NCVER

Adding value to competency-based training

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INTRODUCTION

Competency-based training (CBT) is an approach to vocational education and training (VET) designed to develop the skills and knowledge necessary to achieve competency. It focuses on an individual's mastery of skill, whereby an individual is deemed competent or not yet competent in that skill. For the last three decades or so, CBT has been fundamental to how accredited VET is delivered in Australia, and over this time both advocates and critics of this approach have emerged.

For this research, we were interested in the strengths and weaknesses of CBT as it is currently applied to the Australian VET system and whether there is cause to consider a broader approach to defining and describing competence and, hence, considering how teaching and learning in VET is most effectively delivered and assessed.

HIGHLIGHTS

- The strength of the CBT approach is that the technical skills a learner needs to achieve to be deemed competent in a workplace are clearly defined.

- However, a broader conception of what it means to be competent is needed, one that explicitly acknowledges the importance of 'non-technical' skills and capabilities, those such as critical thinking, learning from others, collaboration, creativity and innovation, and self-direction, and their role in helping learners to transfer the knowledge and skills acquired in one context to another.

- The benefit of the current CBT approach to *all* types of vocational qualifications and at *all* levels is becoming increasingly questionable. A case can now be made for a differentiated training and assessment paradigm for some qualifications; for example, VET qualifications at the diploma level and above in the Australian Qualifications Framework (AQF), or those in the creative and caring sectors, where personal attributes and capabilities are seen as more critical, in terms of establishing the key elements of what it means to be 'competent'.

- The value of using graded or proficiency-based assessment as a means of differentiating levels of performance, as opposed to being deemed competent/not yet competent as occurs with CBT, is an issue that needs further debate. While grading can impart greater clarity in relation to how well learners can perform a task, there are concerns about its potential to add further complexity to an already complex training and assessment system, including the need for well-constructed and agreed moderation frameworks to grade learners against.

BACKGROUND

Competency-based training has been the main training paradigm for the VET sector in Australia for the last 30 years

Competency-based training is the key training approach used in the vocational education and training sector in Australia. Based on industry-determined standards for workplace performance required in different occupations, it is defined as a:

> *method of training that focuses on a learner's ability to receive, respond to and process information in order to achieve competency. It is geared towards the attainment and demonstration of skills to meet industry-defined standards, rather than to a learner's achievement relative to that of others.*
>
> *(Australian Department of Education and Training nd)*

With CBT, a learner's progress is not time-based but is determined by their mastery of a required competency; once this is achieved the learner moves onto the next competency (Australian Department of Education and Training nd).

Box 1   The origins of CBT in Australia

The federal Labor Government minister John Dawkins could be considered the architect of CBT. In the late 1980s Dawkins envisioned the creation of a new training sector, which combined its 'educational' and 'social purpose' roles, as endorsed in the Kangan report (Australian Committee on Technical and Further Education, 1974, p. xviii), with a critical 'manpower' (workforce) development role. Hodge (2020) noted that the 'manpower' role 'gained the upper hand from the mid-1980s, and arguably epitomises the system we have today' (p.2).

Dawkins and Holding (1987) stated in their landmark report, *Skills for Australia*, that Australia's education and training systems should play a pivotal role in responding to major economic challenges. However, they considered that the way skills were developed in Australia at that time was deficient and lagging behind international standards, although, as Hodge (2020) noted, this view was not necessarily underpinned by evidence.

In promulgating a new way forward for skills development in Australia, Dawkins and Holding (1987) and, subsequently, Dawkins (1988, 1989) promoted the 'creation of a new kind of worker' (Hodge 2020, p.8), one who not only possessed the requisite technical skills but also generic skills such as communication and teamwork, who held an entrepreneurial mindset, and who saw value in, and took responsibility for, continual learning.

Industry was also expected to take on greater responsibility in helping to determine the content of the training and the form it would take, while vocational institutions and teachers/trainers provided the pedagogical expertise to actualise the skill development required by industry (Hodge 2020). The close working relationship between industry and the VET sector was a key part of the new model for skills formation proposed by Dawkins (1988). However, in the move to an industry-led system, VET educators and providers essentially became the followers, not the partners in the relationship.

Tied to this closer working relationship came a call for a diversification in how skills were recognised and training was delivered, the aim being to provide an opportunity for workers who had the experience and skills but not necessarily the formal qualifications to access the education and training they need to further their skills and, ultimately, career progression. The push to recognise that skills and knowledge can be attained outside formal training arrangements decisively highlighted the concept of competency, as well as its assessment (Dawkins 1988, 1989).

In the Australian VET system, CBT takes the form of training packages and accredited qualifications and courses.[1] Training packages were introduced as a concept in 1996 (Bowman & McKenna 2016), with the first packages endorsed in the following year (Guthrie 2009). The packages encompass nationally endorsed units of competency, which specify the standards of performance — the knowledge and skills — required in the workplace, along with the assessment requirements for each unit of competency, and the resultant relevant qualification/s, which are aligned to the Australian Qualifications Framework; namely certificates I—IV, advanced diploma, graduate certificate and the graduate diploma. Training packages are developed through national-level consultations with industry.[2]

Training packages, however, are not without their critics. For example, the recent independent review of the VET system led by the Hon. Steven Joyce noted that 'the process of updating training packages and qualifications was one of the most heavily discussed topics during the Review', with concerns raised by registered training organisations (RTOs), employer and industry groups, and governments about the difficult and often cumbersome process of changing training packages (Australian Department of the Prime Minister and Cabinet 2019, pp.53—4). Indeed, Moran and Bannikoff (2018) noted that training packages do not enable the type of innovation needed to address the emerging and future needs of employers and industry. In short, they are not seen as nimble. At present the whole process by which they are developed, reviewed and maintained is being critically examined and altered (refer to box 4), although this is not the first occasion on which change to the concept has been mooted and attempted (see Beddie, Hargreaves & Atkinson 2017; National Quality Council & COAG 2009; Schofield & McDonald 2004).

Research questions

Given the divergent view of the appropriateness of CBT, the aim of this research is to understand whether broader conceptions of competency might be feasible for VET in Australia. The questions that guided our research were:

- Are conceptions of competency used in international VET systems broader than those used in Australia? If so, where are the main differences and similarities?
- What are the benefits and drawbacks of traditional approaches to CBT?
  - Are there industry areas and qualification types where this traditional approach is more suitable, and industry areas and qualification types where it is less suitable?
- What are the implications of complementary approaches to CBT on training delivery and assessment practices, particularly for learner outcomes and RTO or trainer and assessor practice?
  - Are there examples of RTOs in Australia using graded assessment in addition to competency-based assessment? What are the main features and drivers of these examples?

Approach

The research comprised a review of literature, including a country comparison exercise to compare current international approaches to CBT with practices in Australia, acknowledging that such an exercise can be difficult, given the different cultural, historical, political and economic factors that impact on the way education and training systems have evolved in different countries. The countries in focus were England, Scotland, Northern Ireland, Germany, Finland and Singapore, countries selected because their vocational training approaches provide learners with both the generic and specialist competencies required for current occupations. The approaches adopted by these countries also enable individuals to adapt to changes in occupations and labour markets, such as those resulting from the increasing focus on twenty-first-century skills, moves to digitisation and the introduction of new technologies and work practices.

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1   Accredited qualifications and courses are developed to meet training needs not addressed by existing training packages (Naidu, Stanwick & Frazer 2020).
2   https://www.asqa.gov.au/about/vet-sector/training-packages.

A small number of targeted interviews were also undertaken with representatives of two peak training bodies, a sectoral expert; a training and assessment expert; a CEO of a large registered training organisation (referred to in this report as an 'RTO representative'); and coordinators of the Digital Skills Organisation (DSO) Pilot, one of three pilots established by the Australian Government to inform the qualification design reform agenda. Given that the DSO Pilot will consider questions relating to graded assessment, this research project interviewed the pilot coordinators to understand how providers viewed issues relating to the introduction or extension of graded assessment. The views of, and experiences with, CBT and complementary approaches to CBT of those who participated in the interviews are integrated into this report. Although there is no suggestion that these views are representative of the entire VET sector, they do bring a local element or context to the discussion of international VET practices outlined here. The interview schedule can be found in appendix A.

WHAT IS COMPETENCE?

Competence is being able to know and being able to do

In addressing the first research question, we outline the conceptions of competency used in various international VET systems, including those in some of the focus countries, and provide a brief discussion of the main differences from and similarities to the concept of competency as applied in the Australian VET system.

Conceptions of competency in Australia and abroad: similarities and differences

In the context of the Australian VET sector, competency is defined in the *Standards for Registered Training Organisations 2015* (the *Standards*) 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.*
>
> *(Commonwealth of Australia 2019, p.7)*

This succinct definition emphasises the primacy of the workplace in framing the concept of competency. The *Standards* encompass actions to provide a comprehensive conception of what it is to be competent in the Australian VET system. Specifically, clauses 1.8 to 1.12 of the *Standards* offer RTOs guidance on considerations for conducting effective assessments to confirm competency. The *Standards* refer to assessors making sure that candidates have the appropriate knowledge and understanding in particular contexts (Commonwealth of Australia 2015, p.14—16); that is, they are *able to know as well as being able to do*. In relation to these clauses, the Australian Skills Quality Authority's (ASQA) *Users' guide to the Standards for Registered Training Organisations (RTOs) 2015 (the Users' guide)* states:

For a student to be assessed as competent, your RTO must ensure the student has:

- absorbed the knowledge
- developed the skills
- can combine the knowledge and skills to demonstrate:
  - ability to perform relevant tasks in a variety of workplace situations, or accurately simulated workplace situations
  - consistency in performance and a consistent ability to demonstrate skills when performing tasks
  - understanding of what they are doing, and why, when performing tasks
  - ability to integrate performance with understanding, to show they are able to adapt to different contexts and environments (ASQA 2019, p.51).

The Australian conception is therefore very task-focused, in contrast to European Union countries, for example, where the concept of competence is broader in its coverage than that described in the *Standards*, and is defined as being:

a combination of knowledge, skills and attitudes appropriate to the context. Competence indicates the ability to apply learning outcomes adequately in a defined context (education, work, personal or professional development). Competence is not limited to cognitive elements (involving the use of theory, concepts or tacit knowledge); it also encompasses functional aspects (involving technical skills) as well as interpersonal attributes (e.g., social or organisational skills) and ethical values. Competences can be domain-specific, e.g., relating to knowledge, skills and attitudes within one specific subject or discipline, or general/transversal because they have relevance to all domains/subjects. In some contexts, the term 'skills' (in a broader sense) is sometimes used as an equivalent of 'competences.[3]

In line with the definition applied in the Australian VET context, the European Union definition of competence underpinning vocational education and training encompasses the application of the functional or technical skills required in the workplace. But, as we can see, it goes much further than that, explicitly focusing on the application of personal or social competence in a work context, as well as in settings beyond the workplace. This concept of competency aligns with Dawkins's view of the role of vocational education and training as having an educational and social purpose and a workforce development role (see box 1).

A focus on an individual's personal or social competence is also apparent in the concept of competence adopted by the German vocational education and training system, in which the German Qualifications Framework for Lifelong Learning (2011, p.4) describes competence as 'the ability and readiness of the individual to use knowledge, skills and personal, social and methodological competences and conduct himself or herself in a considered and individually and socially responsible manner'. This framework differentiates these competences into two categories: professional competence, which refers to the 'breadth and depth of knowledge' and the 'instrumental and systemic skills and judgement' required; and personal competence, which encompasses social competence (for example, team and leadership skills, communication) and autonomy or self-competence (for example, taking responsibility for one's actions, self-reflection, and learning; German Qualifications Framework for Lifelong Learning 2011, p.5). The professional and personal competences are incorporated into the concept of *competence to act*, with Gessler (2017) noting that these competencies are 'dependent, interconnected and cannot be developed independent of one another', but equally can be viewed separately to ensure that competencies within each of the categories are demonstrated (p.10).

Preparing learners for the future through the development of knowledge, skills and understanding relevant to the twenty-first century is a key mission for some of the other comparator countries. For example, in recent years Singapore has implemented its Workforce Skills Qualifications (WSQ) system to assist its workforce to adapt to an increasingly changing technological and globalised economic environment.[4] As a national competency-based training system, the WSQ enables employees and other adults to access training and to develop relevant and in-demand skills based on 'bite-sized chunks of learning'. These bite-sized chunks are formally recognised in statements of attainment, which can then be assembled to form a full qualification. As a competency-based training and recognition system, the WSQ is not only focused on skills development and acquisition but also on the recognition of skills and experience already acquired. The Australian VET system has some similar features, in that students may choose to undertake a unit and also have this recognised on a statement of attainment, which can subsequently become part of a full qualification. Previously acquired skills and experience can also be recognised through formal recognition of prior learning (RPL) processes.

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3   CEDEFOP definition of competence: http://www.ibe.unesco.org/en/glossary-curriculum-terminology/c/competence.
4   https://www.ssg.gov.sg/wsq.html.

The Singapore Workforce Skills Qualifications (WSQ) system, like the German qualifications framework, has a clear focus on both technical skills and competencies and generic/non-technical skills and competencies, referred to in the WSQ as critical core skills.[5] There are 16 critical core skills, which are transferable and which can be applied across industries or occupations. They are organised under three clusters:

- *Thinking critically:* this cluster encompasses cognitive skills, which are needed to think broadly and creatively in order to see connections and opportunities in the midst of change. Cognitive skills are the basis of technical skill development and progression. The critical core skills within this cluster are:
  - creative thinking
  - problem-solving
  - decision-making
  - sense making
  - transdisciplinary thinking.

- *Interacting with others:* learning from other people is one of the most effective ways to acquire new skills and ideas. Being effective in interacting with others means thinking about the needs of other people, as well as being able to exchange ideas and build a shared understanding of a problem or situation. Increasingly, to succeed, people need to be able to combine their technical skills with those of others. The critical core skills encompassed within this cluster are:
  - collaboration
  - communication
  - developing people
  - customer orientation
  - Influence
  - building inclusivity.

- *Staying relevant:* managing oneself effectively and paying close attention to trends impacting on work and living provide the strategies, direction and motivation for technical skill development. The critical core skills that are included in this cluster are:
  - learning agility
  - adaptability
  - self-management
  - global perspective
  - digital fluency.

Each of the 16 critical core skills has three levels of proficiency (basic, intermediate and advanced), which acknowledges the scope for learners to continue to develop expertise in these skills. Additionally, each critical core skill contains the knowledge and abilities that an individual needs to demonstrate evidence of the skills. An example of the knowledge and abilities required to develop competency in the critical core skill of 'problem solving' at the different levels of proficiency is provided in appendix B.

As noted above, the critical core skills in the Singapore WSQ system are distinct standalone skills rather than being embedded within the technical skills. This is important as it means they cannot be hidden or lost within technical skills or assumed to have been acquired simply through the education and assessment processes. Training programs for each of the 16 critical core skills are provided through Institutes of Higher Learning (universities, polytechnics, or the Institute of Technical Education); for the majority, the training programs address the differing levels of proficiency within each of the core skills.

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5   https://www.skillsfuture.gov.sg/skills-framework/criticalcoreskills.

Occupational requirements drive this need for training in critical core skills. Significantly, in Singapore, for every individual occupation within each of the industry sectors, a skills map has been developed, with input from employers, industry associations, unions, education providers, and government.[6] These skills maps, which themselves form part of an overarching industry sector skills framework, outline the job description and the associated critical work functions and key tasks, as well as the type of critical core skills and technical skills required and the level of proficiency. Appendix C gives an example of a skills map and how the critical core skills are incorporated. Having critical core skills embedded in occupational roles very clearly demonstrates the value of generic or non-technical competencies for employment.

A further example of a broader conception of competence can be found in the Scottish Modern Apprenticeship Framework for the Creative and Cultural Industry. This outlines the non-technical skills and attributes learners are required to have *even before* they are considered for employment and training in an apprenticeship (see box 2).

Box 2   Personal skills and attributes as key competencies in the Modern Apprenticeship Framework for the Creative and Cultural Industry in Scotland

The creative and cultural industries are identified as a key contributing sector to the economic growth of Scotland (Scottish Government 2022). To support the sector, a number of Modern Apprenticeships at the Scottish Credit and Qualifications Framework diploma level are available for individuals looking to work in the areas of cultural venue operations, technical theatre and production operations, or museums and galleries practice. Modern Apprenticeships combine paid employment with training.

The framework for a Modern Apprenticeship in the creative and cultural industries notes that there are no minimum academic criteria for entry; however, it stipulates the following skills and attributes that employers in this sector consider necessary for those wishing to undertake an apprenticeship:

- an interest in the creative and cultural industries

- self-motivation to success within the industry

- self-discipline and enthusiasm

- an ability to work on own initiative

- the capacity to develop organisational skills

- the potential to complete the qualifications

- a willingness to learn and apply that learning in the workplace

- a willingness to work with due regard to health and safety

- a willingness to adapt to different work roles

- a capacity to cope with busy conditions

- a willingness to communicate with a variety of people (Creative & Cultural Skills 2021, p.12).

The above list indicates a broader conception of what it means to be competent, covering as it does the personal and motivational attributes learners require even before they are considered for employment and training in an apprenticeship in the Scottish creative and cultural industries.

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6   https://www.skillsfuture.gov.sg/skills-framework#whatisit.

In contrast to the broader definitions of competence used, for example, by the European Union and Germany, there are no references to attitudes, ethical values, or interpersonal attributes in the definition of competency contained in the Australian *Standards for Registered Training Organisations (RTOs) 2015*. It could be assumed however, through the reference to the 'consistent application of knowledge and skill to the standard expected in the workplace' (see definition given on page 4), that these additional attributes, while not specifically listed in the definition itself, may have a role in what is typically associated with ethical and or professional behaviour. As an aside, an interviewee noted the difficulties with the use of the term 'consistent application' in the definition of competence in the *Standards*:

> *The other thing that's problematic is the definition, from a regulatory perspective, of 'consistent application'. Now 'consistent' is nebulous in part because it's a matter of consistent over a time frame or over a number of occasions or theoretically [if] they meet the knowledge requirements then apply that [knowledge] does that mean they are consistently able to progress with their learning? And that's where there's a challenge [in defining consistent].* (RTO representative)

Because training packages and accredited courses have been established to develop the skills required by industry, little direct guidance is available about how to develop and assess the other personal competencies that students will need to navigate learning and life. This is not to say that the importance of personal competencies — often referred to by terms such as 'general capabilities', 'employability skills', and more recently, 'twenty-first century skills' — have not been recognised in the Australian context. Indeed in 2005, the then National Quality Council and the Council of Australian Governments (COAG) endorsed the incorporation or embedding of employability skills into training package qualifications and units of competency. These employability skills, based on a framework developed by the Australian Chamber of Commerce and Industry and the Business Council of Australia, were communication, teamwork, problem-solving, initiative and enterprise, planning and organising, self-management, learning and technology (Wibrow 2011). Embedding employability skills into training packages was significant for, as Wibrow (2011) writes, it 'signalled that teachers would have to teach them — and that learners would have to take them seriously' (p.10). An issue with embedding skills or competencies is however that they can become almost hidden or buried within a unit of competency; their value to a trainer for ensuring they are taught, and to the learner as skills important for employment, becomes lost.

More recently in Australia, supporting frameworks have been developed that focus on the development of personal competencies. Similar to the employability skills framework described above, these structures include the Core Skills for Work Developmental Framework (CSfWDF; Australian Department of Industry, Innovation, Climate Change, Science, Research and Tertiary Education [DIICCSRTE] & Australian Department of Education, Employment and Workplace Relations 2013)[7], and the Australian Core Skills Framework (ACSF; Australian Department of Industry, Innovation, Science, Research and Tertiary Education [DIISRTE] 2012)[8] among others. While frameworks such as these are not a mandatory component of Australia's CBT approach, they are important as they legitimise the value of personal and social competencies in their own right; that is, they are not hidden within technical competencies. Equally, the frameworks highlight the importance of these competencies in helping individuals to transfer skills and knowledge learnt in one context to another. It could still be argued, however, that the competencies on which these frameworks focus are still insufficiently broad to develop competencies such as personal agency, ethics and active citizenship, which help individuals to learn, live and thrive in the twenty-first century.

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7   The CSfWDF describes the set of employability skills that underpins successful participation in work. It is not a set of standards, nor is it an assessment tool. The employability skills are categorised under three clusters: (1) navigate the world of work (e.g., manage career and work life; work with roles, rights and protocols); (2) interact with others (e.g. communicate for work; recognise and utilise diverse perspectives); (3) get the work done (e.g. plan and organise; identify and solve problems; create and innovate).

8   The ACSF can be used to identify and develop the five core skills considered as being essential for effective participation in Australian society. The core skills are learning, reading, writing, oral communication, and numeracy. The ACSF can be used in both formative and summative assessments.

Skill transferability – the importance of individual attributes and context

Both the Australian and European Union notions of competence refer to students developing the ability to transfer skills and knowledge to different contexts. The extent to which such skills and knowledge are truly transferable, however, is still not certain, especially in view of findings pointing to the importance of substantial context-specific information enabling the transfer of previously acquired skills and knowledge to new situations (Billett 2017; Hager 2017). Using concepts associated with the development of expertise can help us to broaden notions of what it is to be both competent and capable.

In this regard, research by Saks et al. (cited in Nagele & Stadler 2017) finds that we cannot ignore the fact that learners also bring with them a range of personal and individual traits, these facilitating or impeding their ability to learn, practise and apply skills in training and in workplaces. Saks et al. found that skills transfer was impeded when individuals did not have the 'meta-cognitive skills, or willingness or motivation to use these skills' in new situations (p.743). The expectations and attitudes of existing employees in the new work situation, along with the structure and conditions of the new workplace, were also found to limit a newcomer's ability to transfer previously acquired skills. The importance of personal attributes and contextual factors in an individual's ability to transfer skill and knowledge is recognised in the Core Skills for Work Developmental Framework, where they are referred to as 'influencing factors' (DIICCSRTE 2013, p.11–12).

Research on the development of expertise and the differences between novices (who are generally new to a skill or area) and experts (who are far more experienced and capable) is helpful in this case: in addition to demonstrating the importance of the high levels of context-specific information required for the effective transfer of skills between contexts, it also highlights the importance of the individual's other cognitive attributes for the effective transfer of skills.

BENEFITS AND DRAWBACKS OF THE CBT APPROACH

To help us to answer our second research question on the benefits and drawbacks of the current CBT approach in Australia, we draw on past research, as well as the interviewees' perceptions of the strengths and weaknesses of the approach, as practised in this country. The suitability of the current CBT approach for particular industries and/or qualifications is also considered.

Benefits or strengths

Advocates of the CBT approach have mainly focused on the benefits of having a training system aimed at servicing the needs of industry and workplaces, a system that is open to all occupations and sectors. As one interviewee said:

> I think the strength is the setting up of the graduate for success in the implementation and their demonstration of proficiency in the role that their qualification is meant to align with.
>
> (RTO representative)

Advocates have mainly been stakeholders from government, industry and unions, who originally saw the possibility for workforce development in the approach, including a way for Australia to raise the quality and productivity of its training system for students and workers alike. The aim was both to raise the qualification profile of the nation and to improve its competitiveness in global markets.

In 2009, the joint Steering Committee of the National Quality Council and Council of Australian Governments' (COAG) Skills and Workforce Development Subgroup investigated the continued relevance of training packages and other VET products. At the time it found 'unanimous support for the key pillars of the Australian VET system', which included training packages and accredited courses as a single national framework (National Quality Council & COAG 2009, p.2).

Advocates also believe that the CBT system introduced under the original reforms had opened up the VET system to new industry sectors and occupations not previously serviced by VET, and that Australian VET's close connections with industry are well respected internationally. The national industry standards used in CBT have also been fundamental to establishing some national consistency, although to varying success (Lilly 2020).

The standards cover most occupations and define in detail the knowledge, skills and behaviours required by Australian industry and the occupations within it. In this context, they can also provide specific guidance to learners on what skills or competencies they can achieve. Evidence of the competencies that a learner has achieved can then be provided to employers and recruiters.

I am very supportive of competency-based assessment at some of the levels of the Australian Qualifications Framework. I believe it is very helpful for both industry and learners to know the standards they must achieve. Sometimes these are task-based outcomes but equally they can be demonstration of aptitude. They produce a thoroughness for learners that is clear and they provide industry with evidence this learner has achieved that level of competency.

(Peak body representative)

In terms of an education model, a strength [of CBT] is the demonstration of outcomes in the assessment process. *(Sectoral expert)*

One of the strengths of the VET system is that we result competent / not yet competent, which should indicate that a person can or is unable to perform a job function or job role.

(Teaching and learning expert)

The benefits of the current CBT approach are especially noteworthy for practical and trade qualifications, particularly those at the entry and middle levels of the AQF (that is, up to certificate IV), although even at these levels learners are perceived to benefit from developing higher-order skills (for example, leadership and innovation):

There is a strong place for CBT in the qualifications that are very practical in nature and indeed often at entry/mid-level. They tell a candidate what they can and cannot yet do. Done well competency-based training should also allow for movement to other levels of the AQF much more quickly than is possible now. *(Peak training body representative)*

Drawbacks or weaknesses

The benefits or strengths of CBT are offset by several perceived drawbacks or weaknesses. For example, the CBT approach in Australia was not considered by some interviewees to be forward-looking, instead more concerned with 'what was' or 'what is' rather than preparing people for 'what could be':

By the virtue of calling it national and competency and industry, it can only ever look backwards. [By the time] you can get a qualification ready to run, it's already behind. *(Sectoral expert)*

The definition currently in place has little reference to the impact of change in the workplace and the rapid pace of change … There should be some consideration for the development of 'guild knowledge', developed in collaboration with industry. Initial skill and knowledge development can be generic – across an industry sector, then there is the development of 'guild knowledge' specific to a particular 'type of work' within that sector. This is reflected in the work/research that has been undertaken by Leesa Wheelahan and Gavin Moodie – flatter broader definition of competency that can be easily transferable and then the application of guild / specialised skills.

(Teaching and learning expert)

The imperative to be forward-looking is most obviously exemplified by wide-reaching events such as the COVID-19 pandemic, which necessitated workers to adapt quickly to changing expectations and skills:

Achieving industry standards is the strength [of CBT], but it is challenged by failure to be forward-looking. That is, we know industry standards are built on what is retrospective for a

person to be able to do/know and therefore they fail to be dynamic as occupations and needs change. COVID has demonstrated this very acutely, in that the need for integration of digital skills became fundamental to more jobs than had been the case previously.

(Peak training body representative)

CBT has also been criticised for the degree of prescription and bureaucracy associated with it (Guthrie 2009; Hodge & Guthrie 2019). In short, it is seen as slow and ponderous. The key criticism about CBT is that its focus on discrete job functions has led to the multiplication of assessment tasks, which in turn has increased the burden on both teachers and learners (Hodge & Guthrie 2019). Lilly (2020) makes the point that, in using job functions as the 'key organising principle', training packages have ignored the needs of the learner and other approaches to building up qualifications; for example, drawing units from a generic bank of units or modules to 'better capture the depth and breadth of knowledge and other employability requirements' (p.6). A concern for CBT's prescriptiveness was raised by one interviewee who said:

Our implementation of competence through the training package regime has also let us down in that it has become too prescriptive and too granular … We have over-orchestrated the notion of performance evidence. That removed the value of quickness in determining competency versus those not yet competent and the ability for judgement from the assessor as to whether indeed the person undertaking the assessment could do the role/function/task/general capability.

(Peak body representative)

The level of prescriptiveness was also seen as discouraging individuals from applying for recognition of prior learning because of extensive evidence requirements to 'prove' they had attained competence against the required and very detailed standards. As an interviewee noted:

The reason why it's [RPL] busted is that the level of specificity within a unit of competency it's just too hard to do. And so, people would say, why would I bother [to try and get recognition for my prior learning]?

(Sectoral expert)

While another elaborated:

Overly prescriptive performance elements and criteria have also taken away the opportunities for good recognition of prior learning to be integrated as a legitimate form of assessment. Once we encouraged RPL, now the regulatory framework and the training packages really make RPL not viable for the individual in terms of the effort involved. This is contrary to the purpose of competency-based assessment, which when first introduced was meant to simplify the assessment process and produce the capable candidates needed by industry quickly.

(Peak body representative).

Interestingly, in the Finnish VET sector the recognition of prior learning is championed in the creation of the personal competence development plans held by the learner. These plans are developed at the beginning of a VET program by the learner, who works with the VET teacher or guidance counsellor and, in some cases, the employer. A learner's prior learning and work experience are assessed during the preparation of the personal competence development plan, with the outcome that learners only study *what they do not yet know* (CEDEFOP 2019). These plans allow for flexibility and a high degree of individualisation in the approach to acquiring vocational skills.

Critics of CBT also see it as discouraging free debate about the value of education for its own sake (Stevenson 1992, 1995), and also that it focuses too heavily on industry needs rather than enabling teachers to use their own professional judgements in identifying the competencies that should be taught and how they should be assessed (Hodge 2015). The performance criteria in units of competency have also been criticised for encouraging teachers to use these as checklists (Guthrie & Waters 2021), with little attention paid to theories of teaching and learning and other forms of underpinning knowledge. As one interviewee commented:

> *It [CBT] basically has no knowledge which is the foundation of skills, that building block of skill. [Competency] is often taught by accident, not in a deliberate, pedagogical manner.*
>
> *(Sectoral expert)*

The focus on industry and employer requirements also makes the application of an individual capabilities approach — which emphasises the capabilities or the competency of the person and not the development of specific and narrowly defined skills — more problematic. Aligning with the earlier discussion about conceptions of competency, Wheelahan and Moodie (2011) argue that VET's focus should be to develop personal agency and the broad vocational capabilities that individuals need to be skilful at work rather than focus on atomised workplace-specific skills.

Wheelahan (2007) is also of the view that CBT should not be prescribed for all VET qualifications. Concerns about the universal application of CBT to all occupations, and by extension all qualifications, was also raised by one of the interviewees:

> *We use a one-size-fits-all model for all occupations and it doesn't work for all occupations. Classic being ICT and business … And this is a national system trying to aim for occupational outcomes. What a lot of businesses are saying is that you don't need occupational outcomes, [they] need a few skills and things like that. So this is again a reflection of the one-size-fits-all. We've got this one conceptual model, but it can't deal with the complexity or the series of circumstances underneath.*   *(Sectoral expert)*

Similarly, another interviewee queried whether there could be variations within the CBT approach:

> *As with any system one size does not fit all — is there opportunity for differentiated models in one system?*   *(Teaching and learning expert)*

In an extension to this argument, some interviewees claimed that the competency-based approach has not always worked well for those qualifications at the higher levels of the AQF and for industries such as the creative, caring and health industries, for which more holistic approaches to learning and assessment would be suitable or for which knowledge, personal attributes and capabilities are seen as more critical in terms of establishing the key elements of what it means to be 'competent'.

> *The creative industries are possibly a good example, and whilst someone can be deemed 'competent', skills and knowledge grow and develop over time. The apprenticeship model is reflective of this. This is an area where I believe industry/industrial relations can play a role, by potentially progressing wages as your experience and ability to perform improves. Graduate programs are a perfect example.*   *(Teaching and learning expert)*

Part of the concern here, it seems, returns to the issue of high levels of assessment prescription found in training packages, especially the numbers and types of assessments (including workplace assessments) required for the completion of units of competency. In accordance with the work of Hodge (2015), this prescriptive approach is considered to have removed from trainers and assessors the ability to make their own broad judgements about a learner's competence and thus effectively meet local employer needs. Such assessment requirements are felt to be particularly inappropriate for those job functions requiring learners to acquire and understand complex and extensive bodies of knowledge, for example, as needed in occupations in the nursing and broader health industries (see box 3).

Box 3 CBT is considered not suitable for enrolled nursing occupations at AQF diploma levels

A concern raised by a representative of the National Enrolled Nursing Advisory Council (which represents a group of TAFE institutes focused on enrolled nursing qualifications) in the interviews for this project is that the focus on discrete technical skills encouraged in training packages cannot hope to encompass all the human and interpersonal capabilities expected of those in enrolled nursing roles, as well as other client-centred roles in health occupations. The focus on discrete functions, and requiring education providers to assess them, does not acknowledge that these roles require a broader set of attributes and capabilities. In their view, education should develop in enrolled nurses studying at diploma level the capability to understand and be guided by their knowledge and the application of critical thinking and problem-solving approaches to deliver effective, appropriate and holistic care.

As reviews of training packages are usually undertaken at the unit of competency level, it is also considered that there is little opportunity for looking at the occupation as a whole; that is, at all the other skills and knowledge required, leading to a silo approach in the development of the qualification. There is also little expectation that these enrolled nurses will be taught to question and to query, while there is also little opportunity for building on knowledge previously acquired. There is also little acknowledgement that what nurses are to be able to do and know cannot be captured by a focus on units of competency, which are delivered and assessed in isolation from other relevant units. In short, a holistic approach is needed.

RTOs that provide training and assessment for regulated occupations such as enrolled nursing must also meet the standards required by external registering and accrediting bodies. They must also prepare learners to gain this registration or accreditation.

The emphasis on multiple and prescribed assessments for these VET qualifications means that the burden on teachers and trainers and learners has multiplied. Gaining employer cooperation in providing the high number of workplace assessments required by these assessment expectations also places added burdens on RTOs, employers and learners, with some health care facilities refusing to undertake the number of assessments required to be undertaken in the workplace.

Adding value to CBT for the Diploma of Nursing may mean rethinking how best to revise assessment expectations so that only the critical functions and skills require workplace assessment, with workplace simulations and classroom presentations and discussions made available for the remainder. Providers could also help to identify and provide guidance on the competencies that could be assembled under one assessment event to reduce the prescribed number of assessments.

A differentiated approach for qualifications of this type and level may need to be explored.

The concerns of the limitations of the CBT approach, as it is currently applied to health-related occupations in particular, are summed up in the views of one of the interviewees:

> *Think about an enrolled nurse… what we've ended up doing is creating these long lists of knowledge on the assumption that that leads to good practice. And educationally, that's completely moribund. So, even in regulated occupations, saying that [somebody is] competent/ not yet competent, is losing its relevance. That sort of didactic model can work where you're talking about electricity [for example]. You either electrify yourself or you don't. But when you get to an interpersonal situation as an enrolled nurse … the [notion of being] competent may well be relevant but here is where it's no longer didactic, because you've got no idea what the patient's going to be like, so you need a broader set of capabilities etc. [An alternative approach to skill development could be] why don't I give you the broader capability to understand how to operate? And that's more of a knowledge-based approach and you don't need [to be] competent/not yet competent. You need a sort of proficiency capability … learning outcomes type of approach. When they're faced with a situation … they've got more of a chance [of doing their job well if] … they've got the mental models and you don't get that via competency [approach].* (Sectoral expert)

Related to this concern, another interviewee raised the issue of what being deemed 'competent' actually means and whether it can be considered the same as being proficient:

> *So where is competent? So if you were to bring it into a metric scale, is competent 74% and equivalent to higher education? Is it 68%, is it 92%? Arguably it's 100%. But in reality, it's very hard to measure all the different aspects of everything a workplace requires …*
>
> *…*
>
> *Yes, they're competent, but that's only [in the sense that] they could probably start day one on the job as opposed to proficient as far as they can hit the ground running and know every component before starting day one. So there may be a potential separation and the separation may be based on whether they've done it [CBT] in a work placement in a real environment rather than a simulated one.* (RTO representative)

Hager (2017) reminds us that, in describing procedures and outcomes, competency standards do not and cannot capture everything, including knowledge that is 'tacit', in that it is understood but not verbally articulated. He urges trainers and assessors to apply a more holistic approach to assessment tasks by combining a *related set of tasks* in one assessment event rather than 'individual tasks taken in isolation' (p.206). One of the interviewees also noted the need to take a more holistic approach to the assessment of competency, and in so doing highlighted the challenges with taking such an approach:

> *The challenge is that we result at unit of competency level, and, in the workplace, job functions are not singular acts. There is not a holistic approach to resulting the qualification itself. Ideally you should be able to join all the dots together and that should represent competency; however, if the training organisation does not have good industry engagement and current educators, the competent determination may not translate into what the industry expects at that particular AQF. I believe this is one of the key challenges — the interpretation of industry standards by training providers and how they are represented at training package level, notionally training package design.* (Teaching and learning expert)

The type of clustering that Hager (2017) suggested is not a new concept in Australian approaches to competency-based assessment, with clause 1.12 of the ASQA (2019) *Users' Guide* providing the following advice about how clustering should be used:

> *As similar requirements are often expressed in multiple units of competency, you can often 'cluster' a number of units together for assessment to avoid repeating assessment of the same tasks. If you do this, take care to address all relevant environments and contexts in the assessment process and to meet any prerequisite requirements for every unit or module in the cluster. Analysis of each individual requirement across the cluster of units will reveal where such assessment methods are appropriate and where discrete assessment activities may be required.*

In our consultations we heard that issues could arise when learners are found not to be competent in one of the units in the cluster. For example, as one interviewee noted:

> *[In the enrolled nursing qualification] there [are] probably easily 100 regulatory/functional requirements and, technically, if the student fails one of those, they are deemed not yet competent. And so that's why the sector's completely in arms against competency.* (Sectoral expert)

The *Users' Guide* does not provide guidance when this occurs.

In summing up the main drawbacks or weaknesses of the CBT approach in Australia, we turn to Wheelahan (2016), who believed VET should move to a new system, one that provides individuals with skills for the future and helps them to develop the knowledge, skills and attributes to be 'creative and innovative at work, support their educational and occupational careers and help them support their families and communities' (p.193).

There may be some progress towards Wheelahan's vision of a 'new' system. Since the review of the Australian VET system, led by the Hon. Steven Joyce (Australian Department of the Prime Minister and Cabinet 2019), the Australian federal, state and territory governments have embarked on a journey of reforming the VET system. An extensive consultative process with stakeholders, focused on reforms in industry engagement, qualification design and quality, has indicated support for changes to the VET system to address many of the concerns just discussed (see box 4).

Box 4   Working towards a new training agenda

Under the auspices of National Cabinet, the Australian Government and state and territory governments commenced reforms in the areas of qualification design, industry engagement and quality. Findings from surveys and consultations with stakeholders on these issues indicate support for making Australia's VET system less complex and prescriptive, separating occupational from training standards, and delivering qualifications which enable students to acquire broader vocational outcomes. These findings support many of the concerns just discussed, specifically:

- Support exists for reforming the current system of industry engagement[9] to enable better collaboration across industry sectors and to provide industry (comprising smaller sectors, and small and medium enterprises) with stronger input to, and representation in, the training system, in addition to training package development and review. It is considered that industry should identify the skills and competency it requires and work with the VET sector in supporting the design and delivery of training products.

- Reforms to the design of qualifications[10] aim to make the system less complex, by reducing duplication and over-specification, and improving the ability of training products to respond to the changing needs of the workplace.

- Although stakeholders reported general satisfaction with the *Standards for Registered Training Organisations 2015*, they also suggested improvements for promoting clarity and an increased focus on training delivery and learner wellbeing. Issues with training packages were also raised by stakeholders, including the burden placed on RTOs to respond to minor changes, inflexibility of expectations, and requirements that do not reflect current or local industry practice.[11]

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9   https://www.skillsreform.gov.au/blog/moving-towards-better-industry-engagement-in-vet/.
10   https://www.skillsreform.gov.au/blog/addressing-the-changing-skills-needs-of-employers-and-individuals:-qualifications-reform/.
11   https://www.skillsreform.gov.au/blog/achieving-high-quality-in-the-vet-sector/.

ADDING VALUE TO CBT AND IMPLICATIONS FOR TRAINING, ASSESSMENT AND LEARNER OUTCOMES

In this section we explore the ways in which we can add value to the CBT approach in Australia and the implications of doing so particularly for training and assessment practice.

A broader notion of being competent

CBT in Australia can be complemented by both broadening the conception of what it means to be competent and diversifying competency requirements according to qualification levels. Given the complexity of the Australian VET sector, it is important that both of these aspects be considered. In 2021, there were 4.3 million students undertaking nationally recognised training and approximately 3500 RTOs delivering nationally recognised training (NCVER 2022), while in 2019 there were approximately 71 000 people employed as trainers and assessors (Knight, White & Granfield 2020). The complexity of the VET sector, and what this could mean for how competency is conceived, was highlighted by one of the interviewees:

I guess the challenge is the breadth of delivery across the vocational education training sector and also the diverse range of learner cohorts, including those being delivered either in a VET in Schools, young learner context, right through to a dual-sector perspective and where a higher education provider may look at it more from a grading [perspective] and then almost try and have the same head of department then do a competency-based assessment. And the reason I referenced that is it means that people are almost trying to deem their own categorisation of competent, based on what the unit of competency may ask for or the training package, or just what is realistic from a learner cohort, and is also influenced by whether it is in a real workplace environment versus a simulated environment versus a context of no employment outcome … [the definition of competency] needs to be a broader connotation than a more narrow [one] because of the breadth of [provision] and providers. (RTO representative)

As discussed earlier, broader conceptions of competency are identified as those which combine both the technical knowledge, skills and capabilities with the generic skills, capabilities, aptitudes and personal attributes required for the jobs of today and those for the future. Some of our comparator countries, for example, Germany and Singapore, have a set of key or generic competencies, such as taking responsibility for one's actions, self-reflection, and learning, which have been identified for their training sectors.

In 2018 the Council of the European Union Area member states identified eight key competencies that all learners (including VET learners) should develop, noting that not all of the key competencies will apply in a meaningful way to all occupations. These included competence in:

literacy, multilingual, mathematical, science, technology and engineering, digital, personal, social, and learning to learn, citizenship, entrepreneurship, cultural awareness and expression; skills that enabled lifelong learning and employability, social inclusion, active citizenship and personal development. (CEDEFOP 2022)

Although there is no specific reference to social inclusion, active citizenship, entrepreneurship, or personal development in the definition of competence in the *Standards for Registered Training Organisations (RTOs) 2015*, or for that matter, in supporting frameworks such as the Core Skills for Work Developmental Framework, these remain an important area of focus of government policy (for example, social inclusion, wellbeing and entrepreneurship). Indeed, specific VET qualifications are devoted to the development of entrepreneurial skills and sustainability skills (for example, the Certificate IV in Entrepreneurship and Certificate IV in Environmental Management and Sustainability, both from the Business Services Training Package). A stronger focus on the development of digital skills is evidenced by the establishment of the new Digital Skills Organisation and the

ongoing availability of relevant units of competency from the ICT Training Package. Further, the non-accredited system abounds with courses and programs for developing digital skills and knowledge of specific software and programs, and operating systems.

The attainment of competence in digital and entrepreneurial skills and more general skills, such as active citizenship, for example, could also be supported more formally by an increased use of micro-credentials and digital badges to certify attainment in the qualification mix. This is the model used in Singapore's Workforce Skills Qualifications system, where the attainment of occupation-specific critical core skills is facilitated through the undertaking of micro-credentials.[12]

Different competency requirements for different qualification levels

Diversifying competency requirements according to qualification levels is something that occurs within the Scottish apprenticeship system. Scotland supports three strands of apprenticeships: Foundation Apprenticeships, which are classified as level 6 in the 12-level Scottish Credit and Qualifications Framework (SCQF), were introduced in 2014 and enable secondary school students to combine their school studies with workplace experience and training opportunities. The Foundation Apprenticeships are similar to school-based apprenticeships and traineeships in Australia. During a Foundation Apprenticeship, students can also complete components of a Modern Apprenticeship, which combines paid employment with training and are available to anyone aged 16 years or older (OECD 2020).

Modern Apprenticeships have been available in Scotland since 1994 and are classified as levels 5—11 in the SCQF, with the majority at SCQF levels 5—7. These types of apprenticeships are similar to Australian apprenticeships and traineeships. Technical and Professional Modern Apprenticeships (SCQF levels 7—11) are also available for people aged 16 years and over to train for jobs at a senior supervisory or management level.[13]

Graduate Apprenticeships, the third strand, sit at levels 7—11 of the SCQF and were introduced in 2017—18. These allow workers to combine paid work with university or college studies (up to master's degree level), and are typically undertaken as four days of work and one day at university or college (OECD 2020).

In addition to the relevant vocational qualification and industry-specific training, all Modern Apprenticeships in Scotland include either 'Core Skills' or 'Career Skills', in addition to the technical skills, with the 'level' of the apprenticeship determining which of these set of core or career skills is included.

The core skills, which share similarities with the skill areas described in the Core Skills for Work Developmental Framework and the five core skills of the Australian Core Skills Framework are skills that employers have deemed to be most likely needed in any work environment. While not every job requires an employee to be proficient in all of the core skills, every job will need some level of proficiency in some or all of these core skills, which are:

- communication
- working with others
- problem-solving
- information and communication technology
- numeracy.

For apprenticeships at higher levels; that is, the technical and professional apprenticeships at SCQF level 7 and above, a set of career skills have been introduced to develop skills in:

- business administration
- management (including Business Continuity and Governance)
- customer service
- enterprise.

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12 https://www.skillsfuture.gov.sg/skills-framework/criticalcoreskills.
13 For an example of a technical apprenticeship see https://www.skillsdevelopmentscotland.co.uk/media/43501/ma-framework-business-and-administration-at-scqf-level-8.pdf.

These career skills are essentially higher-level core skills. Which core or career skills are required to be demonstrated is set out in guiding documents called Apprenticeship Frameworks.[14] The Apprenticeship Frameworks are developed by Sector Skills Councils in partnership with employers and other relevant stakeholders and describe the duration of the apprenticeship, the name of the qualification, the mandatory units and the core or career skills that must be demonstrated. Where they cannot be embedded in mandatory units, the core or career skills are required to be achieved and certificated separately. Apprentices are not required to repeat any core skills for which they may have already been certificated in previous training programs.

Implications of a broader notion of 'competent' for training and assessment

Expanding the current concept of competency to one that explicitly includes more personal or non-technical competencies signals to learners, employers and training providers the importance of these skills for occupational competency and for enabling personal growth and learning in the longer-term. Importantly for individuals, these types of skills help them to transfer knowledge and skills gained in one work, or life, context to another. As noted earlier, various non-technical skills are currently embedded within training packages, meaning that their relevance and value can become lost or be minimised. A consequence of this could be the need for individuals to repeatedly undertake similar training if they change jobs or upskill, an issue identified by the Hon. Brendan O'Connor, federal Minister for Education and Skills (2022), following the Jobs and Skills Summit (Australian Government 2022):

> *Due to transferable skills being poorly recognised, students may need to undertake duplicate additional training that delivers similar skills to those they already have in order to move into a new job. In fact, to move from their first occupation, into a new specialisation, then into management role and into a new industry they could need to undertake 4 qualifications which would take 10 years.* (O'Connor 2022)

Broadening the current concept of competency to one that makes explicit the requirement for personal/non-technical competencies — in addition to the technical competencies — will have implications for the skills of trainers and assessors. As Wibrow (2011) highlighted, a difficulty with incorporating these types of skills in training packages, and one that still remains today, is ensuring that the trainers themselves are sufficiently trained to teach such skills and that 'appropriate and consistent methods of assessing and reporting are available and utilised' (p.10). Without appropriately skilled trainers and assessors — and quality VET delivery — learners may struggle to engage with the concept of non-technical skills, such as communication and agile thinking, impeding their ability to transfer knowledge gained during training to future employment contexts (Guthrie & Waters 2022; Wibrow 2011).

Given that assessing personal/non-technical competencies can be difficult, it is important to have appropriately skilled assessors. Rüschoff (2021) undertook a systematic review of the methods used to assess the professional and personal competencies in the German vocational education and training system. She found that 60% of the assessment instruments reviewed focused on the professional or technical competencies, while less than 10% included a focus on personal competencies, such as social or communication skills. This is not altogether unsurprising, as these types of competencies are broadly applied in a real-world setting and are not merely confined to the completion of one task, as may occur with a technical competency. As Rüschoff (2022) notes, a key challenge then in including personal competencies in a broader concept of competency is describing all the scenarios across the varying contexts in which these competencies are required and to 'define when a situation was successfully mastered or not' (p.11).

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14   See, for example, the Apprenticeship Framework for a Modern Apprenticeship in Construction Technical at SCQF Level 7, https://www. skillsdevelopmentscotland.co.uk/media/42964/ma-framework-construction-technical-at-scqf-level-7-2.pdf#:~:text=The%20aim%20 of%20the%20Modern%20Apprenticeship%20in%20Construction,provide%20the%20industry%20with%20a%20well-trained%20productive%20- workforce.

Differentiating the levels of performance: the use of grading and proficiency-based assessment

Another way by which value can be added to CBT is to consider grading the performance of learners or applying a proficiency-based approach in assessments.

The use of grading

The grading of performance is perceived to motivate learners to perform beyond the minimum standard and, for some, to pursue excellence:

> *The feeling that I got when I was speaking with educators was that where there was something high to achieve, if you had high achievers, they would push through and achieve really high. But as soon as you said everybody gets the same mark, they just thought they didn't see people push themselves as much. So I think that's what marking [grading assessment] does.*
>
> *(Teaching and learning expert)*

> *Yes, I think it has to be in there so people have a sense of success. I mean, if we sit back and say, well, OK, we stick with competency and therefore that means that your success is that you've got yourself into a low paid retail job. Well, that's OK, that's reasonable success. But people don't want to view that, they want to do this as building their career so I think it has to come in [to give people a sense of how competent they are].*   *(Sectoral expert)*

Grading can also give employers and recruiters and higher education institutions information on the best candidates for job roles or for further study (Productivity Commission 2017, p.94; Thomson, Mathers & Quirk 1996, p.v), and is supported for those occupations requiring high levels of expert skills and knowledge, such as accountants (Strong 1995).

> In Australia a non-graded system (competent/not competent) was originally supported for philosophical and practical reasons. Advice given to the Ministers of Vocational Education and Training of the day by the Australian Vocational Education and Training Advisory Committee (VEETAC; 1993, p.47) noted that if grading were adopted it might lead to 'a sense of failure in the less naturally able students who may simply require more time than normally allocated to reach the required standard, and concentration of teaching effort on the more able students'.

In its 2017 review of Australia's productivity performance, the Productivity Commission called for a reconsideration of the adoption of grading practices to give greater clarity to employers about *how well* employees can perform a task, not merely whether they can do the task or not (p.96). The recent review of the VET system led by the Hon. Steven Joyce also supports the adoption of grading or other forms of proficiency-based assessment, calling for a pilot of such approaches with certain qualifications and industries as a first step (Australian Department of the Prime Minister and Cabinet 2019, p.49). The Productivity Commission and others (Skiba 2020; Thomson, Mathers & Quirk 1996; Williams & Bateman 2003) note that the Australian VET system has a history of the use of graded assessment (for example, the state-funded development of grading models piloted in Queensland and Western Australia in the early 2000s). The application of graded assessment approaches however was not consistent at the national, state/territory or provider level, and the policy focus moved away from grading to emphasise the quality of delivery and the effectiveness of teaching (Productivity Commission 2017; Williams & Bateman 2003).

Looking beyond Australia to England, we find that grading in the new Vocational and Technical Qualification system is being considered. Here the focus has shifted away from single units to complete qualifications, and from simple competent/not competent assessments of performance to grades; however, such grades continue to be based on notions of competence, with learners expected to meet all requirements before grades are awarded (Newton 2018).

Similarly in the Australian VET system, grading is allowed but it can only be applied after competency has been achieved. ASQA's Users' Guide provides guidance to RTOs on how to apply the requirements for conducting effective assessments (see clauses 1.8 to 1.12 in the *Standards*); here all elements must be passed before a grade can be assigned. The *Users' Guide* states, 'If your RTO applies any form of grading to students, ensure that this is applied only after the student has been assessed as fully competent and is in addition to a determination of competent or otherwise' (ASQA 2019, p.52).

Returning our focus to England, the application of grading practices also occurs in the recently developed VET qualifications available for 16 to 19-year-olds, known as T-levels. College- or apprenticeship-based, T-Levels are made up of compulsory and distinct components, with these including the core theory, concepts and skills that pertain to a specific industry area, specialist skills and knowledge for a specific occupation or career, and minimum standards for English and maths (for those students who have not already attained these standards). Students completing T-Level courses will receive a certificate with their overall grade of pass, merit, distinction or distinction* (akin to a higher distinction). They will also be awarded a grade for each of the core skills and knowledge, using the grades A* to E, and a discrete grade for each occupation specialisation identified as pass, merit and distinction. The certificate will also confirm that the student has completed the minimum requirements for maths and English, an industry placement, and any other mandatory requirements. In T-levels the overall grade is based on the grades that students obtain on the core component and the occupational specialisations. A statement of achievement will be available for those who do not pass all components.[15]

Newton (2018) investigated the extent to which Awarding Organisations[16] in England embraced graded competencies to broaden their approach to assessments. In examining the requirements of 18 different qualifications offered by 15 Awarding Organisations, Newton found that they allowed a wide array of assessment practices. At the unit level, the qualifications exhibited little variety in possible assessment grades (that is, pass, merit or distinction); it was at the full qualification level, however, that different combinations of these three types of grades were more prevalent. Newton also noted that what he called the 'design default template' was still similar to the traditional competency-based assessment approach, whereby skills and knowledge were broken down into specific elements of required behaviours and knowledge.

Newton (2018) also describes how a unit-level grade would be awarded and how unit-level grades would be translated into a grade for the full qualification. He notes that *command verbs* were often used to differentiate between what he called the 'cognitive or behavioural complexity of the task', with lower levels of behavioural or cognitive complexity associated with lower challenge and thus with lower grades, while higher levels were attached to higher grades. For example, according to Newton, a command verb like 'explain' is less challenging so can attract a pass grade, while verbs like 'discuss and review' attracted a higher grade, such as a merit grade. Combined command verbs like 'analyse, evaluate and critically evaluate' are more challenging commands and can attract a distinction grade (p.60).

This concept of command verbs has the potential to inform the development of grading systems in the Australian VET context. Newton's (2018) analysis, however, was based on descriptions in qualification documents; it did not consider the reliability and consistency of the skills and knowledge of assessors in performing assessments and arriving at judgements. If command verbs were to be incorporated in the Australian approach to VET teaching and assessment, it must be done, as noted by Newton, within a well-constructed and agreed moderation and validation framework in order to be seen as having integrity.

Levels of proficiency

Similar to grading, applying levels of proficiency to the assessment of skills or competencies provides learners with a clear marker of their current position and where they can aim for if they choose. As described briefly earlier, Singapore's Workforce Skills Qualification System, comprising both technical and 'critical core' skills

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15   https://www.gov.uk/government/publications/introduction-of-t-levels/introduction-of-t-levels#grading-and-certification.
16   Awarding Organisations design and award qualifications in Britain.

and competencies, differentiates performance in terms of proficiency levels. The core (generic) skills and competencies supports three levels of proficiency: basic, intermediate and advanced, while the technical skills comprises six levels of proficiency, where level 1 is the lowest or basic level of proficiency and level 6 is the most proficient. The skills maps developed for individual job roles within each of Singapore's identified industry sectors (for example, early childhood, food services, precision engineering, wholesale trade) outline the critical work functions and key tasks of that job role, along with the technical and critical core skills required and the proficiency level expected (see appendix C for an example of a skills map).

Similar to the approach in the UK's Vocational and Technical Qualification system, Singapore also uses command verbs as a way to distinguish levels of proficiency. Examples of verbs used to describe the competency of an individual with a basic proficiency level (across any core skill) include 'collate', 'support', and 'prepare'. For individuals with an intermediate level of proficiency, the command verbs include 'review', 'develop', 'monitor' and 'analyse', while examples of command verbs to describe an advanced level of proficiency in any core skill include 'direct', 'evaluate', 'formulate', 'synchronise' and 'lead' (see appendix B).

The Australian Digital Skills Organisation Pilot is also intending to apply proficiency levels.[17] The pilot takes a new approach to skills development, using skills assessment (technical, occupational and tacit knowledge) rather than testing learned knowledge as the organising framework, and is based on employer-driven skills standards, an approach that seems to be more appropriate for those skills that are transferable across functions and organisations. The application of proficiency-based assessment, as opposed to the CBT competent/not competent model (see box 5 for further information), which uses capability as its organising framework, also makes sense for these skills.

Box 5   The Digital Skills Organisation's digital skills assessment framework

The Digital Skills Organisation (DSO) Pilot was established to help ensure that 'Australia has a highly skilled, resilient and adaptable digital workforce that is responsive, and demand-driven to the needs of employers and industry'.[18] To this end, the pilot is implementing a range of projects, whereby training providers work with employers to identify employer needs, and design and deliver training programs (including course content) in partnership with registered and non-registered training providers to meet these needs. The pilot project Train 100 Data Analyst project provided training for new entrants, Aboriginal and Torres Strait Islander learners, mature-age learners, and learners with tertiary qualifications who want to develop data analyst abilities, with the training delivered by TAFE Queensland RTO, Goanna Education RTO, and General Assembly.

Learners are put through aptitude testing as part of the Skills Assessment Framework to determine their strengths and fit for a particular field, as well as their development needs. A summative assessment or capstone test, independently designed and highly aligned with employer-driven skills standards, uses concepts of proficiency-based assessments to differentiate how far learners have come from their original starting points. The capstone assessment is focused on the skills required to perform a workplace project **not** on *accredited* competencies aligned to a particular occupation. The five levels of proficiency used to describe achievement in the capstone test are Level 1: Novice; Level 2: Advanced Beginner; Level 3: Capable; Level 4: Proficient; and Level 5: Lead.

Implementing this approach with RTOs has not always been straightforward. As a result, the DSO Pilot has developed another framework that aims to raise RTO skills in applying the framework. A 'Skills-based Capability Framework' will support the RTOs to implement the skills-based approach to training within the current competency-based system. RTOs that adopt the skills-based approach will take on the role of a centre of excellence for a specific digital discipline (for example, cyber security) and will provide resources and direction to other RTOs in order to help them implement the skills-based approach to training.

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17   https://www.dese.gov.au/skills-organisations/digital-skills-organisation-pilot.
18   https://www.dese.gov.au/skills-organisations/digital-skills-organisation-pilot/dso-pilot-projects>; <https://digitalskillsorg.com.au/t100/.

Implications of differing levels of performance for training and assessment

The use of grading approaches is not always supported because it is perceived to add another layer to assessment, which can further complicate the assessor's role. Indeed, it is prudent to heed the warning of Skiba (2020), who noted that the 'introduction of a graded system to record proficiency or personal traits on top of a binary system utilised to record competence should not increase the level of complexity in an already complex system' (p.111). Not all interviewees were supportive of a graded assessment approach, voicing their concerns:

> *I have never supported graded competency. Either competency is binary at the UoC [unit of competency] level or cluster or it needs to be moved away from. I have tried to use graded assessment with competency myself and it … [becomes] … a complex education design piece … Competency allows speed to progress with skills development – let the student go onto something at a higher or different level rather than [put] too much effort in that particular UoC or cluster.* (Peak body representative)

> *From our [training and assessment] perspective, from a fairness perspective, unless you have that graded assessment really well thought out and not just based on [for example] the margins weren't lined up or, they used the right font or something like that, I think it's very challenging for an organisation to implement effectively without really strong engagement with employers to be able to stipulate the criteria.* (Teaching and learning expert)

> *I do think competency is more effective than a grading structure … what Australia lacks is the full integration with industry, where you always have that industry sign-off or that work-based learning and so Australia simulates more than other countries...But I still wouldn't change competency as [being] a sign off of have they met the outcome that they've aspired to in starting the training which was being ready for the occupational output.* (RTO representative)

One interviewee made the point that grading is almost unnecessary as achieving competency should be seen as akin to gaining a distinction:

> *It [CBT] is around, how can we better help everybody to want to get a distinction as a result. You know if we're seeing competent, we should be looking at competent as a distinction, that should be the highest level, because if it's not, then what are we missing out somewhere, what's the gap? I always think about what's the gap because at one point a number of years ago … competent was 80%. I'd be like, yeah, but 20% is what they aren't getting, you know? Like don't tell me it's [competency is 80%] in electrical because if the [not yet competent] 20% has something to do with not matching the right wires, I'd be very worried.* (Teaching and learning expert)

Another interviewee held a contrary view:

> *What I'd prefer to do is to say here's the learning outcomes and this is your level of proficiency against the learning outcomes. Then by the way, this is also demonstration of your competency in these particular areas [by virtue of the fact that if you've passed, you're obviously competent].* (Sectoral expert)

Further to the additional level of complexity the use of graded assessment would add, concerns were raised by some interviewees about the capability of the trainers and assessors to apply a graded assessment approach:

The Certificate IV TAE does not prepare teachers for a world of graded assessment.

(Peak body representative)

I think it's [graded assessment] a lot more challenging [for trainers and assessors]. It is harder to be fair, to meet that principle of assessment … a lot of moderation and decision [is required] as to how we're going to award, you know, whether that it's a pass, merit or distinction … moderation is really the key at that point in time. So if we look at the secondary school system here in [jurisdiction], the moderation that happens around the resulting of that, it's a huge complex model. But for absolute fairness, you've got to be able to be prepared to invest in [that level of moderation] because it's your call against mine; it doesn't matter how descriptive your rubric is, it's still open to independent judgement. Unfortunately, you still have that judgement that has to be made. And it's only when you've got to be able to justify that judgement, either to a panel [or] somebody else, that you really start to unpack that. And I honestly think we're starting to talk about assessor skills that go way beyond what is in the Cert IV Training and Assessment.   *(Teaching and learning expert)*

The Productivity Commission (2017) also highlighted concerns about the 'the capacity of VET teachers and assessors to consistently identify the competency of students, much less deliver performance grading' (p.95). Suggestions are made for other supporting mechanisms if performance grading were to be adopted, for example, the use of qualitative commentary to accompany a grade achieved. That said, as one of the peak body representatives noted, other mechanisms such as personal profiles and capability statements, portfolios and awards can be used to assess and document student performance in place of graded assessment.

A final consideration here. Adopting approaches that are no longer based on the competent/not competent model will, however, require funding mechanisms to be adjusted to ensure that the extra time and effort required by RTOs and their staff to help learners to achieve higher levels of performance is enabled and rewarded. Indeed, the DSO Pilot project, described in box 5, identified a need to focus on developing teacher skills in proficiency-based assessment. Learners, too, will need to expend extra effort if they are to develop skills that go beyond satisfactory or minimum levels of performance.

REFLECTIONS AND LEARNINGS FOR AUSTRALIA'S TRAINING SYSTEM

Suggesting novel solutions for how to add value to, improve or reform the Australian approach to CBT is a difficult endeavour. We should not ignore the considerable amount of thinking and research already expended in this area (see, for example, Guthrie 2009; Wheelahan 2016; Hodge & Guthrie 2019) or, indeed, the reforms already underway or being considered, including reforms to the design of VET qualifications and to the system of industry engagement. That said, we make the following suggestions for further consideration.

▪ There is continued value in using occupational standards as the basis for specialist skills training (for example, the training of carpenters and joiners or plumbers) or skill standards for generic roles that apply across contexts (like ICT skills and business skills). Whether organised around competencies or skills, the achievement of standards can help to instil confidence in learners, employers and recruiters about the consistency and quality of training.

▪ However, we need to reconsider the narrow definition of 'competence' currently applied in the Australian VET sector. As acknowledged in the approaches taken by the various countries highlighted in this research — and supported by the views of some of our interviewees — competence is a much broader concept than merely the demonstration of a technical skill required in the workplace. It encompasses cognitive skills, creativity and

innovation; interpersonal attributes such as communication and collaboration; and work and life skills such as ethics, integrity, self-direction, autonomy and active citizenship. Further, competence is more than a static attribute. It evolves as individuals continue to grow through their learning, work and social experiences. It is not only concerned with what an individual knows now or has learnt in the past; it is about preparing for what the individual can learn in the future.

The development and recognition of these broader, generic or non-technical, competencies is critical — it is this group that helps learners to transfer knowledge and skills gained in one context to another. The importance of transferable skills was acknowledged in the *National industry insights report 2020/21 national overview* (Australian Industry and Skills Committee 2022). In this report, which provides high-level analysis of industry skill needs, three of the top five skills prioritised across the skills forecasts from the Industry Reference Committees were generic: adaptability (for example, resilience, self-management, adapting to changes and new technologies, emotional intelligence); collaboration (for example, communication skills, teamwork, social perceptiveness); and analytical skills (for example, creativity, problem-solving, critical thinking, innovation). Ensuring that these types of skills are explicit in occupational standards or requirements, as occurs in Singapore, for example, clearly demonstrates the value of generic or non-technical competencies for employment.

If broader judgements about what constitutes 'competence' are to be applied, then trainers will also need to develop their own capabilities in teaching, delivering and assessing non-technical competencies. Such changes should, however, be informed by frank discussions between government, RTOs, employers, and industry groups, including employer and professional associations, and unions.

An important caveat: if the definition of competence is broadened but we do not change how we describe, teach, assess or regulate the 'new' competencies, then the broadening of the definition becomes a redundant exercise.

▪ Furthermore, to ensure that training suits both the AQF level and qualification type and reduces its high levels of assessment prescription, it may be timely to move on from a single training approach, one currently applicable to all qualifications (as already suggested by Lilly 2020 and Wheelahan 2016). A stronger role for training providers in the development of training products has the potential to ensure that the teaching, delivery and assessment practices do not become overly burdensome on learners, trainers and employers, and, importantly, that they are suitable for different qualifications and AQF levels. But a revitalised role for training providers also means that the training products themselves must be simpler and easier to understand and therefore translate.

▪ The value of grading performance, either with or without the demonstration of competence, is an issue that needs further debate. The application of grades or proficiency levels to assessments can motivate learners to perform to a higher standard, enabling them to continue to develop their expertise while simultaneously imparting greater clarity to employers on how well employees can perform a task. However, further investigations into how these approaches are received in practice in the Australian VET system should be undertaken. Concerns about the potential to add further complexity to an already-complex training and assessment system, as well as the prospect of transferring assessment responsibility away from the provider, need to be heeded:

> *I think as a starting point you need to trust the education sector to have the student meet the intended outcomes by the time they are deemed competent or deemed satisfactory against a role. Now, is there a view of what is competent versus proficient? I think there is, but the problem of that view is initiatives start getting put in place … where it's a matter of, we're going to take hundreds of recent graduates from trades qualifications and we're going to put them through an additional assessment to see whether we believe that they're really proficient in the workplace. And as soon as that occurs, it starts to take [the onus] away from the organisation to make sure they're [the learner] generally competent before they sign off.*
>
> *(RTO representative)*

- A final consideration relating to the broader perspective of adding value to CBT was raised by two of the interviewees, whereby they highlighted the current limitations on local employer or industry involvement in the development of training packages, and the importance of redressing this. As one of the interviewees stated:

> *The assessment requirements and training package rules limit local flexibility and adaptability and that's actually the root cause of why everybody says that's not delivering for industry or for employers because the training package, the assessment requirements, the prerequisites and the way that ASQA regulates it [can limit the ability for providers to tailor training specifically for a business].* (Sectoral expert)

Having a 'local' approach to the development of apprenticeships occurs in England. Following a review of the apprenticeship system in 2012, which concluded that apprenticeships needed to be more employer-driven and outcome-focused, 'trailblazer' groups were introduced. These groups, which develop the apprenticeship standards (concise documents that describe the knowledge, skills *and behaviours* required for someone to be competent in the job) and assessment plans, are led by the employers who are most likely to use the apprenticeship, along with sector organisations. The concept of trailblazer groups allows for employers to identify training programs that best suit their (local) needs and to work with training providers to develop the appropriate curricula (British Council nd; Shreeve 2019).

A similar 'local' approach is taken by Further Education Colleges in Northern Ireland. These providers are considered to be 'anchor institutes', playing a critical role in local workforce development and economic growth by working with employers to identify local skill needs. They also provide opportunities for learners, including existing workers, to continually update their skills and knowledge to meet changing skill demands (UK Department for Employment and Learning Northern Ireland 2016).

Rethinking the approach to training package development and review in Australia to one that adopts a more intensive 'local solutions' approach, as occurs in England and Northern Ireland, can give a voice to local industry and communities. In such an approach, in addition to consulting with the local industry/employer/community, training package developers would also consult with RTO subject matter experts to develop products that could be used to develop local capabilities to deliver full qualifications:

> *When you sit as a CEO like I have in many jurisdictions and have local industry constantly tell you the training package does not work for them, it is a difficult discussion, given the training package has been produced by industry. I often think it is not the industry standards the local employer objects to it is the overly detailed way in which, as an RTO, we must assess those standards through CBT that is the problem. We need to give local employers some power to develop components that would work for them. After all, there are diverse views even among industry people. Training package developers must get away from being so prescriptive on performance that competency-based assessment becomes difficult to use in its purity. There is a place for judgement when relationships between industry current and qualified assessors and local employers are working well.* (Peak body representative)

Industry Clusters, to be operational from 1 January 2023, have been established by the Australian Government.[19] Designed to give industry a greater role in qualification design to ensure that the skills needed now and into the future skills are being developed, they may target a 'local solution' more effectively than perhaps what has occurred in the past.

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19 https://www.dese.gov.au/skills-reform/skills-reform-overview/industry-engagement-reforms.

REFERENCES

Australian Committee on Technical and Further Education 1974, *TAFE in Australia: report on needs in technical and further education*, April 1974, Kangan report, vol.1, AGPS, Canberra.

Australian Department of Education and Training nd., *FAQS Competency-based training*, viewed December 2021, <https://www.myskills.gov.au/media/1776/back-to-basics-competency-based-training.pdf>.

Australian Department of Education, Skills and Employment (DESE) 2022, *National Foundation Skills Framework 2022 to 2032*, Department of Education, Skills and Employment, Canberra, viewed September 2022, <https://www.skillsreform.gov.au/papers/national-foundation-skills-framework-2022-to-2032/>.

Australian Department of Industry, Innovation, Climate Change, Science, Research and Tertiary Education (DIICCSRTE) & Australia Department of Education, Employment and Workplace Relations 2013, *Core Skills for Work Developmental Framework*, DIICCSRTE, Canberra, viewed August 2022, <https://www.dewr.gov.au/skills-information-training-providers/core-skills-work-developmental-framework>.

Australian Department of Industry, Innovation, Science, Research and Tertiary Education (DIISRTE) 2012, A*ustralian Core Skills Framework*, DIISRTE, Canberra, viewed August 2022, <https://www.dewr.gov.au/skills-information-training-providers/resources/australian-core-skills-framework>.

Australian Department of the Prime Minister and Cabinet 2019, S*trengthening skills: expert review of Australia's vocational education and training system*, Joyce review, DPMC, Canberra, viewed 31 July 2022, <https://pmc.gov.au/resource-centre/domestic-policy/vet-review/strengthening-skills-expert-review-australias-vocational-education-and-training-system>.

Australian Government 2022, 'Jobs and Skills Summit 1—2 September 2022, outcomes', Canberra, viewed 10 October 2022, <https://treasury.gov.au/sites/default/files/inline-files/Jobs-and-Skills-Summit-Outcomes-Document.pdf>.

Australian Industry and Skills Committee 2012, *National industry insights report: 2020/21 overview*, DSE, Canberra, viewed 10 October 2022, <https://nationalindustryinsights.aisc.net.au/sites/default/files/AISC_NIIR_National%20Overview%20Report_2021.pdf>

Australian Skills Quality Authority 2019, *User's guide to the Standards for Registered Training Organisations 2015*, viewed September 2021, <https://www.asqa.gov.au/sites/default/files/2020-01/users_guide_to_the_standards_for_registered_training_organisations_rtos_2015_v2-2_0.pdf>.

Australian Vocational Education, Employment and Training Advisory Committee (VEETAC) 1993, *A national research and development strategy for vocational education and training — operational plan*, NCVER, Adelaide, viewed 10 October 2022, <https://www.voced.edu.au/content/ngv%3A18465>.

Beddie, F, Hargreaves, J & Atkinson, G 2017, *Evolution not revolution: views on training products reform*, NCVER, Adelaide.

Billett, S 2017, 'Developing domains of occupational competence: workplaces and learner agency', in M Mulder (ed.), Competence-based vocational and professional education: bridging the worlds of work and education, Springer, Switzerland, pp.47—66.

Bowman, K & McKenna, S 2016, *The development of Australia's national training system: a dynamic tension between consistency and flexibility*, NCVER, Adelaide.

British Council nd, *The UK technical and vocational education and training systems: an introduction*, viewed July 2022, <https://www.britishcouncil.org/sites/default/files/the_uk_technical_and_vocational_education_and_training_systems.pdf>.

CEDEFOP 2013, *Analysis and overview of NQF level descriptors in European countries, Working paper no.19*, Publications Office of the European Union, Luxembourg.

——2019, *Vocational education and training in Finland: short description*, Publications Office, Luxembourg, viewed September 2022, <http://data.europa.eu/doi/10.2801/841614>.

——2022, *Key competencies in vocational education and training*, viewed July 2022, <https://www.cedefop.europa.eu/en/projects/key-competences-vocational-education-and-training>

Commonwealth of Australia 2015, *National Vocational Education and Training Regulator Act 2011, Standards for Registered Training Organisations 2015*, viewed July 2022, <https://www.legislation.gov.au/Details/F2014L01377>.

Creative & Cultural Skills 2021, *A Modern Apprenticeship in Creative and Cultural at SCQF Level 7: framework document for Scotland*, viewed August 2022, <https://www.skillsdevelopmentscotland.co.uk/media/48058/ma-framework-creative-and-cultural-at-scqf-level-7.pdf>.

Dawkins, JS 1988, *The challenge for higher education in Australia*, AGPS, Canberra.

——1989, *Improving Australia's training system*, AGPS, Canberra.

Dawkins, JS & Holding, AC 1987, *Skills for Australia*, AGPS, Canberra.

German Qualifications Framework for Lifelong Learning (DQR) 2011, viewed September 2022, <https://www.dqr.de/dqr/shareddocs/downloads/media/content/the_german_qualifications_framework_for_lifelong_learning.pdf?__blob=publicationFile&v=1>.

Gessler M, 2017, *Areas of learning: the shift towards work and competence orientation within the school-based vocational education in the German dual apprenticeship system*, viewed September 2022, <https://www.researchgate.net/publication/282328377_Areas_of_Learning_The_Shift_Towards_Work_and_Competence_Orientation_Within_the_School-based_Vocational_Education_in_the_German_Dual_Apprenticeship_System>.

Guthrie, H 2009, *Competence and competency-based training: what the literature says*, NCVER, Adelaide.

Guthrie, H & Waters, M, 2021, *Unpacking the quality of VET delivery*, NCVER, Adelaide.

——2022, *Delivering high-quality VET: what matters to RTOs?* NCVER, Adelaide.

Hager, P, 2017, 'The integrated view on competence', in M Mulder (ed.) *Competence-based vocational and professional education: bridging the worlds of work and education*, Springer, Switzerland, pp.203—28.

Hodge, S 2015, 'Alienating curriculum work in Australian vocational education and training', *Critical Studies in Education*, vol.57, p.143—59.

——2020, *Training and assessment in key landmark documents: an overview,* VET Knowledge Bank, NCVER, Adelaide, viewed August 2021, <https://www.voced.edu.au/vet-knowledge-bank-landmark-documents-training-and-assesment-historical-overview>.

Hodge, S & Guthrie, H 2019, 'Moving beyond training packages: first steps', AVETRA Conference, viewed May 2022, <https://avetra.org.au/resources/Documents/Conference%20Archives/Conference%20Archives%202019/Hodge_Guthrie_Final.pdf>.

Institute of Technical Education (ITE) nd, *ITE create: skills for future, skills for life*, viewed July 2022, <https://www.ite.edu.sg/docs/default-source/who-we-are-docs/ite-create-ecopy.pdf?sfvrsn=e444e9f6_12>.

Knight, G, White, I & Granfield, P 2020, *Understanding the Australian vocational education and training workforce*, NCVER, Adelaide.

Lilly M, 2020, *Re-imagining VET qualifications*, Australian Industry Group, viewed March 2022, <https://www.aigroup.com.au/news/reports/2020/reimagining-vocational-qualifications/>.

Moran, T & Bannikoff, K 2018, *TAFE SA Strategic Capability Review 2018*, Parliament of South Australia, Adelaide.

Nagele, C & Stalder, B 2017, Competence and the need for transferable skills, in M Mulder (ed), *Competence-based vocational and professional education: bridging the worlds of work and education*, Springer, Switzerland, pp. 739—53.

Naidu, R, Stanwick, J & Frazer, K 2020, *Glossary of VET*, NCVER, Adelaide.

NCVER (National Centre for Vocational Education Research) 2022, *Total VET students and courses 2021*, NCVER, Adelaide.

National Quality Council & Council of Australian Governments 2009, *VET products for the 21st century: final report of the Joint Steering Committee of the NQC and the COAG Skills and Workforce Development Subgroup, June 2009*, NQC Secretariat, Melbourne, viewed August 2021, <https://www.voced.edu.au/content/ngv%3A5470>.

Newton, PE 2018, *Grading vocational and technical qualifications: recent policies and current practices*, viewed September 2021, <https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/755681/Grading_vocational_and_technical_qualifications_-_FINAL.pdf>.

O'Connor, Hon. Brendan 2022, 'Simplifying VET qualifications', media release, 4 September 2022, Canberra, viewed 10 October 2022, <https://ministers.dewr.gov.au/oconnor/simplifying-vet-qualifications>.

OECD (Organisation for Economic Cooperation and Development), 2020, *Strengthening skills in Scotland*, OECD, Paris, viewed March 2022, <https://www.oecd.org/skills/centre-for-skills/Strengthening_Skills_in_Scotland.pdf>.

Productivity Commission 2017, *Shifting the dial: 5 year productivity review*, report No.84, Canberra.

Rüschoff, B 2021, 'Competence assessment in German vocational education and training', in OECD, *AI and the future of skills, volume 1: capabilities and assessments*, Educational Research and Innovation, OECD Publishing, Paris, viewed September 2022, <https://doi.org/10.1787/5ee71f34-en>.

——2022, *Methods of competence assessment in vocational education and training (VET) in Germany—- a systematic review*, Federal Institute for Vocational Education and Training, Bonn.

Schofield, K & McDonald, R 2004, *Moving on: report of the high level review of training packages*, ANTA, Brisbane.

Scottish Government 2022, *Delivering economic prosperity: Scotland's national strategy for economic transformation*, viewed August 2022, <https://www.gov.scot/binaries/content/documents/govscot/publications/strategy-plan/2022/03/scotlands-national-strategy-economic-transformation/documents/delivering-economic-prosperity/delivering-economic-prosperity/govscot%3Adocument/delivering-economic-prosperity.pdf>.

Shreeve, R 2019, *Removing the tradesman's entrance: England's policies to reduce the divide between academic and technical education through initiatives such as T Levels and Degree Apprenticeships*, MacKenzie Research Institute, viewed July 2022, <https://holmesglen.edu.au/Holmesglen/media/PDFs/Removing-the-tradesman-s-entrance.pdf>.

Skiba, R 2020, 'Graded assessment models for competency-based training in vocational education and training', *World Journal of Education, vol.10, no.3*, viewed August 2021, <https://files.eric.ed.gov/fulltext/EJ1265367.pdf>.

Skills Development Scotland 2020, 'Career skills for technical and professional apprenticeships', viewed March 2021, <https://www.skillsdevelopmentscotland.co.uk/what-we-do/apprenticeships/modern-apprenticeships/modern-apprenticeship-group-mag/career-skills-for-technical-and-professional-apprenticeships/>.

Stevenson, J 1992, 'Policies and practices in vocational education and training in Australia', *What future for technical & vocational education & training?: conference papers Volume 1*, (publisher not identified), Adelaide.

——1995, 'Political colonisation of the cognitive construction of competence', *Journal of Vocational Education and Training*, vol.47, no.4, pp.353–364.

Strong, N 1995, 'Competency based assessment: recognising levels of achievement in competency-based vocational education and training', *Australian Journal of Adult and Community Education*, vol.35, no.1, pp.21—32.

Thomson, P, Mathers, R & Quirk, R 1996, T*he 'grade' debate: should we grade competency-based assessment?*, NCVER, Adelaide.

UK Department for Business Innovation and Skills & Department of Education UK 2016, *Post-16 skills plan*, viewed March 2021, <https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/536068/56259_Cm_9280_print.pdf>.

UK Department for Employment & Learning Northern Ireland (DELNI) 2016, *Further education means success: the Northern Ireland strategy for further education*, DELNI, Belfast, viewed August 2022, <https://www.economy-ni.gov.uk/sites/default/files/publications/economy/FE-Strategy%20-FE-Means-success.pdf>.

UK Department of Education 2020, *The introduction of t-levels*, viewed September 2021, <https://www.gov.uk/government/publications/introduction-of-t-levels/introduction-of-t-levels>.

UK Government nd, *Apprenticeship standards — England*, viewed October 2021, <https://sfia-online.org/en/tools-and-resources/standard-industry-skills-profiles/digital-apprenticeships-england/england-apprenticeship>.

Wheelahan, L 2007, 'How competency-based training locks the working class out of powerful knowledge: a modified Bernsteinian analysis', *British Journal of Sociology of Education*, vol.28, no.5, pp.637—51, viewed July 2021, <https://www.researchgate.net/publication/233101020_How_competency-based_training_locks_the_working_class_out_of_powerful_knowledge_A_modified_Bernsteinian_analysis>.

——2016, 'Patching bits won't fix vocational education in Australia — a new model is needed', in B Clayton & R Harris (eds), *International Journal of Training Research*, vol. 14, issue 3, viewed March 2022, <https://www.tandfonline.com/doi/full/10.1080/14480220.2016.1254368>.

Wheelahan, L & Moodie, G 2011, *Rethinking skills in vocational education and training: from competencies to capabilities*, NSW Board of Vocational Education and Training, Sydney.

Wibrow, B 2011, *Employability skills, at a glance*, NCVER, Adelaide.

Williams, M & Bateman, A 2003, *Graded assessment in vocational education and training: an analysis of national practice, drivers and areas for policy development*, NCVER, Adelaide.

APPENDIX A: IINTERVIEW SCHEDULE

- Strengths and weaknesses of the Australian VET system's approach to CBT
  - Very briefly, what would you say are the strengths of the Australian approach to CBT, including those associated with training package development and review.
  - Very briefly, what would you say are the weaknesses?
- Broader conceptions of competency
  - Are there any industry areas and qualification types where such broader conceptions of competency are more suitable and alternatively less suitable?
- Benefits and drawbacks of traditional approaches to competency-based assessment
  - What do you think are the benefits of competency-based assessment, especially that which does not make distinctions between levels of performance (i.e. competent/not yet competent) for learner outcomes, RTO training delivery and assessment practice, and expectations of employers and recruiters?
  - What are the drawbacks?
  - Are there industry areas and qualification types where this traditional approach is more suitable and industry areas and qualification types where it is less suitable?
- Benefits and drawbacks of using graded competencies in assessment
  - What would you say are the benefits of having a system which applies grading to performance in competency-based assessment?
  - What would you say are the drawbacks?
  - What implications would it have for learner outcomes, RTO training delivery and assessment practice, and expectations of employers and recruiters.
- Do you know of any examples where RTOs have adopted or extended the grading of competencies in assessments. What is the key approach to grading used in these RTOs and what have been the main features and drivers?
- Are there industry areas and qualification types where grading has been found to be more suitable and alternatively less suitable?

APPENDIX B: SKILLSFUTURE SINGAPORE - CRITICAL CORE SKILLS (CCS) REFERENCE DOCUMENT

CCS category	Thinking critically
CCS	Problem solving
CCS description	Generate effective and efficient solutions to solve problems and capitalise on new opportunities

CCS Proficiency Description	Basic CCS-PRS-B002-1 Identify problems and implement guidelines and procedures to solve problems and test solutions	Intermediate CCS-PRS-I002-1 Determine underlying causes of problems and collaborate with other stakeholders to implement and evaluate solutions	Advanced CCS-PRS-A002-1 Anticipate potential problems to drive a culture of continuous improvement which seeks to turn problems into opportunities across the organisation
Knowledge	• Problem identification techniques • Questioning techniques • Types of corrective actions • Problem solving processes, tools and techniques • Experimentation techniques • Impact measurement techniques	• Root cause analysis techniques • Decision evaluation and prioritisation frameworks • Exercises for developing big picture thinking approaches • Strategies to manage experimentation processes • Stakeholder analysis techniques • Risk analysis techniques • Types of metrics to measure solution effectiveness	• Organisation's vision, objectives and operating climate • Emerging problem-solving processes, tools and strategies • Types of social, political, economic and cultural factors which impact stakeholder relationships • Conflict management strategies • Risk management strategies • Strategies to evaluate solution effectiveness
Abilities	• Implement problem identification techniques to recognise issues within work area • Identify decisions to be made to solve problems • Suggest potential corrective actions to solve problems • Conduct work area experiments to test potential solutions • Report any issues which occur during solution testing to other stakeholders • Collect information to monitor implementation of potential solutions against impact criteria	• Diagnose underlying causes of issues by considering wider contexts • Encourage behaviours and practices for team members that promote effective problem solving approaches and continuous improvement • Facilitate exercises with different stakeholders to develop big picture thinking approaches to inform solution development • Collaborate with other stakeholders to seek opinions on potential solutions • Develop experiments to test potential solutions • Determine the constraints and risks associated with potential solutions • Analyse outcomes of experiments to recommend the most suitable solution for a problem • Engage different stakeholders to secure buy-in for proposed solution • Review the effectiveness of the problem solving process and solution against defined goals	• Define objectives of organisational problem-solving processes in line with organisation vision, objectives and operating climate • Synthesise emerging trends to design organisational problem-solving processes, tools and techniques • Champion a culture of continuous improvement across the organisation • Evaluate multiple variables and contexts to anticipate potential problems which may occur • Determine appropriate stakeholders to be involved in problem solving processes in the organisation • Oversee collaboration between multiple stakeholders across the organisation to design solutions • Direct the resolution of any conflicts during problem solving processes • Evaluate the business implications of implementing the proposed solutions across the organisation • Endorse solutions to be implemented across the organisation • Establish strategies to evaluate the effectiveness of problem-solving processes across the organisation

APPENDIX C: SKILLS FRAMEWORK FOR EARLY CHILDHOOD - SKILLS MAP, BEGINNING INFANT EDUCATOR

Sector	Early Childhood
Track	Early Childhood Development
Occupation	Infant Educator

Job role	Beginning Infant Educator

Job role description	The Beginning Infant Educator builds relationships with infants and toddlers and looks out for their developmental needs and milestones so as to be able to respond to their needs appropriately. He/She contributes to the creation of a secure environment for infants and toddlers through nurturing respectful, responsive, and reciprocal relationships. He/She executes the required curricula and programmes and creates a quality learning environment. To provide holistic care for infants and toddlers, the Beginning Infant Educator establishes relationships and partnerships with different stakeholders. He/She also engages in professional development and reflective practice, under the guidance of his/her leaders.

Critical work functions and key tasks

Critical work functions	Key tasks
Plan and implement curriculum and programmes	Implement routine caregiving approaches and learning materials aligned to the Early Years Development Framework
	Create developmentally appropriate quality learning environments under the guidance of leaders
	Document children's learning and development
	Apply strategies to build respectful, responsive, and reciprocal relationships with infants and toddlers
	Apply the health, safety, nutritional and hygiene practices in accordance with standards and procedures
	Implement developmentally appropriate activities in the infant care setting
Build stakeholder relationships and partnerships	Build rapport with colleagues in accordance with Centre's strategies and policies to foster positive workplace relations
	Contribute to establishment of relationships with families to facilitate the continuity of care and learning between families and Centre
	Support the coordination of activities between home and Centre
	Support the collaboration with families and community stakeholders to enhance programmes and services
Manage family and community programmes	Collaborate with colleagues to execute outreach activities to promote Centre programmes and services
	Collaborate with colleagues to execute collaborative projects with families and community stakeholders
	Collaborate with colleagues to evaluate family and community initiatives and programmes for improvements
Conduct routine caregiving	Conduct caregiving assessment under the guidance of the Senior Infant Educator
	Provide routine caregiving practices in accordance to standards and procedures
	Provide inputs on areas for improvements for routine caregiving based on observations

Uplift professional practice	Demonstrate behaviour that is aligned with the Centre's vision, mission, and values
	Contribute to the development of appropriate teaching and caregiving methods based on emerging sector trends, technologies, and tools
	Identify areas for improvement to enhance work performance
	Participate in professional development and service quality improvement activities
	Provide inputs for potential new teaching and caregiving approaches based on observations

Skills and competencies

Technical skills and competencies		Critical core skills (Top 5)	
Child development assessment	Level 3	Adaptability	Basic
Child observation	Level 2	Collaboration	Basic
Child safety and protection	Level 2	Communication	Basic
Classroom management and guidance of children's behaviour	Level 2		
Collaborative practices with stakeholders across disciplines	Level 2	Problem solving	Basic
Community partnership	Level 2	Self-management	Basic
Data and information management	Level 3		
Diversity and inclusion	Level 1		
Early childhood curriculum design	Level 3		
Early childhood pedagogical practice	Level 3		
Early childhood programme planning	Level 3		
Ethical conduct and professional integrity	Level 1		
Family and caregiver engagement	Level 1		
Health, hygiene and nutrition for children	Level 2		
Interaction and relationship	Level 2		
Learning environment design	Level 3		
Practitioner inquiry	Level 2		
Reflective practice for educators	Level 2		
Resilience and self-care	Level 2		
Responsive caregiving approaches	Level 2		
Situation management with families and community	Level 2		

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