Challenges affecting the integration of competency-based training at the higher levels of the Singapore Workforce Skills Qualifications – National Qualifications Framework

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The Institute for Adult Learning (IAL) aims to contribute to the competitiveness of Singapore by developing an effective, innovative and responsive Continuing Education and Training (CET) sector that is able to meet the needs of industries and the workforce. It achieves this by raising capabilities, catalysing innovation, and leading research in workforce learning.

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Abstract

The Singapore Workforce Skills Qualifications (WSQ) system has made remarkable progress in rolling out a high rate of competency-based training (CBT) programmes targeting rank-and-file and supervisory level learners over the past six years. In line with the national strategy of preparing a highly skilled, knowledgeable and productive workforce, the Singapore Government is committing considerable resources to strengthen the nation's Continuing Education and Training (CET) system. A key component of this CET strategy is to increase the number of CBT programmes available at the higher levels of the WSQ system, targeting learners at the Professionals, Managers, Executives and Technicians (PMET) occupational category to broaden and deepen their expertise. Emerging data points out that significantly fewer number of WSQ programmes have been developed for PMET learners across the variety of WSQ frameworks. Concerns have emerged among WSQ practitioners who query whether such data could be an indication of WSQ training providers facing challenges in integrating the CBT approach at the higher levels of the WSQ system – to train and assess PMET learners' attainment of higher level competencies, often involving intangible, irregular, affective and cognitive-orientated learning outcomes. WSQ practitioners and critiques alike question the robustness of the concept of CBT by asking; *Is CBT fundamentally orchestrated for the training and assessment of lower level competencies, mainly targeting rank-and-file and supervisory level learners' ability to demonstrate often routine and directly observable tasks? Are the performance-orientated training and assessment methods obligated by the CBT approach better suited for the lower level WSQ competencies rather than the higher level ones?* This paper address the challenges affecting the integration of CBT at the higher levels of the WSQ system by reviewing the discourse on the notion of competence, the recurring arguments both for and against the use of the CBT approach and the issues surrounding the development and implementation of NQFs.

Singapore Workforce Skills Qualifications (WSQ) System

Singapore has implemented a National Qualifications Framework (NQF) since October 2005, (WDA 2010a) – referred to as the "Singapore Workforce Skills Qualifications" (WSQ) system – which has been "developed by drawing upon competency-based training (CBT) models established in United Kingdom, Australia and New Zealand", (Willmott 2006, p 8). Employers and training providers who meet WDA's accreditation requirements are appointed as Approved Training Organisations (ATOs) or CET Centres which are

authorized to use the WSQ national competency standards as their reference point for developing WSQ accredited CBT programmes for the purpose of training, assessing and certifying their workers as having attained national standards requirements (WDA 2007a, p 9 and 2007b, p 1).

26 industry or sector level WSQ frameworks have been implemented ranging from "Retail" to "Textile & Fashion Technology", (WSQ, 2010a). The training and assessment of these WSQ programmes are delivered by the respective sector's WDA accredited ATOs or CET Centres which has resulted in some 280,000 workers benefitting from "WSQ quality training with 671,216 Statements of Attainments issued", as of 2010, (WDA 2010c).

Questions and Concerns Raised

Even though thousands of adult learners in Singapore have been assessed as "competent" over the past six years, the statistics indicate that a significantly high portion of the WSQ training and assessment conducted was for the lower tiers of WSQ qualification levels[1] targeting mostly the rank-and-file "operational" and "supervisory" level competencies offered within the WSQ levels 1 to 3. A strikingly low rate of WSQ training has been developed for Professionals, Managers, Executives and Technicians (PMETs) levels during this same period addressing higher level competencies (from WSQ level 4 onwards).

[Note: "PMET" is a broad occupational category used by Singapore's government agencies to distinguish occupational mobility, labour, economic and social trends pertaining to the segment of population within Singapore's workforce who already possess recognised diploma and above higher education level qualification/s (adapted from MOM, 2010)].

It is possible to infer that the apparent imbalance between the extent of lower and higher levels of WSQ training programmes developed, presents researchers with a snapshot of the level of support or reservations harboured among current WSQ practitioners for or against the use of CBT approach at differing levels of the WSQ system.

The high level of concern held by WSQ policymakers surrounding the challenges faced by WSQ practitioners' in their integration of CBT approach at higher level WSQ programmes for PMETs, is brought into perspective when the current imbalance is viewed against the backdrop of the Singapore government's announcement of a S$2.5 billion budget expansion of its investment in CET over the next few years, (Singapore Budget 2010). The Singapore government has announced plans to expand the reach of WSQ system further, as part of initiatives to scale up workforce productivity at a national level for the country to achieve the next stage of economic competiveness at the global level. Over 250,000 PMETs are expected to benefit from CET by 2015 (Hansard, 2011) and a significant amount of the learning is expected to be attained through WSQ training programmes

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[1] *The WSQ Qualifications Levels: Level 1= Certificate, Level 2= Higher Certificate, Level 3= Advanced Certificate, Level 4 = Diploma, Level 5 = Specialist Diploma and Level 6 = Graduate Certificate / Graduate Diploma*

developed based upon the CBT approach, (WDA, 2010b). Thus, as part of achieving greater accountability towards the allocation of public funds for training the workforce, it is important for WSQ practitioners to ascertain the challenges which affect CBT from being integrated beyond the rank-and-file and supervisory levels, in order for WSQ policy makers and training providers to consider solutions which facilitate the wider adoption of the higher levels of the WSQ system among PMET learners and its recognition by employers.

Literature Review

Three subject areas – i.e.: *Competence and CBT; Development and implementation of NQFs*; and *The capability of WSQ trainers and teachers* – are examined to bring to light the concerns and issues which may have relevance to the challenges affecting the integration of CBT at the higher levels of the WSQ system. The development and implementation of NQFs and CBT in the United Kingdom and Australia are also reviewed and compared with Singapore's NQF journey.

The review of literature on the first subject area, "Competence and CBT" reveals that there is no one agreed definition of competence and that there are recurring arguments both for and against using the CBT approach for the development of adult training in both Vocational Education and Training (VET) and Higher Education (HE) learning environments. While there appears to be a general recognition for the overarching principle of competence, differing views emerge over the specific form in which competence should be recognised within a context for acknowledging the comprehensive suite of knowledge, skills and abilities required by an individual to execute an established job, occupation or profession. Four main strands of recurring arguments with reference to CBT are explored further to uncover key concerns and issues affecting the development, implementation and integration of CBT across all level of the WSQ system, with particular attention paid to distinguish those concerning the higher level competencies:

i. The definition of competence;
ii. Issues with competence-based assessment (CBA);
iii. Concerns over difficulties in codifying competencies into outcome statements; and
iv. That CBT marginalises theoretical knowledge.

In the review of the first recurring argument, the literature on the definition of competence is examined which uncovers that there are distinctions between the academic debates over what should be defined as the principle competence versus the actual implementation of the form of competence at the workplace. Among the implementers of CBT, there appears to be a trend towards shifting away from the "reductionist and behaviourist concept of competency" in favour of the growing acceptance towards a more "multi-dimensional and more analytical concept", also referred to by several authors as a "holistic" form of competence. The parameters of this "holistic" from of assessing for competence are surfaced which brings to light the importance of clear competency statements for the implementation of a measurable from of competence.

Issues with the implementation of CBA are reviewed next where the arguments raised by critics of NQF – such as Alison Wolf (1995) – are examined to consider the inherent contradictions within the form of competence developed by United Kingdom's (UK) National Vocational Qualification (NVQ) system and their model of implementing CBA. An alternate view by Hager, Gonczi and Athanasou (1994) as to how an integrated and holistic approach towards conceptualising competence, coupled with a well-designed CBA system could overcome the objections raised by such critics of the NVQ form of competence is presented.

The review of the third recurring argument reveals that concerns surrounding the ambiguity resulting from codification of learning outcomes and competency standards are inherent throughout the entire education spectrum and is not unique to CBT approach alone. The difference in the process of developing NVQ competency standards as compared to the methods used by other educational models is highlighted to distinguish that NQFs produce "occupational standards" which are concerned more with the validation of non-formal and informal learning while educational models produce "educational standards" which are concerned more with the learning process. Concerns over the differences in interpretation and re-interpretation of the "production" and "consumption" of standards are addressed by Stevenson's (2001) call for "holistic approach to teaching and learning".

In the review of the last of the recurring arguments with reference to CBT, the social-realists' critique of the displacement of theoretical knowledge within the curriculum of modern academic and vocational education is addressed together with concerns raised over CBT's marginalisation of the learner's access to theoretical knowledge. A case is made by the social realists for the Anglo-Saxon VET systems to incorporate some of best practices from the German VET system, particularly the German concept of "occupation" or *Beruf* to develop a comprehensive curriculum which aims to holistically develop the learner into the context of their occupation by forming an identity to become part of their profession or occupation. The evolving treatment of knowledge by different countries which have adopted NQF "occupational standards" model using their respective formats of competency CBT standards is considered in related to the form of competence adopted. Alternative theories related to the concept of knowledge in CBT – such as Billet's (2001) "curriculum for the workplace" are also reviewed to offer a different perspective on the subject.

The literature review then turns to the second of the three subject areas identified, "The development and implementation of NQFs", in order to appreciate the factors and conditions which has contributed to the concerns and challenges affecting the integration of CBT at the higher levels of the WSQ system. The historical context which led to the creation of the NVQ CBT approach are reviewed in this section, i.e.: the key decisions taken by the NVQ's original architects which shaped its eventual form of competence; the competency model employed to establish the NVQ framework's "concept or definition of competence" before being "operationalised" into "statements of competence"; and all of which were eventually adapted by Australia and Singapore to develop their own variation of a NQF. The efforts undertaken by

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UK and Australia to review their respective NQF's definition of competence to signal a move away from their previously performance-orientated form of competence towards a more holistic "standard of performance required in the workplace" is examined and against the WSQ current definition of competence to consider its currency for the Singapore workforce.

Within the last subject area identified for literature review, the contributing factors which resulted in the lack of capability among NQF trainers and teachers in developing and delivering CBT programmes are examined and related to recent efforts undertaken by WDA to raise the level of pedagogic competencies required for new trainers and teachers functioning within the WSQ system to develop well designed and pedagogically effective WSQ programmes using the CBT approach. The benefits of incorporating academic best practices to develop innovative and flexibly designed CBT programmes for the WSQ system is also explored.

Discussion

Most of the criticism levelled against the use of the CBT approach in NQFs over the past 20 years has been directed at its "Taylorist and behaviourist roots" (Eynon and Wall, 2002). Such detractors argue that the focus of CBT is on the completion of task-orientated performance criteria, supplemented by positive and negative responses by the organisation to bring about the desired outcome by the learner. Emphasis on rote learning methods has been the norm rather than understanding the actual learning process undergone by the learner, so much so that CBT has been criticised for focusing on a "narrow" approach towards establishing competence within learners. Proponents of CBT on the other hand draw on cognitive models of learning supported by the works of Bruner (1960), Ausubel (1963) and Gange (1965) which focus on the structuring of knowledge in a learning environment for effective acquisition of learning by the learner (Harris et al, 1995). Proponents also raise attention to the humanistic school of thought promoted by Maslow (1970) and Rogers (1983) which emphasis the holistic learning outcomes and the individual differences in the learning process, calling for more broader and holistic interpretation of competence to be promoted which draws on the best practices in curriculum development in education and training (ibid).

From the review of the literature on the definition of competence, it is clear that there appears to be a trend towards shifting away from the "reductionist and behaviourist concept of competency" in favour of the growing acceptance towards a more "multi-dimensional and more analytical concept", also referred to by several authors as a "holistic" form of competence. While a multitude of issues affecting the implementation of CBA were identified in the review, most of the critique are over the form of competence rather than the principle behind it. WSQ practitioners should explore further as to how an integrated and holistic approach towards conceptualising competence, coupled with a well-designed CBA system could be developed in the Singapore context to address the challenges for integrating CBT into the higher levels of WSQ. For example, Wolf (1995) questions as to why there is a general opposition among NQF practitioners against the use of written assignments within CBA methods. Jones (Voorhees 2001, p 16) makes a case for institutional research

support to be catered for the development of well designed valid, reliable and fair CBA, which would result in meaningful data for measurement and evaluation for progressive improvement. Gonczi, Hager, & Oliver (1990) argue that such effective use of CBA has been successfully implemented for the training of established professionals in HE, such as the medical, law and accountancy professions and make a case for its use at the higher levels of VET. The wide use of such formal research techniques on CBA are needed in the WSQ context to address the challenges arising from designing valid and reliable assessments for the higher levels WSQ qualifications.

With regards to the concerns raised over the virtual impossibility of sufficiently codifying outcome statements or competency statements, it is acknowledged that there will always be some degree of concerns over the level of accurate codification achieved during the development of standards across the entire educational spectrum. This should be viewed as a trade-off in light of benefits that such document has the potential to offer to teaching, and assessment of learning through the various educational approaches including CBT. However, it should be acknowledged that the process for identifying and codifying – frequently relying on the "functional analysis" method – NQF competency standards appears to be a "weak link" within the NVQ-CBT form of competence which in my view requires significant improvement to strengthen the WSQ system. The concerns over the deficiencies inherent within the functional analysis method are highlighted by Young (2010). Over in the United States, Erwin and Wise (Voorhees, 2001) articulate some best practices in competence-based learning models in higher education in terms of "*Standard Setting*" and "*Procedures for Determining Competency*". They caution readers from the onset that standard setting and competence testing are imperfect sciences. Erwin and Wise also detail the trade-offs between two standard-setting procedures – *Angoff's method* (a traditional method) compared against *The Bookmark Procedure* (a newer method) – currently used by higher education institutions in the United States to set standards for outcome based learning, for consideration by standard setting policy makers, Voorhees (2001, p 56-60).

Pertaining to the concerns over the marginalisation of theoretical knowledge in CBT, – raised by Young (1999, 2007 & 2009), Wheelahan (2010) and Billet (2001) – theorise their concerns over the role of knowledge in CBT, VET, curriculum and education. Such theories should be viewed by CBT and VET practitioners as important conceptual breakthroughs which illuminate and expand the community's understanding of the principles and forms of competence which facilitate workforce education. While "theoretical" and "everyday knowledge" may be viewed from different conceptual lenses as conceived by the originators of these concepts, there is a concern that these important discoveries may not result in anything more than conceptual or academic arguments (Lum, 1999) unless they are integrated as knowledge for enhancing education in workplace and the labour market through the structures offered by CBT, VET and education systems. Such conceptual theories of knowledge in CBT offer WSQ practitioners a conceptual foundation to frame their own deliberations about their choice of approach towards VET curriculum and pedagogic practice. Ultimately, each nation's policy makers, education providers, employers, workers and learners have an active role

towards finding their own level of equilibrium at a societal level to decide between providing and gaining access to two main types knowledge required by workers and learners, i.e.: *"knowledge for performing <u>at</u> the workplace"* and the *"knowledge for performing <u>beyond</u> the workplace"*. Such stakeholder's success in establishing socially acceptable trade-offs will likely contribute to the society's choices between these two types of knowledge, usually as part of a wider societal level life-long learning policy. These policies in turn will contribute to the factors deciding how knowledge is treated within education, VET, curriculum and incorporated within CBT.

By tracing the history of the development and implementation of NQF and considering the evidence uncovered from reviewing the historical development of the NVQ framework, it is possible to conclude that a broad or holistic interpretation of competence did not take root as a result of the considerable challenges faced by the policy makers in their "operationalisation" as originally envisioned within UK's White Papers of the 1980's. The distorted interpretation of the definition of competence and policy maker's deviation from the initial version of the "Job Competence Model" had contributed significantly to the eventful limited NVQ form of competence which eventually took shape had ironically resulted in a performance-orientated or narrow interpretation of competence and CBT permeating throughout the NQF system of the 1980's, as criticised by Bob Mansfield, (Burke 1989, p 33). Both the AQF (2010) and WSQ systems, in the process of adapting the NVQ model, have inadvertently also incorporated their performance-orientated form of competence at the inception phase of implementing their respective NQFs. Similar to the NVQ experience, the AQF and WSQ systems also appear to have orchestrated their respective accreditation requirements in favour of performance-orientated training and assessment methods, which in turn has fostered a training environment which is conducive developing programmes pertaining to routine and directly observable tasks, mostly at the lower levels of their respective qualifications.

Such a performance-orientated form of competence has contributed to the wide ranging critique of the CBT approach and often such critiques are mistakenly directed at the "principle of competence" rather the "form". The latter of course is at the heart of this issue is what needs to be addressed as the "distortions" resulting from the "operationalisation" of NVQ has inadvertently limited the potential for the maximisation of learning and assessment throughout the CBT approach at all levels of qualifications. It is only after years of research on the results of the implementation of CBT and after implementing a series of continuous improvement practices in the execution CBTA that UK and Australia have begun to address the issue by incorporating much more innovative and flexible learning and assessment strategies. Such a fresh perspective towards competence would not be possible if not for VET practitioners taking reference and learning from the best practices implemented in the educational contexts of outcome based academic education and for their willingness to accept a much broader or holistic form of competence.

This fresh attitude towards NQF and CBT had resulted in both the Australian and UK national qualifications' authorities revising their definitions, as part of

an ongoing process of updating their NQF related policies (NQC Australia 2009 and UKCES 2009). Such efforts undertaken to improve the NQF system reflects their wider goal for a more holistic interpretation of the learner's competence emphasising on the overall "standard of performance required in the workplace" as agreed by employers. Correspondingly, the adoption of a less prescriptive format of assessment to analyse learner's competence by these countries is in line with the move towards a more holistic approach of competence advocated by Deist and Winterton (2005, p 41).

Hence, by comparing the definition of competence adopted by the WSQ system against the newer definitions of AQF and NVQ, I offer the view that Singapore's six-year-old national qualifications framework is at a similar point of its NQF evolution as its predecessors, where there is still a strong dependence on performance-orientated assessments to determine the learner's competence, which inherently limits the potential for incorporating a wider range of learning and assessment methods at every level of qualification. I would recommend for WDA's policymakers to consider adopting a more holistic definition of competence for the WSQ system, as a start to signify to WSQ practitioners the willingness of WDA to incorporate a wider range of innovative and flexible learning and assessment strategies and of its support to ATOs, CET centres and the wider CET community for the development of high quality CBT programmes for all levels of WSQ qualifications – which holistically address the broader training needs of the context rather than only assess for performance – especially the higher level targeting PMETs. The importance of having a clear definition of competence and the integral part it plays in the setting of standards is emphasised by Erwin and Wise (Voorhees, 2001):

> *An integral part of achieving such a rigor is to have a clear definition of what it means to be competent. This definition represents the target state of examinee proficiency that will be referenced by the judges in choosing a passing standard. To the degree that the definition is vague or ambiguous, different judges will vary in their conceptualisation of competence, an agreement among judges will be more difficult to attain. … a poorly articulated definition of competence is one of the most common obstacles to a successful standard setting.*

> Voorhees (2001, p 11)

It is also possible to reflect that many of past criticisms surrounding the delivery of atomistic and modularised CBTA, could on hindsight, be viewed as indicators of the overall lack of capability among VET trainers and teachers to apply a high level pedagogic design and strategy onto their subject matter expertise. Judging from the experience of the more experienced countries which have implemented CBT, it is clear that planning, designing, maintaining, evaluating and reviewing the CBTA systems of training organisations will always be an ongoing effort. The success of such training organisations, its benefits to learners and employers and ultimately the NQF hinges on the capability of its VET trainers and teachers who are apply to continuously upgrade both their pedagogic and subject matter expertise to deliver CBTA

innovatively and flexibly by engaging their learners through enhancing their learning experience. In my opinion, the challenge for WDA then, is to find a balance within its implementation strategy in achieving its outcomes for higher levels of pedagogic capability among WSQ trainers and teachers, between its use of regulatory enforcement measures versus efforts to professionalise the role of Adult Educators through a mix of recognition and rewards, as part of its quest to achieve a high quality of programmes for the CET community (both WSQ and non-WSQ) which are able to address the needs of its learners in at a holistic level.

Conclusion

Based on the review of literature and analysis of findings, it is possible to conclude that the WSQ system has inherited the narrow form of competence from the original NVQ model and such a performance-orientated assessment structure stands in the way of integrating CBT approach for the development of higher level programmes for the WSQ system. Singapore is at a similar stage of NQF CBT evolution as experienced by UK and Australia before. Current WSQ practitioners appear to lack sufficient pedagogic knowledge and experience to support the development and implementation of a holistic CBT curriculum which is customised to serve the graduate profile of its learners and the longer term employability needs of employers, while meeting the outcomes set by the standard. Instead, the current WSQ programmes developer's primary goal appears to be orchestrated around meeting WDA's course accreditation requirements while rigidly adhering to the WSQ principles of open access, bite-sized learning, and principles of assessment and rules of evidence. I would argue that such a bite-sized, performance-orientated assessment focus has resulted overwhelmingly in the creation of fragmented WSQ programmes which tend to closely mirror the performance criteria of the competency standards rather that to be organised around a suite of learning and assessment methods most suited for the profile of the learners.

One way for WDA to address the deficiencies of the NQF form of competence identified would be to consider incorporating the best practices from other theories related to the subject of skills and competence such as the "*Five-stage model of adult skill acquisition*" developed by Dreyfus and Dreyfus (1986) and the concepts of *Communities of Practice (CoP)* and *Social Learning Systems* (Wenger, 2000) coupled with *Situated Learning: Legitimate Peripheral Participation* developed by Lave and Wenger (1991), to use WSQ competency standards as the basis of a wider holistic CBT curriculum to meet the respective needs of learners, employers and industry.

A much greater level of learning and assessment through the WSQ system would be possible through the adoption of a broader and holistic definition, applied to WSQ competency standards and scaffold towards facilitating the novice learner's entry and progression into an occupation or profession. Essentially the WSQ system can assist learners who are new to an industry or sector enter as "novices" through the attainment of entry level or lower level WSQ competencies for that job. However, rather than viewing the "novice" learner as having met the entry level requirements for a job, WSQ practitioners should take a more holistic developmental approach to consider

the learner as having had the opportunity to enter a CoP as a legitimate peripheral participant from the previous position of an outsider as articulated by the concept of *Situated Learning: Legitimate Peripheral Participation* by Lave and Wenger (1991).

As a conceptual model, the CBT approach is well suited to cater for the development of novice workers at the rank-and-file and supervisory levels, who need to be competent with entry-level competencies in order to be inducted into a CoP as "legitimate peripheral participants". Having secured a foothold into the organisation and the domain through a job, the learners and their employers can then embark upon suitable initiatives to involve and recognise their acquisition of broader and deeper competencies which would allow them to move within the community of practice at the workplace as full members. While such a CBT-CoP model may be critiqued as being taking a simplistic view of career transitions of novice learners into a new industry, I would argue that it would be in the interest of the respective industry, professions, sector groups and employers to successfully implement such a model as part of their long-term manpower strategy. Young (2010) provides examples of such "success" stories in the case of Accounting Technicians NVQs and Health Care in the UK where the NVQ system has been widely recognised and adopted by both the employers and job-seekers to meet the industry's longer term Human Resource Development needs.

For such novice category of learners, at the lower levels of the WSQ qualification system, WSQ programmes needs to be developed using a holistic curriculum approach through the detailed application of curriculum, pedagogic and assessment design considerations to not only meet the WSQ accreditation requirements of the competency standard but to enhance the overall learning experience of the learners using a variety of well designed learning and assessment strategies, which will result in better prepared workers entering the Singapore workforce. Besides offering training and assessment solutions to novice learners, the CBT approach has a distinct advantage over the traditional academic model as NQFs offer an alternate "Recognition of Prior Learning" (RPL) pathway for full members of a CoP, who are higher up the skills acquisition hierarchy, to be recognised for their current or past practice of the competencies concerned. By relating RPL to the past criticisms surrounding CBT, it is possible to infer that many of the issues raised has been surrounding the use of assessment methods which were designed for the evaluation of mastery levels of performance of practitioners of competencies which was imposed upon novice learners. Thus a case can be made to distinguish between the training and assessment methodologies developed for novice and experienced level learners of the WSQ system.

However, even if such a CBT-CoP model is successful, it will still be probably viewed as being inadequate by the social realists in its provision of access to disciplinary knowledge is essential for the comprehensive development of the social identity of the learners. While I support the arguments presented by the social realists with regard to the principle of access to "theoretical knowledge", I offer the view that such a proposition needs to be rationalised with the economic reality of the social context in which it is being implemented, especially in the face increasingly uncertain global economic conditions and

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shrinking budgets of educational and training organisations. Within highly market dependent economy such as Singapore's (Brown and Lauder, 2000: 113-114), I would argue that, NQFs offers an effective response mechanism for the Government and non-Government organisations to strategise and assist affected segments of the workforce (e.g.: retrenched, low-wage workers and the unemployed) to be trained to meet the needs of employers in an efficient and responsive manner. While it is acknowledged that such learners may only have access to limited horizontal knowledge structures via the CBT approach for a start, such training should be delivered using a comprehensive holistic curriculum approach for teaching and assessment of leaning in order to ensure that the learners are inducted into a "community of practice" of both the organisation and the domain as a "legitimate peripheral participants" with adequate support mechanisms in place for them to embark on their long-term acquisition specialist disciplinary or vertical knowledge structures required of the domain. It is also worth noting that emerging complex design strands of NQFs, which are designed to provide higher education at the Vocational Graduate Certificate and Vocational Graduate Diploma levels, are challenging the conventional assumptions about way the CBT approach is being used to deliver a high level of "applied knowledge" and "complex knowledge" to prepare workers for the "new workplace", (Priest, 2009).

Thus, I would conclude that most of the challenges affecting the integration of CBT at the higher levels of the WSQ system centre around the "distorted" narrow NVQ CBT form of competence. Singapore could learn from the best practices of other countries which have moved on to adopt a much broader, "holistic" form of competence to overcome the challenges identified in integrating CBT across the entire WSQ system, particularly at the higher level qualifications.

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