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AUSTRALIAN TECHNOLOGY NETWORK
OF UNIVERSITIES

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Foreword

COVID-19 has created sudden and drastic disruptions within Australia’s economy, workplaces and education sectors. In just six months, it has triggered higher unemployment, accelerated digitisation, and a shift towards growth industries, such as health, technology and advanced manufacturing.

Helping Australians adapt to these changes by up-skilling and re-skilling is imperative for Australia’s economic recovery.

While the crisis has been challenging, it has also galvanised business, government and education sectors to come together to tackle the impacts of health and economic shocks.

We must use the opportunity of these closer collaborations to create innovative new models of learning that help prepare all Australians for work.

This paper is a first step in that process. It is a joint initiative of leading education and employer bodies, the Australian Technology Network of Universities (ATN), TAFE Directors Australia (TDA), the Australian Industry Group (Ai Group) and AlphaBeta, now part of Accenture.

It sets out a shared vision for education and employment in Australia post-pandemic and recommends four resolutions and twelve actions to realise this vision.
Key actions for the future of learning in Australia

Australians need to change what, when and how they learn to equip them for the workplace of the future. ATN, Ai Group, TDA and AlphaBeta recommend four resolutions and twelve actions to help the tertiary education and training sector, learners, employers and governments make this transition.

1. Put the strategy, funding, and partnerships in place that grow high-value jobs and industries, and support them with innovative education and training models
   a. Align investment from the tertiary education and training sector, government and industry to high-value industries and high-value jobs.
   b. Produce a national workforce development strategy to clearly articulate the needs of industry, government and the tertiary and training sector and facilitate a more aligned, collaborative approach.
   c. Develop collaborative learning hubs that co-locate industry, education and training sector organisations. Hubs will facilitate enterprise-based training, greater collaboration and commercialisation of research.

2. Equip Australians with the skills and confidence to power the economic recovery
   a. Use data analysis to identify employer and learner training needs and use this to inform the design of education and training content and products.
   b. Design education and training around critical skill needs, rather than occupations or industries, to help develop work-ready individuals and improve mobility of the workforce between different occupations and industries.
   c. Encourage enterprise-based learning – such as work-integrated learning, industry-linked research positions, and employer-driven apprenticeships, cadetships and internships.

3. Expand the range of education and training products on offer to ensure that all learner needs can be met and to improve the opportunity to gain new skills and maximise employability
   a. Encourage shorter, targeted courses, such as micro-credentials, to encourage continuous learning that is relevant to work needs. These micro-credentials should be substantial enough to impart the key skills, knowledge and attributes needed; stackable so that workers can build on previous skills; and portable so that skills can be recognised across different industries and employers.
   b. Develop agreed knowledge and skill combinations that involve both higher education and Vocational Education and Training (VET) to make it easier for individuals to move between these sectors, e.g. Advanced Diplomas and apprenticeships for higher qualification levels to ensure Australia continues to develop skills in high-value, high skill industries.
   c. Create an effective, engaging online learning experience to enhance learning experiences, improve access to learning and improve digital literacy among the workforce. Create blended learning models which utilise online and face-to-face interaction to create a more engaging learning experience.

4. Ensure funding and accreditation approaches allow modern, innovative and high-quality learning models
   a. Explore individual skills accounts and skills passports to allow workers to undertake training throughout their lifetime through financial support to re-skill or up-skill via relevant micro-credentials and courses.
   b. Enable an industry-led approach to further learning that allows enterprises to select relevant training for their employees to undertake, which is then subsidised by government.
   c. Ensure the Australian Qualifications Framework (AQF) prioritises knowledge, skills and application rather than being narrowly focused on progression through hierarchical levels of education. This will support more modern and innovative approaches to learning and qualification development such as short courses and lifelong learning.
Why these actions are needed

Resolution 1

Put the strategy, funding, and partnerships in place that grow high-value jobs and industries and support them with innovative education and training models

A clear vision and strong partnerships between the education and training sector and industry are critical for growing high-value industries and jobs.

Identifying high-value industries and research priorities, and putting investment behind them, is critical to focus efforts across sectors (Action 1a). South Australia’s investment and development of a defence manufacturing industry, the $1.5 billion Modern Manufacturing Strategy, and the release of the Science and Research Priorities and National Manufacturing Priorities are good examples of this approach.

A post-pandemic national workforce development strategy will ensure a clear vision for jobs in Australia, and make sure employment and education and training opportunities are aligned to support them (Action 1b). The strategy should identify key workforce and training needs, including skills and training product types and likely future demand for them. It should explain where education and training funding, design, accreditation and delivery models must adapt to meet these needs, and lay out a plan for this adaptation. Many good education and training initiatives and innovations have been launched during the pandemic; the workforce development strategy could also identify which should be continued beyond it.

Collaborative learning hubs that physically co-locate industry and education and training organisations are critical to support new work integrated models of learning and innovation (Action 1c). The Tonsley Innovation District in South Australia is an example where research institutions, businesses, start-ups, incubators, government and the wider community have come together in partnership. The facility will support employment and encourage a transition from traditional manufacturing to high-value advanced manufacturing.

Resolution 2

Equip Australians with the skills and confidence to power the economic recovery

The education and training system has a critical role to play in helping learners acquire the skills and attributes needed to successfully enter and thrive in the workforce as jobs and skill needs are evolving.

Data analysis should be used to identify employers and learner needs and outcomes, to then improve the design of education and training content to ensure courses are relevant and responsive (Action 2a).

Designing education and training around critical skills (Action 2b), not occupations, will encourage work-ready learners and labour market portability. The Competency-Based Training (CBT) model used in VET focusses on observable workplace performance and skills and has already had significant success. The AQF review has created a unique opportunity to reshape education and training design.

Enterprise-based learning will allow entry-level and existing cohorts of workers to be skilled, re-skilled and up-skilled (Action 2c). Work-integrated learning helps ensure the relevance of learning and means skills can be immediately applied and reinforced. It helps build cohorts of learners within a single company, functional area or industry. It allows content to be more rapidly adapted to emerging trends and needs within industries. A good example of this model is SAGE Group’s Skills Lab partnership with TAFE SA and Flinders University. This partnership is delivering industry-led Digital Engineering Apprenticeships. Another example is BHP’s recent partnership with the Australian Government to invest $30 million to support new training initiatives in the regional communities in which it is most active.
Resolution 3

Expand the range of education and training products on offer to ensure that all learner needs can be met and to improve the opportunity to gain new skills and maximise employability

Learning models for foundational and continuing education and training need to evolve to ensure that Australia’s workforce remains engaged and able to adapt to changing tasks and demands. Increasingly, Australians will undertake more training later in life, to fill specific skills gaps and emerging skill needs required by business through micro-credentials and other alternative, short-form courses. Australians will need to double their share of learning they do after the age of 21. Furthermore, Australians will acquire education and learning from the tertiary and training sector to meet these skills needs.

Work-relevant up-skilling through micro-credentials that are stackable and portable could help keep people in the workforce engage in learning and working (Action 3a). This would allow workers to take short courses to develop skills and knowledge which are recognised by employers and that could be built upon in the future. An example of this is UTS and Telstra’s partnership to develop micro-credentials for data analysis, artificial intelligence and machine learning for Telstra employees to address skill gaps.

Developing agreed knowledge and skill combinations that involve both VET and higher education will make it easier for individuals to matriculate between these sectors as needed to meet a range of different skill requirements throughout their career (Action 3b). Revisions to the AQF will also help to support these pathways making it easier to move between the two sectors. The revisions would create a new range of diplomas (including Diploma, Higher Diploma and Graduate Diploma) across more bands under the revised AQF. This would enable new pathways for vocationally-oriented qualifications and allow vocational and higher education to have access to types of qualifications suited to providing up-skilling and re-skilling opportunities.

Finally, creating an effective, engaging online learning experience will also be important as technology becomes more prevalent (Action 3c). Blended learning models which utilise online, and face-to-face engagement can create a more enriched learning experience for individuals. One example of this is Curtin University’s partnership with the global education platform edX to deliver Massive Open Online Courses (MOOCs) as well as Curtin’s MicroMasters.

Resolution 4

Ensure funding and accreditation approaches allow modern, innovative and high-quality learning models

Funding and accreditation models need to enable innovations in education and training. However, current funding and regulation models are not geared towards supporting a system where people learn later in life, or to supporting short-form courses and micro-credentials.

While there is financial support for initial study and foundational learning (e.g. HELP loans), there are more financial barriers and costs for workers who are seeking to take postgraduate study or top-up training. Twenty-seven per cent of adults over 25 years old who wanted to participate in non-formal learning, but could not, stated financial reasons as a key barrier.1

Skills accounts could allow workers to undertake training throughout their lifetime through government support to re-skill or up-skill via relevant micro-credentials and courses (Action 4a). The initiative would help to inform individuals of learning opportunities and provide financial support to individuals to up-skill or re-skill at all stages in life.

Enterprise-led approaches could also be used to facilitate further learning in relevant skill areas (Action 4b). The model allows enterprises to select relevant education and training for their employees to undertake, which is then subsidised by government. This would ensure that enterprises select the most relevant training and development for their employees.

The AQF review provides an opportunity to adjust the regulation framework to better support more modern and innovative approaches to learning and training (Action 4c). Shifting the focus of the AQF to be more skills-focused and less hierarchical will ensure that an industry’s and individual’s skill needs are prioritised. Furthermore, aligning short courses with the AQF will provide a way of officially recognising these credentials and create more pathways into other courses.

Adopting the actions outlined in this paper will help address the short-term shocks of the pandemic, and see Australia adopt more modern and innovative learning approaches that will help with the jobs recovery.

The following sections of the paper explain the need to grow jobs in high-value industries, and encourage innovation in the education and training sector, from the perspectives of industry, and the VET and higher education sectors.
Recovering from a global pandemic

The COVID-19 crisis has created a severe, short-term economic shock and compounded long-term changes in work and education and training models. Using the crisis response to adapt to both must form a critical part of the recovery plan.

The COVID-19 pandemic has triggered a sudden and deep unemployment shock creating the most significant economic challenge since the Great Depression. At the peak of restrictions in Australia, 10 per cent of the labour force lost their job or were stood down to zero hours. The unemployment rate is expected to reach eight per cent in the December quarter 2020.2

Young people have been disproportionately affected with higher shares of employment in industries and jobs which were more acutely affected by COVID-19 such as hospitality and casual employment.3 This is compounding pre-COVID trends, where lower-skilled and younger workers were more likely to experience involuntary job loss. Findings from the Grattan Institute show that young people who graduate during recessions typically experience poorer labour market outcomes over their lifetime relative to cohorts graduating during a booming labour market.4

The pandemic has also spurred on significant disruptions to Australian industries. Service industries such as hospitality have seen substantial declines in demand, with spending down as much as 84 per cent below normal levels during late April for pubs and venues. Conversely, industries such as healthcare and technology have seen large increases in demand.5

Trends such as digitisation have also accelerated due to the pandemic, which will further increase the demand for technologically savvy workers. Some businesses have implemented as much technology in 2020 as they had in the past ten years. The web presence of Australian firms increased from 55 per cent in 2018 to 77 per cent in 2020 and collaboration tools such as videoconferencing were used by 60 per cent of Australian firms, with 45 per cent of businesses intending to increase the use of these digital tools into the future.6
Using the crisis to prepare Australia for a post-pandemic world

While current unemployment rates are high, stimulus measures initiated by state and federal governments are currently shoring up the economy. Consequently, the Australian Treasury forecasts unemployment will fall from 10 per cent in December 2020 to around 6.5 per cent by the June quarter 2022 as the economy begins to recover.

If these forecasts hold, it means the training and employment market could revert to be shaped more by long-term trends, rather than pandemic-related shocks, within one or two years. That makes it imperative that responses to the crisis address these long-term trends as well short-term disruptions.

Furthermore, medium-term stimulus measures, such as $1.5 billion Modern Manufacturing Strategy and JobMaker plan, are also being rolled out. The intent of these programs is to grow high-value industries and jobs in the medium term and re-skill and up-skill workers. The design of these interventions offers a critical opportunity to invest strategically in high-value industries and jobs, and innovative new education and training models.

The key trends Australia must prepare for as part of the recovery are shifts in how, when and what Australians learn. By 2040, workers are expected to spend an additional two hours a week on non-automatable tasks such as interpersonal, creative and decision-making tasks and information synthesis tasks, while spending two hours a week less on automatable tasks such as information analysis and routine, manual tasks.

This will change the skills demanded in education and training. Skills that complement technologies like automation and artificial intelligence as well as uniquely human traits will be in high demand. The average Australian worker will need to spend twice as much time as they do now on deepening their distinctive human characteristics such as leadership, empathy and intuition. For example, while technologies and robots are becoming more prevalent, in surgery, a surgeon will need to be able to effectively communicate the procedure to patients as well as make decisions about the best way to operate.

Australians are now also more likely to change jobs multiple times. By 2040, 87 per cent of workers will have changed their jobs at least once. On average, workers will have changed occupations 2.4 times by 2040. These job changes will, on average, bring about a 22 per cent change in workers’ tasks which will require re-skilling and demand for education and training.

This will change the amount of training Australians need to undertake, and the point in their lives when they train. By 2040, the average Australian will spend an additional three hours per week (or 8,000 more hours in total) learning, representing a 33 per cent increase from 2018. Workers will also begin to undertake more learning later in life. Australians will need to double the share of learning they do after the age of 21 from 32 per cent to 41 per cent. This is due to a combination of workers re-skilling due to job changes or up-skilling in response to new tasks within their jobs.

Most additional learning will occur at work in the form of on-the-job training as well as short-form, flexible courses and micro-credentials. Analysis suggests formal workplace training and informal on-the-job learning together would need to make up nearly 42 per cent of an average Australian’s total lifetime skills training by 2040, twice as much as today (21 per cent).

Adapting to these changes will require new models of collaborative learning, as the Accenture Adelaide Hub case study shows. Government, the tertiary and training sector and industry collaborating to invest in growth industries, and undertaking enterprise-based training, is also critical to creating high-value job opportunities.

The shocks brought about by the COVID-19 pandemic will only accelerate these changes. While the crisis presents a number of challenges, it also provides the opportunity to address longer-term education and employment priorities. Addressing them needs to be a key part of Australia’s economic recovery plan. This includes creating high-skilled, meaningful jobs that adopt new technologies and processes, and encouraging new models of learning.
Accenture Adelaide Hub
Accenture’s Adelaide Hub is one example where industry, government and the training sector are partnering to develop high-skilled jobs in high-value industries. Launched in October 2020, the hub was developed with the support of the South Australian Government to build local skills and capabilities for new economy opportunities.

The Adelaide Hub will focus on growing sectors in South Australia, including aerospace, defence and cyber security. The investment will support the growth of Accenture’s national security and cyber defence capabilities, new Advanced Technology Centres of Excellence for innovation, which includes Oracle, SAP, Splunk and Salesforce, and intelligent operations capabilities to develop and deploy advanced analytics and artificial intelligence.

The Adelaide Hub has the potential to generate up to 2,000 jobs over the next five years and inject up to $1 billion into the South Australian economy. The move supports South Australia’s push for establishing a high-tech community and a new, collaborative approach to business and technology.

The investment also offers an opportunity to collaborate with educational and training institutions. Accenture has partnered with TAFE SA to launch a Certificate IV in Cybersecurity to allow students to study whilst also working part-time at Accenture. This will allow Accenture to up-skill local talent while providing them with applied skills and experience.

Finally, the hub will encourage more interaction between industry. Accenture joins a number of other tech-focused organisations setting up in Adelaide such as the Australian Space Agency, the Australian Institute for Machine Learning, an MIT Living Lab and the Australian Cyber Collaboration Centre located in Adelaide’s Lot Fourteen precinct. Bob Easton, the Chairman of Accenture ANZ said: “Accenture is committed to serve as a key member of the local community, investing and working together with other businesses and educational institutions to assist the South Australian Government in meeting its economic growth targets”.

AlphaBeta - Economic and skills context 11
Growing new industries and skills

Australia will need to find new frontiers of productivity to stay a high-value, high wage economy as the nation transitions out of the pandemic. This includes identifying the industries that will drive new growth and jobs, and the education and training needed to support workers to participate in these areas.

Sectors such as advanced manufacturing and services provide significant opportunities to grow high-value industries, and high-skill jobs. Recent initiatives such as the Modern Manufacturing Strategy show the government’s intentions to develop new modern manufacturing at scale. There is also strong service sector growth in both commercial activity and human services. Australia’s services share of gross value added (GVA) grew from 20 per cent in the mid-1960s to around 40 per cent in 2018.13

To take advantage of this opportunity, we need a strong workforce development strategy that links employment and education and training opportunities. Australia must build a flexible, resilient workforce, equipped with 21st century skills rather than a tightly targeted set of skills.

Care services provide an example of the kind of skills and capabilities required of the workforce. Employers are no longer seeking individuals who can undertake manual, rote tasks. Instead, employers want workers who are equipped with decision-making skills and an ability to deal with people, providing higher, more sophisticated levels of service.
The VET and higher education sector have a key role to play in preparing future workers

The training system has a strong role to play to prepare individuals for an increasingly complex world of work. This will require core skills in literacy, numeracy and digital literacy, technical capabilities as well as 21st century skills to increase agency and ability to engage proactivity in the workplace. 21st century skills include competencies in areas such as analytic skills, interpersonal skills, ability to execute, information processing and capacity for change and learning. These competencies are becoming increasingly important in economies such as Australia where there are declines in low-skilled labour and growth in knowledge work and service occupations where broader competencies are demanded. 14 ‘T-shaped’ employees – workers with deep knowledge and skills in a particular area as well as broader knowledge across a range of disciplines – are also becoming increasingly relevant in today’s workforce.

To meet this demand, the VET sector must make some key shifts in training delivered. The VET training model is too focused today on transactional skills for the job of today. More targeted and effective training will ensure benefits from new high-value industries such as defence, advanced manufacturing and services are fully realised. There is an opportunity for VET to provide more funding and focus towards broad, underpinning skills to equip the workforce with core skills, technical capabilities and 21st century skills which are aligned with the needs of industry. Collaboration is needed between the tertiary and training sector, government and industry as well as close alignment to the workforce strategy. Initiatives such as enterprise-based training will allow workers to acquire a broader set of skills, with an industry focus.

The tertiary education model and approach to forming learning needs to change to make sure that all citizens can access learning to allow them to pursue their aspirations. As part of this approach, it will be important to recognise that innovation and technology may not recognise institutional constructs, such as VET versus higher education. Developing pathways between these education institutions and providing a range of opportunities to meet innovation and technology needs can help to address this.

The need for a new order of education to meet these demands

In order to meet the skill and knowledge demands of the workforce, the education and training sector needs a new and complementary form of engagement with industry, such as industry-based learning collaboration hubs working in or alongside TAFEs and universities.

This could be piloted via a demonstration model supporting more joint programs and approaches across TAFEs and universities, utilising blended delivery models to encourage flexible, engaging learning environments. This would help to foster more collaboration between the tertiary and training sector, industry and government, and support innovation and the development of relevant skills and knowledge. Furthermore, this model will limit distortions caused by funding and regulation imposts across different sectors.

These new approaches to better link education and employment will allow Australia to realise productivity gains in high-value, high wage industries. This needs to be the new settlement with industry and the Australian community – that there is opportunity for industry growth through innovation and new manufacturing and other forms of higher learning – and the productivity trade-off gives rise to wage growth.
University of South Australia building data visualisation capability for the Hunter Class Frigate Program.
The University of South Australia (UniSA) has partnered with Australia’s Innovative Manufacturing Cooperative Research Centre (IMCRC) and BAE Systems Australia’s shipbuilding business, ASC Shipbuilding, to deliver data visualisation research worth more than $4 million as part of the Hunter Class Frigate Program.

The project focuses on how narrative visualisation (telling stories through data) and big data processing can deliver and refine complex manufacturing processes. It will provide integrated data insights across the entire supply chain, enhancing how shipyards and shipbuilding are planned and managed. The project will harness the capabilities of local advanced manufacturers to create new technologies, including a purpose-built data visualisation platform, a big data dashboard to provide real-time information to workforces, and touchscreen conference tables to support decision making with data. Professor Bruce Thomas from UniSA’s Australian Research Centre for Interactive and Virtual Environments says “the work will underpin a change in the way shipyards are planned and managed by enabling integrated data insights across the supply chain.”

The project shows how partnerships can help to develop relevant, high-value skills and capabilities for defence and the broader manufacturing industry – particularly as the economy transitions out of COVID-19 and moves towards new high-value industries. Federal Minister for Industry Science and Technology, Karen Andrews says “this type of industry-led innovation that can be applied in a range of different settings will be key to charting our COVID-19 economic recovery.”
ATN’s role as a public institution

ATN Universities (Curtin University, Deakin University, RMIT University, University of South Australia and University of Technology Sydney) are committed to playing a positive and central role in developing solutions to the biggest problems facing our economy and society.

Today’s workers face rapid change to industry and the nature of work, which means the ‘one qualification for life’ is effectively no longer fit-for-purpose and a lifelong approach to skills acquisition is required.

Universities have an essential role to play in ensuring equitable access to education, regardless of background or circumstance. This means helping Australians, as well as thousands of international students, to obtain the qualifications they need to secure entry into the full-time workforce.

Building better connections between universities and industry is also critical. Currently, more than 2.3 million small-to-medium enterprises (SMEs) in Australia employ over five million Australians. ATN Universities provide support in research and development, as well as mentoring and people-to-people links. More broadly, universities can help drive innovation and adaptation through discovery research, as well as industry-engaged, applied research.

Australia’s higher education system, particularly our public universities, need to ensure they are not only keeping up with the disruptions, but embracing and driving them. They must help shape a path forward so that we continue to provide individuals as well as business with the tools they need to continue Australia’s prosperity and drive innovation.
The future of work and the need to collaborate

ATN Universities have an unequivocal connection to skills, workers and industry. While we are a network of young and innovative universities, we also draw on our previous history and experience. This history and connection to industry means we have always had a strong understanding of the nature of work and the changing nature of industry and the skills needs of workers.

Understanding these skills needs will become increasingly important in ensuring workers receive the skills they need to enter or remain in the workforce. Digitisation and growing industries such as defence and advanced manufacturing mean that education and training systems must adjust.

Collaboration between government, the tertiary and training sector and industry will become increasingly important to equip workers with the necessary skill sets they need. RMIT University’s Deputy Vice Chancellor Science, Engineering and Health and Vice President for Digital Innovation, Professor Aleksander Subic, reinforces this point when discussing growing areas such as systems design, industrial automation and robotics, and security, saying “we need to partner in ways we haven’t done in the past. It’s about co-design, co-investment and co-delivery of transformational programs for the changing industry environment and economy”.

One example of collaboration can be seen in the development of the Geelong Future Economy Precinct at Deakin University’s Waurn Ponds campus. The precinct was developed with support from Deakin, industry partners, and local and state government, and hosts a cluster of advanced manufacturing start-ups. The precinct also supports former workers from the Ford Motor Company in an effort to kick-start new industrial growth for the region and create new pathways for secure employment for the thousands of jobs lost from the cessation of car manufacturing.
Carbon Nexus supporting the transition to advanced manufacturing.
Carbon Nexus is a purpose-built research facility owned and operated by Deakin University within its Geelong Future Economy Precinct. The facility was launched in 2014 as part of a collaboration between Deakin University and CSIRO. Anchor funding came from the University with additional support from the Victorian and Federal governments.

Carbon Nexus collaborates with a host of advanced manufacturing start-ups and is equipped with open access infrastructure designed to support the scale-up and commercialisation of advanced manufacturing technologies developed by researchers. This includes two carbon fibre processing lines and laboratory infrastructure for 50 researchers.

Among the start-ups and businesses are Carbon Revolution, which has developed the world’s first single-piece carbon fibre wheels, Quickstep, which develops composite components for the defence industry, and JUC Surf, an innovative start-up producing surfboards from recycled carbon fibre. Carbon Nexus also collaborates with local and international industry partners including Vestas, Boeing, the Ford Motor Company, Dow Chemical and Daimler.

Importantly, the Carbon Nexus facility has helped workers transition from traditional manufacturing jobs to new, advanced manufacturing jobs. Over 600 jobs have been created in the precinct surrounding Carbon Nexus and many of these positions have gone to workers from traditional manufacturing jobs at recently closed Geelong factories like Ford and Alcoa. The growing carbon composites industry around Carbon Nexus is harnessing these workers’ skills in a new advanced manufacturing environment and providing new skills and up-skilling opportunities. Facilities like it will be increasingly important for developing strong relationships between industry, the tertiary and training sector and government to up-skill and re-skill workers in high-value, growing industries such as advanced manufacturing.
The need for stackable micro-credentials and short courses to support lifelong learning

A major change to Australia’s education and training system is greater demand for continuous learning.

Universities are already responding to this change by creating new forms of training products and delivery methods. Shorter, targeted courses and stackable micro-credentials are the new frontier in global education. Co-designed, ‘bite-sized’ units of education are attractive to workers who do not have the capacity or time to invest in traditional full degree or postgraduate coursework courses.

Micro-credentials and short-form courses can also play an important role up-skilling and re-skilling the workforce as Australia moves beyond COVID-19 because they allow people to train in a concentrated and efficient way, to aid their ability to perform new tasks, or to move to a new role or industry. They should be ‘stackable’, meaning each micro-credential can contribute towards an overarching qualification that is also recognised in its own right. They require careful management, including ensuring they are high-quality and recognised by industry and regulators as real credentials.

One example of micro-credential innovation is the partnership between University of Technology Sydney (UTS) and Telstra Corporation. In 2019, UTS worked closely with the Telstra Corporation to up-skill employees in areas including big data, machine learning and artificial intelligence. With a shortfall of up to 60,000 information and communication technology workers in Australia over the next five years, Telstra identified a range of skills gaps in its workforce strategy and worked with UTS to retrain employees while accessing the University’s research capability and excellence.

The workforce up-skilling focused on offering workers short courses or ‘bite-size’ credentials. These courses include live group learning discussions throughout about five hours of online learning per week for eight weeks, with two weeks of practical assessment to finish.

RMIT has also innovated by developing RMIT Creds, a suite of industry-relevant digital certification to help develop skills and capabilities for life and work, co-created with leading employers and industry bodies.

Universities are also expanding online learning to create well-designed and thoughtful learner experiences that lead to high student satisfaction. Curtin University has partnered with the global education platform edX to deliver Massive Open Online Courses (MOOCs) as well as Curtin’s MicroMasters. Deakin has a series of Professional Practice credentials, which offer professionals flexible postgraduate qualifications that can be studied alongside work, and support workers without formal qualifications, or with an undergraduate qualification that is no longer relevant to their work. UniSA Online also offers a six-month course to skill and re-skill workers for a career in aged care, one of Australia’s fastest-growing professions.

As a network, ATN is about to roll out an open-access short course called Design Your Life, which will help workers develop a roadmap for skills acquisition and career development. The free cross-ATN program has drawn on design thinking principles developed by Curtin in collaboration with Stanford to support workers navigate a plan to ensure their skills stay relevant in a shifting labour market.
AQF review

The Australian Government’s review of the AQF in 2019 provides the entire post-secondary education sector with the opportunity to continue to develop innovative new educational offerings. Indeed, Australia has the opportunity to be the world leader in the design and recognition of new ways of skilling and qualifying people.

The potential proliferation of short courses as a part of filling the skills need in Australia (and globally) will require further changes to the AQF. These changes will focus on the types of qualifications that people need, addressing a range of knowledge and skills needs, rather than being narrowly focused on progression through hierarchical levels. Currently, most micro-credentials are not recognised by government as short courses and do not receive formal credit. Aligning short courses with the revised AQF will provide a trusted way of recognising these credentials and providing potential pathways into other courses.

Student experience

Short-form credentials have the capacity for success if there is a proper focus on teacher quality. RMIT’s Deputy Vice Chancellor Education and Vice President Professor Belinda Tynan says “the critical point of difference in student success [is the] educator” and that well-designed and thoughtful learner experiences lead to high student satisfaction, even in entirely online courses.15

Learners want more flexibility in their learning opportunities. Not everyone can afford to go to university full-time or ‘go back’ to university to retrain. Many have family or financial obligations and cannot commit the time. The traditional model for many is a rite of passage, but for others, especially our mature-age learners or those already in work and seeking up-skilling, new models are required.

The ‘earn as you learn’ model is an opportunity to provide more flexible, engaging learning experiences. It is timely therefore that the relationships with industry can work towards advanced apprenticeships or cadetships as we reconsider a different rite of passage. Creating bite-sized learning opportunities in which industry, universities and the economy can do things differently for everyone’s benefit.

Finding a way forward

As the disruptors in the Australian higher education sector, ATN are already doing the work to develop the industry links and the teaching and learning expertise to ensure that a range of new educational offerings are developed and considered relevant and responsive to the changing economic offerings we face.

There are major obstacles to ensuring that the post-secondary system in Australia can meet the ever-changing needs of the economy and the student. Firstly, we need a strong regulatory change to allow for the development of relevant, trusted and stackable micro-credentials. Secondly, we need to ensure that industry is part of the ‘co-design’, and that universities continue to acknowledge and activate workplaces as sites of learning. Thirdly, shorter credentials need to be financially viable and be backed by co-investment.

The missing link in the lifelong learning piece is a comprehensive skills account or enterprise funding model. This needs to be developed in partnership with the Commonwealth, states and territories as well as businesses and the post-secondary education sector to ensure we can have a strong basis for providing new and innovative education options for thousands of Australians displaced and disrupted.
Building the right skills for industry and individual enterprise

A deep challenge with an upside

The depth and breadth of the challenges faced by Australian industry during the pandemic have been extreme. Almost every sector has faced upheaval and continues to live with uncertainty.

Employers will drive the recovery in conjunction with key skilling partners. By rebuilding, they will be assisting all affected individuals to begin or resume working and enrich their working lives. The large range of government measures put in place to support industry development, employment, skills development and research will underpin the recovery.

A significant upside to the pandemic has been the switch to digitisation. In a matter of months, companies have accelerated the digitisation of functions such as customer and supply chain interactions and internal operations by three to four years. To embed these transitions, they need a rapidly up-skilled workforce prepared for closer collaboration between humans and smart machines, willing to innovate, and supported by agile spaces and cross-functional teaming.

This means education and training will be a key driver for Australia’s economic recovery as we emerge from the prevailing crisis. The way we now respond will become a major influence on the recovery of individuals, businesses and the national economy. If Australia is to rebuild and provide access to jobs in all emerging and continuing industries, our education and training outcomes need to closely align with opportunities in the labour market as they re-emerge. All workers must receive the education and training needed to allow them to undertake productive and engaged roles in order to better contribute to renewal and innovation in the workplace. Re-skilling, redeployment and support must occur at scale.

A need for closer partnering

Education and training must be related to business growth needs, integrated with industry strategies and include innovative approaches that better anticipate immediate-, short- and medium-term skill priorities for industry sectors. Education and training then must be easy to access and relevant for individuals to gain – or transition within – employment in roles that are often different from the past. Strategies must be developed for all workforce age categories and must facilitate the mobility of individuals by providing recognition of achievement.

The pandemic and the unexpected acceleration of digitisation should be seen as a watershed moment for collaboration between the industry sector and the tertiary education and training sector. The new leap by more companies to an increasingly sophisticated mix of human and technological capabilities reaches into all learning and development. A step change to embed co-involvement cultures, new approaches and models can only assist the success of both sectors.

Increasingly, large companies are developing their own competency frameworks according to their specific organisational needs and partnering to offer their own training for existing workers and new entrants. They are expanding targeted in-house training programs to help more employees move into more highly skilled roles in areas of projected need.

A flexible tertiary education and training sector must renew to be a partner in this activity. In particular, there is now even greater value in employer-led programs, flexible training adapted to a company’s needs, co-located industry-training hubs and digitally delivered solutions.
SAGE Group is an engineering company which provides smart automation solutions focused on digital solutions, Internet of Things (IoT) and Industry 4.0. The company is 25 years old and goes to market through its four core brands of SAGE Automation, Nukon, Embedded Expertise and Skills Lab, has 14 offices in Australia and employs more than 470 people. It offers solutions to a range of different industries including defence, transport, resources, utilities, energy and manufacturing. Its head office is based in the Tonsley Innovation Precinct in Adelaide, which aids collaboration with other companies and education institutions.

SAGE has realised the importance of providing high-quality learning to meet current and future industry needs. Skills Lab is a Registered Training Organisation (RTO) that was created by SAGE to offer training solutions to meet industry needs. SAGE’s training offerings developed over time from additional internal training to up-skill graduates from tertiary education, to training for businesses and industry, to Skills Lab.

One key offering of Skills Lab is a new, digital engineering apprenticeship in collaboration with Ai Group, TAFE SA and Flinders University which aims to meet industry needs. The apprenticeship provides individuals with a combination of experience, skills and a nationally accredited Diploma of Applied Technologies. Hands-on work experience working along SAGE Group engineers and technicians also means that students are able to work with industry-leading technology and gain real-time experience in the workplace.

Another important aspect of SAGE’s Skills Lab is the ability to quickly adapt training needs to keep up with the latest technologies. For example, Skills Lab is already changing components of its Diploma of Applied Technologies, despite it only being 12 months old. This ensures that graduates are receiving up-to-date training using leading technologies which are demanded by industry. Hands-on industry experience also helps to address the issue of up-skilling in outdated technologies.

SAGE’s new approach to training exemplifies a more industry-led, targeted approach to learning which prioritises hands-on learning, adaptation and collaboration. This approach will become increasingly important as digital trends are accelerated, and demand for life-long learning and continuous up-skilling become more central.
Changes to work are driving changes for knowledge and skills development

Linking ongoing learning to workforce productivity is essential. The need for re-skilling and up-skilling will be increasingly built into every worker’s day – they will need to know how to continually learn. To set workers up for the future, education and training programs must ensure the transferable capabilities of adaptability, creativity, problem-solving, communication and initiative are well incorporated. It is these skills that will allow companies to augment human capabilities with tech capabilities in novel ways to thrive in new scenarios. And they are best developed in applied learning contexts.

Revisions to the AQF – which specifies the standards for educational qualifications in Australia – create a timely opportunity to create a new policy architecture for the education and training system in Australia, one that provides a better foundation for an industry’s and individuals’ needs. The AQF’s central purpose is to ‘establish a basis for improving the quality, accessibility, linkages and public or labour market recognition of qualifications within a country and internationally.’ The changes to the AQF shift the architecture from a rigid and hierarchical model that privileges knowledge over skills, and higher education over vocational education. These changes propose a new model that enables qualification development more fit for the modern economy, now and into the future.

Despite revisions to the AQF, there will be challenges for our education and training system, including long held social and status assumptions. Ideally, qualifications would be designed and developed in a way that organises knowledge and that enables individuals to gain, retain or build upon meaningful work. They would have a purposeful balance between technical and generic skills, and knowledge, all of which could be developed through an engaging applied learning pedagogy. They would be nationally relevant and accessible. They could be completed in entirety or accessed via meaningful components. They would be widely valued and respected as vocational qualifications. They would set an individual up to commence their career, add to an existing career or assist with changing career.

The acceleration of digital applications and solutions, as well as skills and knowledge requirements emanating from work, has further disrupted the traditional education and training system. We are now seeing micro-credentialing, digital badging, e-portfolios and proliferation of open source learning platforms. Historically, our education and training system has been built and developed around public – and more recently, private – training institutions that provide formal credentialled learning. However, just as the world of work is rapidly transforming, education and training is receiving the same level of disruption. Education and training have not been the exclusive prerogative of training institutions for some time.

In this world the design of a qualification is challenged, as are funding models, the role of institutions and the relationship between learning and credentialing. The organising principle for the education and training system in the future needs to evolve to something much more advanced, focussing upon the nexus of the individual and work. Qualifications will need to be designed differently, combined differently and be accessible across contexts in many more varied and timely ways. They need to be able to support and build upon the dynamic and fluid combination of skills and knowledge. Qualifications will also not necessarily be assembled hierarchically. Individuals will access qualifications over their working life to meet the demands for critical re-skilling and up-skilling.

There is also an opportunity to broaden employment-based qualification pathways. These are traditionally understood to be apprenticeships and traineeships, but the model should be expanded to include cadetships and internships at higher qualification levels. Many of the growth industries increasingly require higher levels of skills. This has major implications for our education and training provision, as well its intersection with work. The apprenticeship system sits neatly in this space. It is capable of providing a high-quality, fully integrated learning and employment experience at the leading edge of economic transformation. This model would allow us to acknowledge that some individuals will train in order to gain work; others will build their learning through work. Either way, the strength of work-based learning models will be important.

We are now in a world where there is broad acceptance by individuals, industry and government that broadening and deepening of skills and knowledge must be constant. Not only should we reflect on where we are, how we got here and what is valued, we must also project forward to design systems and relationships for the right skills for future industry and individual enterprise.
Case Study

CV Services Group apprenticeships and on-the-job learning.
CV Services Group (CV) provides a complementary range of technical services across four businesses: Electrical Construction, Infrastructure Services, Asset Services, and Media & Signage. The company employs approximately 550 team members and has offices in Brisbane, Townsville, Gold Coast, Sunshine Coast, Sydney and Melbourne.

CV offers a range of apprenticeships across numerous trades including electrical, plumbing, fire, heating, ventilation and air-conditioning, carpentry, sign writing, digital print and sheet metal, and currently has over 100 apprentices who are undertaking a formal qualification. CV, in conjunction with RTOs, provide their apprentices with formal training and work experience with ample opportunity for growth and up-skilling into their desired trade. The combined theoretical and practical training allows CV to develop a strong workforce with relevant, recognised skills and qualifications.

Electrical apprentices make up a significant portion of CV’s apprentices due to the company’s diverse electrical offering. Electrical apprentices are offered further development opportunities, including the potential to undertake a broader range of electrical training in a number of different areas including civil, construction and maintenance. The diversity of work allows apprentices to experience working for different teams and managers, as well as working in variety of environments, enabling them to further build their knowledge and skillset.

Further annual training is also provided to all electrical workers within the company to assess their competency. The annual skills assessments utilise a custom training room complete with switchboards specifically designed to assess electrical worker’s practical knowledge. The practical demonstration of CV’s electrical team members’ knowledge ensures that their skills are up-to-date, and industry standards are maintained.

CV also offers internal training which provides team members with the leadership and managerial skills needed to effectively lead their teams. One of the types of training provided at CV is a Management Certificate Program, which includes a range of different modules designed specifically for up-skilling and educating team members on the CV way, including human resources and industrial relations, health and safety, performance management processes, as well as other processes, risks and policies. Not only does this internal training provide individual team members with the opportunity to upskill within the business and take on new roles and increased responsibilities, this also ensures that team members have the right skills to excel in their role and provide their team with strong leadership and direction.

At CV, training is essential to develop the right team who can deliver the right outcomes for the business. This can be seen at apprentice level, all the way through to the leadership team. With the right training in place, CV benefits from a high level of team satisfaction which enables them to exceed expectations and provide a superior service to their clients.
Conclusion and a call to action

Australia’s economy is at an inflection point. The pandemic has seen sudden increases in unemployment and the acceleration of digitisation as well as a shift towards new, high-value, high-skilled industries such as health, technology and advanced manufacturing.

Up-skilling and re-skilling Australia’s workforce to meet industry’s needs will be imperative for ensuring a sustainable and effective economic recovery.

How this is done will also be important for addressing longer-term trends shaping the education and training sector. Australians will need to adopt alternative forms of learning throughout their life such as micro-credentials to meet changes in their tasks and their jobs.

A benefit of the crisis is that it has seen closer engagement and collaboration between business, government and education in order to tackle the pandemic. We must now build on these strengthened partnerships to create a shared vision and new models of employment and education and training in Australia.

This will help Australia recover well from the crisis, and ensure that the education and training system are meeting the needs of growing industries, supporting high-value jobs and increasing productivity.
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