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Rethinking Skills in Vocational Education and Training:

From Competencies to Capabilities

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BVET

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Introduction

Governments around the world are concerned with skill – skill development, skill shortages, and skills mismatches. As with many other countries, Australia is seeking to increase its 'stock' of skills because they are considered intrinsic to innovation, competitiveness and productivity. Skills are also considered intrinsic to social inclusion as those without skill are marginalised from work, experience lower levels of health and well-being, and have less capacity to shape the major developments in their lives. However, while there is general agreement that skills are important, there is less clarity on the nature of skill, the kinds of skills we need and how they should be developed.

This paper has been commissioned by the New South Wales Board of Vocational Education and Training (BVET) to generate discussion about work, skill and qualifications. BVET has a tradition of publishing new work that questions existing orthodoxies in vocational education and training (VET) in Australia and this paper is part of that tradition. BVET's contribution to policy debates in Australia is wide-ranging; it provides the space we need to have robust debate so that existing policy is critiqued but also so that alternatives are challenged and improved in the process.[1]

The purpose of this paper is to be provocative. As authors, we regard the paper as the next step in the conversation about alternative ways of envisaging skills. Preparing the paper has been a challenge because while there is a well developed critique of existing VET policy and VET's competency-based training (CBT) qualifications, it is more difficult to develop coherent and well formed alternatives that go beyond general exhortations to do things differently.

As a result, we consider this paper to be a starting point for our thinking and not the end point.

Building on *Beyond Flexibility: Skills and Work in the Future*

The paper critiques existing notions of skill and qualifications in VET in Australia to make the case for change, but tries to go beyond that as part of a discussion about what we should do differently. While not attributing the views in this paper to BVET or to authors of previous work it has commissioned, it contributes to a discussion BVET started in 2001 when it commissioned work by the Workplace Research Centre (WRC) at the University of Sydney that resulted in *Beyond Flexibility: Skills and Work in the Future.*[2] BVET subsequently commissioned research by the WRC on skills ecosystems, and this approach has been influential in VET policy in Australia and in thinking about the relationship between VET and work. It led to the National Skills Ecosystem Program,[3] and it has informed work that has developed these ideas further in other contexts (see Buchanan, Yu, Marginson and Wheelahan 2009; Buchanan, Yu, Wheelahan, Keating and Marginson 2010).[4] This paper builds on those discussions. It takes many of the key concepts of skills ecosystems as a starting point and considers the implications for VET and for qualifications. The key changes that are taking place in society and in the economy are discussed in

[1] See: http://www.bvet.nsw.gov.au/projects.html for the range of projects BVET has initiated

[2] See: Buchanan, Schofield, Briggs, Considine, Hager, Hawke, Kitay, Meagher, Macintyre, Mounier and Ryan (2001)

[3] See: https://www.training.nsw.gov.au/businesses/training_options/managing_workforce/skill_ecosystem.html

[4] For publications on skills ecosystems and other BVET publications on innovation and new models of VET see: http://www.bvet.nsw.gov.au/projects_innovation.html

this paper, as are the policy issues that arise for governments and their impact on VET. While the paper presents frameworks for thinking about skill, it doesn't present a package of policy prescriptions that can be applied unproblematically. It does argue that Australia has developed the notion of competence underpinning CBT to its full potential and that a new concept is needed to transform vocational education further.

Introducing capabilities

The paper proposes for consideration a framework based on the capabilities approach developed by Nobel Laureate economist Amartya Sen (1985, 1992) and the philosopher Martha Nussbaum (2000). The capabilities approach is increasingly used in international and national public policy (Robeyns 2005; Henry 2007, 2009). There are many possible directions within the capabilities framework based on differing philosophical premises and so it is not possible to present a definitive model for VET in Australia, but it does open the possibility for some common ground and thus dialogue in VET on the nature of skill and the policy frameworks that are needed to support its development.

However, the argument in the paper is not for capabilities in general. It is not another argument for generic skills, employability skills or graduate attributes. This is because these attributes cannot be considered independently of the occupation for which people are being prepared. The key argument in this paper is that VET must prepare students for a broad occupation within loosely defined vocational streams rather than workplace tasks and roles associated with particular jobs (Buchanan 2006). Standing (2010: 13) explains that whereas an occupation is commonly defined by a career structure, a job has none. Training for a job is limited to the requirements of the job, whereas education or training for an occupation is premised on the notion of development and progression so that educational and occupational progression are linked.

A capabilities framework relates the conditions individuals need to engage in work and to progress through a career with the requirements of broad occupations. It focuses on what people need to be able to do to exercise complex judgements at work and what they need to be able to do in the future, rather than on workplace tasks and roles that have been defined for them or based on existing or past practice. This approach recognises the diffuse study and employment destinations of VET graduates, while also recognising that we need to enrich vocational qualifications by recognising the depth and complexity of vocational knowledge, as this is a core component of capability. This is recognised in UNESCO's 2004 Hangzhou Declaration which called for greater scholarship on vocational disciplines (UNEVOC 2004).

This paper emphasises the importance of theoretical knowledge for vocational qualifications. Access to theoretical knowledge is a fundamental component of capability. It is essential to support the development of vocational identities and practitioners who draw from and contribute to the knowledge that underpins their practice. VET qualifications will need to face both ways to the knowledge base of practice and to the practice of work (Barnett 2006). At present, VET qualifications mostly focus one way, to the practice of work and as a consequence diminish the complexity of that work.

The first section of the paper discusses changes that are taking place to the social settlement that underpins VET in response to economic and social challenges facing Australia. The next section discusses innovation and the impact this is having on work and workplaces and how this shapes notions of skill, and it offers a critique of the concept of generic or employability skills. It also considers the impact of changes to the economy on the sectoral divide between VET and higher education and compares and contrasts Anglophone and Northern European concepts of skill. This is followed by a discussion of CBT and the extent to which it

can remain the basis of VET qualifications. The final section considers the impact a capabilities approach would have on VET qualifications, standards, accreditation and assessment, and VET policy. This includes a discussion on deepening vocational knowledge to underpin workplace practice.

The social settlement underpinning VET is changing

The structure of VET, the way skill is envisaged, and the relationship between VET and work are always the outcome of a settlement between civil society (employers, labour and occupational groups), the state and educational institutions (Keating 2008: 3). Power is not equally shared in this relationship and Keating (2008: 3) argues that the key relationship is between the state and civil society. This is particularly clear in VET where educational institutions have less autonomy than in the higher education or the schools sectors, both of which are supported by very powerful, often overlapping, interests (Keating 2003). The concept of a social settlement underpinning VET also helps us to understand that VET must serve a range of different purposes but also different interests, and that the interests of all constituents are not the same. Clarke and Winch (2007: 1) explain that governments focus on the productive capacity of society; individuals focus on preparation for their working life and progression in the labour market; and employers focus on the immediate needs of their firms. They explain that these are conflicting interests, and as a result, the VET system represents a compromise and at the same time reflects the power attached to each of these different interests (Clarke and Winch 2007: 1).

Complaints about VET are not new

Australia's VET system is on the one hand regarded as world class, and on the other as needing reform to better support economic growth and increases in productivity (Gillard 2009). These views are not mutually exclusive. While the higher education and schools sectors are under increasing pressure to be more relevant to the needs of work, VET comes under particular scrutiny and critique because it is meant to deliver the skills that industry needs.

Hyland (1999: 99) says that employers in the United Kingdom have been complaining about education and training since at least the time of the Paris exhibition in 1867 when, even then, we seemed to be falling behind our industrial competitors. Debates over the extent to which VET should be directly tied to the needs of work are also not new. Hyland goes on to say that in 1889 the UK passed the *Technical Instruction Act* to improve this situation, but in 1901, Lord Haldane:

> … still felt the need to remind politicians that the country had to train the minds of our people so they may be able to hold their own against the competition which is coming forward at such an alarming rate…(Hyland 1999: 99)

VET will *always* be criticised, for three reasons. First, if its purpose is primarily to prepare people for work then it will be found wanting as the demands of work change and as a consequence of changing notions about appropriate preparation for work. Work has changed dramatically in the last 100 years, as have ideas about the purpose of VET, its relationship to work, its broader role in society and the nature of curriculum (Rushbrook 1997; Anderson 1998; Goozee 2001). Industries change at different rates and in different ways, and employers even within the same industry have different needs. It is not possible to reconcile these differences within one system. Second, the nature of the social settlement is always subject to negotiation as the various constituents press for greater consideration of their concerns in response to broader changes in society and the economy. Third, problems in the economy and mismatches between skills and work are attributed to problems with VET even though the relationship between VET and work is

mutually constitutive, and problems can also arise from ineffective deployment of skill in workplaces (Skills Australia 2010a).

Reconsidering the nature of skill provides an opportunity to revisit the social settlement and ensure we develop approaches that better suit future needs. The current social settlement underpinning VET dates from the late 1980s when the Australian and state governments agreed to make CBT the exclusive curricular basis of VET qualifications to tie it more tightly to the needs of industry. Our debates echo the debates in the early 1900s; CBT is under challenge because of perceptions that it cannot produce autonomous workers who can hold their own and contribute to innovation in a changing economy and society.

Why the social settlement is changing – changes to society and the economy

The social settlement that underpins VET in Australia is changing, in part through its relationships with the schools and higher education sectors, and because of changes to work and society (Buchanan et al. 2010). Australia needs more coherent and interconnected sectors of education and all sectors of education need to prepare students for further study in their field and for uncertain futures in work. The scale and pace of change in society and the economy mean that the changes that VET will need to make to its qualifications and the way it understands skill go beyond tweaking. Skills Australia (2010a, 2010b) argues that not only must VET grow (as must tertiary education more broadly), but what it does needs to change.
Skills Australia (2010a: 1) explains that:

> Australia faces a number of pressing workforce threats and opportunities.
>
> Some, like those associated with environmental change and new technology, are global challenges.
>
> Others, like demographic change, our economic performance and social inequality are largely national but are just as serious. To position Australia to meet these challenges requires new ways of thinking about skills and knowledge and their application in the workplace and the community.

Australia needs to increase its workforce participation rate and productivity and build social inclusion (Skills Australia 2010a, 2010b). It needs a more educated population as well as a more skilled one as a consequence of the growing complexity of society and the economy and pace of change. Most people's life chances are related to their access to, and success in, education and this now means completing school and participating in tertiary education.

Australia, like most industrialised countries, has been progressively moving from elite to mass and more recently towards universal higher education over the last 30-40 years in response to changes in society, the economy and technology (Trow 2005). Australia now has universal tertiary education and is on the cusp of universal higher education which Martin Trow (1974, 2005) defines as participation by 50% or more of the relevant age group. Trow argues that the purpose of universal higher education systems is to prepare the whole population for rapid social and technological change. All individuals will need foundation skills even to participate in low-skilled work and in their communities and civil society, and more people will need higher levels of skill.

Consequently, a notion of VET that is limited to preparing people for specific workplace tasks and roles is far too limited.

Why the social settlement is changing – the effect of government policies

In response to these developments, the Australian and NSW governments have specified targets for higher levels of

participation in, and attainment from, education and training. This includes increasing the percentage of the population with degrees and higher level VET qualifications, increasing the percentage of students from low socio-economic backgrounds in higher education, decreasing the percentage of the population with no or low level qualifications, and increasing school retention rates and the outcomes of Indigenous school students (Commonwealth of Australia 2009; NSW Government 2010c; DIIRD 2010).

The NSW Government's (2010a, 2010b) *Business Sector Growth Plan* and its *NSW Regional Innovation Strategy* regard education and training as a major enabling mechanism to improve innovation, competitiveness and productivity in NSW. The NSW Government's (2010a: 56) premise is that educational pathways between schools, vocational and higher education are a key to addressing and meeting the State's skills needs, particularly in areas of skills shortage.

The changes to tertiary education go beyond the need for growth; it is not a case of more of the same but just bigger. The content and focus of qualifications is expanding to accommodate a broader range of purposes, particularly in VET. VET qualifications now must equip students with the knowledge and skills they need for work, but also ensure that they have adequate language, literacy and numeracy skills and foundation skills, green skills needed for a sustainable economy and society, technological skills, and the knowledge and skills they need for further learning as the basis for changes to their existing work and for occupational progression (Wheelahan and Curtin 2010). This is exemplified by:

- the revised Australian Qualifications Framework now requires all qualifications in all sectors (with the exception of the doctoral qualification) to prepare students to study at a higher level in their field (AQFC 2011);
- the endorsement by Council of Australian Governments (COAG) of a 'Green Skills Agreement' in 2009 to revise VET qualifications to incorporate skills for sustainability;[5]
- the focus on language, literacy and numeracy and IT skills in policy (see, for example NQC/COAG, 2009; Skills Australia 2010a, 2010b);
- governments' focus on pathways as a key workforce development strategy (see for example, Bradley 2008; SA DFEEST 2010; NSW Government 2010b, 2010c; DIIRD 2010); and
- the finding in the report *VET Training Products for the 21st Century* by the NQC/COAG (2009: 10) that there needs to be more attention to specifying underpinning knowledge and theory in higher level qualifications, and the preparatory or enabling qualifications needed to support foundation skills, and the need to build general workforce capability.

A greater focus on pathways requires improved curricular coherence between qualifications in the different sectors. All of this suggests that the educational purposes of VET require more emphasis if the vocational purposes are to be achieved. We argue in this paper that current VET qualifications are not able to meet these requirements effectively.

[5] See: http://www.deewr.gov.au/Skills/Programs/WorkDevelop/ClimateChangeSustainability/Pages/GreenSkillsAgreement.aspx viewed 11 March 2011

The relationship between skills and work

This section discusses the changing nature of work and the factors that support innovation. The first part focuses on the nature of innovation and innovative workplaces. It then discusses problems that arise from using markets to match skills, qualifications and jobs. The penultimate part argues that the focus in policy on generic skills or employability skills is misplaced because such skills cannot be considered independently of the occupations for which people are being prepared. The final part of this section discusses the impact of changes to the economy and the nature of work on the sectoral divide between VET and higher education sectors.

Innovation and discretionary learning in workplaces

Countries are trying to increase the percentage of their population with tertiary education qualifications to be competitive in the international economy.[6] International government organisations such as the

World Bank argue that countries have to invest in tertiary education if they are to be more innovative and responsive to the needs of a globally competitive economy and the changing labour market requirements for advanced human capital (World Bank, 2002: 6). Nations need to build the capacity for organizations and people [to] acquire, create, disseminate, and use knowledge more effectively for greater economic and social development.

The ways in which knowledge and skills are deployed in the workplace are of great significance (Skills Australia 2010a). The OECD's (2010a) review of the literature on innovative workplaces identifies four main types of workplaces. The first is the discretionary learning workplace; the second type is the lean production organisation; the third consists of enterprises that use Taylorist forms of work organisation; and the fourth type of workplace uses traditional forms of work organisation.

Discretionary learning workplaces are distinctive in combining high levels of autonomy in work with high levels of learning, problem-solving and task complexity. These businesses have lower constraints on work-pace, less monotony and less repetitiveness. They have average levels of team work and less than half of the employees in this group participate in job rotation which the OECD (2010c: 36) says points to the importance of horizontal job specialisation.

Lean production organisations have low levels of employee discretion in setting work pace and methods. However, they have much higher levels of job rotation and team work, and work is more constrained by quantitative production norms and by the collective nature of work organisation. Lean production organisations use quality norms the most of the four types and have considerably higher than average employee responsibility for quality control. The OECD (2010a: 36) says that lean production organisations have a structured or bureaucratic style of

[6] There is debate on whether we live in a knowledge society, knowledge economy, or innovation economy (Webster 2006). This is part of a broader debate about the extent to which globalisation represents a fundamental shift to globalised structures that transcend the nation state, or whether the current international economy is an extension of existing international relations characterised by concentration of wealth by powerful nations (Held and McGrew 2007; Jarvis 2007). However, regardless of various positions in this debate, there is general agreement that the international economy is characterised by greater international flows and more intensive knowledge work – at least in some sections of the economy. This will have implications for education and training (Field 2006).

organisational learning that is very similar to the lean production model derived from Japanese businesses in the 1990s.

Taylorism is the opposite of the discretionary work organisation: it has low discretion and low level of learning and problem-solving.

The fourth group, traditional organisations, are characterised by monotonous work, low learning and low task complexity and few constraints on the work rate. The OECD (2010a: 36) says that traditional organisations have work methods which are mostly informal and uncodified.

Arundel and Hollanders (2005) classify businesses into four types according to the level of novelty of the businesses' innovations and the creative effort that the business invests in innovation internally. *Lead innovators* have creative internal innovative activities as an important part of the businesses' strategy. Lead innovators have introduced at least one product or process innovation developed at least partly internally, perform R&D at least occasionally and have introduced an innovation which is new to their market. These businesses are also likely sources of innovations that are later adopted or imitated by other businesses.

Technology modifiers mainly innovate by modifying technology developed by other organisations. Technology modifiers do not perform R&D and many are essentially process innovators that innovate through internal production engineering.

Technology adopters do not develop innovations internally and thus acquire all their innovations externally by, for example, buying new production machinery.

The fourth category is of *non innovators* (OECD 2010a: 51).

The OECD (2010a: 52-58) correlate the relation between the four types of work organisation (discretionary learning, lean production, Taylorism and traditional organisation) with the four levels of innovation (lead innovators, technology modifiers, technology adopters and non innovators). They found a positive correlation between discretionary learning businesses and those that are lead innovators and technology modifiers and a negative correlation between discretionary learning businesses and non innovators.[7]

There are two conclusions to be drawn from this discussion. First, education and training systems can supply skills but they must be effectively deployed in the workplace. Second, while employers must effectively deploy skills, education and training systems need to focus on producing workers who are autonomous and can engage in discretionary learning to support innovative workplaces.

Mismatches between education and skills, and work

The fit between qualifications and occupations is quite loose, except for some regulated trades such as electricians and professions such as physicians (Karmel, Mlotkowski and Awodeyi 2008). There have been numerous studies in Australia and overseas which find that some tertiary graduates are in jobs that don't need their level of education (education under use), some are in jobs which normally require a higher level or longer education (under education), some workers are in jobs which don't need their particular qualification (qualification under use), some are in jobs for which they are not qualified (under qualification), some workers are in jobs that don't use all their skills (skills under use) and some workers are in jobs for which they are not fully skilled (under skilling).[8]

[7] The strongest positive correlation is between discretionary learning businesses and lead innovators, with an R^2 of 0.44 significant at the .05 level. There is a negative correlation between lean production organisations and lead innovators (R^2 of 0.44) and technology modifiers (R^2 of 0.47); and, a positive correlation with technology adopters (R^2 of 0.29) and non innovators (R^2 of 0.36).

[8] See CEDEFOP (2010); Galasi (2008); Linsley

About 30% of Australian workers have education, qualifications or skills that are not well matched to their job, and this is consistent with findings overseas. Furthermore, education, qualifications and skills mismatches are not just the result of temporary adjustments as workers enter the workforce or adapt to technological or structural change, but persist for many workers over several years (Mavromaras, McGuinness and Wooden 2007: 281). These studies further undermine the existence of a close link between vocational education and employment, whether this is considered by level of education, skill or occupation. Most vocational and higher education is not closely linked to occupations; education for regulated trades and occupations is a minority of VET training.

This is not to argue that vocational education shouldn't be practical or related to an occupation, but that the link is looser than previously claimed or sought. There are implications for the design of vocational qualifications. It means they must be more holistic rather than role or task-focused, and emphasise the knowledge base of practice to a far greater extent to give students a greater understanding of their broad occupational field. This is discussed later in this paper.

It also has implications for the mechanisms for matching workers and jobs. Evidently, even a liberal market economy such as Australia's can't rely on the market for an optimal matching of educated and skilled people with the jobs that can make the best use of their education, qualifications and skills. Additional mechanisms are needed to match trained workers and the jobs that need them. The skills ecosystem approach offers some guidance on the kinds of mechanisms that may be developed (Buchanan 2006). This is also discussed later in this paper.

(2005); Mavromaras et al. (2010); Messinist and Olekalns (2007); Miller (2007); O'Connell (2010); Richardson et al. (2006); Ryan and Sinning (2011); and, Watson (2008).

Problems with generic skills

The mismatch between qualifications and jobs is one reason for the emphasis on generic skills in policy. The rapid pace of social, economic and technological change is another. This is exemplified by the World Bank (2007: 118) which argues that people need new competencies for the knowledge economy. These include cognitive skills (such as skills in language, communication, logistical and mathematical thought); cognitive problem solving skills; self-learning and self-knowledge; social skills (such as team working, negotiation skills, self-confidence, and developing social networks) and motivation for work (including initiative, responsibility, commitment, and interest).

The OECD (2010c: 58) posits a similar group of skills which include basic skills and digital age literacy; academic skills; technical skills; generic skills; soft skills (appropriate emotions and behaviours, multicultural awareness and understanding, receptiveness etc) (see also The World Bank 2002: 30; OECD 2007: 18); and leadership skills.

In Australia this emphasis on generic skills is expressed as employability skills in VET and graduate attributes in higher education. All VET qualifications must include employability skills (DEEWR 2011), and the Commonwealth Government is attempting to develop indicators for generic skills as well as discipline specific indicators in higher education (DEEWR 2009a: 19).

This is a common attempted resolution of the tensions between training for one workplace and a range of workplaces and training for immediate and future relevance. But this resolution is illusory. Communication depends heavily on subject since all skilled occupations have highly specialised language – jargon – and is also highly sensitive to context. Solving an electrician's problem such as calculating how many power points may be run off a cable is quite different from solving a nurse's problem such as ensuring a patient takes their medication.

Communication skills are a core skill for hairdressers since communicating with their clients is part of their client service. This is a different skill from the car mechanic's skill of communicating with their clients which requires mechanics to explain the maintenance and service of a car in lay terms, which is different again from their skill in communicating with technical precision with other mechanics, suppliers and other specialists. As Young (2005: 15 –16) explains, there is no curriculum and no scheme of assessment that could teach or assess a form of generic problem solving that would apply to both. Volmari et al (2009: 18) explain that competence is context-dependent (trialogical learning). Thus its assessment is linked to the prevailing valuations and the operating environment. The OECD (2010c: 58) in citing debates about generic skills, says that problem solving, for example, takes place within a certain work environment and culture and is influenced by routine procedures.

The common terms in which generic skills are expressed mask the differences they are trying to surmount. Consequentially generic skills either become so rooted in their immediate context that they are not transferable to other contexts or become so general that they lose their direct relevance to the workplace. Moreover, emphases on generic skills tend to under-emphasise the technical or domain-specific knowledge of particular occupational areas. In particular, arguments about the rapid obsolescence of knowledge within industries have led to the deprofessionalisation thesis (Pahl and Rauner 2009: 196). In arguing against this, Pahl and Rauner (2009: 196) cite research that demonstrates the importance of professional knowledge for the development of professional competence, even with growing discontinuity between careers. Domain specific knowledge is, they argue, the basis for professional competence. In citing arguments about generic skills, the OECD (2010c: 58) explains that critics argue that to solve anything but the simplest problem, expertise and specialist bodies of knowledge are likely to be required.

The notion of soft skills may come into play *after* specific requirements have been satisfied. For example, the OECD (2001: 105) notes that most surveys of employers' hiring decisions ask about hiring at a particular level which requires a particular level of education and technical skill as a prerequisite. It therefore concludes that soft skills should be considered supplementary to established educational requirements. Lauder, Brown and Ashton (2008: 28-29) note that because of the strong supply of technically competent graduates employers in their survey were more concerned with soft skills in recruiting staff. That is, given a sufficient supply of suitably qualified labour, employers are able to discriminate between applicants at a more fine-grained level. But even here, soft skills are contextualised; for example, the soft skills required in the hair-dressing industry will be different to those required in the science laboratory.

Australia's 'tracked' education system

Changes to the economy and society are putting pressure on the way that Australia organises its education system and the sectoral divide between schools, VET and higher education. There are two main ways that industrialised economies organise their education systems: differentiated or tracked systems which are characteristic of Northern Europe; and, unified systems which are characteristic of Anglophone liberal market economies.

Traditional, tracked qualifications systems emphasise the different purposes of VET and higher education qualifications and the different occupational destinations they are designed to serve. Unified systems differ because while their sectors and institutions have different orientations, their qualifications are less differentiated and they emphasise student pathways between qualifications to a greater extent (Moodie 2003; Young 2005).

The differences in the education systems between Northern Europe and Anglophone countries reflect differences in the way each organises their economies. The economies of Northern Europe use social partnerships between government, employers, and labour to match graduates to jobs in relatively stable labour markets, whereas Anglophone liberal market economies use the market as the mechanism for matching graduates and jobs in more volatile labour markets (Hall and Soskice 2001). Tracked systems work if graduates enter relatively stable labour market destinations and if they are able to effectively allocate graduates to job vacancies and to careers that draw from the differentiated knowledge base in each sector (Moodie 2003). Unified systems are designed to meet the needs of more fluid labour markets in which knowledge and skill requirements change in response to more rapid change in markets and processes of production and technology, and this means that they are putatively underpinned by common knowledge and skill requirements. This is encapsulated most clearly in policy that establishes generic skills as an important component of qualifications.

Australia is unusual among Anglophone countries because it has a liberal market economy in common with other Anglophone countries while also having a differentiated tertiary education system that is similar to Northern Europe (Wheelahan and Moodie 2005). However, unlike many countries in Northern Europe which have tracked secondary education systems, the senior years of secondary education in Australia are relatively undifferentiated and the senior school certificates have been designed primarily to rank students for competitive entry to university (Keating 2006: 62-63). Keating (2006: 60) explains that:

> …the logic of these typologies would suggest that the post-school education sector in Australia should be similar to those of the UK, North America and New Zealand. Australia shares with these countries an untracked secondary school system, and upon this basis it should have a more diversified and generalist post-school sector. The open nature of these Anglophone generalist school systems allows for less regulated links with the post-school sectors which in turn can adapt into different orientations and generalist institutions. This contrasts with the academic and vocational tracks of the continental European secondary school systems that articulate relatively directly with the more specialized post-school sectors.

The rationale for different sectors in Australia is being further undermined by changes in the labour market and in society which is leading to much greater overlap in what the Australian VET and higher education sectors do in the middle. Both offer vocational and general education, and both seek to prepare students for work. Both seek to provide students with the capacities they need as citizens and to participate in their communities. Both seek to engage students in learning and provide individuals with the opportunity to develop their potential. Distinctions remain so that VET has responsibility for apprenticeships, traineeships and second-chance education, while higher education has responsibility for research and research training.

The blurring in the middle is principally arising because each sector is preparing students for similar kinds of occupations. The labour market destinations of VET and higher education graduates have become less differentiated with graduates from VET advanced diplomas/diplomas often competing with bachelor degree graduates for the same positions, and diplomas are being replaced by degrees as the entry level qualification in many industries (Foster, Delaney, Bateman and Dyson 2007; Karmel and Cully 2009; Karmel 2010).

As discussed earlier, the fit between qualifications and occupations is quite loose,

except for the trades and other regulated occupations such as physician (Karmel, Mlotkowski *et al.* 2008). Overall, when specific rather than broad occupational areas are considered, 29.7% of VET graduates in 2010 reported that they were working in the occupation directly associated with their VET qualification (NCVER 2010: Table 13). A further 32.8% reported that they were employed in other occupations, but found their training relevant. The similar occupational destinations for graduates in VET and higher education undermine the rationale for separate sectors and for the differentiated knowledge base in each. The increasing domination of the degree as the entry level qualification also undermines the occupational outcomes of diplomas and advanced diplomas, but enhances their role as pathways to degrees. Both suggest that there needs to be more curricular coherence between the sectors.

A critique of competency-based training

This section commences by contrasting Australia's notion of skills with Germany's; provides a critique of competency-based training models of curriculum and Australian training packages; and concludes with a discussion of the outcomes of VET.

A tracked system, but an Anglophone country notion of skills

While Australia is unlike other Anglophone countries in having a tracked tertiary education system as in Northern Europe, its notion of skill is more akin to Anglophone notions of skill than that in Northern Europe.

Mounier (2001) has analysed the notion of skill into three dimensions:

- cognitive skills – a foundation of general skills for general citizenship such as literacy, numeracy and general educational competence;
- technical skills – those needed to perform particular tasks for pay, such as recognised trade or professional skills; and
- behavioural skills – personal skills to perform as an employee, usually subordinate roles in the production process or the provision of a particular service.

Buchanan and colleagues (2001: 21) note that cognitive, technical and behavioural skills are embedded in the employment relationship as well as broader social structures, and this has different meanings in Anglophone and Northern European countries. Thus, skills aren't just developed by students in a tertiary education system to be subsequently put to work, but are mutually constituted by people, their education and their work.

Clarke and Winch (2006: 261) summarise Anglo-Saxon understandings of skill as follows:

- it tends to be regarded as an individual attribute or property;
- it is associated with tasks and jobs rather than occupations set within an industrial context;
- it is associated with physical/manual mastery or ability;
- it has no particular association with a knowledge base.

This is reflected in different versions of the *Training Package Development Handbook.* The 2007 version explains that the concept of competency includes all aspects of work performance, not only narrow task skills (DEST 2007: 3).

It says that competency has four components, which are:

- task skills;
- task management skills;
- contingency management skills; and
- job/role environment skills (ibid).

The latest web version has attempted to broaden this somewhat. It explains that:

> Competency is demonstrated to the standard required in the workplace and covers all aspects of workplace performance including:
>
> - performing individual tasks;
> - managing a range of different tasks;
> - responding to contingencies or breakdowns; and
> - dealing with responsibilities of

the workplace, including working with others.

> Competency requires not just the possession of workplace related knowledge and skills but the demonstrated ability to apply specified knowledge and skills consistently over time in a sufficient range of work contexts (DEEWR 2011).

However, as is discussed in more depth in the next section, qualifications are made up of units of competency, and units of competency describe:

- a specific work activity
- the conditions under which it is conducted
- the evidence that may be gathered in order to determine whether the activity is being performed in a competent manner (ibid).

VET qualifications start with the smallest component and aggregate units of competency to make a whole qualification. They do not start with the occupation and the development of the person within that occupation. Regardless of how competence is defined, it is still principally task-focused and does not focus on the expert knowledge intrinsic to that occupation and the way this is related to practice. It does not emphasise the development of occupational identity or autonomy. These arguments are developed more in the next section.

Kompetenze in Germany

The German VET system prepares students for a range of vocational occupations as in Australia and while it includes a number of elements, it is based on the dual-system of apprenticeship training in which apprentices are trained in the workplace and in vocational education institutions.
The Germans have different understanding of competence. Clarke and Winch (2006: 261) describe Germany's understanding of three-fold *Kompetenze* (roughly, competence) as including:

- *Fachkompetenz*: the disposition and ability to use expert knowledge and know-how to solve tasks and problems purposefully, appropriately and autonomously by using the right methods.
- *Personalkompetenz*: the disposition and ability to be clear about, review and assess opportunities to develop demands and restrictions imposed by family, occupation and the public, to fulfill one's own potential as well as to make and develop life plans. This encompasses personal qualities such as autonomy, critical faculties, self confidence, reliability, a sense of responsibility and duty, and particularly the development of moral concepts and self-determined commitment to moral values.
- *Sozialkompetenz*: the disposition and ability to live and create social relations, to realise and understand devotion and tension as well as communicate and engage with others rationally and responsibly, in addition to developing social responsibility and solidarity.

While Germany's *Kompetenze* reflect Mounier's three dimensional skills, they do so in a different way and are much broader than Anglo skills. They are also exercised as part of a *Beruf* (occupation) which has a body of systematically related theoretical knowledge (*Wissen)* and a set of practical skills (*Können*) as well as the social identity of the person who has acquired these (Clarke and Winch 2006: 262). In Germany there are about 100 *Berufe*, each of which has a well defined social, legal and employment role and status.
Germany's tracked system of tertiary education therefore has a broad notion of *Kompetenze* which prepares graduates for a broadly conceived *Beruf*. In contrast, Australia's tracked system of tertiary education has a narrow Anglo understanding

of skill which prepares graduates for a particular job. Australia's inconsistency in its construction of skills, occupations and its tracked tertiary education system is as equally unsatisfactory for students as it is for employers and educators because it results in discontinuities within tertiary education, between tertiary education and employment, and within employment. It needs to be resolved by a mutual adjustment of education and work to adopt broader conceptions of skills, qualifications and occupations. While this adjustment would make tertiary education less apparently applicable to a particular job as it is currently performed, it would in fact make tertiary education more relevant to work by forming more coherent pathways between tertiary education and employment which would be sustained beyond the short term.

A critique of competency-based training

There has been fierce debate of CBT and training packages in Australia, so much so that Schofield and McDonald (2004) called for a new settlement to underpin them in their high level review of training packages in 2004. This has led to amendments in the definition of competency to address concerns. In *VET Products for the 21st Century*, the National Quality Council (2009: 14) revised the definition of competency to explain it more clearly and to simplify and strengthen its meaning. Competency is now defined as:

> the consistent application of knowledge and skill to the standard of performance required in the workplace. It embodies the ability to transfer and apply skills and knowledge to new situations and environments (NQC/COAG 2009: 14).

The latest version of the *Training Package Development Handbook* says that:

> Competency is a broader concept than the ability to perform individual workplace tasks and comprises the application of all the specified technical and generic knowledge and skills relevant for an occupation. Particularly at higher qualification levels, competency may require a combination of higher order knowledge and skills and involve complex cognitive and meta-cognitive processes such as reflection, analysis, synthesis, generation of ideas, problem solving, decision making, conflict resolution, innovation, design, negotiation, strategic planning and self-regulated learning (DEEWR 2011).

Recommendation 10 from *VET Products for the 21st Century* is to "Allow for VET qualifications to provide for identified knowledge and preparatory units of competence as appropriate" (NQC/COAG 2009: 15). The purpose of these changes was to simplify and strengthen the meaning of competency and to address concerns that underpinning knowledge was inadequately incorporated. While these are laudable objectives, we argue that the structure of CBT precludes achieving these objectives.

Five problems with competency-based training

First, units of competency are still tied to the specific. Units of competence describe discrete workplace requirements and the knowledge and skills that are needed to demonstrate competent performance for that workplace requirement (DEEWR 2011). As explained above, units of competency can logically stand alone when applied in a work situation. This is based on an atomisation of jobs in which jobs consist of an ensemble of workplace roles and requirements and VET qualifications are made up of a matching ensemble of units of competence. The constituent elements of units of competency are further specified and include: elements of competence, performance criteria, required knowledge and skills, a range statement and evidence guides. Such detailed specification is

required because units of competency describe the outcomes of learning independently of processes of learning. This process of specification encourages reductive processes of learning that tick off outcomes, rather than holistic learning. Moreover, the unitisation of knowledge and skills results in the lack of a coherent knowledge base for a flexible workforce that is able to support change (Brockmann, Clarke, Méhaut and Winch 2008: 236). It makes the development of a theoretical basis for workplace practice more difficult by disaggregating elements of work rather than emphasising their interconnectedness.

Second, the outcomes of learning are tied to descriptions of work as it currently exists. They focus on the present (because outcomes must be related to a specific workplace activity) and thus emphasise tradition and inhibit the development of innovative knowledge and new forms of practice (Wheelahan 2010b, 2010c). This results in:

> [a] rigid backward mapping approach, in which the state of the art on the shop floor is the untouchable starting point for the definition of occupational competencies, leading to routinised job descriptions, in which the proactive and reflective worker is left out. (Biemans et al. cited in Brockmann, Clarke *et al.* 2008: 237)

Third, CBT still does not provide adequate access to underpinning knowledge and it will not while it is still tied to specific units of competency. Knowledge is still restricted to that which is actually applied at work so that knowledge is tied to specific tasks and roles in the workplace.

The *Training Package Development Handbook* says that:

> While knowledge must be expressed, units of competency, their elements or performance criteria should not be entirely knowledge based unless a clear and assessable workplace outcome is described. Knowledge in units of competency:
>
> - should be in context;
> - *should only be included if it refers to knowledge actually applied at work*;
> - could be referred to in the performance criteria and the range statement (DEEWR 2011 emphasis added).

This removes specific applications of knowledge from the applied academic disciplines which underpin professional and vocational practice. Students have access only to contextually specific elements of theory that are relevant to the particular context, so that the emphasis is on elements of content rather than the system of meaning.

For example, a mechanic will learn that a particular formula applies in a particular context, but this does not tell them if the same formula will apply in a different context, or what to do if they are confronted with the unfamiliar. They need access to mathematics if they are to exercise autonomy and judgement. In contrast, Clarke and Winch (2004: 516) argue that students need to learn the relevant theory and then learn to recognise instances of theoretical propositions in practical situations to which they can then apply appropriate means (Clarke and Winch 2004: 516).

Moreover, it cannot be assumed that knowledge can be tied to specific events because events are complex outcomes. Understanding how events are constructed, identifying those components that are contingent and those that are necessary, the differences between events, and their relationship to other events are critical aspects of understanding, particularly in allowing students/workers to discriminate, select and apply knowledge in an appropriate way to particular contexts.

Fourth, CBT is based on the simplistic notion that processes of learning are identical with the skills that are to be learnt. This is derived from behaviourist learning theory in which the outcomes of learning can be described in advance as observable behaviours that are aligned to a particular task, so if someone is observed undertaking a particular task, it is assumed that they have the knowledge they need (Jessup 1991). The conditions for learning are external, and what is to be learnt is a given (Smith and Ragan 2005). However, this underplays the complexity of learning and the resources that people bring with them when engaging in tasks. While there can be no learning without doing, underlying capacity lays the basis for new learning. This is widely recognised in the case of language, literacy and numeracy, but less acknowledged when it comes to systematic access to theoretical knowledge.

Young (2010: 16), in drawing from the work of the Russian learning theorist Lev Vygotsky, explains that:

> access to higher order concepts … [is] a complex two-way pedagogic process. Initially, the learner's everyday concepts are extended and transformed by pedagogy through engaging with the theoretical concepts of the curriculum. The process is then reversed; learners draw on their newly acquired theoretical concepts to re-engage with and transform their everyday concepts.

This allows students to 'think with' their ideas and concepts and not just apply them to specific situations. Theoretical knowledge becomes part of the lens through which they view the world. It is the basis for innovative learning in the workplace, and for educational and occupational progression.

Fifth, even though CBT is meant to certify that particular outcomes have been achieved, as Young (2003: 208) explains, this doesn't change the fact that:

> …the credibility, quality and currency of a qualification is only partly based on what it says the person qualified can do or knows; far more important is the trust that society in general and specific users in particular (those whom select, recruit or promote) have in the qualification…If one or other of these communities does not underpin a qualification, it will have a problem of credibility, however well specified its outcomes.

Outcomes of the VET system

VET measures graduate outcomes by the percentage of graduates who were in employment and/or further study post-training; the percentage who were in employment; and the percentage who were in further study. The outcomes from VET indicate that a new approach is needed. First, as discussed earlier, only 30% of VET graduates work in jobs that are directly associated with their qualification. While a further 33% found the training relevant, they may find it more relevant if their training prepared them for a broad occupational role with diverse destinations. The low percentage of graduates working in jobs directly associated with their qualification undermines the purpose of VET qualifications as currently defined, which is to provide the specific skills needed for specific occupations and to ensure efficient training. It is, however, difficult to argue that CBT results in efficiencies when most people will not be employed in those jobs.

The outcomes of young people in VET are cause for concern. The number of young people aged between 15 – 19 years in VET has grown by 28% over the last 10 years, and they now have the biggest share of any other age group (27%) (Productivity Commission 2010: Table B.15). Their employment rates have declined by about 5% over the last 10 years. Of more concern is the 7% decline in their further study outcomes during this time (Wheelahan 2010a: 6). Usually, further study rates decline when there is a strong labour

market, and study rates go up when the labour market is weak. In this case young students' study and employment rates have both declined.

Arguably, further study outcomes are more important for this age group than employment outcomes, because they need to have higher level VET qualifications to gain secure employment and get out of insecure, contingent employment. Karmel explains that while 40% of young VET graduates in 2004 proceeded to further study in 2005 (Karmel 2007: Table 18),[9] only a minority would go on to complete a qualification and so qualify as a graduate. Karmel (2007: 25) explains that:

> Completion rates are variable, and 12% of students have no recorded achievement at all.[10] Relatively few young people graduate at certificate III or higher, and only a small proportion of people undertaking certificates I and II complete the qualification and move on to further training (Karmel 2007: 25).

The outcomes for disadvantaged students are also poor (NQC/COAG 2009: 12). They are overly concentrated in low level qualifications such as certificates I and II, which are meant to provide pathways to work and further study. They do neither effectively and there are high rates of churn as students from disadvantaged backgrounds undertake further qualifications at the same level without progressing to higher level studies (Wheelahan 2010a).

Overall, there are benefits to students from completing higher level qualifications: they are more likely to be in secure employment, have higher rates of pay and more access to training at work (Karmel 2007, 2008). However, a key policy objective for VET is to support upskilling by providing people with training they can use to move to higher skilled jobs. Most workers do not move into a different occupational skill level post-training in VET, including over two thirds of those in low paid occupations and 86% of those in higher paid occupations (Pocock 2009: 20). Moreover, it is not clear that the broader benefits of gaining a VET qualification apply to those in low-paid occupations to the same extent as they do to VET graduates overall.

Pocock (2009: 20) says that:

> Prior to training, workers in low-paid occupations are more likely to be employed in casual jobs compared with those in other occupations. As the majority of graduates do not change their job or move to a different occupational skill level after training, it is not surprising that nearly one-third of graduates—and especially women and younger people—from low-paid occupations are employed on a casual basis after training.

We are not suggesting that these outcomes are solely attributable to CBT, however CBT was meant to result in more efficient outcomes, higher skilled jobs, better outcomes for young people and disadvantaged people, and enhanced educational pathways. These are the explicit policy objectives that underpinned the introduction of CBT. This has not been the result.

Implementation of Training Packages

The OECD review of VET in Australia recognised that Australia had a very high quality VET system, but found that training packages were difficult to use, expensive, too big, cumbersome and difficult to implement (Hoeckel, Field, Justesen and Kim 2008). They argue that in the absence of national assessments, there is no standard to ensure that a particular set of skills has in fact been acquired. They heard complaints that training packages were not in touch with the needs of

[9] Of these, 25% went to university, around 53% went to TAFE, and a further 20% went to other VET providers (derived from Karmel 2007: Table 18).

[10] This means that 12% of those aged between 15 – 19 years 'have not passed a single subject in their period of study' (Karmel 2007: 17).

industry and that they are frequently too complex to follow for teachers and trainers, who are not involved in their development. They concluded that:

> Now that a national system is well established…[training packages] have outlived their usefulness, particularly in view of the time and effort involved in developing and maintaining them (Hoeckel, Field *et al.* 2008: 37).

There are still complaints that training packages have not been implemented properly and teachers do not have the capabilities they need to use them to their full potential (Smith 2010). These complaints were also heard during the High Level Review of Training Packages in 2004, along with the view that there needed to be more trust in the professionalism of teachers and less emphasis on compliance and risk mitigation (Schofield and McDonald 2004). Guthrie (2009: 12) says that there is little public evidence available that the high level review's recommendations have been comprehensively acted upon. Arguably, training packages have been in place since 1997, and if Australian VET is still finding it difficult to implement them, it is hard to see why this will change in the future. All this suggests that a new approach may be needed. This is the focus of the remainder of this report.

Capabilities – A new framework for thinking about skills in VET

This section explores the extent to which the capabilities approach can act as a framework for skills in VET. As with the notion of competence and competency, the notion of capability is used in an equally bewildering variety of ways (Guthrie 2009; Cairns and Stephenson 2009). Higher education discourses often centre on capabilities or capacities to distinguish them from generic skills or employability skills discourses in VET. There is also a literature on capabilities in higher education and while some of this is relevant to the way in which the concept of capabilities is used here, this paper focuses on the broader notion of capabilities as developed by the Sen (1999) and Nussbaum (2000).[11]

The broader capabilities approach goes beyond individual attributes which is often the focus of the higher education capabilities literature,[12] to consider the social, economic and cultural conditions that are required to realise capability.

Moves towards the capabilities approach

The capabilities approach is increasingly being used in economic and social policy. It underpins the United Nation's Human Development Index.[13] The outgoing Treasury Secretary Ken Henry (2009: 7) explains that the development of Treasury's wellbeing framework was heavily influenced by Sen's work. Robeyns (2005: 94) explains that:

> The capability approach is a broad normative framework for the evaluation and assessment of individual well-being and social arrangements, the design of policies, and proposals about social change in society.

A little later, she says that: The core characteristic of the capability approach is its focus on what people are effectively able to do and to be; that is, on their capabilities (Robeyns 2005: 94). The capabilities approach distinguishes between *capabilities* and *functionings.*

[11] Sen (1993: 47)and Nussbaum (2000: locations 292-98) agree on the central focus of capabilities as the 'space' that asks about what people are able to be and do (and the necessity for resources and social arrangements to be constructed to underpin capabilities), but they differ over whether capabilities can be specified or codified in a fundamental list of capabilities. Nussbaum has developed a list of *central human functional capabilities* whereas Sen argues that such a list is unnecessary. Sen's discipline is economics, while Nussbaum's is philosophy. Sen acknowledges the affinities with an Aristotelian account of the human good, but emphasises important differences. Nussbaum attempts to ground the capabilities approach more firmly in Aristotle's philosophy. However, as Garnett (2009: 440) explains, both stress the multidimensionality of human freedom, and that freedom is a diverse concept. Both draw on concepts of negative freedom (freedom *from* – the absence of restraint which requires *civil* and *political* rights –, freedom of choice, affiliation, religion etc) and positive freedom (freedom *to* – which requires *social* and *economic* rights – the provision of social resources and opportunities needed to fulfil one's potential, such as education, social security, health provision etc) (Berlin 1998). Garnett (2009: 441) argues that while Nussbaum and Sen draw on negative and positive freedom, the emphasis they put on each differs.

[12] For an exception, see Walker and Unterhalter (2007).

[13] Amartya Sen's work underpins the United Nations' Human Development Index http://hdr.undp.org/en/humandev/origins/ (viewed 29 January 2011). The Human Development Index is at this website: http://hdr.undp.org/en/statistics/hdi/ (viewed 29 January 2011).

Capabilities refer to people's capacity to act, while achieved functionings refer to the outcomes that ensue when they choose to use their capabilities to achieve a particular goal. A complex set of capabilities provides individuals with the basis for making choices in their lives, whereas functionings are the outcomes when they exercise choice. A particular set of capabilities can produce any number of outcomes.[14] Walker and Unterhalter (2007: 4) explain that: The difference between a capability and functioning is one between an opportunity to achieve and the actual achievement, between potential and outcome. Sen (1993: 31) distinguishes between functionings and capabilities in this way:

> *Functionings* represent parts of the state of a person – in particular the various things that he or she manages to do or be in leading a life. The *capability* of a person reflects the alternative combinations of functionings the person can achieve, and from which he or she can choose one collection.

Two people with similar capability sets may make choices that result in different functionings or outcomes.

Sen (2000) defines social exclusion as 'capability deprivation' and this arises when people do not have the capabilities they need to choose how they will live their lives. He says that social exclusion can be both a cause and result of capability deprivation (Sen 2000: 5). For example, those excluded from education and training were generally disadvantaged to begin with, and continue to be so, in part as a consequence of their continuing exclusion. Far from being a deficit approach, the capabilities approach is based on human freedom and choice. Robeyns (2005: 95) explains that capabilities refer to effective opportunities to undertake the actions and activities that [individuals] want to engage in, and be whom they want to be. As an illustration, those who have disabilities that limit their mobility will have a narrower capability set if they do not have access to transport or other resources they need to undertake the activities they choose. Capabilities are not solely an individual attribute; they also refer to access to the resources individuals need to make choices, and the extent to which individual, social and environmental arrangements make it possible for them to exercise choice (Robeyns 2005).[15] In drawing on Sen's approach, Ken Henry (2007) argues that:

> Essentially, we must create a society in which all Australians have the opportunity to build a powerful set of capabilities – capabilities that allow all of us the freedom to choose to live our lives in ways that have real meaning and real value. This is not only vital for individuals, it is critical for our economy.

He says that education is not only an instrumental freedom – a means to an end – but also a substantive freedom, a constituent component of development (Henry 2007). In other words, access to and participation in education is part of a capability set, and not just merely an instrumental means to an end. It is what makes choice (capability) possible (Saito 2003). Moreover, Sen's approach also takes us beyond a simple focus on human capital. He explains:

> At the risk of oversimplification, it can be said that the literature on human capital tends to concentrate on the agency of human beings in augmenting production possibilities. The perspective of human capability focuses, on the other hand, on the ability – the substantive freedom – of people to lead the lives they have reason to value and to enhance the real choices they have. The two perspectives cannot but be related, since both are concerned with the

[14] See also Crocker (1992); Walker (2008)

[15] This is a key reason why the capabilities approach has been increasingly used within the disabilities field. See Terzi (2007a, 2007b).

> role of human beings, and in particular with the actual abilities that they achieve and acquire.
>
> But the yardstick of assessment concentrates on different achievements (Sen 2007: 99).

A caveat about the capabilities approach

There is an important caveat in the way we use the capabilities approach. This arises because as Robeyns explains above, the capabilities approach is a normative framework for evaluating, assessing and providing the conditions for individual well-being and social arrangements. It does not, however, provide a social theory that explains the *causes* of capability deprivation, or social arrangements and social distributions that cause inequality. This requires social analysis and social science (Sayer 2011: 238).

Social analysis is needed to provide the *social context* for the development of capabilities as it is this that gives capabilities their context. The absence of such an analysis can result, as Sayer (2011: 237) explains, in the application of context-insensitive norms or policies that are doomed to produce undesirable consequences. This in turn, can lead to lack of attention to the social conditions and social arrangements that are needed to realise capabilities. For example, while VET may provide education and training that helps students develop capabilities, these capabilities may not be able to be realised in workplaces that resist change, and provide few opportunities for discretionary learning or for the development of autonomous practice. Moreover, unless the conditions for the development of capabilities and for the exercise of capabilities is considered, a capabilities approach could result in little more than the *formal* provision of opportunities, without the substantive means to result in opportunities. For example, disadvantaged students who are disengaged from education require complex support if they are to experience success, which goes beyond passive provision of opportunities, or even worse, making participation a condition of income support.

Capability is contextualised by the broader social and economic environment in which people live and work, and consequently, we need to focus on the capabilities that people need for work, particularly to support innovation. If the focus is on the development of the individual and on work, then this means ensuring students have access to the knowledge, skills and capabilities they need to work in a vocation or broad occupational field. Education policy that considers capabilities in the abstract will result in abstract lists – such as generic skills, employability skills and graduate attributes. This is a danger that the existing capabilities literature in higher education can slip into. Much of the higher education literature (but not all) refers primarily to individual attributes and not to the broader notion of capabilities as realised through individual, social and environmental resources and arrangements. Consequently, it can focus on generic aspects of capability without contextualising them in vocations which give capabilities meaning.

Supporting the creation of autonomous individuals and occupational identities

The development of skills that are underpinned by complex capabilities requires an understanding of the nature of work, the relationship between education and work, and the kind of qualified person… we want to produce (Muller 2009: 217). Buchanan et al. (2009) argue that higher education and VET are premised on a different notion of the human actor. Higher education envisages autonomous individuals who are co-producers of their own learning, whereas VET envisages workers who are under the direction of others

(Buchanan, Yu *et al.* 2009: 15). Higher education provides students with access to principled knowledge that promotes autonomous reasoning, whereas VET focuses on contextualised knowledge and procedural knowledge. A capabilities approach may help

provide more curricular coherence between VET and higher education and thus support pathways and help overcome discontinuities in flows in education particularly if both seek the development of practitioners capable of autonomous reasoning (Buchanan, Yu *et al.* 2009).

As with the German notion of Beruf, supporting the development of autonomous reasoning will require access to a systematically related body of theoretical knowledge, a set of practical skills, and a social identity within an occupation or vocation (Clarke and Winch 2006: 262). A focus on the generic diverts attention from the development of social identities as the basis for participating in an occupation with a future. Bernstein (2000: 59) argues that specialised identities are:

> … not a purely psychological construction by a solitary worker as he/she undergoes the transitions which he/she is expected to perform on the basis of trainability. This identity arises out of a particular social order, through relations which the identity enters into with other identities of reciprocal recognition, support, mutual legitimisation and finally through a negotiated collective purpose (Bernstein, 2000: 59).

Arguments are often posited that that globalising economic processes and changes to the structure of the labour market are leading to a diminution of occupational identity. In contrast, Dostal (2009: 168) argues that the declining stability of employment structures and the growing mobility of job holders reduces identification with employers and strengthens identification with occupation.

A capabilities approach starts with the person and not specific skills

A capabilities approach starts with the person and not specific skills. It asks about the capabilities that people need in order achieve a range of outcomes. The capacity to exercise skill at work is an emergent property of more fundamental, complex and wide-ranging knowledge, skills and abilities. Capacity arises from the inter-relationship between personal, social and working lives, and that means learning *for* work needs to go *beyond* work. This is in contrast to training packages, which while insisting that language, literacy and numeracy skills must be explicit and recognisable in units of competency, that nonetheless, LLN requirements identified in units must reflect, but not exceed, those skills required for the particular work task the unit represents (DEEWR 2009b). People will need to learn several skill sets throughout their lives, but this does not make a vocation. Winch (2010: 560) explains that:

> It is not the practice of a bundle of skills but the way in which they are integrated into a form of agency, involving independent planning, activity and evaluation, which is of a potentially very wide scope that is important to this type of agency.

A capabilities framework to support agency in this way will require access to the applied theoretical knowledge that underpins practice in occupations and professions, but also to industry specific knowledge and skills that transcends particular workplaces and the tacit knowledge of the workplace (Barnett 2006). Effective VET pedagogy would explicitly orient to each while supporting students to integrate these different components of practice.

Learning outcomes, curriculum and pedagogy also need to be based on the notion of development so that a key outcome of learning is that students are able to progress to the next level of knowledge and complexity of practice. Barnett (2006: 152) explains that inevitably, the base-level activities in many workplaces largely involve situated knowledge, but in progressing to higher levels, a more even mix of situated and disciplinary knowledge becomes necessary.

Workers (and thus students) must continue to engage with the contextual at higher levels, but they use theoretical knowledge that is more complex and at higher levels of abstraction to do so.

The nature of qualifications and the design of curriculum will differ within different vocational fields of practice. Muller (2009: 217) explains that there is not one kind of professional practice and that important curricular differences arise as a result. The body of knowledge underpinning practice varies in complexity, depth and level of abstractness in different fields (Muller 2009: 219). Some qualifications will provide access to more strongly demarcated bodies of knowledge because this is needed as a precondition of practice, whereas others will have more emphasis on breadth of knowledge and contextual knowledge. However, while this is so, he argues that the conceptual demands of all occupations are increasing and access to conceptual knowledge is important for epistemological, economic and social justice reasons.

Implications for qualifications and standards

The above analysis has implications for the design of VET qualifications. This section discusses: building trust in qualifications; standards, accrediting qualifications, and assessment; and, the respective roles of the registered training organisation (RTO) and the workplace.

Qualifications and trust

As discussed earlier, there must be trust in qualifications if they are to be valued, regardless of what a qualification says that a person knows or can do. Trust is at two levels. The first level is systemic, and it is based on trust in the educational systems and institutions in a society. This means for example, that there is confidence that those who have qualified to become doctors are capable and competent, and that newly qualified electricians can be trusted to safely install wiring in a building. This trust takes a long time to be established, but it can be eroded quickly as we saw with the 2009 crisis in international education over the standards of education provided in some private VET providers.

The systemic level of trust is a necessary but not sufficient condition for the second level. This second level is more specific, and it applies at the level of qualifications and also pathways and credit transfer arrangements. Low levels of trust result in more and more specification of learning outcomes at finer levels of detail, but do not guarantee trust in qualifications. All they do is undermine the educational purpose of qualifications while at the same time increasing regulatory requirements which contribute to compliance cultures, rather than supporting innovation. Trust is based on confidence in teaching, learning processes, syllabi and assessment and not independently of these. For example, there was a collapse of trust in the Certificate IV Training and Assessment in part because of perceptions of delivery that was poor, or of dubious integrity. Conversely, there is extensive research to show that levels of credit and student transfer are higher when there is trust between institutions, and particularly in teaching and assessment (PhillipsKPA 2006).

This suggests that policy attention is needed to build communities of trust to underpin qualifications by helping to deepen the knowledge base of practice and to build a consensus on this knowledge, and to support VET pedagogy and assessment. This is discussed in the section on policy implications below.

Standards, assessment and accreditation

The development of standards, assessment and accreditation processes are interlinked aspects of a national VET system with portable qualifications that are underpinned by trust. Each is discussed in this section.

One of Australia's achievements in the last 30 years has been to create a national VET system with nationally portable qualifications. CBT was in part introduced to help achieve these goals. Australia must continue to have nationally recognised VET qualifications as this is intrinsic to building a nationally competitive economy. However, we need a much more simplified version of standards that are underpinned by a different conceptual basis.

The conceptual basis of CBT is that it is possible to specify outcomes objectively. The end result is pages of specification through all the various components of units of competency. This is necessary to tie down meaning, but in the end it is an elusive goal because it is not possible to tie down meaning so that everyone understands it in the same

way and so that it means the same outcome is applied everywhere.

An alternative approach would to have simpler version of standards based on preparation for a broadly conceived occupation that has a number of different occupational destinations within a broad vocational stream. Standards would be based on the judgement of recognised experts as representing the best understanding at present for the needs of practice now and in the future in that broad occupational field. This would include the knowledge base of practice. As an illustration, Engineers Australia's national generic competency standards for associate engineers (which generally require an advanced diploma or associate degree) have three broad domains which are: knowledge base; engineering ability; and, professional attributes.[16]

The development of a simpler set of standards that covered the knowledge base of practice, industry specific requirements, and professional attributes would result in a better focus on the development of the individual in the context of their broad occupation. They would also underpin nationally portable qualifications.

National consistency and confidence in VET qualifications would be further supported by a national assessment framework. The OECD (Hoeckel, Field *et al.* 2008) has explicitly suggested that Australia should consider such an approach, and Skills Australia (2010b) has suggested that we consider a system for the external validation of RTO assessments. The OECD (2010b: 148) explains that external validation can take many different forms and still ensure that qualifications remain responsive to local industry needs. For example, national assessment, validation or moderation could be focused on a core component of standards, while locally responsive assessment could be developed to suit specific industry requirements in particular regions.[17] This would help to build trust in the outcomes of qualifications and ensure national consistency around core components. It would be an important component of a quality assurance framework.

The final component of a national VET qualifications framework would be accreditation of programs against the national standards by a group of experts. This would allow the development of locally responsive programs and it would support innovation. Providers and teachers are more likely to invest in a program when they have developed the curriculum and assessment and this is more likely to be responsive to local needs. This means there would be a focus on inputs as well as outcomes. It would require negotiation over the development of the curriculum, the knowledge base, skills, and the nature of work placements. For example, in accrediting programs Engineers Australia takes into account:

- the teaching and learning environment;
- the structure and content of the program; and
- the quality assurance framework.[18]

Collaboration between RTOs, teachers, and industry experts on curriculum, teaching and learning and assessment would help to increase trust in the outcome of, and reduce the risks associated with, assessment. As Eraut (2001: 94) explains:

> When assessment follows a known training programme, there is evidence of trainees' experiences and learning trajectories, as well as final assessments, to help reduce the risk of false positive decisions. It is also possible to reduce the quantity of assessment by focusing on areas

[16] See Appendix A for the full list of Engineers Australia's competencies for associate engineers

[17] Indeed, it is possible that assessment of this sort could be nationally moderated or validated.

[18] See: http://www.engineersaustralia.org.au/about-us/program-accreditation/program-accreditation_home.cfm viewed 6 February 2011

> where reaching an effective level of performance is more difficult, and areas where below standard performance is more risky. Thus the separation of assessment from training inevitably makes assessment more bulky, more bureaucratic and more expensive.

The inter-related components of standards, national assessment frameworks and accreditation outlined above would contribute to increasing trust in vocational qualifications, while at the same time ensuring greater relevance through more extensive collaboration between industry experts and teachers through the process required to accredit programs. This framework also acknowledges the *distinct* contributions of the educational institution and the workplace in developing vocational qualifications. Developing programs will be the outcome of negotiation, and this means differing perspectives will arise. Robust discussion will no doubt ensue.

Far from this being a problem, it could be a driver for innovation. Granville (2004) explains that the end result of too close a relationship between the educational institution and the workplace is reproduction, whereas too loose a relationship results in irrelevance.

A possible objection may be that such an accreditation process would be slow and cumbersome. This is indeed a criticism that is often made of the German system which uses social consensus to changing curriculum and qualifications. However, arguably, the system we have at present is slow and cumbersome. Hoeckel et al. (2008) say that developing training packages takes a long time and is expensive. Major stakeholders can block or delay the development of training packages for a considerable time. Smith (2010: 61) illustrates this in explaining that endorsement of the Hairdressing Training Package in 2000 (and superseded in 2006) took five years. Guthrie (2010: 10) explains that the development and endorsement of the Certificate IV TAA was a protracted and difficult process and as a consequence the integrity of its design may have been compromised in the process. A new streamlined, quality assured and transparent process for the development and endorsement of Training Packages has been endorsed by the National Quality Council to enable greater speed to market,[19] but the process still seems to involve a lot of stages and requires broad consultation. Such processes are necessary because the risks are high when there must be *one* qualification for the entire country, in contrast to a simple set of standards that are used as the basis for locally developed qualifications, underpinned by a national assessment framework.

[19] See: the Training Package Development and Endorsement Process: http://www.deewr.gov.au/skills/overview/policy/tpdep/pages/tpdendorsementprocess.aspx viewed 19 March 2011.

Implications for policy

The implications for policy from the preceding analysis are that the focus would move from:

- products (training packages, assessment materials etc) to processes (brokering standards, accreditation and assessment); and,
- qualifications based on workplace tasks and roles to qualifications that prepare students for broad occupations within vocational streams or in other words, a move from competencies to capabilities.

A capabilities framework will help to support the development of a tertiary education sector, and extend the reach of existing policies such as skills ecosystems. It does this because it is premised on development of the person and their potential to proceed to higher educational and occupational levels. It builds on existing policy objectives of the NSW and Australian governments to support the development of a coherent tertiary education sector and pathways between qualifications and between sectors. However, the capabilities approach and tertiary education and pathways policies need to be situated within a broad approach to vocations that is premised on linking educational and occupational pathways. This will require attention to tertiary education but also to the structure of occupational pathways. Policy will need to address discontinuities and fragmented flows within the labour market, within education (between schools, VET and higher education), and between the labour market and education (Buchanan, Yu *et al.* 2009).

The skills ecosystems approach provides a framework for bringing occupational and educational pathways together (Buchanan, Yu et al. 2009), and the NSW and Australian governments developed the national skills ecosystem program to develop and test this approach.[20] Skills Australia (2010b: 54) recommends that this program can be an element of a broader program to encourage greater responsiveness of VET to partnerships that align with business strategies.

This report endorses that suggestion. This will require further thought on how to develop the skills ecosystems approach to explicitly focus on building communities of trust and broker collaborative development of standards, accreditation and national assessment frameworks that are tailored to support the particular needs of different industries. There would also need to be a move away from a focus on products (training packages and assessment materials) to a focus on brokering consensus on simplified standards that reflect the different conceptual basis as described in the previous section.

It may be helpful to experiment with different approaches to building communities of trust. Specific suggestions are discussed below. However, regardless of the model chosen, different industries may require different frameworks, particularly in accreditation and assessment. For example, the services industries may focus more on localised accreditation processes for regions that involve local employers, unions, and educational providers (schools, VET and higher education) from different sectors to ensure that programs can serve local needs more effectively, while at the same time developing national assessment frameworks that incorporate national validation combined with localised assessment strategies. Alternatively, it may be more appropriate in the case of public safety services such as the army, police, fire brigade etc to have accreditation processes that focus on the

[20] See: https://www.training.nsw.gov.au/businesses/training_options/managing_workforce/skill_ecosystem.html#Australian_National_Skill_Ecosystem_Program viewed 6 February 2011.

extent to which programs align to national regulations, standards and requirements for those industries. In this case, although there may be different state-based regulations and standards at times, it is still possible for experts to develop a set of national standards, as Engineers Australia has demonstrated.

Building communities of trust

Building communities of trust within skills ecosystems will help to promote more coherent occupational pathways. The development of occupational pathways is not given sufficient attention in policy; however, focusing on this will contribute to developing more coherent educational pathways. For example, Moodie (2010) shows nursing in higher education had the biggest proportion of commencing students with a prior VET qualification than any other higher education field of education. This is because of the strong occupational pathway from enrolled to registered nurse, and less to do with effective pathways between VET and higher education around the country. In other words, the occupational pathway came first, and the educational pathway followed.

There is very little interaction between the professional bodies that traditionally service higher education, and VET-specific bodies such as skills councils and more industry specific bodies (for example, MINTRAC which is the national industry training council for the meat industry[21]). This contributes to the divide between VET qualifications and professional qualifications offered by universities by reinforcing the distinction between low/medium skilled occupations and high skilled professions. It also contributes to discontinuities and fragmented flows within the labour market as discussed above (Buchanan, Yu *et al.* 2009). Engaging professional bodies will also help to build the knowledge base of practice, because as Bretherton and Oliver (2008: 42-43) explain, historically, professions have played a critical role in negotiation, preservation and integration of skill within a sector. They say that professional bodies are intrinsic to 'skills escalation' strategies because they are concerned with the development of professional knowledge and skill and their deployment.

Moreover, dialogue between the professional bodies and VET bodies would arguably enhance curriculum in *both* VET and higher education by leading to a better blend of occupational and theoretical knowledge on the one hand, and experiential experience in the workplace where students learn to integrate that knowledge with practice. It would help the development of coherent curriculum and teaching and learning strategies so that lower level qualifications provide the scaffolding for knowledge and skills at higher levels. The new Australian Qualifications Framework will also support this process by requiring all qualifications (with the exception of doctorates) to provide students with knowledge and skills to study at the next level in their field (Buchanan, Yu *et al.* 2010). It may also result in more effective and supportable integration of non-formal and continuing professional development into VET and higher education programs because all parties would have a better understanding of the nature of the learning that had been undertaken.

Building the knowledge base of practice

Deepening the emphasis on theoretical knowledge in vocational qualifications is not just a matter of including relevant applied disciplinary knowledge (as important as this is); it requires rethinking the nature of vocational knowledge.

[21] MINTRAC: http://www.mintrac.com.au/index.php viewed 20 March 2011.

The UNESCO 2004 Hangzhou Declaration called for greater scholarship on vocational disciplines (UNEVOC 2004). Dittrich (2006a: 7) describes vocational disciplines as the special sciences of occupational work which are concerned with the operation and maintenance of… technology in particular occupational areas and on work-processes in the area of skilled work. In contrast, the academic discipline usually deals with the development and application of technology. Vocational disciplines are the link between applied academic disciplines in fields such as engineering and their application in work.[22]

This suggests a new role for VET in researching the changing base of vocational practice in the industries it supports. It establishes a research role for VET that is different to research in higher education, but one which is crucial to innovation because it is focused on the transformation of workplace practice (OECD 2010a).

The Hangzhou Declaration specifies 12 broad vocational disciplines. These provide the framework for research in occupational fields and for the development of curriculum. The vocational disciplines consist of occupational fields or families, Dostal (2009: 165) says that:

> From the point of view of vocational training those occupational areas or fields are of far higher significance than single occupations and they characterise the stability of the occupational landscape in the long run.

The occupational disciplines are:

1. business and administration;
2. production and manufacturing;
3. civil engineering;
4. electrical and electronic, engineering and information and communication technology;
5. process engineering and energy;
6. health care and social care;
7. education and culture;
8. leisure, travel and tourism;
9. agriculture, food and nutrition;
10. media and information;
11. textile and design;
12. mining and natural resources (Dittrich 2006b: 3).[23]

This approach is congruent with a skills ecosystems understanding and a developmental approach to the development of occupations and vocations. However, Australia would need to review this framework and develop an approach that better reflected the structure of our economy and related occupations. For example, the elaborated list of vocational disciplines which groups different occupations arguably does not give sufficient attention to the creative and performing arts as industries.

Vocational disciplines are also characterised by their focus on learning because they would have a more direct relationship with vocational pedagogy and how to *teach* in those areas (Dittrich 2006a).[24] In this way, research on the changing base of vocational practice can inform curriculum. It would be a foundation for developing the scholarship of VET teaching (Boyer 1990) in Australia and it would provide a basis for research and development in VET. It would also provide a basis for VET teacher development by developing specialist areas that can be

[22] This is not to suggest that the applied academic disciplines do not have relevance in VET curriculum – they do, *as well as* their role in contextualised workplace practice. So, for example, engineering students would need to study mathematics as well as its contextualised use in work processes.

[23] See also Pahl and Rauner (2009: 193).

[24] Dittrich (2006a: 8) distinguishes between vocational disciplines and vocational pedagogy; vocational disciplines are focused on occupational practice and while vocational pedagogy is focused on learning in that field. Vocational pedagogy links vocational disciplines and the applied academic disciplines to learning to work in occupational fields.

included in advanced VET teacher qualifications and continuing professional development (CPD).

The *Quality of teaching in VET: final report and recommendations* (Wheelahan and Moodie 2010) recommended a two pronged approach to deepening and improving the knowledge base of vocational practice. First, it recommends that research on vocational disciplines and teaching in specialist vocational areas be developed. This entails building on generic research on VET pedagogy which characterises most research in Australia and it establishes a new field of research on workplace practices. Second, it recommended that advanced VET teacher qualifications (beyond entry level) and CPD provide opportunities for VET teachers to undertake studies in their vocational specialist field as well as more generic subjects. Research shows that teachers need pedagogic content knowledge, which is knowledge about how to teach in their content area, and support to deepen the underpinning knowledge of their content area (Shulman 2004). The *Report* noted that there was considerable support for this approach in consultations and in responses to the project's *Options paper*.

The Australian Chamber of Commerce and Industry (2010) argues in its submission to the Productivity Commission's VET workforce project that:

> There would also be considerable benefit in establishing a national professional development strategy that concentrates on knowledge and skills development in their industry area along with developmental pedagogy to assist VET practitioners in delivering skills and knowledge to learners.

Proposals for developing the capabilities approach to skills

This section proposes that BVET commission a pilot to develop and extend the approach developed in this paper. This is based on linking capabilities with skills ecosystems, vocations and the development of the theoretical basis of vocational practice. It is suggested that one or two vocational disciplines are selected and that an interlinked project be established to:

- consider the best way communities of trust can be developed to develop or consolidate standards, accredit qualifications, and support a national assessment framework within a vocational discipline. It may be helpful to compare and contrast two vocational disciplines to explore the extent to which different or identical models would be most appropriate;
- commission research into an occupational stream within a vocational discipline to consider the changing knowledge base of professional practice and changes to professional practice. In many industries new national provider standards are being developed (such as in aged care, or possibly in the disabilities industry) and these should be taken into account in considering the implications for practice in that field. Ideally, this work should build on existing research undertaken by BVET and others on particular skills ecosystems and industries;
- the research should apply this understanding to a consideration of curriculum in that field, and how curriculum can be scaffolded to support occupational and educational progression through VET qualifications and to higher education and to ensure students have access to the theoretical knowledge base that underpins their field of practice;
- commission an RTO partner in the project to develop a qualification and curriculum based on this research and collaboration with industry partners, which is then externally accredited and components of assessment are externally moderated. The outcomes of the project would need to be

evaluated.

Ideally, it would be best if two vocational disciplines could be included in the project, with one that already has established standards developed by experts and underpinned by strong professional bodies and a well developed body of professional knowledge; and, the other in an industry that is not yet characterised by these features, with more contingent employment, and under-developed occupational pathways. We suggest that engineering fits the first vocational discipline, as it has the standards established by Engineers Australia and a strongly developed professional body.

Aged care or the disabilities industry could be used as the second occupation within a vocational discipline. Both are industries with high rates of casualisation, labour market churn and poorly developed occupational pathways.

Both have been or are being reviewed by the Productivity Commission, and both industries are in the process of developing provider standards. An alternative may be to select either the hospitality or tourism industry as these are industries shaped by national factors and local requirements, with transient labour markets but also more developed occupational pathways in some 'higher end' providers. It also has the benefit of an existing body such as THE-ICE, which is a not-for-profit body that accredits qualifications in tourism and hospitality in VET and higher education.[25]

THE-ICE is also in the process of developing benchmarking for non-university higher education providers in their industries. Moreover, the industry has a skills council that has recently undertaken extensive research into the requirements of its VET teaching workforce.

[25] THE-ICE: http://www.the-ice.org/index.php?option=com_pages&Itemid=7 viewed 20 March 2011.

Conclusion

The framework developed in this paper provides a new way of thinking about skill in VET. It proposes a move away from competencies to capabilities.

CBT has made a contribution to the development of a national VET system and national qualifications, but it is time to move to a new way of thinking about skill. CBT is tied to the existing workplace and it does not provide students with access to the disciplinary systems of meaning that underpin vocational practice. Instead it provides students with access to contextually specific elements of theoretical knowledge, which can limit students' capacity to use knowledge in novel contexts. Government and its educational systems must equip the whole population for rapid social, economic, cultural and technological change, and this goes beyond training for specific jobs.

A capabilities approach emphasises building underlying capacity so students can realise a number of different outcomes. Innovative workplaces are characterised by high levels of discretionary learning, and VET needs to support the development of autonomous workers who can exercise judgement. The capabilities approach also emphasises the social mediated nature of skill. Capabilities are not just individual attributes; rather they require educational, social, economic and workplace arrangements that facilitate the realisation of capabilities.

A new concept of broad occupational standards would move away from the precise specification of learning outcomes to a simpler approach that emphasises the judgement of recognised experts. Standards would be one element of a national VET system that included national assessment frameworks and accreditation of qualifications against national standards by experts and other key stakeholders. Accreditation processes should include representatives of the schools and higher education sectors to promote curricular coherence. The nature of assessment would differ depending on the nature of the industry.

The implications for VET policy are that it needs to move from a focus on products (such as training packages and assessment materials) to a focus on processes (brokering standards, accreditation and assessment). The conceptual basis of qualifications will need to move from training people for specific workplace tasks and roles to a focus on the person and their development in preparing them for a broad occupational field.

It is suggested that the communities of trust are needed to broker standards, assessment and accreditation. They would also support the development of occupational pathways, and facilitate collaboration between the schools, VET and higher education sectors to improve educational pathways. Further research is needed on appropriate models for building communities of trust in different broad occupational fields that involves key VET stakeholders and professional bodies. This would contribute to the development of a more coherent tertiary education system focused on building vocations from low, medium to high levels of skill.

Furthermore, it is suggested that we need to rethink the nature of vocational knowledge so that it incorporates vocational disciplines. These would deepen the knowledge basis of occupational practice recognising the importance of the applied academic disciplines to vocational practice and vocational qualifications. A new research role is identified for VET in researching the knowledge base of workplace practice and the implications that will have for curriculum and pedagogy. Second, a framework for VET teachers is needed to undertake preparation and continuing professional development in

their vocational specialist area in a way that deepens their pedagogic knowledge. Options for piloting the new approaches outlined in this paper are suggested.

Appendix A: Engineers Australia

Engineers Australia accredits higher education and VET programs and their 'national generic competency standards for associate engineers' (which generally require an advanced diploma or associate degree) include the following domains:[26]

- Knowledge Base
  - Knowledge of science and engineering fundamentals
  - Knowledge and understanding of engineering and technology
  - Techniques and resources
  - General knowledge

- Engineering Ability
  - Application of standards and codes of practice
  - Specifying and installing systems
  - Design procedures
  - Assessing technical and policy options
  - Observation, analysis and testing
  - Operations and maintenance
  - Specific training
  - Responsibility as technical expert
  - Understanding of the business environment
- Professional Attributes
  - Ability to communicate effectively, with the engineering team and with the community at large
  - Ability to manage information and documentation
  - Capacity for creativity and
  - innovation
  - Ability to function effectively as an individual and in multidisciplinary and multicultural teams, as a team leader or manager as well as an effective team member
  - Capacity for lifelong learning and professional development
  - Professional attitudes

Each element is discursively elaborated – so that knowledge of science and engineering fundamentals requires knowledge of mathematics sufficient to understand from an analytical viewpoint the physical phenomena relevant to the field of engineering and to the technologies commonly employed, and the functioning and limitations of relevant plant and equipment; and to solve problems commonly encountered in the field.

Accreditation processes[27]

Engineers Australia explains that:

> A generic framework for developing specific education outcomes for programs is provided in the generic attributes requirement of the Engineers Australia Accreditation Policy, and more specifically in the Stage 1 Competency Standards. The generic attributes recognise the broad nature of professional engineering practice in today's world.
>
> The accreditation process does not prescribe detailed program objectives or content, but requires engineering education providers to have in place their own mechanisms for validating outcomes and continually improving quality.
>
> Accreditation does, however, judge the appropriateness of educational objectives and targeted graduate capabilities, the integrity of the educational design and review

[26] See: http://www.engineersaustralia.org.au/shadomx/apps/fms/fmsdownload.cfm?file_uuid=9FB0BD88-0858-B737-6749-18336462FF1C&siteName=ieaust viewed 6 February 2011.

[27] See http://www.engineersaustralia.org.au/about-us/program-accreditation/program-accreditation_home.cfm viewed 6 February 2011.

processes and the means employed to deliver and monitor outcomes.

References

Anderson, Damon (1998), Chameleon or Phoenix: the metamorphosis of TAFE, *Australian & New Zealand Journal of Vocational Education Research* **6** (2): 1-44.

Arundel, Anthony and Hollanders, Hugo (2005), *EXIS: an exploratory approach to innovation scoreboards*, European Commission, <www.proinno-europe.eu/page/admin/uploaded.../eis-2004_EXIS.pdf> viewed 7 February 2010.

Australian Chamber of Commerce and Industry (2010), *Submission to the Productivity Commission Education and Training Workforce: Vocational Education and Training*, <http://www.pc.gov.au/projects/study/education-workforce/vocational/submissions> viewed 18 October 2010.

Australian Qualifications Framework Council (2011), *Australian Qualifications Framework 2011*, Adelaide, <http://www.aqf.edu.au/Portals/0/Documents/Australian%20Qualifications%20Framework%202011%20approved%20by%20MCTEE%2018%20March%202011.pdf> viewed 24 April 2011.

Barnett, Michael (2006), Vocational knowledge and vocational pedagogy, Young, Michael and Gamble, Jeanne. *Knowledge, Curriculum and Qualifications for South African Further Education*, Cape Town, Human Sciences Research Council: 143 - 157.

Berlin, Isaiah (1998), *The Proper Study of Mankind: An Anthology of Essays*, London, Pimlico.

Bernstein, Basil (2000), *Pedagogy, Symbolic Control and Identity*, Oxford, Rowman & Littlefield Publishers.

Boyer, Ernest L (1990), *Scholarship reconsidered: priorities of the professoriate*, The Carnegie Foundation for the Advancement of Teaching, Princeton, NJ

Bradley, Denise (Chair) (2008), *Review of Australian Higher Education Final Report*, Department of Education, Employment & Workplace Relations, Canberra, <http://www.deewr.gov.au/HigherEducation/Review/Documents/PDF/Higher%20Education%20Review_one%20document_02.pdf> viewed 8 March 2009.

Bretherton, Tanya and Oliver, Damian (2008), *Identifying paths to skill growth or skill recession: A literature review on workforce development in the community services and health industries*, Community Services and Health Industry Skills Council, Sydney, <https://www.cshisc.com.au/index.php?option=com_docman&task=cat_view&gid=36&Itemid=79> viewed 15 August 2009.

Brockmann, Michaela; Clarke, Linda; Méhaut, Philippe and Winch, Christopher (2008), Competence-Based Vocational Education and Training (VET): the Cases of England and France in a European Perspective, *Vocations and Learning* **1** (3): 227-244.

Buchanan, John (2006), *From 'skill shortages' to decent work: The role of better skill ecosystems*, Board of Vocational Education and Training, NSW, Sydney, <https://www.training.nsw.gov.au/forms_documents/industry_programs/workforce_development/skill_ecosystem/buchanan.pdf> viewed 17 January 2010.

Buchanan, John; Schofield, Kay; Briggs, Chris; Considine, Gillian; Hager, Paul; Hawke, Geof; Kitay, Jim; Meagher, Gabrielle; Macintyre, John; Mounier, Alain and Ryan, Shaun (2001), *Beyond Flexibility: Skills and Work in the Future*, Australian Centre for Industrial Relations Research and Training, University of Sydney, and Research Centre for Vocational Education and Training, University of Technology, Sydney, Sydney, http://www.skillecosystem.net/data/files/general/Beyond%20Flexibility.pdf.

Buchanan, John; Yu, Serena; Marginson, Simon and Wheelahan, Leesa (2009), *Education, work and economic renewal: An issues paper prepared for the Australian Education Union*, Workplace Research Centre, University of Sydney, Sydney,

<http://www.aeufederal.org.au/Publications/2009/JBuchananreport2009.pdf> viewed 26 August 2009.

Buchanan, John; Yu, Serena; Wheelahan, Leesa; Keating, Jack and Marginson, Simon (2010), *Impact Analysis of the proposed strengthened Australian Qualifications Framework Conducted for the Australian Qualifications Framework Council (AQFC)*, Workplace Research Centre, University of Sydney, Sydney, <http://www.aqf.edu.au/Portals/0/Documents/AQFC%20-%20impact%20analysis%20-%20final%208Oct10%20(3).pdf> viewed 25 October 2010.

Cairns, Len and Stephenson, John (2009), *Capable Workplace Learning*, Rotterdam, Sense Publishers.

CEDEFOP (2010), *The skill matching challenge. Analysing skill mismatch and policy implications*, European Centre for the Development of Vocational Training, Luxemburg, <http://www.cedefop.europa.eu/EN/Files/3056_en.pdf> viewed14 February 2011.

Clarke, Linda and Winch, Christopher (2004), Apprenticeship and Applied Theoretical Knowledge, *Educational Philosophy and Theory* **36** (5): 509-521.

Clarke, Linda and Winch, Christopher (2006), A European skills framework?—but what are skills? Anglo-Saxon versus German concepts, *Journal of Education and Work* **19** (3): 255-269.

Clarke, Linda and Winch, Christopher (2007), Introduction, Clarke, Linda and Winch, Christopher. *Vocational Education: International approaches, developments and systems*, London, Routledge.

Commonwealth of Australia (2009), *Transforming Australia's Higher Education System*, Department of Education, Employment and Workplace Relations, Canberra, <http://www.deewr.gov.au/HigherEducation/Pages/TransformingAustraliasHESystem.aspx> viewed 22 May 2009.

Crocker, David A. (1992), Functioning and Capability: The Foundations of Sen's and Nussbaum's Development Ethic, *Political Theory* **20** (4): 584-612.

Department of Education Employment and Workplace Relations (2009a), *An Indicator Framework for Higher Education Performance Funding*, DEEWR, Canberra, <http://www.deewr.gov.au/HigherEducation/Documents/HIEDPerformanceFunding.pdf> viewed 27 January 2009.

Department of Education Employment and Workplace Relations (2009b), Training Package Development Handbook, from <http://www.deewr.gov.au/Skills/Overview/Policy/TPDH/Pages/default.aspx> viewed 4 February 2011.

Department of Education Employment and Workplace Relations (2011), Training Package Development Handbook, from <http://www.deewr.gov.au/Skills/Overview/Policy/TPDH/Pages/default.aspx> viewed 6 February 2011.

Department of Education Science and Training (2007), *Training Package Development Handbook*, DEST, Canberra, http://www.dest.gov.au/sectors/training_skills/publications_resources/profiles/Training_Package_Development_Handbook.htm.

Department of Further Education Employment Science and Technology (2010), *Skills for All: Productivity and Participation through skills*, Adelaide, <http://www.dfeest.sa.gov.au/AboutDFEEST/Strategiesplanspolicies/SkillsforAll/tabid/267/Default.aspx> viewed 7 July 2010.

Department of Innovation Industry and Regional Development (2010), *Opening Doors For All Victorians:The Tertiary Education Access Plan*, Melbourne, <http://www.dbi.vic.gov.au/__data/assets/pdf_file/0018/224613/Tertiary_Education_Access-Plan.pdf> viewed 26 April 2011.

Dittrich, Joachim (2006a), Professionalisation of TVET teachers/trainers - an issue for international cooperation -, *15th International IVETA Conference "Vocational Education and Training in the context of Life Long Learning"*, Moscow, Russia, <http://www.unip-net.org/modules.php> viewed 1 June 2010.

Dittrich, Joachim (2006b), Vocational Disciplines - How could a general framework look like?, *"Innovation and Internationalisation in the Qualification of Technical and Vocational Education and Training (TVET) Experts"*, Colombo, Sri Lanka, November 23-25, 2006, <http://www.unip-net.org/modules.php?op=modload&name=UpDownload&file=index&req=getit&lid=49> viewed 2 March 2011.

Dostal, Werner (2009), 3.1.1 Occupational Research, Rauner, Felix and MacLean, Rupert. *Handbook of Technical and Vocational Education and Training Research*, Springer.

Eraut, Michael (2001), The role and use of vocational qualifications, *National Institute Economic Review* (78): 88-98.

Field, John (2006), *Lifelong Learning and the New Educational Order*, Staffordshire, Trentham Books.

Foster, Sue; Delaney, Bernadette; Bateman, Andrea and Dyson, Chloe (2007), *Higher-level vocational education and training qualifications: Their importance in today's training market*, National Centre for Vocational Education Research, Adelaide, <http://www.ncver.edu.au/publications/1798.html> viewed 7 May 2008.

Galasi, Péter (2008), *The effect of educational mismatch on wages for 25 countries , http://econ.core.hu/file/download/bwp/BWP0808.pdf (accessed 14 February 2011).* Budapest working papers on the labour market BWP – 2008/8, <http://econ.core.hu/file/download/bwp/BWP0808.pdf> viewed 16 March 2011.

Garnett Jr., Robert F. (2009), Liberal Learning as Freedom: A Capabilities Approach to Undergraduate Education, *Studies in Philosophy & Education* **28** (5): 437-447.

Gillard, Julia (2009), Speech: Big Skills Conference, *The Big Skills Conference* Darling Harbour, Sydney, 5 March 2009, <http://www.deewr.gov.au/Ministers/Gillard/Media/Speeches/Pages/Article_090304_155721.aspx> accessed 5 March 2009.

Goozee, Gillian (2001), *The development of TAFE in Australia*, National Centre for Vocational Education Research, Adelaide, <http://www.ncver.edu.au/publications/574.html> viewed 6 February 2004.

Granville, Gary (2004), *Impact of the National Qualifications Framework after Ten Years of Democracy*, South African Qualifications Authority, Pretoria, <http://www.saqa.org.za/> viewed 13 September 2005.

Guthrie, Hugh (2009), *Competence and competency based training: What the literature says*, National Centre for Vocational Education Research, Adelaide, <http://www.ncver.edu.au/publications/2153.html> viewed 7 July 2009.

Guthrie, Hugh (2010), *A short history of initial teacher training*, National Centre for Vocational Education Research, Adelaide, <http://www.ncver.edu.au/publications/2311.html> 7 December 2010.

Hall, Peter A. and Soskice, David (2001), An introduction to Varieties of Capitalism, Hall, Peter A. and Soskice, David. *Varieties of Capitalism The Institutional Foundations of Comparative Advantage*, Oxford, Oxford University Press: 1-68.

Held, David and McGrew, Anthony (2007), *Globalization/Anti-Globalization: Beyond the Great Divide*, Cambridge, Polity Press.

Henry, Ken (2007), Creating the right incentives for Indigenous development, *Cape York Institute Conference "Strong Foundations – Rebuilding Social Norms in Indigenous Communities*, Cairns, 26 June,

<http://www.treasury.gov.au/documents/1275/HTML/docshell.asp?URL=070624_CYI.htm> viewed 29 January 2011.

Henry, Ken (2009), Fiscal policy: more than just a national budget, *2009 Whitlam Institute Symposium* 30 November, <http://www.whitlam.org/__data/assets/pdf_file/0006/111687/Whitlam_Institute_Speech2.pdf> viewed 29 January 2011.

Hoeckel, Kathrin; Field, Simon; Justesen, Troy R. and Kim, Moonhee (2008), *Learning for Jobs OECD Reviews of Vocational Education and Training: Australia*, Organisation for Economic Co-operation and Development, Paris, <http://www.oecd.org/dataoecd/27/11/41631383.pdf> 18 March 2009.

Hyland, Terry (1999), *Vocational Studies, Lifelong Learning and Social Values: Investigating Education, Training and NVQs Under the New Deal*, Aldershot, Ashgate.

Jarvis, Darryl S. L. (2007), Risk, Globalisation and the State: A Critical Appraisal of Ulrich Beck and the World Risk Society Thesis *Global Society* **21** (1): 23 - 46.

Jessup, Gilbert (1991), *Outcomes: NVQs and the Emerging Model of Education and Training*, London, The Falmer Press.

Karmel, Tom (2007), *Vocational education and training and young people: Last but not least*, National Centre for Vocational Education Research, Adelaide, <http://www.ncver.edu.au/publications/1736.html> viewed 6 March 2008.

Karmel, Tom (2008), *A peripatetic research perspective on older workers and VET*, National Centre for Vocational Education Research, Adelaide, <http://www.ncver.edu.au/publications/1939.html> viewed 5 August 2009.

Karmel, Tom (2010), The future of VET: or, Allen Ginsberg revisited, Beddie, Francesca and Curtin, Penelope. *The future of VET: A medley of views*, Adelaide, National Centre for Vocational Education Research.

Karmel, Tom and Cully, Mark (2009), *The demand for training*, National Centre for Vocational Education Research, Adelaide, <http://www.ncver.edu.au/publications/2124.html> viewed 27 February 2009.

Karmel, Tom; Mlotkowski, Peter and Awodeyi, Tomi (2008), *Is VET vocational? The relevance of training to the occupations of vocational education and training graduates*, National Centre for Vocational Education Research, Adelaide, <http://www.ncver.edu.au/publications/2013.html> viewed 5 August 2009.

Keating, Jack (2003), Qualifications frameworks in Australia, *Journal of Education and Work* **16** (3): 271-288.

Keating, Jack (2006), Post-school articulation in Australia: a case of unresolved tensions, *Journal of Further and Higher Education* **30** (1): 59-74.

Keating, Jack (2008), Qualifications Systems and National Qualifications Frameworks, *Monash University-ACER Centre for the Economics of Education and Training Annual Conference*, Melbourne, Melbourne, 31 October 2008 <http://www.education.monash.edu/centres/ceet/docs/conferencepapers/2008jackkeating.pdf> viewed 8 June 2009.

Lauder, Hugh; Brown, Phillip and Ashton, David (2008), Globalisation, Skill Formation and the Varieties of Capitalism Approach *New Political Economy* **13** (1): 19-35.

Linsley, Ingrid (2005), Causes of overeducation in the Australian labour market, *Australian Journal of Labour Economics* **8** (2): 121-143.

Mavromaras, Kostas; McGuinness, Seamus and Fok, Yin King (2010), *The incidence and wage effects of overskilling among employed VET graduate*, National Centre for Vocational Education Research, Adelaide, <http://www.ncver.edu.au/publications/2231.html> viewed 21 January 2011.

Mavromaras, Kostas; McGuinness, Seamus and Wooden, Mark. (2007), Overskilling in the Australian labour market [Paper in: Policy Forum: Education and Skill Mismatches in the Labour Market.], *Australian Economic Review* **40** (3): 279-85.

Messinist, George and Olekalns, Nilss (2007), Skill mismatch and training in Australia: some implications for policy, *Australian Economic Review* **40** (3): 300-306.

Miller, Paul W. (2007), Overeducation and undereducation in Australia, *Australian Economic Review* **40** (3): 292-299.

Moodie, Gavin (2003), *VET-higher ed transfers and the structure of tertiary education*. The Changing Face of VET, Australian Vocational Education and Training Research Association Conference, Sydney

Moodie, Gavin (2010), Change and transformation in student transfer from Australian vocational to higher education, *VET Research: Leading and Responding in Turbulent Times, 3th Annual AVETRA Conference*, Holiday Inn Surfers Paradise, Queensland, 8 - 9 April

Mounier, Alain (2001), *The Three Logics of Skills in French Literature*, Australian Centre for Industrial Relations Research and Training (ACIRRT), University of Sydney, Sydney, <http://www.bvet.nsw.gov.au/pdf/threelogics.pdf> viewed 6 June 2004.

Muller, Johan (2009), Forms of knowledge and curriculum coherence, *Journal of Education and Work* **22** (3): 205-226.

National Centre for Vocational Education Research (2010), *Australian vocational education and training statistics: Student outcomes 2010*, National Centre for Vocational Education Research, Adelaide, <http://www.ncver.edu.au/publications/2315.html> viewed 6 December 2010.

National Quality Council/COAG Joint Steering Committee (2009), *VET Training Products for the 21st Century: Final Report of the Joint Steering Committee of the NQC and the COAG Skills and Workforce Development Subgroup* National Quality Council, Melbourne, <http://www.nqc.tvetaustralia.com.au/__data/assets/pdf_file/0004/49657/VET_Products_for_the_21st_Century_-_FINAL_REPORT.pdf> viewed 2 February 2011.

NSW Government (2010a), *NSW Business Sector Growth Plan*, Sydney, <http://www.business.nsw.gov.au/__data/assets/pdf_file/0017/5417/NSWBusinessSectorGrowthPlan_Final_100927_web.pdf> viewed 19 January 2011.

NSW Government (2010b), *NSW Regional Innovation Strategy: Resilient Businesses, Sustainable Jobs*, Sydney, <http://www.business.nsw.gov.au/__data/assets/pdf_file/0010/5401/NSWRegionalInnovationStrategy.pdf> viewed 19 January 2011.

NSW Government (2010c), *NSW Tertiary Education Plan*, Sydney, <https://www.det.nsw.edu.au/media/downloads/strat_direction/corporate/nswterteduplan.pdf> viewed 6 September 2010.

Nussbaum, Martha C (2000), *Women and human development: the capabilities approach*, Cambridge, Cambridge University Press (kindle book).

O'Connell, Andrew (2010), The myth of the overqualified worker, *Harvard Business Review* **88** (12): 30.

Organisation for Economic Co-operation and Development (2001), *Education Policy Analysis 2001*, Centre for Educational Research and Innovation, OECD, Paris

Organisation for Economic Co-operation and Development (2007), *Innovation and growth: rationale for an innovation strategy*, OECD, Paris

Organisation for Economic Co-operation and Development (2010a), *Innovative Workplaces: Making Better Use of Skills within Organisations*, OECD, Paris, <http://dx.doi.org/9789264095687-en> viewed 20 January 2011.

Organisation for Economic Co-operation and Development (2010b), *Learning for Jobs*, Paris, <http://www.oecd.org/document/61/0,3343,en_2649_39263238_43736957_1_1_1_1,00.html> viewed 21 October 2010.

Organisation for Economic Co-operation and Development (2010c), *The OECD Innovation Strategy Getting a Head Start on Tomorrow* OECD, Paris, <http://www.oecd.org/document/15/0,3746,en_2649_34273_45154895_1_1_1_1,00.html#HTO> viewed 7 February 2011.

Pahl, Jörg-Peter and Rauner, Felix (2009), 3.2 Research in the Vocational Disciplines, Rauner, Felix and MacLean, Rupert. *Handbook of Technical and Vocational Education and Training Research*, Springer.

PhillipsKPA (2006), *A National Study to Improve Outcomes in Credit Transfer and Articulation from Vocational and Technical Education to Higher Education: Final Report*, Department of Education Science and Training, Canberra, <http://tafecentre.vic.edu.au/wp-content/uploads/2009/03/givingcreditwherecreditisdue.pdf> viewed 30 August 2009.

Pocock, Barbara (2009), *Low-paid workers, changing patterns of work and life, and participation in vocational education and training: A discussion starter*, National Centre for Vocational Education Research, Adelaide, <http://www.ncver.edu.au/publications/2104.html> viewed 13 March 2009.

Productivity Commission (2010), *Vocational Education and Training Workforce: Productivity Commission Issues Paper*, Melbourne, <http://www.pc.gov.au/projects/study/education-workforce/vocational/issues> viewed 18 November 2010.

Richardson, Sue; Tan, Yan; Lane, Anna and Flavel, Joanne (2006), *Reasons why persons with VET qualifications are employed in lower skilled occupations and industries* National Institute of Labour Studies, Flinders University, Adelaide, <http://nils.flinders.edu.au/assets/publications/Reasons_why_Persons_with_the_VET.pdf> viewed 7 March 2011.

Robeyns, Ingrid (2005), The Capability Approach: a theoretical survey, *Journal of Human Development* **6** (1): 93-114.

Rushbrook, Peter (1997), Tradition, Pathways and the Renegotiation of TAFE Identity in Victoria, *Discourse: studies in the cultural politics of education* **18** (1): 103-112.

Ryan, Chris and Sinning, Mathias (2011), *Skill (mis)matches and over-education of younger workers*, National Centre for Vocational Education Research, Adelaide, <http://www.ncver.edu.au/publications/2330.html> viewed 11 January 2011.

Saito, Madoka (2003), Amartya Sen's Capability Approach to Education: A Critical Exploration, *Journal of Philosophy of Education* **37** (1): 17-33.

Sayer, Andrew (2011), *Why Things Matter to People: Social Science, Values and Ethical Life*, Cambridge, Cambridge University Press.

Schofield, Kaye and McDonald, Rod (2004), *Moving on... Report of the High Level Review of Training Packages*, Australian National Training Authority, Brisbane, <http://www.dest.gov.au/sectors/training_skills/publications_resources/profiles/anta/profile/moving_on_report_training_packages.htm> viewed 25 June 2005.

Sen, Amartya (1985), *Commodities and capabilities*, Amsterdam., Elsevier

Sen, Amartya (1992), *Inequality re-examined*, Cambridge, MA, Harvard University Press.

Sen, Amartya (1993), Capability and Well-being, Nussbaum, Martha and Sen, Amartya. *The Quality of Life*, Oxford Scholarship Online.

Sen, Amartya (1999), *Development as Freedom*, New York, Anchor Books.

Sen, Amartya (2000), *Social exclusion: concept, application and scrutiny*, Asian Development Bank, <http://www.adb.org/documents/books/social_exclusion/Social_exclusion.pdf> viewed 25 January 2011.

Sen, Amartya (2007), Education and Standards of Living, Curren, Randall. *Philosophy of Education: An Anthology*, Malden, MA, USA, Blackwell Publishing: 95-101.

Shulman, Lee S. (2004), *Teaching as community property: Essays on higher education*, San Francisco, Jossey-Bass.

Skills Australia (2010a), *Australian Workforce Futures: A National Workforce Development Strategy*, Sydney, <http://www.skillsaustralia.gov.au/PDFs_RTFs/WWF_strategy.pdf> viewed 9 March 2010.

Skills Australia (2010b), *Creating a future direction for Australian vocational education and training: A discussion paper on the future of the VET system*, Sydney, <http://www.skillsaustralia.gov.au/PDFs_RTFs/discussionpaper-creatingnewdirectionforVET-hr.pdf> viewed 10 November 2010.

Smith, Erica (2010), A review of twenty years of competency-based training in the Australian vocational education and training system, *International Journal of Training and Development* **14** (1): 54-64.

Smith, Patricia L. and Ragan, Tillman J. (2005), *Instructional Design 3rd ed.*, Wiley-Jossey Bass.

Standing, Guy (2010), *Work after Globalization: Building Occupational Citizenship*, Cheltenham, UK, Edward Elgar.

Terzi, Lorella (2007a), Capability and Educational Equality: The Just Distribution of Resources to Students with Disabilities and Special Educational Needs, *Journal of Philosophy of Education* **41** (4): 757-773.

Terzi, Lorella (2007b), A Capability Perspective on Impairment, Disability, and Special Needs, Curren, Randall. *Philosophy of Education: An Anthology*, Oxford, Blackwell Publishing.

Trow, Martin (1974), Problems in the Transition from Elite to Mass Higher Education, *Policies for Higher Education* **OECD** (Paris): 51-101.

Trow, Martin (2005), *Reflections on the Transition from Elite to Mass to Universal Access: Forms and Phases of Higher Education in Modern Societies since WWII*, Institute of Governmental Studies, University of California, Berkeley, Berkeley, <http://repositories.cdlib.org/cgi/viewcontent.cgi?article=1046&context=igs> viewed 13 February 2009.

UNEVOC (2004), *UNESCO-UNEVOC International Meeting on Innovation and Excellence in TVET Teacher/Trainer Education*, UNEVOC International Centre for Technical and Vocational Education and Training, Hangzhou China, <http://unesdoc.unesco.org/images/0014/001480/148003eo.pdf> viewed 14 June 2010.

Volmari, Kristiina; Helakorpi, Seppo and Frimodt, Rasmus, Eds. (2009), *Competence Framework for VET Professions: Handbook for practitioners*. Luxemburg, CEDEFOP, Finnish National Board of Education.

Walker, Melanie (2008), Widening participation; widening capability, *London Review of Education* **6** (3): 267 - 279.

Walker, Melanie and Unterhalter, Elaine (2007), The Capability Approach: Its Potential for Work in Education, Walker, Melanie and Unterhalter, Elaine. *Amartya Sen's Capability Approach and Social Justice in Education*, New York, Palgrave Macmillan: 1-18.

Watson, Ian (2008), Skills in use: labour market and workplace trends in skills use in Australia, paper presented to , 8 September, Brisbane,(accessed 6 March 2011). *Jobs Australia National Conference*, Brisbane, 8 September, <http://www.ianwatson.com.au/pubs/watson_skills_paper_handout.pdf> viewed 16 March.

Webster, Frank (2006), The information society revisited, in (2006) , London, pages Lievrouw, Leah A and Livingstone, Sonia. *Handbook of new media: social shaping and social consequences of ICTs, updated student edition*, London, Sage Publications: 443 - 457.

Wheelahan, Leesa (2010a), Rethinking equity in tertiary education – why we need to think as one sector and not two, *VET Research: Leading and Responding in Turbulent Times, AVETRA 2010, 13th Annual Conference*, Gold Coast, QLD, <http://avetra.org.au/wp-content/uploads/2010/04/48.00-Leesa-Wheelahan.pdf> viewed 1 May 2010.

Wheelahan, Leesa (2010b), The toothless tiger: Are competency-based qualifications relevant in a 21st century knowledge society?, *TAFE Directors Australia National Conference: 2010 : TAFE in the year of the tiger*, Melbourne, 13 - 14 September, <http://www.tda.edu.au/resources/Leesa%20Wheelahan%20-%20Are%20Competency%20Based%20Qualifications%20Revevant%20in%20a%2021st%20Century%20Knowledge%20Society.pdf> viewed 6 November 2010.

Wheelahan, Leesa (2010c), *Why knowledge matters in curriculum: A social realist argument*, London, Routledge.

Wheelahan, Leesa and Curtin, Emma (2010), *The quality of teaching in VET: overview*, LH Martin Institute for Higher Education Leadership and Management, University of Melbourne, Melbourne, <https://austcolled.com.au/announcement/study-quality-teaching-vet> viewed 17 October 2010.

Wheelahan, Leesa and Moodie, Gavin (2005), Separate post-compulsory education sectors within a liberal market economy: interesting models generated by the Australian anomaly, Gallacher, Jim and Osborne, Mike. *A contested landscape: International perspectives on diversity in mass higher education*, Leicester, NIACE.

Wheelahan, Leesa and Moodie, Gavin (2010), *The quality of teaching in VET: final report and recommendations*, L.H. Martin Institute for Higher Education and Leadership, University of Melbourne, Melbourne, <http://www.lhmartininstitute.edu.au/research-and-publications/research/1-study-on-the-quality-of-teaching-in-vet> viewed 15 January 2011.

Winch, Christopher (2010), Vocational Education, Knowing How and Intelligence Concepts, *Journal of Philosophy of Education* **44** (4): 551-567.

World Bank (2002), *Constructing Knowledge Societies: New Challenges for Tertiary Education*, Washington, D.C, The World Bank.

World Bank (2007), Building knowledge economies: advanced strategies for development, from <http://siteresources.worldbank.org/KFDLP/Resources/461197-1199907090464/BuildingKEbook.pdf> viewed 19 January 2011.

Young, Michael (2003), Comparing Approaches to the Role of Qualifications in the Promotion of Lifelong Learning, *European Journal of Education* **38** (2): 199-211.

Young, Michael (2005), National qualifications frameworks: Their feasibility for effective implementation in developing countries, from <http://www.ilo.org/wcmsp5/groups/public/---ed_emp/---ifp_skills/documents/publication/wcms_103626.pdf> viewed 7 July 2009.

Young, Michael (2010), Why educators must differentiate knowledge from experience, *Pacific-Asian Education* **22** (1): 9-20.

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