

Vocational education for the twenty-first century



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Introduction

The crisis in Australian vocational education² is more than a funding, marketisation or system design issue: it is a question of the fitness of our vocational education model for our times. In the context of revolutionary digital technologies, continued globalisation, population ageing and changes to work patterns such as the emergence of the gig and post-work economies, we are failing to repurpose our vocational education resources to develop the twenty-first century capabilities needed by individuals, communities and industries.

This paper starts with history, looking at how late twentieth-century vocational education revolution and counter-revolution trapped Australia's vocational education sector in a pre-digital time warp. The discussion will go on to reflect on promising concepts of vocational education emerging in some other countries as they grapple with twenty-first century challenges: what we can learn from them and from our own experience. Finally, we will reimagine vocational education in Australia as it could be to increase inclusivity, innovation and prosperity.

Kangan: the lifelong learning revolution

To understand the origins of our current neo-liberal³ vocational education model, it's useful to understand this model as a counter-revolution, a backlash against the Kangan revolution that preceded it. The paradigm shift from Kangan to the Training Reform Agenda and beyond was a struggle between two conflicting sets

of ideas about what vocational education ought to be, evolving in two very different economic and social milieux.

The Kangan revolution was part of the Whitlam government's (1972-1975) extensive education transformation program. Myer Kangan, and the Australian Committee on Technical and Further Education he chaired, proposed an inspirational, inclusive program of reforms for what had long been the "under-valued and under resourced" Cinderella of the education system (Fooks, 1994; Goozee, 1995, p. 6). The eponymous Kangan report gave us much: the word TAFE, the beginnings of a national system, better data, upgraded facilities, improved curriculum quality, greatly improved teacher training and more (Schofield, 1994). It envisaged what was then, largely, TAFE as an education sector, equal to universities and colleges of advanced education, focusing on access and lifelong vocational education to enable individuals to fulfil their potential and for the broader benefit of society (Schofield, 1994).

The publication of the Kangan report coincided with "...a golden era of educational growth, both in Australia and overseas" and reflected the optimistic, humanistic ideals prevalent in OECD countries at the beginning of the 1970s (Kearns & Hall, 1994, p. 5). It was greatly influenced by a seminal UNESCO report, *Learning to Be: The World of Education Today and Tomorrow*, which gave the Kangan committee its whole of life-course approach to vocational education (International Commission on the Development of Education, 1972; Kearns & Hall, 1994).

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² The term vocational education is used to designate both vocational education as a category of education and what is known as the VET sector.

³ Neoliberalism refers "... to an economic system in which the 'free' market is extended to every part of our public and personal worlds. The transformation of the state from a provider of public welfare to a promoter of markets and competition helps to enable this shift." (Birch, 2017)

The decade following the Kangan report's publication saw TAFE grow enormously in enrolment numbers and in the scope of its provision. It became the largest post-secondary education sector and, although certainly not the best funded, attracted new federal and state funding for curriculum development, teacher education, facilities, vocational education research and for specialist programs targeting groups such as women, Aborigines and multicultural communities (Goozee, 1995). TAFE in the late 1970s was an exciting and optimistic sector; one that attracted this author along with many others to work in vocational education.

Regime change: The Training Reform Agenda

Sadly, this golden era soon ended. Shifts in international trading patterns through the 1970s and 1980s and the emergence of strong new producers and markets in Asia and the Pacific rim undermined economic policy and industrial practices in the United Kingdom, United States, Western Europe, Australia and New Zealand. Through the 1980s, Australia slid towards what then Treasurer Keating referred to, in 1990 as "...the recession we had to have" (Smith, 2016).

Once again Australia looked to European models for remedies. The Australian Council of Trade Unions (ACTU), working with the Hawke government and acknowledging the symbiosis between skills and economic prosperity, suggested a fact-finding mission to European countries that were thriving in the new economic environment (Goozee, 1995). The resulting reports and policy initiatives recognised the need to make industries more competitive through floating the dollar, tearing down tariff walls, restructuring industrial awards and reforming vocational education.

Vocational education was reformed through a change program that became known as the Training Reform Agenda (TRA). This reform program reflected the open, competitive market approach implemented to reform Australia's industries and also addressed a strong conviction that TAFE was inflexible and unresponsive, incapable of delivering the skills needed to reconstruct Australia.

There was a view that competitive pressure would make TAFE more responsive to industry, less mired in rigid educational practices (Seddon & Angus, 2000). The TRA worked to reduce the influence of teachers

and educational thinking through deliberate suppression of educational language and oversight of curriculum development. Curriculum was replaced by training packages, learning outcomes became elements of competence, assessment criteria became performance criteria, responsibility for the development of qualifications was transferred from educators to industry. In the early days of the TRA, policymakers, industry stakeholders and even educators believed that training package documentation could be so explicit that anyone with minimal training could deliver and assess (Jones, 2003). Consequently, the preparation needed to deliver vocational education was reduced from a bachelor or postgraduate teaching qualification to what is now a certificate IV qualification. The TRA of the late 1980s and 1990s created the industry-led, competency-based, privatised training sector that continues to this day, symbolised by the widespread use of the acronym VET as an ever-present reminder of the sector's shift in focus from education to industry training.

The two competing world views of vocational education represented by the policy regimes prevailing in 1974 and 1994 reflect the dualisms that have dogged vocational education throughout its history in Australia, and in many other countries (Fooks, 1994; Goozee, 1995; Schofield, 1994). These can be summarised as the tensions between:

- vocational education that prioritises the development of the individual as a social good versus vocational education that directly addresses manpower needs
- vocational education institutions that regard themselves primarily as educational institutions versus those that see themselves as vocational training centres
- vocational education that delivers broad humanistic curriculum versus a competency-based approach driven by industry-developed national competency standards
- the state as the custodian and funder of vocational education versus the state as a purchaser.

Manpower on steroids

Today, after forty years of training reform, policymakers, industry stakeholders and even many educators regard vocational education primarily as a means of producing manpower as cheaply as possible. Successive state/territory and federal governments have managed vocational education as a cost to be reduced rather than as an investment in the individual or in social good. Analysis by Noonan and his colleagues from the Mitchell Institute demonstrates that public funding for vocational

education has declined while that available to the more valued and influential school and university sectors has grown (Noonan, 2016). Continued training reforms by successive state and federal governments have intensified the manpower focus of technical education and by some measures these reforms have been successful. Over the period the national qualifications and national quality systems have been consolidated, industry leadership is now well entrenched and private training provision has mushroomed to enrolment of 58.7% of students in 2016 (National Centre for Vocational Education Research (NCVER), 2018). The understanding that the vocational education sector exists primarily to serve industry rather than individuals or communities is almost universally accepted in the public policy and polemic concerning the sector.

Yet, over the past five years there has been growing evidence that the vocational education sector has suffered from an excess of training reform. Growth in for profit private provision has siphoned government and individual investment into private pockets with little return to industry or community. Belated regulatory intervention forced several large providers to close, abandoning tens of thousands of students with incomplete qualifications (Superina, 2018). Vocational education continues to be the Cinderella of the education system despite the fact that in 2016, 4.2 million Australians participated in it.⁴ Lack of esteem and political clout have allowed uncapped growth in undergraduate enrolments in universities to erode participation in vocational education (Karmel, Roberts, & Lim, 2014). Declining funding and public confidence in vocational education have reached such a critical point that, as Noonan and Pilcher have recently shown, vocational education enrolments have dropped beyond what can be explained by growth in the university sector, to the point where vocational education is at risk of becoming a residual sector (Noonan & Pilcher, 2018, p. 10).

Reduced funding has meant less investment in teaching practice and vocational education research, greatly affecting the capacity of the sector to maintain its knowledge, renew its educational practices and adapt as society and industry change. Despite their best efforts, vocational education providers, even the enduring public institutions, are

not resourced to innovate. Given the public ownership of, and historical investment in, TAFE institutions⁵, these ought to be leading the development of new vocational education knowledge and innovative practices. However, TAFE institutions have lost much of their capacity to evaluate and renew their educational practice and thinking.

The financial and regulatory systems considered necessary to manage 5000⁶ RTOs have reduced and redirected effort. Significant public institutions that ought to be trusted to manage their own quality must instead devote resources to the satisfaction of overly burdensome external compliance requirements and continual requests for information. These resources could otherwise be invested in the innovation increasingly needed to adapt to changing learner and industry needs. Meanwhile, Australia's vocational education sector remains in the past, painstakingly preparing people to perform known, narrowly defined tasks for yesterday's industries. Vocational education and the vocational education system are not positioned to meet the needs of twenty-first century industries let alone individuals and communities.

We do not know how work and employment opportunities will change in the near future. Predictions range from "forecasts that nearly half of jobs in advanced economies may be automated out of existence" to confidence that high-level vocational skills will be more important than ever in the digital world (Baker of Dorking, 2016; European Centre for the Development of Vocational Training, 2015; European Centre for the Development of Vocational Training (Cedefop), 2017; Pfeiffer, 2015). What we do know is that people will need educational breadth as well as occupational depth to adapt and thrive as industries and society change. Researchers who have looked specifically at how vocational education can prepare people for digital disruption emphasise the importance of acquiring broad technical skills that can be adapted and applied in novel contexts, complemented by what have become known as twenty-first century capabilities (Baker of Dorking, 2016; Committee for Economic Development of Australia, 2015; Figel, 2008; Gardner, 2006).

Capabilities are much broader than the combinations of skills and knowledge specified by the Australian

⁴ (<https://www.ncver.edu.au/data/collection/total-vocational-education-students-and-courses>)

⁵ The term TAFE institution refers to publicly owned TAFE institutes, community colleges, polytechnics and vocational education sections of dual sector universities

⁶ <https://www.asqa.gov.au/about/australias-vet-sector/about-rtos>

Qualifications Framework: capabilities also encompass dispositions and attitudes (Barnett & Coate, 2005; Hager & Holland, 2007). Twenty-first century capabilities, in particular, represent the knowledge, skills, attitudes and dispositions individuals must acquire to adapt to complex and unknown circumstances (Barnett & Coate, 2005). For example, European Union countries have identified the capabilities they consider necessary to remain globally competitive and to best prepare individuals for lifelong employment. These comprise high-level technical skills, core skills and a range of capabilities referred to in the EU as transverse capabilities – “the ability to think critically, take initiative, problem solve and work collaboratively will prepare individuals for today’s varied and unpredictable career paths ... particularly entrepreneurial skills” (European Commission, 2012, p. 3).

Compared with the EU approach, there are some obvious problems with our vocational education sector’s development of Australia’s twenty-first century workforce. Below, I discuss five critical gaps in the preparedness of Australian vocational education to support the preparation and ongoing education of individuals for twenty-first century life and work:

- There is insufficient capacity to ensure learners graduate with the strong core literacy, numeracy and digital skills needed to underpin all other learning.
- Australian vocational education curriculum and teaching do not address the twenty-first century capabilities needed for long-term employability and community engagement.
- The applied and workplace-situated pedagogies required to develop high-level technical skills are not regarded as distinctive pedagogies requiring research and development to keep pace with workplace change.
- Our vocational education institutions and systems are not well prepared to respond to disruptive change.
- Vocational education institutions have neither capability nor capacity for innovation.

Inattention to core skills

Australia’s significant problem with adult core skills literacies is a barrier to education generally and contributes to the nation’s unpreparedness for digital disruption. There is much evidence for this including the 2013 OECD report *Programme for the International Assessment of Adult Competencies*, which is based on a survey of Australians from 15 to

74 years-old. The OECD found that 43.7 per cent of Australians – around 7.3 million people – had below-proficiency level literacy. Numeracy scores were worse, with around 53.5 per cent of the population below proficiency levels. High levels of early school leaving (almost 18 per cent of 15 to 19 year olds according to 2011 census data) no doubt contribute to this problem (Dommers, Myconos, Swain, Yung, & Clarke, 2017). Despite government requirements for vocational education providers to test core skills before enrolment and to address gaps, there are insufficient resources to deliver the substantial remedial programs needed to develop core literacy, numeracy and digital skills to proficiency level. Surely we should stop providing core skills ‘lite’ to vocational education learners, but rather ensure that all young adults, including apprentices, enter the workforce with substantial mathematics and English skills equivalent to senior secondary certificate level.

Inattention to twenty-first century capabilities

Australian vocational education qualifications are based on impoverished curricula which fail to address the capabilities needed by adults in a twenty-first century democracy, let alone prepare them to contribute to innovation. Historically, attempts to enrich vocational education qualifications with substantial general capabilities have been reduced to inclusion of narrow, short-term proficiencies. For example, senior secondary and most university curricula address the broad twenty-first century capabilities needed to be ethical and responsible global citizens, creative contributors to innovation, adaptable lifelong learners able to navigate the changing worlds of life and work (Ministerial Council on Education Employment Training and Youth Affairs, 2008; Wagner, 2008)). In training packages these important lifelong capabilities are reduced to a much less ambitious series of ‘employability skills for’ immediate use in the workplace, such as “problem solving, collaboration, self-management, communication and information technology skills”.⁷

Underdeveloped pedagogies

Many of the problems associated with poor development of vocational education teaching staff are discussed in the paper in this series written by Guthrie and Jones. Here, the discussion emphasises that the sector’s capability to innovate and prepare for an unknown future has been diminished by low

⁷ <https://www.education.gov.au/core-skills-work-developmental-framework>

expectations and standards for vocational education teaching. Vocational education teaching is not recognised and valued as a distinctive pedagogy, related to both secondary and higher education, but with its own specialised set of teaching and assessment methods relying on hands-on applied learning and the workplace as a context. There is minimal investment in the scholarship of vocational education learning and teaching. This, combined with the low teaching qualification level required and other constraints such as limited investment in digital technologies, means that vocational education institutions have little capacity to develop innovative educational solutions to meet new learning needs arising from disruptive industrial changes.

Unpreparedness for disruption

The vocational education sector has limited capability to foresee and respond quickly to disruptive changes in the nature of work and workforce. A good example of this comes from an industry not previously associated with disruption, Aged Services. This industry is experiencing multiple pressures due to the ageing of both its client population and its workforce, at the same time as consumer-directed care policies disrupt the sector's business models and employment modes. It is hard to imagine the current workforce – ageing, of low socioeconomic status, many from non-English speaking backgrounds – easily adapting to an industry already being interrupted by new Uber style services providers (Aged and Community Services Australia, Leading Age Services Australia, the Aged Care Guild, UnitingCare Australia, & Australia, 2016). Multiple reports have warned of the need to scale up the quantity and quality of training for the sector and to address new skills requirements (Aged and Community Services Australia et al., 2016; Productivity Commission, 2011; Skills IQ, 2017). These changes have been imminent for years, yet the vocational education sector has not prepared for them. NCVET data show that the numbers in training for this sector declined significantly from 2014 to 2016⁸ despite accelerating growth in the aged care workforce (Productivity Commission, 2011). Most concerning, further disruptive changes in the nature of work for this sector are looming as digital technologies currently being developed transform residential and home-based services and the skills needed to provide them. Last year, Flinders University's Medical Device Research Institute published a technology roadmap

for the aged services industry. The researchers pointed out that digital literacy is becoming important for this industry posing challenges for a workforce with low language, literacy and digital skills (Medical Device Research Institute Flinders University, 2017, pp. 47-48). The skills needed to work in consumer directed and technology enhanced services are not explicitly reflected in the current aged services qualifications (Certificate III in Individual Support and Certificate IV in Ageing Support). Nor do these or other vocational education qualifications explicitly prepare learners to adapt to and navigate change, to think critically, to be – as they increasingly need to be – entrepreneurial.

Vocational education and innovation

These four failings underlie the most serious gap in vocational education policy in Australia, the failure to recognise the contribution of vocational education graduates to innovation. Industrial innovation has always relied on technical and trades skills. For example historians have attributed Britain's leadership in the first industrial revolution to the greater availability of skilled technicians and tradespeople in the UK compared with other countries. Technicians took the inventors' ideas and created the countless small innovations needed to get the bugs out of big inventions, and constructed, installed and operated new technology (Meisenzahl & Mokyr, 2011).

In Australia, Phillip Toner and his colleagues from the University of Sydney have studied the contribution of workers with trade and technical qualifications to the country's innovation effort, showing that such workers make up 30 per cent of Australia's research and development workforce (Toner & Dalitz, 2012). Their analysis shows that "the Australian pattern of innovation is, arguably, more dependent on vocational education skills than other OECD nations ... the dominant form of innovation is incremental and particularly oriented to the adoption and adaptation of products, processes and services developed locally by other firms and industries or sourced from overseas" (Toner & Dalitz, 2012, p. 16). Further evidence comes from Beddie and Simon's analysis of the Melbourne Institute's 2007 Australian Inventor Survey of Australian patent applicants from 1986 to 2005, concluding that over 50 per cent of inventors were likely to have vocational education backgrounds (Beddie & Simon, 2017). Finally, evidence of the vocational education contribution to innovation

⁸ Based on data extracted by the author from the NCVET VET students by industry statistical compendium

comes from the Office of the Chief Scientist, which in March 2016 reported that “... people with vocational education level qualifications had a much higher level of business ownership compared to those with university level qualifications” and “... of the STEM-qualified population, approximately two-thirds held vocational education and training (vocational education) qualifications, while one-third were higher education graduates with bachelor degrees or higher ... The vocational education sector makes a critical contribution to Australia’s STEM skills base, a contribution yet to be fully reflected in the evidence base for policy development.’ (Office of the Chief Scientist, 2016, p. 158)

Nonetheless “... in Australia skills, particularly VET, are almost entirely excluded from government innovation policy reports and bodies” (Dalitz & Toner, 2016). This contribution is invisible to policymakers, the media and the general public. For example, the vocational education sector did not initially feature in the Australian Governments National Innovation and Science Agenda. After intense TAFE lobbying two recommendations have been included in the Federal Parliament’s report *Innovation and Creativity – Inquiry into innovation and creativity: workforce for the new economy*: “expanding the National Innovation and Science Agenda to include the vocational education sector” and “adopting elements of the Canadian Applied Research and Innovation Services model to strengthen connections between vocational education providers and small and medium-sized enterprises”.⁹ Lack of recognition of vocational education’s role in innovation means that we have neglected to build the capability needed to optimise that contribution. In their recent study of the Australian vocational education sector’s role in innovation, Beddie and Simon concluded that the sector’s participation in innovation depends on its “... capability to identify, nurture and impart ... applied research skills” (Beddie & Simon, 2017). As already discussed, recent policies have failed to build the capacity of vocational education institutions and their graduates to undertake research and foster innovative capability.

International exemplars

Many countries recognise the need for high quality, high-level technical education to underpin the delivery of technologically advanced products and services and are scaling up their vocational education

⁹https://www.aph.gov.au/Parliamentary_Business/Committees/House/Employment_Education_and_Training/Innovationandcreativity/Report_-_Innovation_and_creativity

curriculum and sectors accordingly (Pfeiffer, 2015). The United Kingdom, Canada, Germany, Austria among other countries are focusing on building strong, innovative vocational education sectors to support their future workforce strategies.

In Canada, the national government has established a program to support business innovation based on co-investment and collaborative applied research between community colleges and polytechnics and enterprise partners. This program has been so successful that now more than CAD\$50 million is allocated to it annually supplemented by industry partner contributions. Demonstrated benefits include increased productivity, new product development and increased sales for the participating businesses. The colleges and polytechnics also claim improved capability and employment outcomes for students.

New Zealand Institutes of Technology and Polytechnics (ITPs) are able to apply for national research funding equally with universities and other providers. As a result, in 2016, the ITP sector received over NZD\$7 million from the national Performance Based Research Fund.¹⁰ New Zealand polytechnic websites describe many examples of innovation driven by applied research, as can be seen in an example from New Zealand’s largest polytechnic, Unitec at <https://www.unitec.ac.nz/research-and-enterprise>.

TAFE institutes, as permanent public institutions, ought to be the natural leaders for developing and sustaining applied vocational education research and innovation in Australia. Despite limited resources, some are working towards this, such as Holmesglen Institute with its Centre for Applied Research and Innovation and TAFE Queensland, which is building an applied research portfolio. However, lack of resources, means that TAFE institutes and the vocational education sector generally are not achieving their potential contribution to innovation. Significant investment in applied research and innovation infrastructure and staff capability is needed to enable Australian TAFE institutes to create the organisational cultures that will produce future adjusters and implementers of innovations.

Kangan redux?

There seems little doubt that Australia’s current vocational education model is not delivering the

¹⁰ <http://www.tec.govt.nz/funding/funding-and-performance/performance/financial/>

capabilities needed in the twenty-first century workforce. Individuals require a broad combination of strong core skills, twenty-first century capabilities and high-level technical skills to assure them of lifelong employment, enabling them to navigate their own way in an unpredictable and changing labour market and in society more generally. Twenty-first century industries will increasingly rely on individuals who have developed the potential to manage their own career and learning pathways, adapting to new workforce challenges. The Kangan Report prioritised individual development and social purpose *alongside* workforce relevance (Kangan & Australian Committee on Technical and Further Education, 1974). Now, industries need vocational education which prioritises individual development and social purpose as a *precondition* for workforce relevance; a Kangan 4.0 approach for the industry 4.0 era.

How can we redesign Australian vocational education to address the critical gaps discussed above? I suggest that the following changes would be needed.

Strong core skills

First, there must be a genuine, adequately funded commitment to ensuring all adults have strong core literacy, numeracy and digital skills as a basis for ongoing participation in work and community. This commitment must acknowledge the specialised needs of significant groups such as early school leavers, Aboriginal and Torres Strait Islanders and recently arrived migrants.

Qualifications for twenty-first-century industries

Our narrow, behaviourist vocational qualifications need to be broadened for the twenty-first century to ensure that technical skills are transferrable and complemented by twenty-first century capabilities such as critical thinking, creativity, adaptability and entrepreneurship. A number of researchers have suggested models for doing this, typically developing skills and capabilities appropriate for large industry sectors or otherwise for a range of occupations (Billett, 2016; Hodge, Atkins & Simons, 2016; Wheelahan, 2015). Our experience supports the view held by these researchers that it is possible to design curriculum that develops transferrable technical skills in a context that also develops twenty-first century capabilities.

The range of qualifications levels available through vocational education must expand. Developed

countries aspiring to continued high standards of living need more workers with vocational education at levels equivalent to Australia's AQF levels 5 and 6 (Baker of Dorking, 2016; Brown & Hesketh, 2004; Pfeiffer, 2015). Other countries have accepted that high-level technical skills are important in the digital world and have developed higher-level vocational education qualifications, including postgraduate degrees, to deliver these. The recent changes to vocational education in the United Kingdom are an example, with the successful development of many higher and degree level apprenticeships.¹¹ Australia has taken initial steps, piloting higher apprenticeship models through a program coordinated by Price Waterhouse Cooper.¹² Vocational education of the future could offer vocational qualifications ranging from AQF 1 to 10 designed for applied and workplace-situated learning. Higher, including degree level, apprenticeships could be expanded to cover a much larger range of industries, recognising the value of situating vocational education in real workplaces. Incentives may be needed to encourage reluctant employers to host on-the-job learning.

In the future even more than in the past, vocational education qualifications must meet the needs of individuals seeking to reskill or upskill throughout a lengthened working life as well as new entrants to the workforce; some of these will be seeking new employment opportunities after interrupted lives. These many circumstances require an expanded range of qualifications, skill sets, micro-credentials and pathways. Skilful curriculum design will be necessary to ensure that individuals are able to achieve the mix of core skills, technical skills and capabilities needed at each critical life and employment stage.

To address this complexity, many are arguing for a localised approach to ownership and development of vocational education qualifications, giving providers ownership and allowing them to respond agilely to local needs (Billett, 2016; Wheelahan, 2015). Such a change would mean an end to industry ownership of national qualifications, but not necessarily of vocational standards. The development of national industry standards to frame technical skills development in locally developed qualifications could maintain the qualification portability and recognition which has been so useful in Australia.

¹¹ <http://www.apprenticeshipguide.co.uk/higher-apprenticeships/>

¹² <https://www.pwc.com.au/careers/student-careers/higher-apprenticeship.html>

Twenty-first century teaching

There is a need to recognise and resource high quality, self-renewing vocational education teaching. This requires serious initial and continuing teacher education in applied and workplace-situated pedagogies. To develop and maintain its relevance in a changing workforce environment, vocational education teaching practice must be based on applied research into the development and evaluation of the applied and workplace-situated pedagogies required to develop high-level technical skills and twenty-first-century capabilities in context. Twenty-first-century vocational education must operate within a lifelong learning context, respond to digital disruption in education as well as industry and nurture innovation. It will take much more professional development than a certificate IV to meet these needs. Simon and Beddie have developed a framework for supporting innovative practice and institutions which could become part of a comprehensive initial and ongoing professional development program (Simon & Beddie, 2017).

Future ready vocational education providers

To deliver future-focused vocational education qualifications we need a strong vocational education sector centred on applied and workplace-situated knowledges, traditions and practices (Billett, 2013; Wheelahan, 2015). Such a sector would consist of durable, independent institutions with strong innovation and applied research cultures, capable contributors to tertiary education alongside universities. We need a network of 'grown-up' institutions, each with its own sense of purpose related to its aspirations for its students, not to current government policy. TAFE institutions, as large, enduring public providers are the natural anchor institutions for such a network (Wheelahan, Buchanan, Goedegebuure, Mallet & McKew, 2017). There is no reason why TAFE institutions could not become the repositories for excellence in vocational education practice on behalf of all education institutions.

Autonomous twenty-first-century vocational education providers should develop their own qualifications and quality standards reflecting local needs and national industry standards as appropriate. TAFE and other vocational education institutions already deliver mixes of vocational qualifications from foundation certificate to postgraduate level (AQF 1-9) depending on local

needs and the availability of other providers. Large vocational education providers could be supported to become self-accrediting by an adequately resourced integrated national regulator.

Preparation of a future ready vocational education sector must be attentive to the certainty of uncertain disruptive change. Innovation capability is central and, among other strategies, it is important to implement Federal Parliament's recommendation that Australia adopt the Canadian Applied Research and Innovation Services model to build vocational education applied research and innovation capability.

An integrated tertiary education sector

It is time to rethink the language used to characterise vocational education as a category of education and as a sector. Today, primarily higher education institutions such as universities often deliver sub-degree¹³ qualifications and many TAFEs and other registered training organisations deliver higher education as well as vocational education qualifications. The traditional distribution of vocational qualifications between university and vocational education institutions in Australia is largely an artefact of our tertiary education history. For example, degree-level nursing in New Zealand is mainly delivered by ITPs but by universities in Australia. Given that the workforce will need more higher-level vocational qualifications in future, perhaps we no longer need to designate qualifications as vocational and higher education. In future it may be more useful to differentiate what we now think of as VET institutions on the basis of their specialist expertise in applied and workplace-situated learning, understanding that increasingly learning will take place in and around workplaces.

It is time to fulfil the Bradley (and Kangan) vision of an integrated tertiary education sector (Beddie, 2015; Billett, 2013). As the need for higher-level vocational education increases, it becomes increasingly nonsensical to retain hard sectoral and funding boundaries between institutions that primarily deliver vocational education and those that primarily deliver higher education. Parity of esteem can only come with parity of policy and resourcing. Why not follow the example of New Zealand and other countries that fund delivery of qualifications according to qualification level rather than classification of the delivery institution?

¹³ Certificate, diploma, advanced diploma, associate degree.

An integrated tertiary sector would require a number of regulatory and policy changes to ensure that vocational education practice and institutions are future ready:

- development of integrated national tertiary education policy overseen by a single policy authority with vocational and higher education expertise and commitment to parity of policy esteem for both arms of the tertiary sector. This could be formed on the basis of a compact between Federal, state and territory governments, university and vocational education sectors.
- merging vocational and higher education regulation based on a single quality system which allows all self-accrediting vocational and higher education institutions to self-regulate as recommended by the Bradley Report (Bradley, Acquah, Noonan, Nugent & Scales, 2008). Stronger autonomous providers should require a lighter regulatory touch. The size of the provider market should better reflect what can be realistically regulated.
- recognition of the role of TAFE institutions as the long-term anchors of vocational education within a merged tertiary sector and of the need to conserve them as public assets with responsibility for developing and maintaining innovative vocational education curriculum and teaching practice.
- implementation of a model of tertiary funding by AQF level.

The creation of an integrated tertiary sector must be matched with some specific investments in building the capability of vocational education institutions to generate innovation:

- sufficient investment in digital technologies to bring large vocational education institutions such as TAFE to digital parity with universities with respect to learning and teaching and to support innovation projects with industry partners
- a vocational education innovation program fund, as recommended by the Parliamentary *Innovation and Creativity* report
- significant, sustained investment in dedicated research into innovation in workplace-situated curriculum and pedagogy to ensure that Australia develops the lifelong vocational learning opportunities needed by individuals, industries and communities
- specific investment to remedy the reputational damage caused by the unethical practice and collapse of a large number of private providers. This should inform the public that the TAFE brand is reliable and only used by public providers.

References

Aged and Community Services Australia, Leading Age Services Australia, The Aged Care Guild,

UnitingCare Australia, & Australia, C. H. (2016). *Aged Care Workforce Strategy Framework*.

Baker, K. (2016). *The digital revolution: the impact of the fourth industrial revolution on employment and education*. Retrieved from http://www.edge.co.uk/media/193777/digital_revolution_web_version.pdf

Barnett, R. & Coate, K. (2005). *Engaging the Curriculum in Higher Education*. England: Society for Research into Higher Education, Open University Press.

Beddie, F. (2015). A binary system of tertiary education: past ideas, contemporary policy and future possibilities. *International Journal of Training Research*, 13(1), 5-15.

Beddie, F., & Simon, L. (2017). *VET applied research: driving VET's role in the innovation system*. Retrieved from

Billett, S. (2013). *Vocational education: purposes, traditions and prospects*. Dordrecht: Springer

Billett, S. (2016). Beyond competence: an essay on a process approach to organising and enacting vocational education. *International Journal of Training Research*, 14(3), 197-214. doi:10.1080/14480220.2016.1254365

Birch, K. (2017, 3 November). What exactly is neoliberalism? *The Conversation*.

Bradley, D., Acquah, D., Noonan, P., Nugent, H. & Scales, B. (2008). Review of Australian higher education: final report [Bradley review]. Canberra: DEEWR.

Brown, P. & Hesketh, A. (2004). *The Mismanagement of Talent*. United Kingdom: Oxford University Press.

Committee for Economic Development of Australia. (2015). *Australia's future workforce?* Melbourne.

Dalitz, R. & Toner, P. (2016). Systems failure, market failure, or something else? The case of skills development in Australian innovation policy. *Innovation and Development*, 6(1), 51-66. doi:10.1080/2157930X.2015.1084116

Dommers, E., Myconos, G., Swain, L., Yung, S. & Clarke, K. (2017). *Engaging young early school leavers in vocational training*. Retrieved from <https://www.ncver.edu.au/publications/publications/all-publications/engaging-young-early-school-leavers-in-vocational-training>

- European Centre for the Development of Vocational Training (Cedefop). (2015). *Stronger VET for better lives: Cedefop's monitoring report on vocational education and training policies 2010-14. Cedefop reference series no. 98*. Retrieved from <http://www.cedefop.europa.eu/en/publications-and-resources/publications/3067>
- European Centre for the Development of Vocational Training (Cedefop). (2017). *People, machines, robots and skills*. Retrieved from <http://www.cedefop.europa.eu/en/publications-and-resources/publications/9121?NL=72>
- European Commission. (2012). *Rethinking Education: Investing in skills for better socio-economic outcomes*. Retrieved from www.eqavet.eu/gns/library/policy-documents/policy-documents-2012.aspx
- Figel, J., Commissioner for Education, Training, Culture, and Youth. (2008). The future of higher education: Challenges and policy directions. The EU perspective. Paper presented at the Higher Education to 2030: Access, Quality and Globalisation Conference, Paris. Retrieved from <http://oecdinsights.org/2010/05/27/oecd-forum-2010-matching-skills-to-jobs/>
- Fooks, D. (1994). *The Life and Times of Cinderella: some perspectives on the early development of technical and further education in Australia*. Adelaide: NCVET.
- Gardner, H. (2006). *Five Minds for the Future*. Boston: Harvard Business School Press.
- Goozee, G. (1995). *The development of TAFE in Australia: an historical perspective*, rev. edn. Adelaide: NCVET.
- Hager, P. & Holland, S. (2007). *Graduate Attributes, Learning and Employability*. Dordrecht: Springer.
- Hodge, S., Atkins, L. & Simons, M. (2016). Towards an epistemically neutral curriculum model for vocational education: from competencies to threshold concepts and practices. *International Journal of Training Research*, 14(3), 230-243.
- International Commission on the Development of Education. (1972). *Learning to be: The world of education today and tomorrow*. Retrieved from <http://unesdoc.unesco.org/images/0000/000018/001801e.pdf>
- Jones, A. (2003). *Good judgements: how TAFE teachers make assessment decisions*. (Doctor of Education), Monash University. Retrieved from <http://hdl.voced.edu.au/10707/454631> (J76.8)
- Kangan, M. & Australian Committee on Technical and Further Education. (1974). *TAFE in Australia: report on needs in technical and further education, April 1974* [Kangan report], 2nd edn. Canberra: Australian Government Publishing Service.
- Karmel, T., Roberts, D. & Lim, P. (2014). *The impact of increasing university participation on the pool of apprentices*. Adelaide: NCVET.
- Kearns, P. & Hall, W. (1994). Introduction. In P. Kearns & W. Hall (eds.), *Kangan: 20 years on: a commemoration: TAFE 1974-1994*. Adelaide: NCVET.
- Medical Device Research Institute, Flinders University. (2017). *A Technology Roadmap for the Australian Aged Care Sector*. Retrieved from http://aciitc.com.au/wp-content/uploads/2017/06/ACIITC_TechnologyRoadmap_2017.pdf
- Meisenzahl, R. & Mokyr, J. (2011). The Rate and Direction of Invention in the British Industrial Revolution: Incentives and Institutions, in *Working Paper 16993*. USA: National Bureau of Economic Research.
- Ministerial Council on Education, Employment, Training and Youth Affairs. (2008). *Melbourne Declaration on Educational Goals for Young Australians*. Melbourne: MCEETYA.
- Noonan, P. (2016). *VET funding in Australia: background, trends and future directions*. Retrieved from <http://www.mitchellinstitute.org.au/reports/vet-funding-in-australia-background-trends-and-future-options/>
- Noonan, P. & Pilcher, S. (2018). *Participation in tertiary education in Australia: Modelling and scenario analysis*. Mitchell Report No. 1/2018. Retrieved from <http://www.mitchellinstitute.org.au/wp-content/uploads/2018/04/Participation-in-tertiary-education-in-Australia.pdf>
- Office of the Chief Scientist. (2016). *Australia's STEM Workforce: Science, Technology, Engineering and Mathematics*. Retrieved from http://www.chiefscientist.gov.au/wp-content/uploads/Australias-STEM-workforce_full-report.pdf

- Pfeiffer, S. (2015). *Effects of Industry 4.0 on Vocational Education and Training*. Retrieved from www.austriaca.at/ita/ita-manuscript/ita_15_04.pdf
- Productivity Commission. (2011). *Caring for Older Australians*. Retrieved from <http://www.pc.gov.au/inquiries/completed/aged-care/report>
- Schofield, K. (1994). The clash of the Titans. In P. Kearns & W. Hall (eds.), *Kangan: 20 years on A commemoration of TAFE 1974-1994*. Adelaide: NCVER.
- Seddon, T. & Angus, L. (2000). Beyond nostalgia: institutional design and alternative futures. In T. Seddon & L. Angus (eds.), *Beyond nostalgia: reshaping Australian education*. Melbourne: Australian Council for Educational Research.
- Simon, L. & Beddie, F. (2017). *Explaining the VET applied research developmental framework*. Adelaide: NCVER.
- Skills IQ. (2017). *Workforce Implications of Consumer- Directed Care Implementation in Health and Community Services. Project Report – Phase One: An evaluation of skills and roles used in the Health and Community Services sector*. Retrieved from <https://www.skillsiq.com.au/site/DefaultSite/filesystem/documents/Workforce%20implications%20of%20CDC%20Project%20Report%20Phase%20One%20Final%20May2017.pdf>
- Smith, W. (2016). Cabinet papers 1990-91: lessons from the recession we didn't have to have. *The Conversation*. Retrieved from <https://theconversation.com/cabinet-papers-1990-91-lessons-from-the-recession-we-didnt-have-to-have-52153>
- Superina, N. (2018). *Trading Up: A reform package for a stronger TAFE NSW*. Retrieved from https://mckellinstitute.org.au/app/uploads/McKell_TAFE_SPREADS_WEBApril.pdf
- Toner, P. & Dalitz, R. (2012). *Vocational education and training: the 'terra incognita' of Australian innovation policy*. [Place of publication not identified]: International Joseph A. Schumpeter Society.
- Wagner, T. (2008). *The global achievement gap: Why even our best schools don't teach the new survival skills our children need— and what we can do about it*. New York: Basic Books.
- Wheelahan, L. (2015). The future of Australian vocational education qualifications depends on a new social settlement. *Journal of Education and Work, 28*(2), 126-146. doi:10.1080/13639080.2014.1001333
- Wheelahan, L., Buchanan, J., Goedegebuure, L., Mallet, S. & McKew, M. (2017). *VET in crisis*. Melbourne: Centre for Vocational and Educational Policy, University of Melbourne.