nature) that specify in detail what a person must be able to do in given occupations or occupational areas.

Competency standards appear to have arisen from certification systems. A certification system is a mechanism that essentially gives information to those buying skills about those selling work skills. Many certification systems have sought to provide recognition to individuals who have gained skills and knowledge in the workplace. Others have been created to ensure that young people who have completed apprenticeship or institutional training have achieved desired standards (Ushiyama, 1992).

In Australia, competency standards first appeared in the early 1990s as a component of the Australian approach to competency based training (CBT) to guide curriculum developers to achieve desired outcomes. By the end of the 1990s, competency standards began to appear in documents called training packages. A training package contains three major components namely: competency standards; qualifications; and assessment guidelines (NSW Vocational and Training Accreditation Board, 1998).

Competency standards within training packages provide nationally developed benchmarks for certification. Where once education authorities issued qualifications based on the participation of the student within the educational institution, qualifications are now issued on the basis of attainment of specified units of competency. As a consequence, qualifications have ceased to be an expression of performance within an educational institution and now represent certification of ability to perform in a workplace. This constitutes a merger between educational qualifications and certification of ability to perform to workplace standards, forming a single set of national qualifications. The result is an emphasis on the achievement of units of competency rather than on how they were achieved.

Anecdotal evidence suggests that competency standards within training packages are having an influence on the nature of curriculum and ultimately the learning that takes place. Different authors have alluded to these effects although not all have specifically addressed the effects of competency standards. Hager (1995) for example indicates that behaviourist approaches to competence have resulted in a focus on assessing performance of discrete tasks thus ignoring the complexity of occupational performance. General criticisms of CBT by different authors include:

- being too narrowly focused on skills at the expense of cognitive development and problem solving ability (Stevenson and McKavanagh, 1992)
- overemphasising the routine visible aspects of work at the expense of less visible integrating skills such as planning, problem solving, perceptions and judgement (Field, 1995)
- stressing learning strategies that run contrary to the acquisition of abilities to handle complex indeterminate situations (Middleton, 1994)
- being too fragmented and compartmentalised to assist integrated and holistic development of competence and expertise (Harris et. al. 1995).

Competency standards can be considered to provide a clear statement as to what is competent performance without suggesting that this exhausts all facets of the occupation (Hager, 1994). As such, there is no intention that achievement should be limited to these outcomes. Competency standards also do not dictate how delivery should take place. Hager (1994) for example argues that competency standards do not constitute a curriculum document. However the question arises as to whether the process of curriculum development using competency standards within training packages is influencing the structure of the curriculum and the nature of the delivery. This research sought to explore these effects.

The Research

The research described in this paper focused on three training packages endorsed for the automotive repair and construction industries: the Automotive Industry Retail Service and Repair Training Package; The General Construction Training Package; and the Civil Construction Training Package. All these training packages contain primarily contain Certificate I to Certificate III qualifications and their respective units of competency.

The research consisted of interviews conducted during 2001 using a standard set of questions. The interviewees were six staff employed as project managers for curriculum development in automotive and construction areas. All the interviewees had experience with competency-based approaches over a number of years, including, in some cases, the use of pre-training package competency standards in the development of curriculum. The research examined the views of these project managers about the influence of competency standards for Certificate I to III qualification levels from the three training packages on the developments they managed. The research used a set of focus questions to explored two main themes:

- the extent to which the competency standards are used in the development of curriculum
- The influence competency standards have on the curriculum.

The Findings

1. Extent of use of the competency standards
All six interviewees commenced the curriculum design process by examining both the competency standards and existing curricula. The competency standards were used for the following purposes:

- To identify major content in current curriculum that should be deleted
- To identify content to be included
- To estimate any gap between the level of attainment of units of competency achievable by college attendance and that specified in the standards.

However, all units of competency did not prove to be useful in the development process. In the view of some project managers there were many units of competency that were expressed in such broad terms that they lacked any level of specificity. In these cases developers had to determine the intent.

Project managers generally undertook what they called a mapping exercise in which the outcomes of modules were aligned to the units of competency in order to identify gaps. For example, a comparison of the outcomes achievable in the current curriculum and that specified in the standards resulted in a requirement for work evidence in many cases, because the amount of experience provided in the college environment was clearly inadequate for the attainment of the units of competency. Thus the achievement of units of competency in the new curriculum became dependent upon evidence of completion of the course modules together with the additional evidence from the workplace that specific experiences had been undertaken.

Wherever curriculum previously existed, the project managers opted for change rather than the design of an entirely new curriculum based solely on the competency standards. This suggests a combination of two major influences on the curriculum. The first is the experience gained in delivering a course along with the traditional views about appropriate content in that course. The other is competency standards. The development process carried out by the project managers could be considered a balance between these influences. In particular, the managers ensured that all the requirements of the qualifications were achieved in the curriculum. However, they gave less to the deletion of material from the curriculum unless it represented significant outcomes that were clearly not required. For instance, two respondents indicated that they retained content from the earlier curriculum leading to outcomes not called for in the competency standards.

The findings thus show that the competency standards played a key role in influencing change in the curriculum, though much of the earlier curriculum was retained. They thus confirm the primary role of competency standards in guiding curriculum developers to achieve desired outcomes. However the question remains as to whether the influence of competency standards extends beyond the achievement of desired outcomes and also influences the approach to delivery.

2. The influence of competency standards on the curriculum
Respondents all agreed that competency standards are having an impact on the way curriculum is structured. However, the main pressure for change is arising from industry advice during the development process. The curriculum development process involves substantial consultation with

industry representatives who have expectations of articulation. The embedding of lower level qualifications into higher qualifications has created an expectation that an individual with a lower level qualification can make a seamless transition into a higher level qualification. In most cases, low numbers mean that individuals with advanced standing undertake studies with students of the higher level courses. This forces developers to design the course into discrete stages, allowing for separate achievement of the lower course outcomes. Thus the course structure and the sequencing of modules becomes based on a principle that lower level modules must be included in higher level courses and completed first.

The other demand is for individuals to gain credit for single units of competency or to be able to undertake single units of competency. This encourages the development of modules leading to the attainment of a single unit of competency - generally referred to as a *one-on-one alignment*. A number of respondents indicated that there was strong pressure from industry bodies to have this relationship between modules and units of competency. In the view of some of the respondents this has introduced a level of fragmentation. Areas of related knowledge and skills that were once learnt in an integrated fashion are now treated separately. An example mentioned is the separation of vehicle servicing, repair and overhaul into separate modules.

Competency standards did not directly influence respondents in terms of detailed content and delivery approaches. Respondents indicated that their chief sources of information on underpinning skills and knowledge came from earlier curriculum or industry sources. Similarly, the competency standards provided no direct influence on achieving the key competencies. Respondents indicated that the consequence of the integration of key competencies being with competency standards also meant that they did not have to be separately addressed in the curriculum. Respondents indicated that they did not have specific strategies for development of the key competencies. Rather the expectation was that in achieving the competency standards course participants would also achieve the key competencies.

Discussion and Conclusions

The findings show that competency standards had a major influence on the respondents in the study in determining the nature of the curriculum. The intended purpose of competency standards leading to defined outcomes is clearly being achieved. However the relationship of units of competency to qualifications is also influencing the structure of curriculum and hence the approach to delivery of educational programs. The latter are not intended consequences.

The effects of the structure of competency standards may not lead to the best educational outcomes. The standards are certainly likely to lead to the achievement of each of the specified units of competency. However, in focusing on each of the units of competency, there are a number of likely effects. One is an emphasis on assessment of each unit of competency rather than a focus on the educational experiences that should take place. Studies by Billett (1999) and Stevenson (1994) have emphasised the importance of educational experiences in achieving broader-based capabilities such as higher-order problem-solving. The educational experiences required for the development of broad capabilities are more likely to be integrated in nature rather than atomistic. For example the development of diagnostic ability in motor vehicle repair depends upon an understanding of the sub-systems of vehicles and their inter-relationships. Where units of competency focus on single sub-systems of motor vehicles, each sub-system may be dealt with in an isolated manner, reducing the

potential to develop an understanding about inter-relationships. The competency standards are in effect developing fragmented knowledge.

Another effect is that encouragement is given to the achievement of minimal outcomes that are technical in nature, rather than broader capabilities. There is increasing evidence of industry demand for generic capabilities rather than technical specific capabilities (Allen Consulting Group, 2000). A study by Kearns (2001) also advocated an expanded range of capabilities beyond the key competencies. However, the research indicates that competency standards are encouraging a minimalist position by developing individual units of competency - most of which are technical in nature.

In addition, competency standards appear to be having an influence on training packages that did not occur with earlier sets of competency units. The difference is mainly in the way units of competency are packaged into qualifications with lower level qualifications embedded into higher level qualifications. Expectations of industry and community in relation to articulation are causing curriculum developers to use the packaging rules of a given training package qualification as the curriculum structure. This is leading to fragmented training that is unlikely to achieve the broader capabilities required in the workforce.

One possible area for further research that arises from these findings is a review of the approach to designing competency standards. Merritt (1996) for example classifies skill certification systems as belonging to two basic models. One is the skill components model that emphasises the performance of sets of discrete tasks and is more oriented around routine behaviour. Training Packages appear to follow this approach. The other is the professional model, which emphasises a broader range of capabilities including performance in non routine situations. This model could be considered as an alternative to the current approach. A further possibility is examination of training package qualifications with a view to reducing the number of qualifications to those that have clear employment outcomes.

The other area the study suggests for further research is a reconceptualisation of the process of curriculum development away from achievement of individual units of competency towards achievement of the totality of units of competency as well as generic competencies.

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