A curriculum design framework for the Australian post-industrial economy. Moving beyond CBT.

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Abstract

This paper is about an alternative approach to the Australian CBT system in designing vocational education programs that help achieve the capabilities needed for work in the Australian post-industrial economy. The Australian CBT system was created to meet the skill needs of industry as the latter struggled to become more competitive in a globalised market. Whilst the Australian CBT system has had many positive features such as emphasising outcomes (as opposed to content) and promoting the concept that learning can take place in a range of ways, its origins lie within an industrial mindset giving rise to severe limitations in its capacity to deal with the needs of post-industrial society. Whilst there have been many criticisms of CBT, research has particularly demonstrated its limitations in achieving key post-industrial capabilities of flexibility and adaptability. Another significant limitation is an emphasis on observable technical skills whilst emerging research is showing an emphasis on generic and broad based capabilities.

Given the limitations of the Australian CBT system, this paper discusses an alternative approach based on emerging learning theory and a framework adapted from Finch that structures curriculum into three broad components of planning, design and assessment. The approach involves incorporating new and emerging approaches in vocational education that are compatible with post-industrial society within the framework. Capabilities for post-industrial workplaces for example are highlighted within the planning parameter. An emphasis on appropriate learning for higher order problem solving is included in the design parameter. The assessment parameter emphasises a wide range of evidence collection including individual participation in learning activities.

Introduction

A transformation of Australian vocational education took place from the 1990s onwards in response to a perceived need to provide a skilled workforce to achieve a globally competitive economy. A set of unifying guidelines about the design and delivery of vocational education generally referred to as the Australian CBT system has driven this transformation. Underlying the transformation of vocational education is a perception that there has been a change in the performance expected of workers.

There are however doubts about the potential of the Australian CBT system to achieve the capabilities needed by young people for the Australian post-industrial economy. This study provides an alternative approach to the design of vocational training that has the potential to achieve the capabilities needed by young people for the Australian post-industrial economy. Just as the Australian CBT system both consolidated existing CBT practices and brought about the eclipse of more traditional approaches to vocational
education, the approach proposed in this study represents a shift beyond CBT. The study represents a synthesis of emerging concepts and approaches to vocational education derived from literature.

The Potential of the Australian CBT for Achieving Capabilities Needed in the Post-Industrial Economy

In pursuit of competitiveness, many Australian firms have moved away from Taylorist approaches to work organisation and adopted new work practices that include working in teams, embracing TQM, employee participation in decision making and embracing a learning organisation philosophy (Smith, Oczkowski, Noble and Macklin, 2002). These changes in the nature of work have resulted in change to the capabilities required of the workforce. A range of studies have addressed the capabilities expected of the post-industrial age (eg. Kearns, 2001; Smith et. al., 2002; The Allen Consulting Group; undated). Whilst requirements can vary from firm to firm, it can be generally concluded that the workforce is expected to be adaptable to changing circumstances, able to problem solve, possess a broad range of skills, be creative and innovative and accept responsibility for their own functions. These are consistent with the goals of the Australian CBT System, that calls for a skilled, innovative, and technologically advanced workforce (BVET, undated). These attributes stand in contrast to those of the industrial age where the capabilities required were largely to work alone and take orders from a range of managers (Symes, 1995).

The Australian CBT system arises from defining a problem of economic competitiveness in a specific way (ie. a need for skills and a perceived failure of the existing vocational education system) and presenting the Australian CBT system as the only possible solution (Mulcahy, 1998). The major current mechanisms for implementing the Australian CBT system are Training Packages. These list a set of qualifications (often linked to given jobs) and their associated units of competency (usually representing measurable tasks or skills).

The Australian CBT system whilst being presented as something new, is nonetheless a repackaging of concepts that arose at the beginning of the 20th century. CBT itself can be traced to attempts to apply Frederick Taylor’s principles of scientific management to education as evidenced in the design of training for US troops in World War I (Harris, Guthrie, Hobart and Lundberg, 1995). Given the industrial age origins of CBT, there are serious questions as to its potential to achieve the capabilities for the post-industrial era. A study by Billett et. al. (1999) for example concluded that the Australian CBT system is unlikely to achieve adaptability and flexibility in students. A post-industrial era is increasingly being typified by a low level of differentiation in function (Arnal, Ok and Torres, 2001; Marginson, 2000). Rapid change in technology, products/services and functions means jobs are already changing the moment anyone attempts to describe them. This contrasts with the Australian CBT system approach to defining narrow jobs as a basis for national qualifications (eg. automotive windscreen fixer). The emphasis on measurable outcomes is also at variance with studies that emphasise the nature of learning in achieving capabilities required in a post-industrial workplace (eg. Billett, 2001; Stephenson, 1992; Stevenson, 1994). Moreover despite research (eg. The Allen
Consulting Group, undated and Kearns, 2002) that indicates an emphasis by enterprises on general skills, the Australian CBT system by focusing on assessment of the technical aspects of jobs does not ensure these general capabilities are attained.

**Moving beyond CBT**

The limitations in the potential of the Australian CBT system to achieve the capabilities required for the post-industrial economy gives rise to a question as to how the capabilities can be achieved. This requires a conceptualisation of how training is planned for. Whilst there are many views about curriculum, the term has generally been used to describe the plan or set of plans that informs the subsequent training. Training Packages, assessment and learning strategies and workplace training plans can all be considered as curriculum documents. Curriculum is itself informed by a range of other factors that include legislation, philosophy and policies. The development of Training Packages for example is based on a set of documents called a Training Package Development Handbook (ANTA, 2003). This document is in tum influenced by frameworks (eg. the Australian Qualifications Framework) and other factors (eg. a behaviourist orientation). Thus the totality of both implicit and explicit guidelines that inform the development of curriculum in its broadest sense ultimately determine the nature of training. An improvement therefore to training can happen through changes to the guidelines.

A change to the guidelines underlying curriculum requires a conceptualisation of these guidelines. A range of concepts such as curriculum models and curriculum frameworks were examined in the literature. The conceptualisation found that best addressed the underpinning guidelines to curriculum is a framework by Finch called Creating a Vocational Education Curriculum: A Comprehensive Framework (Finch, 1999). Of particular interest in Finch’s model is a set of three parameters namely; design and application, planning and assessment. The set of parameters subsequently proved capable of classifying any factor influencing curriculum design.

The inclusive nature of these parameters suggested that they could be a means to bring together a range of factors that have the potential to influence the design of curriculum that results in appropriate training for the post-industrial age. This set of factors combined with these three parameters constitutes a framework, which is subsequently called a post-industrial curriculum design framework.

**A Post-Industrial Curriculum Design Framework.**

The creation of the framework is undertaken by addressing each of the three parameters in turn. The process commences with planning. Planning is about the influences that bear on the outcomes and broad content of a curriculum as well as indicating what will be achieved in the curriculum.

An examination of vocational education literature revealed the following planning factors that have the potential to achieve post-industrial capabilities:
• The concept of competence being redefined as a complex construct that is relative to a given workplace. Drawing on studies by Dall’Alba and Sandberg (1996), Hager (1993), Stephenson, (1992), Velde (1999) and Wenger (1996) competence is best viewed not only as a complex construct that can only be inferred rather than directly measured but also a capacity that is relative to the context rather than strictly to the individual.

• Broad based training that Integrates vocational and general education. The industrial age saw a separation between vocational and academic education, with the former generally seen as tracking individuals into narrow technical roles in industry (Kincheloe, 1995, Stevenson, 1998). The need for post-industrial workers to be flexible, adjustable and multi-skilled suggests a need for a much broader education. As technical skills become quickly obsolescent, individuals need not only a broad rather than a narrow range of occupational skills to quickly change jobs, but also the general skills to continually learn and effectively participate in work life. This has led to a strong advocacy for an integration of academic education and a broad technical education (UNESCO and ILO, 2002). A further extension of this is for workers to have a more critical perspective of work life (eg. Chappell, 1996; Kincheloe, 1995; Stevenson, 1998). Integration is largely based on the philosophy of US educationist John Dewey who called for an end to the duality between academic and vocational education (Dewey, 1965). The basic principles are firstly, studies are based on the philosophy of US educationist John Dewey who called for an end to the duality between academic and vocational education (Dewey, 1965). The basic principles are firstly, studies are based on an occupational or industry area to give students a concrete focus. Secondly students achieve academic as well as technical outcomes. The consequences of this are a transformation of upper secondary and entry level technical training.

• A new philosophical basis of curriculum. The technological conception of curriculum underpins the Australian CBT system. This means curriculum is based on ends being defined (often narrow in scope) and assessment made on those ends (Print, 1993). The fast obsolescence of skills in association with the changes in jobs has reduced the value of acquisition of specific skills thus making the technological conception redundant for the post-industrial era. A possible new post-industrial conception of curriculum drawing on existing conceptions such as social reconstructionist, humanistic and cognitive processes (Print, 1993) would place greater emphasis on learning and reflection rather than assessment.

• A dual system of qualifications. One being educational qualifications based on achievement of learning (a testamur of a beginning). The other a system of qualifications to support national certification (terminal ends). Post-industrial needs emphasise general competencies, broad based skills and life long learning. The learning needs of different companies and individuals can considerably vary as shown by many companies not fully engaging in national qualifications (Kearns, 2002). There is an emerging view that decisions on training are best made at the regional, local and sectoral levels as evidenced by a trend to devolution on decision making (ILO, 2002). This suggests the need for a system of national educational and certification qualifications to be sufficiently flexible to cater for the range of needs. Educational qualifications would be based on the skills and knowledge of a broad range of jobs to provide a basis for multiple careers whilst certification qualifications would be more narrow reflecting industry needs to have recognition for ability to perform in functional areas.
• Competency standards. Competency standards provide an important mechanism to link all forms of learning and provide recognition. However, because they have primarily arisen to serve the needs of certification, there is scope for a significant modification of the way they have been implemented under the Australian CBT system to better serve the previous planning considerations. Under a new framework, they would inform nationally defined educational qualifications without all units being necessarily attained. Attainment of the sets of units of competency would ultimately occur with certification qualifications where clear linkages would occur between a qualification and units of competency.

The parameter of design and application focuses on appropriate approaches to enhance learning such as the best modes of instruction, ways of integrating academic and vocational content, the content itself and the settings for learning. This parameter answers how outcomes can best be achieved. Key elements appropriate to a post-industrial economy are:

• A strong emphasis on workplace learning. One of the strengths of the Australian CBT system is the acceptance of learning in the workplace. Authors such as Billett (2001) and Wenger (1998) have demonstrated the importance of the workplace as a key component of learning. At the same time there has been a gradual shift in conceptualising learning leading to a greater valuing of workplace learning (eg. Field 1998; Kearns, 2002; and Smith et. al., 2002). Based on an emerging pedagogy of workplace learning, a new framework would extend beyond the Australian CBT system and possess guidelines on workplace learning and its integration with institution based delivery.

• Guidelines on Learning. Whilst the Australian CBT system can effectively result in learners being able to perform essential routine skills and tasks, it does not guarantee a broader base of capability such as higher order problem solving. Whilst the Australian CBT system effectively focused vocational education away from the traditional content orientation towards needed outcomes, there are clear limitations as the less easily measured outcomes may not be achieved. Research is showing that the acquisition of the less easily measured outcomes such as higher order problem solving is dependent upon the nature of learning. For example, Stevenson McKavanagh and Evans (1994) concluded that higher order problem solving requires the development of basic cognitive and procedural knowledge as well as exposure to new and unknown situations (as opposed to routine situations). Similarly, the integration of academic and vocational studies and the development of a critical perspective rely on appropriate learning to take place. A new framework would contain guidelines on learning (both workplace and institution learning). Training providers in turn would be required to show evidence how they implemented these guidelines. Overall this involves an extension of specifications on outcomes to specifications on the learning itself.

The parameter of assessment deals with assessing both the curriculum process and its outcomes. The new framework will require training providers to document how needs have been determined to develop individual educational qualifications. This is important
because there is far greater flexibility in creating qualifications for regional and state needs. Assessment will also reflect the learning focus of the framework. Rather than focus almost exclusively on observable behaviour, the new framework will stress overall participation in learning activity as a major component of assessment. This builds on evidence based assessment introduced as a concept under the Australian CBT system.

Conclusions

The Australian CBT system has been created to achieve the needs of a post-industrial workplace. Despite introducing a number of features that are important for skills formation in the post-industrial era, the industrial age origins of the Australian CBT System however overall limit its potential. This paper provides a new framework for the design of curriculum that has a greater potential to achieve the capabilities required in a post-industrial economy than does the Australian CBT system. It represents a development beyond CBT that places a greater focus on the nature of learning, the development of general skills and on-going learning.

Acknowledgment:

This study is taken from a Ph.D thesis currently being undertaken by the author at Macquarie University under the supervision of Dr. Tony Koop.

References:


