LIFELONG SKILLS

Equipping Australians for the future of work

pwc

AUSTRALIAN
TECHNOLOGY
NETWORK
OF UNIVERSITIES

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EXECUTIVE SUMMARY

Technology is changing the way we live, work and learn. Technologists and futurists are public figures, and automation, globalisation, and artificial intelligence, once esoteric topics, are increasingly the subject of dinner table conversations. People want to know what the future will look like, and how they can be ready for it. If the changes of the last 50 years are any indication, readiness will require different, and higher level skills than before.

This report is not predicting the future of work, but aims to suggest ways we can ensure Australia is well prepared to respond to emerging challenges.

Over the next 15 years, automation will replace two hours of work per week for the average Australian.[1] While this is significant, over the last 15 years automation has been replacing work at the same rate.[2] Australia's higher education sector has already undergone significant changes. In 1971, two per cent of Australians aged 20-64 had at least a Bachelors qualification. Today, that number is more than 30 per cent.[3] There is both a clear and evolving role here for vocational education and training. Higher education is more important to Australia than ever before, and will play a vital role in equipping Australians with the skills and knowledge required to navigate the future of work.

Much has been made of the impact of technological and digital change on job roles and industries. The nature of the world of work is changing and this report seeks to reassure policy makers that although there is more to be done, efforts are already underway to actively address this challenge. We cannot predict the future, however, it is likely that Australia's higher education sector will build upon existing structures as part of its journey to best equip students for a changing future.

There is cause for optimism in how Australia can best meet this challenge and this report offers recommendations to industry, universities and Government about how they can meet this challenge by working together. This includes identifying measures that are currently working well and what policy changes might be needed to scale these initiatives at a national level.

PricewaterhouseCoopers Consulting (Australia) Pty Limited (PwC) has engaged with leading figures from industry, Government and universities, and partnered with the Australian Technology Network of Universities (ATN) to develop this report. The recommendations within this report require action on the part of all these parties to be successful. Individuals, industry and government will all need to commit to ensure Australia's future workforce has the appropriate skills to prosper.

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[1] alphaBeta, The Automation Advantage, 2017.
[2] Ibid.
[3] ABS, Education and Work, 2017.

1 SUPPORT AUSTRALIANS' LIFELONG LEARNING NEEDS

1.1 Ensure Australia's national policy and funding arrangements support lifelong learning

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5.2 Combine existing data sources to provide a comprehensive, longitudinal education dataset and improve existing information platforms

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INTRODUCTION AND OBJECTIVES
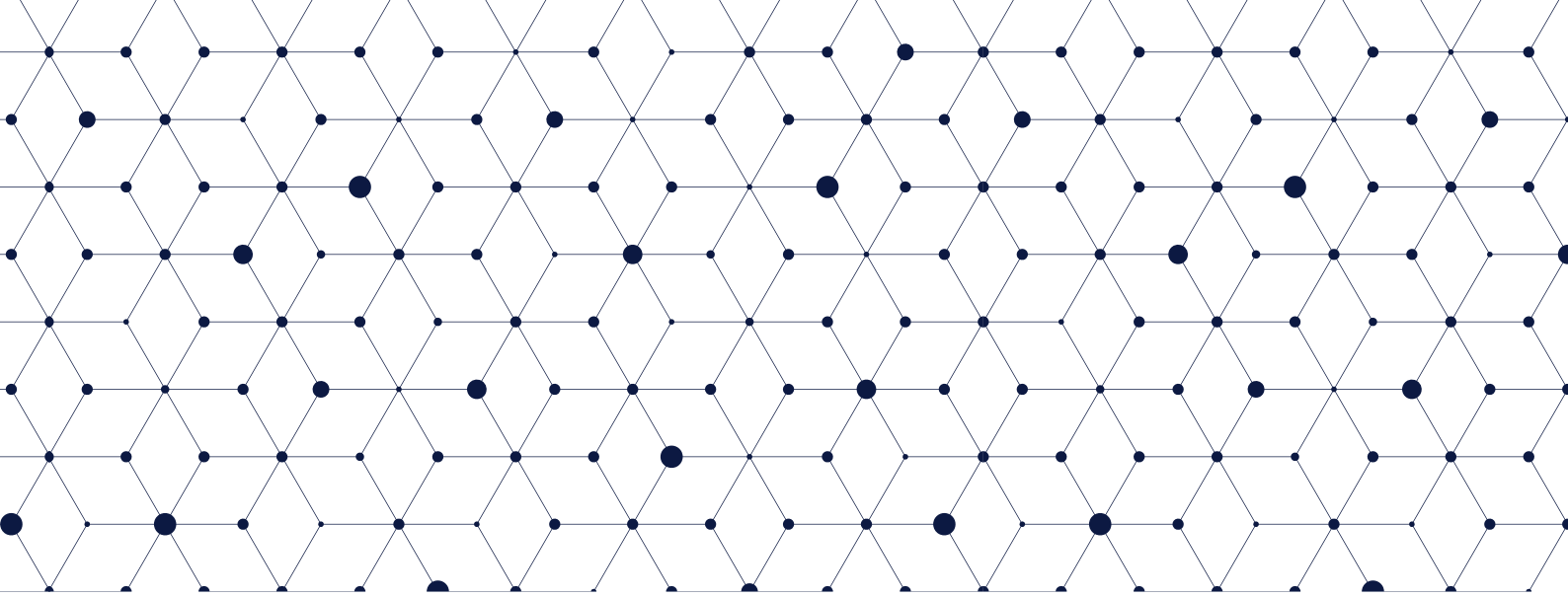
1.1 Understanding the future of work

Societies have always progressed and evolved, creating new jobs and making others redundant. This presents an ongoing challenge around how Australians can be equipped with the right skills and knowledge to thrive in a changing labour market. It is particularly important that we address these issues as the pace of change is accelerating, and will continue to do so in the future.[4] Australians will need to be more flexible across careers and industries. Consequently, Australia will require a more responsive post-secondary education environment to meet the needs of future Australian workers.

Drivers

What will shape the future of work in Australia? A recent report produced by the CSIRO proposed four factors that will drive change:[5]

Digital technologies are advancing fast, automating many tasks, replacing certain jobs and creating others that rely on human-centric skills and capabilities.

Novel applications of technology are disrupting the way we work. Businesses find and employ people in new and innovative ways, such as peer-to-peer platforms. The nature of tasks is also different; we perform fewer manual jobs and instead are required to engage in more creative and social tasks. Even the physical way we work is changing. Many jobs are no longer bound to the office; people are increasingly able to perform their jobs from anywhere, including overseas.

Social, cultural and health factors are changing the demographics of Australia's workforce. Individuals are living and working longer than ever before, particularly in Western countries. Together with other demographic trends, this creates demand in human-centered industries such as health and aged care. These trends may also help foster a culture of innovation. A recent study of OECD countries found the process of population aging may lead to a better understanding and a willingness to adapt one's attitude toward innovative activity.[6]

Changes are occurring on a global scale. Geography is less of a barrier than ever before and countries' economies are increasingly interdependent and trade more goods, services and human capital.

Impact

These complex factors will not affect all industries and businesses in the same way. Based on changes already occurring we can predict to some degree how work in the future will change in response to these drivers.

Australia has begun the shift away from routine tasks, low-skill manufacturing and physical labour, and towards a more human-centred, services-based economy.[7] More recent advances are seeing machines perform not only manual tasks, but routine cognitive tasks.

Demand will increase for more stimulating and satisfying tasks that are difficult to automate, such as non-routine and interpersonal tasks.[8]

A growing proportion of jobs will require individuals who can interact with and coordinate people, plan and manage the solving of complex problems, and select and use technological tools. Success in these roles requires what are typically called "Enterprise Skills", "21st Century Skills", "Employability Skills" or "Foundational Skills" – including critical thinking, problem solving, design thinking,[9] digital skills, analytics, team working, communication, entrepreneurial skills and creativity.[10]

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[4] Committee for Economic Development of Australia, Australia's future workforce?, 2015.
[5] Hajkowicz et. Al., Tomorrow's Digitally Enabled Workforce, 2016.

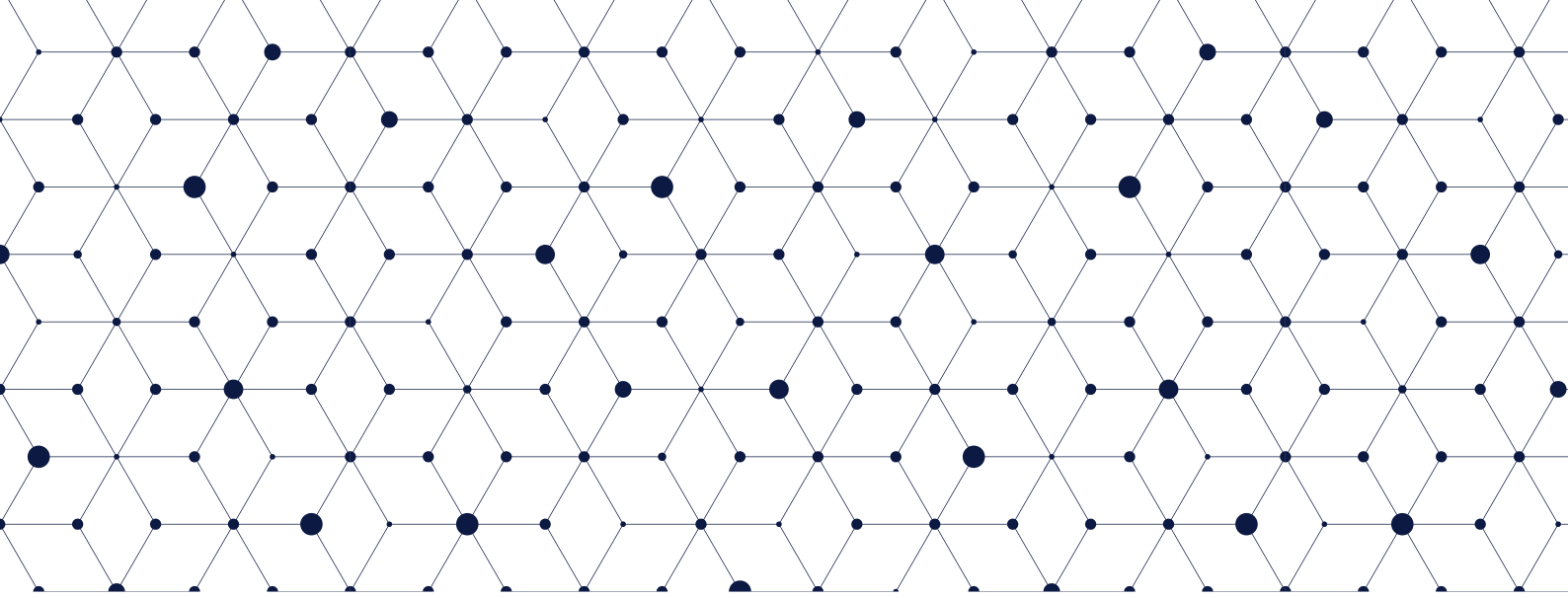[6] Harvard Business Review, 2017.

[7] Edmonds and Bradley, Mechanical boon: will automation advance Australia?, 2015.
[8] Nedelkoska and Quintini, Automation, skills use and training, 2018.
[9] Design thinking is a solutions-focussed, action-oriented methodology used to solve complex problems.
[10] UKCES, The Future of Work: Jobs and skills in 2030, 2014.

Along with these cross-cutting enterprise skills, there will be a need for specific skills and knowledge as industries evolve. These include Big Data literacy and interrogation, cyber security, behavioural analytics, and managing the ethical implications of data.[11]

The rate of change for jobs will increase and this widespread shift will see more people transitioning between careers more regularly.[12] People will need access to education throughout life, whether they reskill to transition between industries or upskill to stay up to date within a field. Taken together, these factors suggest the Australian work landscape will be increasingly dynamic and thus focus on capabilities and skills, rather than occupations.

Universities have a crucial role preparing people for these realities. Firstly, by equipping students with these crucial enterprise skills and in-demand technical skills as part of their initial post-secondary education, and secondly by helping people acquire new skills and reskill throughout life stages.

1.2 Why the ATN is uniquely placed to respond

Changes in the future of work present challenges and opportunities to all universities. The ATN is in a unique position to adapt and thrive, drive change and support people through these transitions.

The ATN has a long history in professional eduction and training. The member universities have strong industry partnerships and focus on student employability and delivering future-ready graduates in the Australian higher education sector. There are approximately 18,000 industry partnerships across the ATN. As a consortium of young and agile universities, the ATN is an industry leader in developing enterprise skills.

The ATN is a national network of industry-engaged universities that currently educates 20 per cent of Australia's university students and has a history of achieving impactful outcomes at scale. There is an ATN university in each mainland Australian state and these institutions have a strong track

record of working collaboratively. The ATN's five-university-one-door policy, including a standardised approach to intellectual property, has delivered productive industry relationships in sectors spanning the Australian economy. The ATN has a successful track record of industry collaboration and preparing graduates with skills valued by industry.

The ATN has already made significant investments around innovative course offerings and delivery models, holistic and employability-driven skills development for students, and meaningful industry partnerships. This report outlines a selection of these in the form of case studies. The coming workforce disruption presents an opportunity for ATN universities, and the wider Australian higher education sector, to build on a culture of outcome-driven innovation. Universities can help people adapt and navigate the future of work with confidence.

[11] Bakhshi et. al., The Future of Skills Employment in 2030, 2017.

[12] Committee for Economic Development of Australia, Australia's future workforce?, 2015.
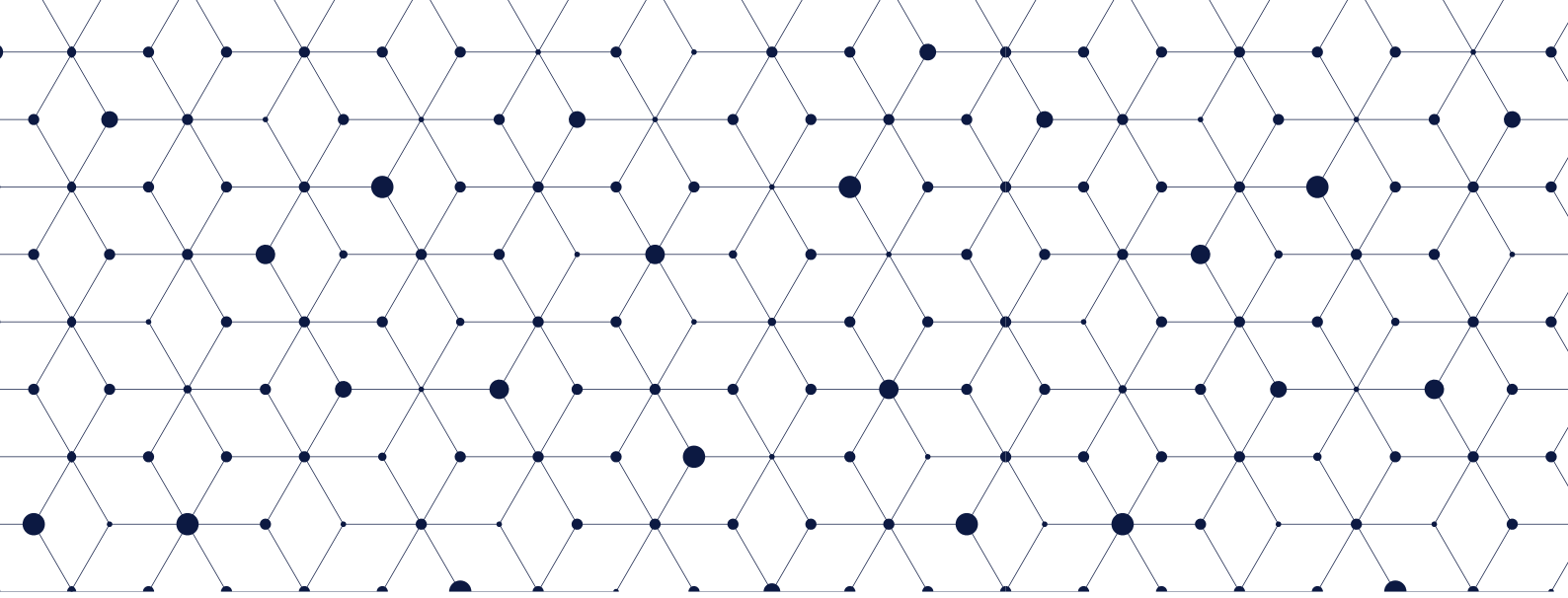
1.3 Our approach

This report is a successor to the 2015 report *Innovate and Prosper: Ensuring Australia's Future Competitiveness through University-Industry Collaboration*, and builds on its core themes of collaboration and innovation.

Findings and recommendations were sourced from interviews and information provided by key stakeholders, and complemented by international and domestic desktop research. We engaged a wide range of stakeholders to provide a balanced picture of relevant issues. Stakeholders included universities, industry and Government; from Vice-Chancellors to recent graduates, state health representatives and major international technology companies. We targeted industries likely to be affected by future changes to the labour market, particularly those key to Australia's economy, including healthcare, technology, mining and resources, education and finance. Alongside the findings are case studies demonstrating ATN or international best practice. These do not constitute an exhaustive list of initiatives in these areas, but rather illustrate the kind of activities already underway.

We developed the recommendations in part three of the report in close consultation with stakeholders. These recommendations focus on policy measures and actions that can better equip students for the employment pathways of the future. We have consciously avoided assessing the impact and potential costs and benefits of recommendations in quantitative terms – this report offers steps forward for all parties which must be carefully considered before action.

We would like to thank all of the organisations that provided input and support for this report, with particular thanks to the following:

2
FINDINGS

The future of work and changes to learning

Lifelong learning allows for Australians to keep pace with the changes and capabilities required for the future of work. The Australian tertiary education sector together with industry and Government need to be agile and responsive to effectively harness opportunities and navigate challenges in the future of work.

Teaching individuals how to think critically is a core capability of post-secondary education. Universities equip students with more than specific technical skills and knowledge; they also instil transferrable skills and techniques to tackle complex problems, and to communicate the lessons and outcomes. These skills will be increasingly important in the future workforce, which will place greater emphasis on working collaboratively and creatively in a transdisciplinary context.
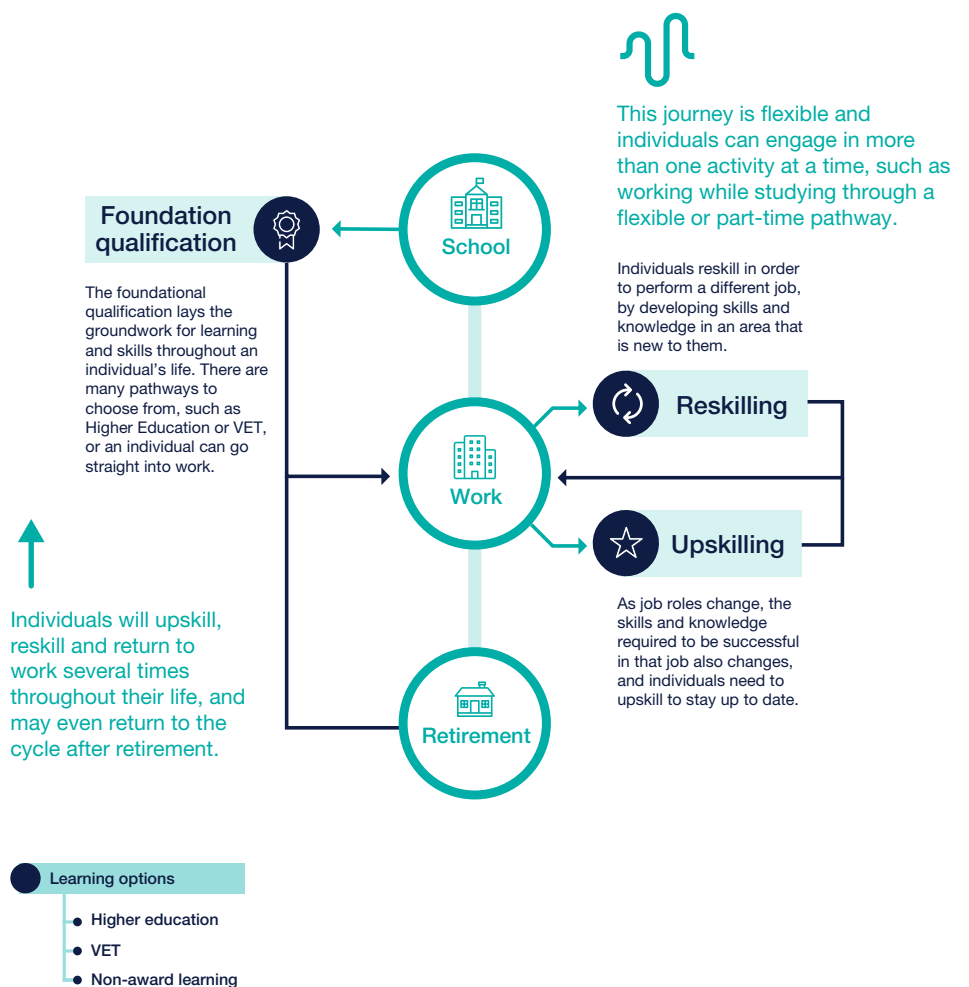
The pace of change will also drive increased workforce transitions and mobility, making learning a lifelong endeavour. Australians need to gain new skills and capabilities connecting to education offerings on an "as needs" basis.

This report focusses on a post-school lifelong journey. This journey begins with a learning experience, in the form of a foundational post-school qualification in either vocational training or higher education. Individuals then ideally transition into the labour force, but will increasingly need to return to upskill or reskill later in life. In the new paradigm of lifelong learning, individuals may repeat this cycle many times. As such, the information and pathways available to learners also form an important part of this journey, as a conduit for learners to return to education and make informed choices about the form, format, and focus of learning that will best equip them to succeed in the future.

Lifelong Learning Cycle

This journey is flexible and individuals can engage in more than one activity at a time, such as working while studying through a flexible or part-time pathway.

Individuals reskill in order to perform a different job, by developing skills and knowledge in an area that is new to them.

Foundation qualification

The foundational qualification lays the groundwork for learning and skills throughout an individual's life. There are many pathways to choose from, such as Higher Education or VET, or an individual can go straight into work.

Individuals will upskill, reskill and return to work several times throughout their life, and may even return to the cycle after retirement.

Reskilling

Upskilling

As job roles change, the skills and knowledge required to be successful in that job also changes, and individuals need to upskill to stay up to date.

School

Work

Retirement

Learning options
- Higher education
- VET
- Non-award learning

2.1 Reskilling and upskilling

The changing nature of work will require Australians to engage with post-secondary education throughout their careers, which will be referred to in this report as lifelong learning. Upskilling and reskilling are two distinct paths driven by different learner and employer needs, and both avenues need to be appropriately catered for.

Learning cycle

Upskilling and reskilling will both become more common in the future.[13] Advancing technology, automation and globalisation will drive upskilling in particular: a 2018 report commissioned by the OECD Directorate for Employment, Labour and Social Affairs found that while 14 per cent of jobs in OECD countries were at high risk of automation, a much greater 32 per cent were at risk of having a significant share of job tasks change because of automation.[14] To perform these changing tasks within jobs, individuals will need to upskill and add depth to their existing knowledge. These learners will need to stay connected to opportunities for growth and development, and advancements within their field.

Working Australians need to stay informed if they are exploring the option of returning to education to gain new skills in an entirely different area. Information about careers and education pathways that align with the interests of a potential employee, as well as current events in the relevant sector, are both critical to reskilling but also may act as a trigger for working Australians to adapt and reskill.[15] The future will increase demand for highly skilled workers,[16] meaning Australians may use full qualifications to reskill or they may seek shorter, more flexible options as an initial step. Recent ABS analysis revealed that while in 1986 the average worker required around a Certificate II or III, now the demand for high level skills has increased such that most occupations require a Bachelor degree or higher.[17]

For many individuals, this will require reskilling or upskilling in order to be competitive and employable in their new field. There will be an increased need for previous experiences, learning and qualifications to be recognised appropriately by the entire post-secondary education sector. The post-secondary education sector needs an effective way of capturing what a learner already knows when they walk in the door, as many future learners will have a unique patchwork of skills already built through qualifications and industry experience.

Alumni relationships

Another key enabler for those looking to re-engage with education is the relationship they have with their alma mater. The connections between university and alumni ideally act as an open door, allowing learners to plug back in to the lifelong learning cycle if and when they need to.

Most universities have well-established alumni programs, but there is scope for these relationships to be of even greater value for both sides. The 2017 Alumni Barometer Survey found 52 per cent of students wanted to be more involved with their university, but only 31 per cent felt informed about what is currently happening and only 16 per cent felt involved.[18]

Graduates want a more meaningful, enduring relationship with their university post-study. An alumni relationship becomes instrumental to both the university and student as individuals increasingly require upskilling or reskilling throughout life. The alumni relationship serves as a way of connecting students and industry to the latest research, events and learning opportunities.

Reskilling and upskilling requires a flexible and collaborative response from industry, Government and the post-secondary education sector. Lifelong learning can be supported with flexible pathways and offerings individually tailored to navigate the future of work.

CURTIN'S CPD SEMINARS
To support the continuing professional development needs of their graduates, Curtin's international alumni chapters organise and host seminars tailored to their alumni's preferences and learning needs. In May 2017, Curtin hosted a seminar in Hong Kong around the challenges, innovations and current major projects of the Hong Kong Metro System. Alumni had early access to this event, and at a discount. Curtin partnered with the Institute of Certified Management Accountants to deliver the event, and provided attendees with CPD credit for time spent.

The CPD seminar program highlights universities can collaborate with their alumni and professional accreditation bodies to meet students' lifelong learning needs.

QUT'S Q MOMENTUM INITIATIVE
The Q Momentum Initiative by QUT provides ongoing support to PhD students for up to three years after graduation, for research students who choose to pursue careers in either academia or industry. Through this initiative, students receive tailored support catered to their individual needs. They also receive access to information resources, invitations to academic and networking events/workshops as well as advice around commercialisation, grant writing and access to a streamlined process for nomination as a visiting fellow.

This Momentum Initiative accentuates the importance of universities' enabling role in ongoing learning opportunities and support for PhD students post-graduation.

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13 Productivity Commission, Upskilling and Retraining, 2017.

14 Nedelkoska and Quintini, Automation, skills use and training, 2018.

15 This is where individuals gain new skills in an entirely different area.

16 McKinsey Global Institute, Jobs Lost, Jobs Gained: Workforce Transitions in a Time of Automation, 2017.

17 ABS, Labour Force, 2017.

18 The Barometer of Alumni Sentiment® survey 2017. Participants in 2017 are alumni of UTS, RMIT, Flinders University, University of Southern Qld, University of the Sunshine Coast and James Cook University. n=8702. Copyright held.

> "It is no longer helpful to see stark contrasts between higher education and VET in the level and types of learning and qualifications they deliver"
>
> Parliament of the Commonwealth of Australia 2015, p.56

2.2 Flexible pathways for lifelong learners

To meet the demand for lifelong learning and allow people to access relevant educational offerings throughout their life, Australia requires a robust system of flexible pathways.

Pathways to formal qualifications

Australia has a segmented tertiary education system. However, given the flexible skills needs of the future, it is vital that students can access pathways that allow them to move freely between the two sectors and access valuable offerings from both.

Recent years have seen new pathways to tertiary qualifications open, such as the Government's Alternative Apprenticeship Delivery Pilots, a $9.2m trial of new approaches, focusing on skills development, choice and industry acceptance.

Combined pathways

While there are many VET and higher education pathways available, the interchange conduits between them are not well publicised or optimised. Currently dual sector universities are the only institutions with the funding incentives to deliver sub-Bachelor, and Bachelor-and-above courses at scale. There is untapped potential to

ATN AND INTERNATIONAL INITIATIVES:
The ATN universities support a more integrated system, by offering students pathways between sectors, or integrating work and study, as demonstrated by the example below. There is also a case study around international best practice of an integrated tertiary system.

SWISS PATHWAYS
Internationally, there are several examples of where VET and higher education are part of an integrated pathway. In Switzerland, two thirds of all students leaving compulsory education choose to undertake VET learning, and there is a variety of flexible pathways for further study or entry into professional or vocational career pathways. This is supported by a strong network of careers guidance and support, many points of transfer between VET and academic pathways, and close cooperation between vocational education providers, trade associations and employer organisations.

RMIT'S FLEXIBLE VET AND HIGHER EDUCATION PATHWAYS
RMIT University leverages its position as catering to both VET and higher education sectors, to provide flexible pathways that offer course credit, and in many cases almost full articulation. These pathways are bidirectional, in addition to established 'diploma to degree' pathways, uncompleted degrees may also be credited toward a Diploma or Advanced Diploma for students who are seeking a specialised skill. RMIT's flexible pathways thus recognise the value of skills and knowledge gained in both VET and higher education and seek to permit streamlined movement between the sectors, allowing a greater diversity of candidates.

The flexibility offered by RMIT supports the growing need for a stronger and more fluid relationship between VET and higher education, where students are able to extend and share their learnings across both sectors.

be found in pursuing opportunities for a more harmonious and cohesive post-secondary education sector, meeting the needs of learners throughout their lives.

Existing flexible employment-based pathways have scope for broader implementation in the future. However, public and industry understanding of their value is largely poor, and in some cases, there is an erroneous perception that apprenticeships and other work-based education models are only for tradespeople, and cannot lead to professional or leadership roles. Australians and the Australian economy may benefit by shifting these outdated perceptions.[19]

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[19] The Australian Industry Group, The Future of Australian Apprenticeships, 2016.

CURTIN'S MICROMASTERS

A MicroMasters is an innovative form of micro-credential, offered through the EdX platform providing graduate-level teaching in partnership with top universities. Curtin has several MicroMasters offerings, in the fields of Marketing, Human Resources and the Internet of Things. Courses are studied completely online and can either be taken for free for independent learning or completed under a verified program which can be articulated into a formal Masters degree at Curtin. Through the EdX network, Curtin has developed international partnerships with other universities including MIT, UC Berkeley and Harvard.

RMIT CREDS

Building skills and experiences for a future workforce.

In 2017, RMIT launched a pilot to create an innovative suite of micro-credentials, developed with industry partners and open to all students. This aligned with RMIT's vision to ensure all its graduates are 'ready for life and work'. The micro-credential portfolio, called *RMIT Creds*, comprises 11 key capabilities, incorporating a range of transferable, enterprise and technical skills. *RMIT Creds* range from 30 minute snippets to several hours of learning which can be stacked or clustered to create more extensive programs spanning the equivalent of five to six weeks. Alternatively, where appropriate, they embed into in a formal program of study.

An example of a micro-credential, developed in partnership with SBS (Special Broadcasting Service), is *Cross Cultural Communications*, one of five micro-credentials grouped within a *Cultural Competence stack*. RMIT is also trialing an 'embedded' model, which incorporates an *Effective Team Membership* digital credential into the course *Introduction to Professional Engineering Practice*. Endorsed by Engineers Without Borders, students who successfully complete the course, team work activities and assessment are also entitled to claim the digital badge.

RMIT has developed a set of quality and design principles for *RMIT Creds*, including high engagement, creative content, authentic assessment and evidence. Upon successful completion, students may claim a digital badge published by RMIT's partner Credly, share the badge through social platforms and have their achievement recorded onto their official transcript.

With 40 existing micro-credentials, spanning the Global Outlook, Enterprise Ready, Communication and Work Ready capability stacks, the aim for 2018 is to create a marketplace of over 90 multi-purpose industry-recognised products delivered across multiple platforms.

RMIT's micro-credentials are adding an important new dimension to the learning and teaching experience providing a trustworthy means of validating student success in work, learning and enterprise.

UDACITY NANODEGREES

Udacity is an online learning platform that offers technology-focussed 'nanodegrees' spanning topics as diverse as VR, Digital Marketing, Self-driving Cars and Robotics. Industry is at the centre of these courses, with Udacity partnering with global brands such as Google, Microsoft, Amazon and Mercedes. The program emphasises employment outcomes, providing integrated career guidance and support modules within nanodegrees, working in tandem with more than 50 hiring partners to tailor their curriculum to employer needs, and matching students to prospective jobs.

Alternate pathways: micro-credentials

Australia needs educational pathways that are flexible and modular. A recent survey conducted by the World Economic Forum, found that the top perceived demographic and socio-economic driver for change was the changing nature of work and flexible work.[20] As students are less restricted by location and more restricted by work commitments when making

decisions on education, non-accredited pathways offering flexibility around time, location and other commitments are useful supplementary offerings.

Micro-credentials are a popular example here; lowcost, short courses that are certified, but do not lead to a formal qualification. Many universities already deliver these as a pathway to formal courses and their popularity has exploded in recent years[21]. Austrade identified capturing

a share of this expanding market as a priority and this is a key pillar of its strategy for Australia to cater to 10 per cent of the global online education market.[22]

Future use of micro-credentials

Micro-credentials have the potential to respond in meeting the reskilling and upskilling needs of Australians. Micro-credentials allow for effective modularised learning to meet the

[20] World Economic Forum, The Future of Jobs, 2016.

[21] https://www.insidehighered.com/news/2017/07/26/mit-deems-half-online-half-person-masters-program-success

[22] http://www.afr.com/leadership/innovation/austrade-sets-target-of-110-million-mooc-students-for-australia-by-2025-20160429-goiksz

"Young people need to bring more than knowledge to the modern workforce. If you struggle to solve problems, collaborate or come up with new ideas, you won't fare well in today's or tomorrow's job markets"

Professor Bill Lucas
Director of the Centre for Real-World Learning

needs of lifelong learning. It is not suggested that micro-credentials will replace traditional offerings but rather will supplement them. Combining universities' expertise in rigorous learning and critical thinking with the flexibility of micro-credentials gives a pathway that is well-suited to the future needs of work.

Micro-credentials are an attractive pathway for people challenged by the time and cost commitments of more formal learning.[23] This could include workers in industries at risk of forced transition due to cost-cutting or automation. For example, NAB recently announced it will cut 6000 jobs over the next three years for these reasons, and take on a new workforce more suited to it's future needs.[24]

Time and cost also present challenges to demographic groups such as mature age workers.[25] This group often has constraints that prevent them from undertaking training, even where it would be valuable to them. Micro-credentials can provide confidence to those new to post-secondary education and make longer qualifications more accessible. A recent report found '[a] majority of mature age employed

people thought that training would help them gain a promotion or perform better in their job, or for non-employed people, to find a job'.[27] Micro-credentials are well-suited to fill this need as they are flexible and focused on specific skills needs and gaps, with comparatively small time commitments for individuals who may also have to work, study, or care for family members.

It must be recognised that there is a policy difference between the need for reskilling of unemployed and underemployed individuals, and those who are upskilling in the workforce. In many instances, there will be an argument for industry contributing to the cost of upskilling, whereas reskilling for underemployed/ unemployed individuals is a separate issue.

Notwithstanding the potential benefits to society and the economy, there is no mechanism for individuals who want to reskill or upskill via a non-traditional pathway that does not operate on a full cost-recovery basis. This presents a challenge: how can these groups who need educational support access the flexible, modular training that micro-credentials provide so that cost is not a barrier?

One issue that may inhibit Government funding support is that freestanding micro-credentials are currently unregulated. Employers and students find it difficult to verify the quality of courses and link these to outcomes. However, if micro-credentials consist of one or more existing components of recognised qualifications, this instils trust and validity of these courses. This is because they have already been through the rigorous self-accreditation processes of universities and are subject to the regulatory supervision of TEQSA and ASQA.

LEARNING FOR MORE THAN LEISURE

One of the most common misconceptions around micro-credentials is that they are lifestyle or personal interest courses. The data suggests otherwise: seven of Australia's 10 most-enrolled courses on Coursera in 2017 were programming, machine learning, cryptocurrency or data science.[26]

[23] Percapita, What's Age Got To Do With It?, 2017.

[24] http://www.afr.com/business/banking-and-finance/financial-services/nab-swings-axe-on-first-1000-jobs-20180218-h0wahj

[25] Australian Government Department of Education, Employment and Workplace relations, Barriers to Mature Age Labour Force Engagement in Australia, 2012.

[26] Coursera, A year in review: Most popular courses in 2017.

[27] Adair and Lourey, Disengagement of Mature Age People from the Labour Force, 2014.

2.3 The learning experience

The importance of a world-class post-secondary qualification will remain, despite changes to the workforce and Australian economy. The changing nature of work requires a responsive and cohesive response to the needs of lifelong learning.

Individuals may have to reskill or upskill later in life, but the foundational post-school qualification is of importance as it is the foundation for a life time of learning and work. It is crucial that universities' core qualifications provide students with skills and experiences tailored to employability and future workforce relevance in addition to the skills or competencies required to fully and successfully participate in an increasingly complex global society.

Skills for the future

Skills that are difficult to automate, but fulfil a societal need will be of increasing demand. Enterprise skills are transferrable, flexible and highly valued by employers.[28] Graduates need to be adept in enterprise skills and can signal them effectively to employers.

The future will also heighten demand for certain technical skills. As workplaces become more digitally integrated, employers will require graduates who can navigate and analyse data, and use technological tools to complement automated processes. Other important skills include cyber security, digital media and sales, and skills that rigorously address human behaviour and wellbeing, such as behavioural analytics.[29]

> Enterprise skills can include critical thinking, problem solving, design thinking, digital skills, analytics, team working, communication, entrepreneurial skills and creativity.[30]

Universities have already recognised the importance of enterprise skills and embedded them in existing curricula. It is vitally important that post-secondary education providers

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ATN INITIATIVES:

The ATN universities have been integrating future-focussed enterprise skills into degree offerings for some time. As long ago as 2001 QUT established the first Creative Industries Faculty, focusing on developing students' adaptable, multidisciplinary capabilities. Some universities have combined these future-skills with innovative offerings, such as Curtin's MicroMasters in the Internet of Things. The case studies below showcase how the ATN universities have embedded enterprise into offerings at both undergraduate and postgraduate levels.

UTS' BACHELOR OF CREATIVE INTELLIGENCE AND INNOVATION (BCII)

The BCII is a four-year transdisciplinary degree placing future need for innovative thinking and cross-disciplinary expertise at the forefront. Through its future-facing and world first structure, the BCII delivery model includes intensive hackathons, think tanks and hot housing days to encourage high-level critical and creative thinking. Courses are agile and industry focused, with material reviewed and refreshed by perspectives from diverse fields after every delivery. It is through these leading-edge capabilities that the degree has become UTS' most popular undergraduate program, with 3500 students applying for the 200 places.

The BCII represents how universities can take the lead in developing capabilities for the globalised workplace.

ATN E-GRAD SCHOOL

The ATN e-Grad School is a virtual graduate school that helps graduate students develop transferrable, professional and entrepreneurial skills across areas including critical and creative thinking, global sustainability, project management, research commercialisation and leadership and communication. There is a range of five-week online modules available at no charge to ATN students. Research students at other Australian or NZ universities can also access these modules for a fee. 10,000 students have completed courses to date, with completion rates of over 80 per cent, and demand for modules increasing to the point that several have waitlists.

The ATN e-Grad school demonstrates how universities can successfully incorporate enterprise skills across a broad subject base, and into higher degree research (HDR)studies.

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continue to embed these skills in their curricula. Further, there need to be adequate opportunities for students to put their learning into real world practice – to understand how the combination of the technical and the generic come together in the workplace. By providing opportunities for students to reflect and practice their skills throughout their studies, graduates will be able to demonstrate their competencies to industry.

> AHEAD OF THE PACK
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> Australian universities already offer students an overwhelmingly positive learning experience. The 2017 Barometer of Alumni Sentiment found that the vast majority – 83% – of students believed that studying at University had made a positive contribution to their life.[31]

Competency based teaching and assessment

Competency-based teaching and assessment (CBTA) comprises practical demonstration of competency in real-world tasks – rather than recitation of knowledge. The demonstration aspect of CBTA is crucial. In a competitive labour market, employers are demanding graduates who can easily demonstrate their value and job-readiness.[32] CBTA lets students 'point to' job-relevant tasks and skills where they have clearly shown competency. Coupled with flexible pathways, CBTA will further allow graduates the opportunity to demonstrate capability when seeking employment.

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[28] Remedios, The role of soft skills in employability, 2012; Finch, Nadeau and Riley, The Future of Marketing Education, 2013.

[29] World Economic Forum, The Future of Jobs, 2016.

[30] OECD, Skills for a Digital World, 2016.

[31] The Barometer of Alumni Sentiment® survey 2017. Participants in 2017 are alumni of UTS, RMIT, Flinders University, University of Southern Qld, University of the Sunshine Coast and James Cook University. n=8702. Copyright held.

[32] Norton, Universities and the evolving graduate labour market, 2017.

The way in which universities demonstrate theoretical and practical outcomes is very different to vocational competency based assessment. However, universities have a very clear understanding of the demonstration of skills required, particularly relating to professional education and accreditation.

The Department of Education and Training's 2017 Employer Satisfaction Survey found 93 per cent of employers are satisfied with graduates' technical abilities, but are less satisfied with their employability and collaboration skills.[33]

It also found that 83 per cent of employers were satisfied with graduate outcomes, and employers rated students with applied skills and competencies highly.[34]

Another strength of CBTA is that it allows for flexible learning at an individual's own pace. As it is outcomes-based, individuals may achieve a competency very quickly if they have prior knowledge or experience, or alternatively take longer if they find it difficult. This potential for efficiency will be increasingly important in the context of lifelong learning – individuals who are reskilling or upskilling often have prior knowledge and learning.

Industry collaboration

Increasingly, Australian universities are interweaving industry and the world of work into education. These collaborations take many forms:

- Work integrated learning (WIL);
- Research partnerships;
- Course co-design and co-assessment;
- Continuing professional development
- General engagement; and
- Cross-pollination of ideas, agendas and objectives.

The benefits to students in terms of employability and skills are well-documented.[35] In an increasingly globalised economy these strong, collaborative, innovative partnerships between businesses and universities are vital.[36]

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[33] Quality Indicators for Learning and Teaching, Employer Satisfaction Survey National Report, 2018.

[34] ibid.

[35] Smith et. al., The impact of work integrated learning on student work readiness, 2014.

[36] SBIB, Making Industry-University Partnerships Work, 2012.

ATN AND INTERNATIONAL INITIATIVES:
CBTA is not a new practice at universities. The Curtin Health Sciences School has integrated competency-based learning through guided simulation and clinical skills, including specialised simulation laboratories, consult rooms, and patient care settings. The two case studies below demonstrate how universities are using CBTA as part of their curriculum, including an example of international best practice.

WESTERN GOVERNORS UNIVERSITY (WGU), UTAH, USA
With a 'competency-based' learning approach the WGU was one of the first and most striking successes of CBTA in a higher education environment. WGU identifies competencies through consultation and collaboration with councils, including representatives from employers and other universities. Industry is also involved to validate that the competencies and assessment methods meet market demands and student needs in an iterative cycle. This combination of expertise from industry and academia ensures all programs are contextually relevant. The university hopes to develop highly competent professionals rather than focussing on seat time or credit hours. Employer surveys had impressive results, 99 per cent of surveyed employers reported that WGU graduates met or exceeded expectations, and 100 per cent reported that WGU graduates were prepared for their jobs.

UNISA'S IRESS TRAINING ROOM
The IRESS Training Room is South Australia's first simulated stock exchange trading floor providing students with first-hand experience and a competency base around how complex financial derivatives operate, as well as how to engage with the industry. IRESS, a leader in financial services software systems, sponsors the room as part of a partnership with the University of South Australia. The Trading Room uses live global market data to build students' competency in training, hence building practical skills outside of course work.

Building strong collaborative partnerships
Australian universities have already made significant progress building this collaborative environment and integrating the fruits of industry partnership into the learning experience. Strategies from peak bodies, for example the 2015 National Strategy on Work Integrated Learning, and individual institutions such as QUT's Real World Learning 2020 Vision, have set bold targets for WIL participation, and best practice on how this can be achieved.

ATN INDUSTRY DOCTORAL TRAINING CENTRE
The ATN's Industry Doctoral Training Centre (IDTC) partners PhD and Masters students with industry, to work on a real world problem, while also undertaking tailored coursework units in research methods, technical skills, and professional skills. In 2017, this program expanded to include Masters students, as well as students from a variety of disciplines including finance, health analytics and information technology. A wide variety of different businesses have engaged as industry partners to date, including SMEs, not-for-profits, as well as large employers such as the ABS and CSIRO.

UNISA CENTRE FOR BUSINESS GROWTH
The Centre for Business Growth is a provider of tools, resources and business growth programs that teach executives the skills required to accelerate their company growth and compete internationally. The Centre caters to for all stages of the business lifecycle; incubating start-ups and helping established businesses grow. A fully Government subsidised one-day workshop is available to provide tailored and specialised advice to small businesses. With an average of 93 per cent increase in revenue achieved from businesses participating in the program, the project has thus far been highly successful.

The Centre for Business Growth constitutes cooperation between Government, universities and small to medium enterprises and demonstrates how through the cultivation of industry relevant skills, universities can help SMEs to prosper and grow.

The appetite for collaborative relationships has resulted in a vast number of partnerships and varied formats of engagement. These have developed rapidly, and often a single employer will have several partnerships underway with different parts of the university. However, this needs to increase in scale.

For Australia to become a global leader in innovation and collaboration and reap the resulting benefits, it needs to maintain its momentum in removing barriers – real and perceived – that prevent employers from engaging with universities.[37] Barriers include employers' capacities to supervise students and identify suitable projects, perceived 'red-tape', and industry's lack of awareness of the benefits.[38] Many of these factors can compound for small and medium enterprises (SMEs) that are less able to scale costs such as administration and supervision to drive visible returns. Furthermore, several employers consulted for this report noted difficulties identifying appropriate points of contact, and 'entry points' to collaborate.

The Fair Work Act governs WIL. Regulation restricts the nature of the work that students can undertake on certain placements, depending on whether a placement is paid or part of a credited course.

One survey of 89 members from the Australian Collaborative Education Network (ACEN) from across 29 institutions found 64 per cent of staff were aware of unpaid placements encouraged or facilitated by their institution. In most these cases students performed work of direct and immediate benefit to the employer.[39] This situation would leave the employer in breach of the Act, suggesting unintentional breaches in university-endorsed placements may be common.

International students

Universities are proactively addressing the unique challenges facing international students for WIL. There are a range of factors outside of a university's control which impact these students. Most seriously, employers are confused around visa status, and view placing international students as a lengthy and complicated process.

Other industry perceptions include but are not limited to:

- International students are less employable as they may go back to their country of origin;
- International students have poor English language skills; and
- International students will not have a good 'workplace fit'.

Regulation also makes it difficult for international students to access WIL. The student visa is restricted to less than 40 hours paid work per fortnight – significantly less than a full-time workload – which can limit their ability to find employers willing to pay for full-time internships.[40]

Higher degree research (HDR) students also suffer disadvantages when it comes to opportunities for industry engagement. They face barriers including funding constraints and non-commercial timeframes for longer research projects. Universities and other bodies are overcoming these barriers through targeted initiatives, such as the Industry Doctoral Training Centre (IDTC) discussed above, the WA iPrep program,[41] and the AMSI APR internship.[42]

Universities, Government and industry need to support these initiatives, as well as expanding and replicating their successes elsewhere.

However, industry perceptions are a significant limitation that needs addressing in order for Australia to capitalise on the valuable resource these students represent.

2.4 Information

Information underpins every step of an individual's learning journey. As the nature of work changes, students need to forecast and make decisions about their educational and employment needs and options, taking into account their likely value into the future. This requires information about employment and career pathways, skills and jobs trends over the next decade and beyond, and how to find support on these various pathways.

Access to this information is critical. Individuals need to be able to explore their educational options at every stage of life. This is true for potential students as well as employers and wider industry.

Yet as skills, jobs and even entire industries change more quickly, staying informed is both increasingly important and more difficult. We need better tools, information resources and means of sharing these updates.

The Government has created a number of online platforms around skills, and careers information, including My Future, My Skills, Job Outlook and the Quality Indicators for Learning and Teaching (QILT). There have been studies linking increased availability of relevant information with greater uptake of courses with better expected labour market outcomes, including for disadvantaged workers.[43]

[37] Dawson, The Value of Collaboration, 2017.

[38] PhillipsKPA, Engaging Employers in Work Integrated Learning, 2014.

[39] Stewart and Owens, The Nature, Prevalence and Regulation of Unpaid Work Experience, Internships and Trial Periods in Australia, 2013.

[40] International Education Association of Australia, Employment, Work Placements & Work Integrated Learning of International Students in Australia, 2014.

[41] The WA iPrep program is another best practice example balancing ease of access with quality industry experience; it involves interdisciplinary teams of PhD students working on an industry project during their thesis examination period, so as to avoid funding or other time constraints.

[42] The APR intern program places PhD students in 4-5 month long internships across all disciplines. Aiming to place 1400 students by 2020, the program industry partners specialised academic expertise at a subsidised cost.

[43] Polidano, Van de Ven and Voitchovsky, The Power of Self-Interest: Effects of Education and Training Entitlements in Later-Life, 2017.

Current gaps in information

More information about higher education options and outcomes is available than ever before, yet given the significant value that this information provides, Australia needs to continue to develop and improve these offerings. While information exists around graduate outcomes and student satisfaction with qualifications, there are few metrics targeted around other educational aspects such as industry engagement and longer term educational outcomes. A longitudinal data set, that is disseminated widely and rigorously analysed, will deliver educational outcomes with more clarity.

While there is an abundance of information available, most resources target high-school students, or school-leavers. This means older learners have limited access to relevant, up-to-date information. PwC's 2017 report for the Department of Education and Training found 'non-youth audiences can encounter difficulties accessing or understanding information'.[44] Compounding the problem, much of the information is only available in fragments. While the relevant data exists, it is diffused across a variety of databases and platforms, which makes it difficult for individuals to access, particularly those less digitally adept.

Another factor is that as the number of studies, surveys, and other data points grows, the information requires greater analysis to form a cohesive picture. There will be valuable insights gained from examining the holistic data gained throughout Australians different stages of life and work.

ATN INITIATIVES:

The ATN Universities have several programs aimed at providing students – past, present and potential – with up-to-date information and support. The case study below shows how information about the university experience is particularly valuable for students from under-represented communities.

UTS U@UNI SCHOOLS OUTREACH PROGRAM

This program is a key part of the UTS Widening Participation Strategy, a whole-of-university approach to increase the number of students from under-represented communities who successfully complete university study. By helping these students engage with university life and experiences, it helps them make informed decisions about tertiary study, and supports academic attainment.

Activities include the U@Uni Summer School program where Year 11 students participate in two week intensive workshops in areas such as media production, business, engineering and IT. Such programs have contributed to UTS increasing its number of commencing domestic undergraduate students with a low socio-economic status background by 40 per cent over the 2011-2015 period, and nearly doubling commencements of Indigenous students from 85 in 2011 to 145 in 2015.

NATIONAL DATA

Over recent years, Australia has taken steps to ensure current and potential students can easily find relevant and transparent information. For example, the Government's Job Outlook website provides information about careers and expected changes over the next five years. In terms of educational information, the Quality Indicators for Learning and Teaching (QILT) website gives information about specific institutions, and national snapshots of student, graduate and employer satisfaction. However, there are limitations around this data, including the fact that it is a relatively new initiative and there are only three years' data available.

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[44] PwC, Careers and Skills Pathways, 2017.

3

RECOMMENDATIONS

1

Support Australians' lifelong learning needs

It is evident that Australians will increasingly need to access education throughout their lifetime to either upskill or reskill, building upon their foundational post-secondary school qualification. It is recommended that Government, universities and industry support lifelong learning by providing resources, information and pathways which enable access to new skills and education opportunities at any stage in life.

1.1 Ensure Australia's national policy and funding arrangements support lifelong learning

Responsibility:

• **Government**

We recommend that Australia's national policy should account for how it will affect learners who return to education for reskilling or upskilling in response to workplace changes.

In the future, workforce transitions will be more frequent. Current initiatives will no longer be sufficient to support reskilling due to structural changes in the economy and forced workforce transition. We recommend that Government incorporate lifelong learning mechanisms into public policy. Policies should allow for multiple qualifications and any cap (unless renewable) would be counter to this objective.

Australia's national policy should ensure flexible, modular learning formats to meet the needs of the lifelong learner. We recommend that Government ensure funding and policy support to effectively manage these major workforce transitions with flexible forms of learning. A solution that could be delivered by universities, is micro-credentials. Micro-credentials are a targeted form of learning that is both cost-effective and time-efficient.[45] This will be further covered in Recommendation 3.

Singapore's SkillsFuture Initiative allows for all citizens over the age of 25 to receive SGD $500 towards lifelong learning in the form of approved courses. This model could be targeted towards at-risk industries or demographic groups, for example offering them a greater amount to invest in learning, or a corollary service that helps individuals decide how to reskill by suggesting qualifications or offerings relevant to their existing skills and circumstances. We recommend that Government consider potential initiatives similar to that of Singapore's SkillsFuture Initiative which would offer individuals one-off payments toward lifelong learning courses.

We also recommend that Government provide technological support for lifelong learners such as the implementation of managed virtual learner accounts, utilising blockchain distribution authentication. These accounts would follow individuals throughout their learning lifecycle and accommodate formal and informal learning, and accredited and non-accredited courses of study.

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45 DeakinCo, Demystifying Credentials: Growing capabilities for the future, 2016.

The account would enable an individual to share with current and potential employers whichever educational attainments they choose, with a Government guarantee of authenticity. These learner accounts would be an effective platform for an individual's lifelong educational record.

The role of industry in promoting lifelong learning must be acknowledged and efforts made to ensure employees are able to access the training they need.

We recommend that Government introduce a universal Unique Student Identifier (USI) to track students across all aspects of the education sector. This will enable delivery of the virtual learner account.

1.2 Invigorate the alumni relationship to build up meaningful, lifelong connections between universities and alumni

Responsibility:

• Universities

Universities play a vital role in supporting individuals' access to lifelong learning. While Government can ensure funding and policy support, universities should build upon the engagement they have with their alumni and provide a connection for individuals who have already undertaken learning, but need to upskill or reskill later in life.

We recommend that Government introduce a universal Unique Student Identifier (USI), broadening its application from VET to also include higher education, to track students across all aspects of the education sector. Many institutions have made significant investments to improve their alumni engagement, and continue to investigate how best to engage alumni and forge a lifelong relationship.

The 2017 Alumni Barometer Survey found 31 per cent of alumni feel that there is value in being an alumnus of their university.[46] There is an opportunity for universities to continue to work with their alumni to build deeper relationships and lifelong value.

The alumni relationship with universities brings significant value to both parties. Given that many alumni are active in industry, forging a meaningful relationship is valuable not only in the context of lifelong learning, but also promoting industry-university collaboration.

The specific content and value proposition of these relationships will depend on the needs and offerings of specific universities and alumni. This already includes a wide spectrum of activities including universities engaging with their alumni in a dialogue around the specific information and offerings alumni value professionally and personally. It may also be useful to ascertain what alumni believe they can offer the university, whether this be mentorship of students, industry connections, or other innovative contributions.

[46] The Barometer of Alumni Sentiment® survey 2017. Participants in 2017 are alumni of UTS, RMIT, Flinders University, University of Southern Qld, University of the Sunshine Coast and James Cook University. n=8702. Copyright held.

2

Equip learners with enterprise skills and competencies

2.1 Ensure all students across all degrees and disciplines have the opportunity to acquire enterprise skills.

Responsibility:

• **Universities**

Enterprise skills such as communication, critical thinking, and interpersonal skills will be highly valuable in the future workforce. As discussed earlier in this report, the accelerating rate of change is creating demand for these transferrable skills, particularly those resilient to automation.

Employers already prize these enterprise skills, so to meet the predicted increase in demand it is recommended that universities embed these transferrable, interdisciplinary skills across degrees and disciplines.

Some universities, including the ATN, are incorporating enterprise skills as part of their professional accreditation requirements. Although it should be noted that the adoption of these skills are broadly not consistent across the wider Australian higher education landscape, previous biases around 'soft skills' hindered universities' delivery of these skills across every faculty and discipline.

However, the landscape is changing. Innovative transdisciplinary degrees that teach these skills at an advanced level exist, and have been largely successful.[47]

Employer demand for enterprise skills is also increasing their value and improving how the wider community regards them. Australian universities should embed these skills at an advanced level across disciplines and degrees.

Altering courses on a wide scale will require investment from providers in terms of development and training for staff.

Universities teach enterprise skills at an advanced level. However, these skills are often delivered within the context of each university's respective business faculties. Elsewhere in curricula, enterprise skills support the pursuit of domain-specific knowledge. To meet future employment needs, enterprise skills should feature prominently in existing pedagogy and assessment.

A recent OECD report addressed pedagogical difficulties that surround enterprise skills, and supports this conclusion. It found that students require 'specific cognitive guidance' for deep learning and cross-disciplinary enterprise skills.[48] As such, it is crucial that Australian universities teach these skills with a breadth and depth appropriate to their value in the workplaces of the future.

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[47] Several of these are discussed in the findings section of this report, including UTS' Bachelor of Creative Intelligence and Innovation.

[48] OECD, Pedagogical Knowledge and the Changing Nature of the Teaching Profession, 2017, 240.

2.2 Integrate competency based teaching and assessment into qualifications to meet employer needs

Responsibility:
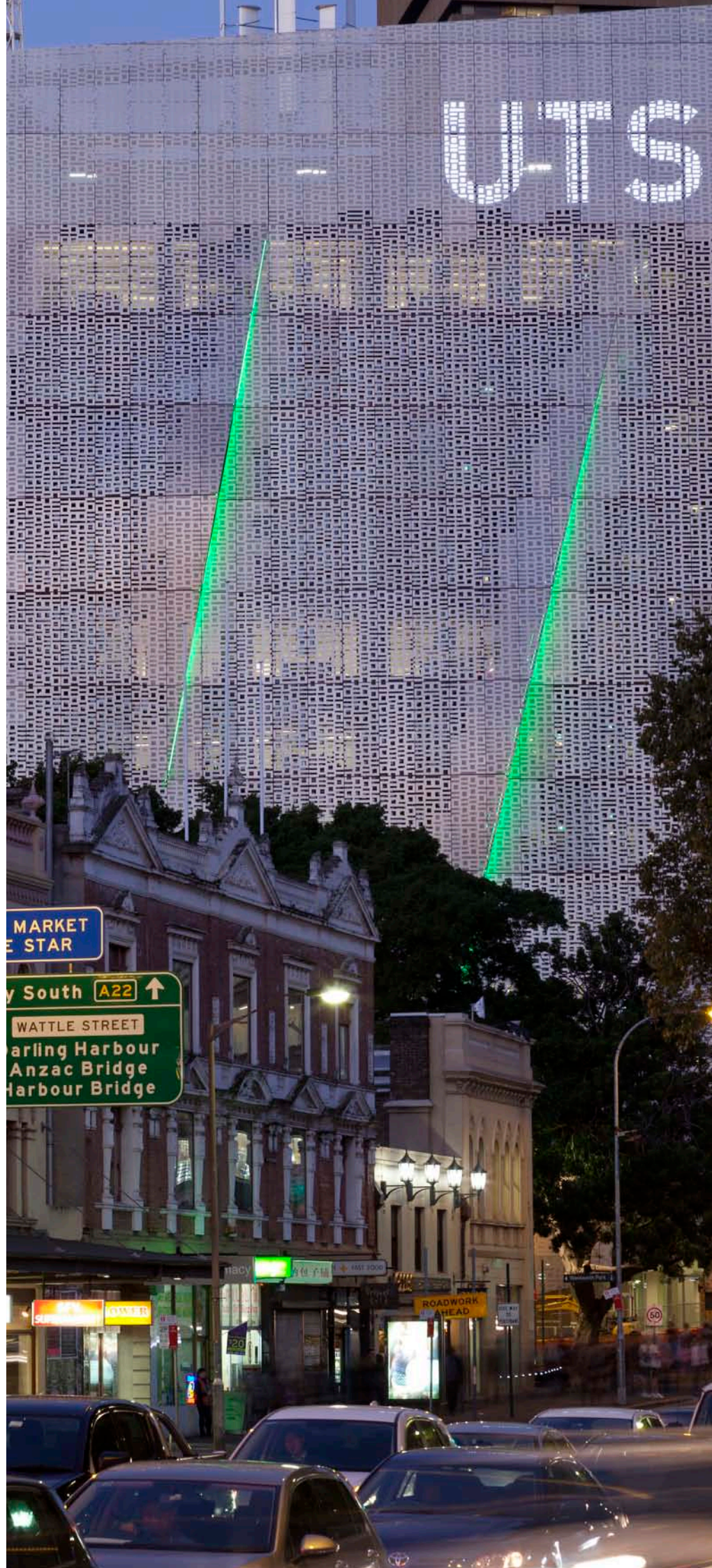- **Universities**
- **Industry**

We recommend that universities build upon their efforts to integrate elements of competency based teaching and assessment (CBTA) across their degrees and offerings. CBTA already occurs in universities, although not always in an overt fashion, and in a slightly different manner to vocational CBTA.

Under a 'mastery evidenced through competency' model, students would show their mastery of a subject by demonstrating their ability to perform specific competencies. In this context, degrees could have selected components of CBTA in addition to normal assessment. Universities already have experience with delivery via a competency-based model.

As with any other course development activity, integrating elements of CBTA would require investment by universities. This could be minimised by using existing examples of CBTA in higher education as a blueprint. This approach also avoids issues – perceived and real – around CBTA being more appropriate to the VET context, as it would build on established, successful higher education practices.

Nonetheless, in order to successfully broaden the application of CBTA into non-traditional disciplines and areas, universities will need to investigate where a competency-based approach is appropriate, such that it complements the learning rather than detracting from it. Industry needs to contribute here; CBTA is topical partly because of increased employer-demand for demonstrated, practical and applied skills.[49] Industry must collaborate with universities to identify what competencies and forms of assessment are valuable indicators of employability.

[49] Quality Indicators for Learning and Teaching, Employer Satisfaction Survey National Report, 2018.

3

Facilitate flexible pathways to meet the needs of future learners

3.1 Further develop flexible pathways that integrate employment and education

Responsibility:
- **Government**
- **Industry**
- **Universities**

Australia's future workforce needs and a greater need for reskilling and upskilling requires formal qualifications to be flexible in the future.

We recommend that Government provide information around existing flexible pathway options. As discussed in the findings section, the public has limited understanding of the new and flexible pathways to reskill and upskill as needed.

Universities have also been delivering flexible degrees and cadetships for some time, and they should use this expertise to help develop and deliver on a traineeship or apprenticeship model. This opportunity is particularly suited to universities that have already invested in strong industry ties. Practically, universities with partnerships already in place will be able to build on common ground and more easily identify courses and areas of work that would be suited to this model.

For these pathways to provide more value to students than simply studying and working concurrently, industry, universities and Government will have to collaborate closely to align content, format and governance, and curate offerings to meet workforce and student needs.

Government should consider how to best support these pathways through funding, so that individuals are not discouraged from pursuing them

based on funding or loan availability. Government would also need to carefully consider the governance for such pathways, in consultation with industry bodies and universities.

It should be noted that both VET and higher education courses are valuable standalone offerings which can supplement and complement each other.

It is recommended that Government provide information around existing flexible pathway options. As discussed in the findings section, the public has limited understanding of the new and flexible pathways to reskill and upskill as needed.

3.2 Enhance Australia's micro-credential offerings through content development and support from universities, industry and Government

Responsibility:
- **Universities**
- **Government**
- **Industry**

The focus on lifelong learning calls for additional flexible offerings to meet the needs of the future workforce – either to reskill or to upskill. Australia has a growing need for flexible, stackable, low-cost education. It is critical that Government, industry and universities collaborate in order to deliver solutions which allow Australians to navigate the future of work.

Government should provide funding support for these flexible offerings, particularly in relation to groups or demographics that may be at risk

of workforce transition. Universities and industry also have a role to play in developing and delivering flexible pathways for students.

Flexible learning options will progressively become more common with the onset of technological disruption in the workplace. Through expanding and developing flexible offerings, universities could drive innovative learning outcomes which would provide Australia with a competitive advantage on the international stage.

Micro-credentials are well-suited to whole-of-life study and to meet the changing demands of the Australian worker. Under this model, individuals can acquire the specific skills they need while also working or studying with minimum disruption. Micro-credentials should also be stackable, meaning individual modules can combine into broader credentials, or even integrate into a formal qualification, without upfront obligations beyond the individual module. Subjects of existing courses could be marketed individually as micro-credentials which would enable full stacking to full qualifications.

While some universities have invested in this space, it is imperative that Australian universities continue to develop and invest in these offerings in order to gain a 'first mover' advantage in the global market. The design and creation of micro-credentials by universities would benefit from industry support and involvement. Employer perspectives have the potential to vastly increase the utility of micro-credentials, helping ensure content is tailored to develop the skills and capabilities that employers need. This also adds signalling value to the micro-credential, by providing industry validation.

4

Continue to promote industry-university collaboration by streamlining and removing barriers

4.1 Ensure legislative framework allows for a broader range of learning placements

Responsibility:
• Government

WIL is one of the more prominent forms of industry-university colaboration. In recent years, universities have prioritised WIL, and its positive impact on employability outcomes is well documented.[50]

However, there are several instances where the *Fair Work Act* limits WIL opportunities available to students, where it cannot be classed as a professional placement or a volunteer activity. This occurs where the placement is unpaid and not embedded within a university course. Currently, placements such as these are illegal if the student is undertaking work that would otherwise be performed by an employee.[51] However, much of the value from WIL is the student experience of performing work tasks, and not merely observing.

Several prominent bodies have made submissions to Government on this issue, including the ACEN. In line with these submissions, we recommend that Government, in consultation with employer bodies and trade unions, investigates how to amend the *Fair Work Act* to provide for these situations.

4.2 Introduce tax incentives to encourage businesses to engage with universities

Responsibility:
• Government

It is recommended that Government consider implementing tax incentives to encourage businesses to engage with universities. Adopting the recommendations outlined in the Ferris, Finkel and Frasier review of R&D tax incentives, would deliver a fiscal incentive for industry to collaborate with universities.[52]

The review recommended the introduction of a collaboration premium for businesses to partner with publicly-funded research organisations, including the cost of hiring PhD graduates, which would have an immediate impact. If adopted, this recommendation would allow for stronger pathways between PhD graduates and industry, while also fostering a greater culture of innovation among Australian businesses.

4.3 Remove barriers and promote broader student participation in Work Integrated Learning (WIL)

Responsibility:
• Government
• Industry

Work placements have been shown to improve both graduate employability outcomes and graduate and employer satisfaction. It is important that the opportunity to undertake WIL is presented to

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[50] Smith et. al., The impact of work integrated learning on student work readiness, 2014.

[51] Stewart and Owens, The Nature, Prevalence and Regulation of Unpaid Work Experience, Internships and Trial Periods in Australia, 2013.

[52] Ferris, Finkel and Fraser, Review of the R&D Tax Incentive, 2016.

students throughout the course of their studies. Industry based experience allows for students to harness and demonstrate real life skills in conjunction with their post-secondary education. WIL plays a critical role in delivering a work-ready pipeline of graduates.

International students are at a disadvantage when it comes to WIL. There are two major obstacles, regulatory and perceptual, that Government and industry can overcome through collaborative action. Firstly, Government should review legislative restrictions around students' hours of work. Under current regulations student visa holders can only perform a maximum 40 hours paid work per fortnight. This is significantly less than a full-time workload and can exclude international students from undertaking WIL with employers full-time, where the placement is not for credit.

Alternatively, similar to the situation surrounding unpaid WIL placements for domestic students discussed in Recommendation 4.1, students may unwittingly breach their visa restrictions while completing such a placement, leaving themselves vulnerable to legal sanction. We recommend Government works with employer groups towards removing this restriction, by creating a special dispensation for student visa holders to work more than 40 hours per fortnight if they are participating in university-sanctioned WIL.

This would translate to better potential university-industry partnerships, a stronger educational experience for international students and strengthen Australia's reputation as a quality provider of education on a global level.

We also recommend Government work together with industry in order to combat the many employer misconceptions and biases that surround international students. Many employers wrongly believe WIL for international students involves complex or lengthy administration, or that international students have limited employability due to poor English skills, or poor workplace fit.

It is recommended that Government collaborate with industry to explore the challenges of international student placements. Government should engage with different industry sectors to find the formats of information that are most effective at conveying the value of international students. These communications should be targeted and simple, outlining regulation and restrictions surrounding international students, and the positive statistics around employer satisfaction with these students.
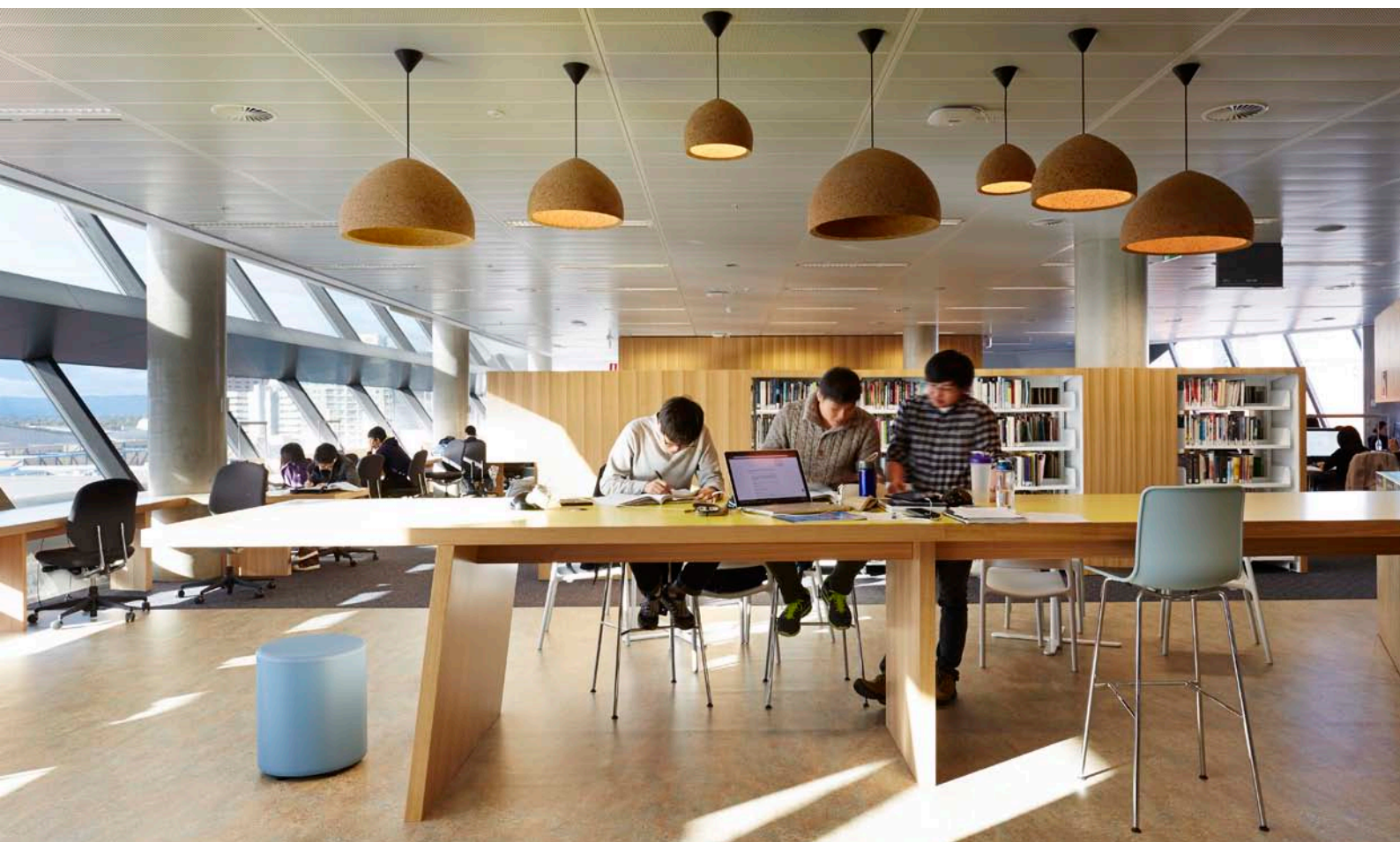
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Ensure all Australians have access to meaningful, relevant education information and data

5.1 Deliver targeted communications for industry groups including small and medium enterprises (SMEs) to demonstrate the value of collaborating with universities

Responsibility:
- **Government**
- **Industry**
- **Universities**

It is recommended that Government, industry and universities collaborate to develop and disseminate information campaigns targeted towards specific groups including SMEs.

SMEs employ the majority of Australia's labour force, so it is crucial that universities continue to engage with this important sub-sector of industry.[53] SMEs have distinct needs and this can present an opportunity for universities to provide valuable forms of support. SMEs should be able to tap into universities' infrastructure and base of deep expertise across a number of different fields on an as-needs basis.

It is recommended that there is a national approach to engage with universities and SMEs to ensure effective communication. By drawing on existing partnerships to provide case studies and examples of added value, Government can develop communications that will encourage and facilitate these important partnerships.

It is recommended that Government prepare communications to share with industry around the value of HDR students. These students often have valuable, future-focused skills including large-scale data analysis, research and entrepreneurship that could have a transformational impact on industry. Many employers hold the incorrect assumption that HDR students are more suited to academia than industry. It is recommended that Government collaborate with universities and industry to develop communications that are targeted and effective at dispelling these assumptions. By clarifying the value and skills of this group, with a particular focus on their advanced enterprise skills and data literacy, both students and industry will benefit.

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[53] RBA, Small Business: An Economic Overview, 2012.

5.2 Combine existing data sources to provide a comprehensive, longitudinal education dataset and improve existing information platforms

Responsibility:

• **Government**

Data sharing has become increasingly important for institutions and lifelong learners in the digital age. We recommend that Government continue to invest and develop platforms to share information about the tertiary sector.

In particular, we recommend that Government adapt the information in the Quality Indicators for Learning and Teaching (QILT) website to provide information on metrics. It should provide information on metrics that are becoming increasingly important for institutions and lifelong learners.

We recommend that Government combine existing data sources to form a comprehensive, longitudinal data set. As the future of work brings increasing dynamism, it will be important that Australia is equipped with robust data to form the basis of predictions and help ensure evidence-based policy.

The UK longitudinal educational outcomes (LEO) model may be a suitable template. The LEO model combines data from varied sources including the Department of Education, learner data held by institutions, employment data and data from the benefits database.

When examined longitudinally, Australia's combined datasets would provide valuable information around the most efficient and effective ways to increase employability. In time, this will inform policy around funding and help Government evaluate the success of initiatives.
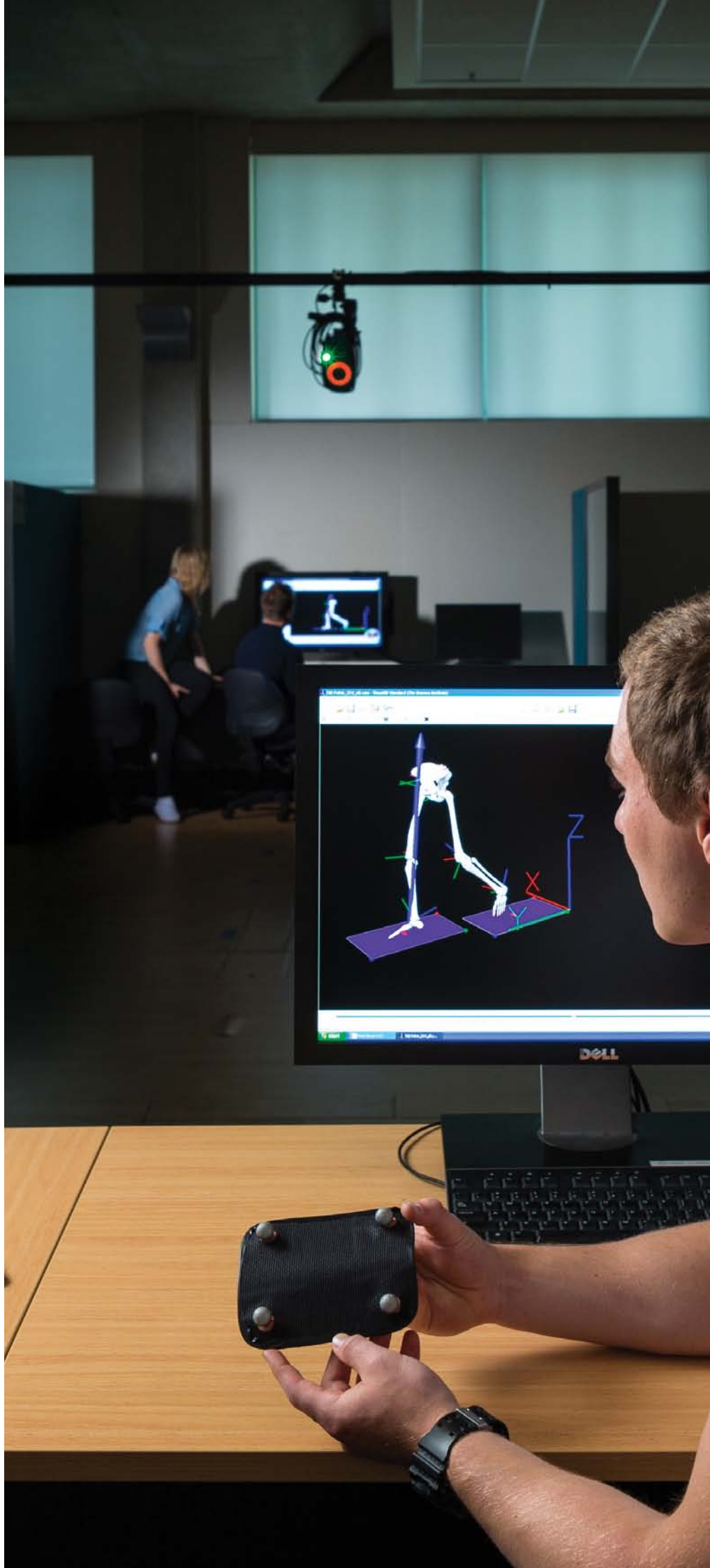
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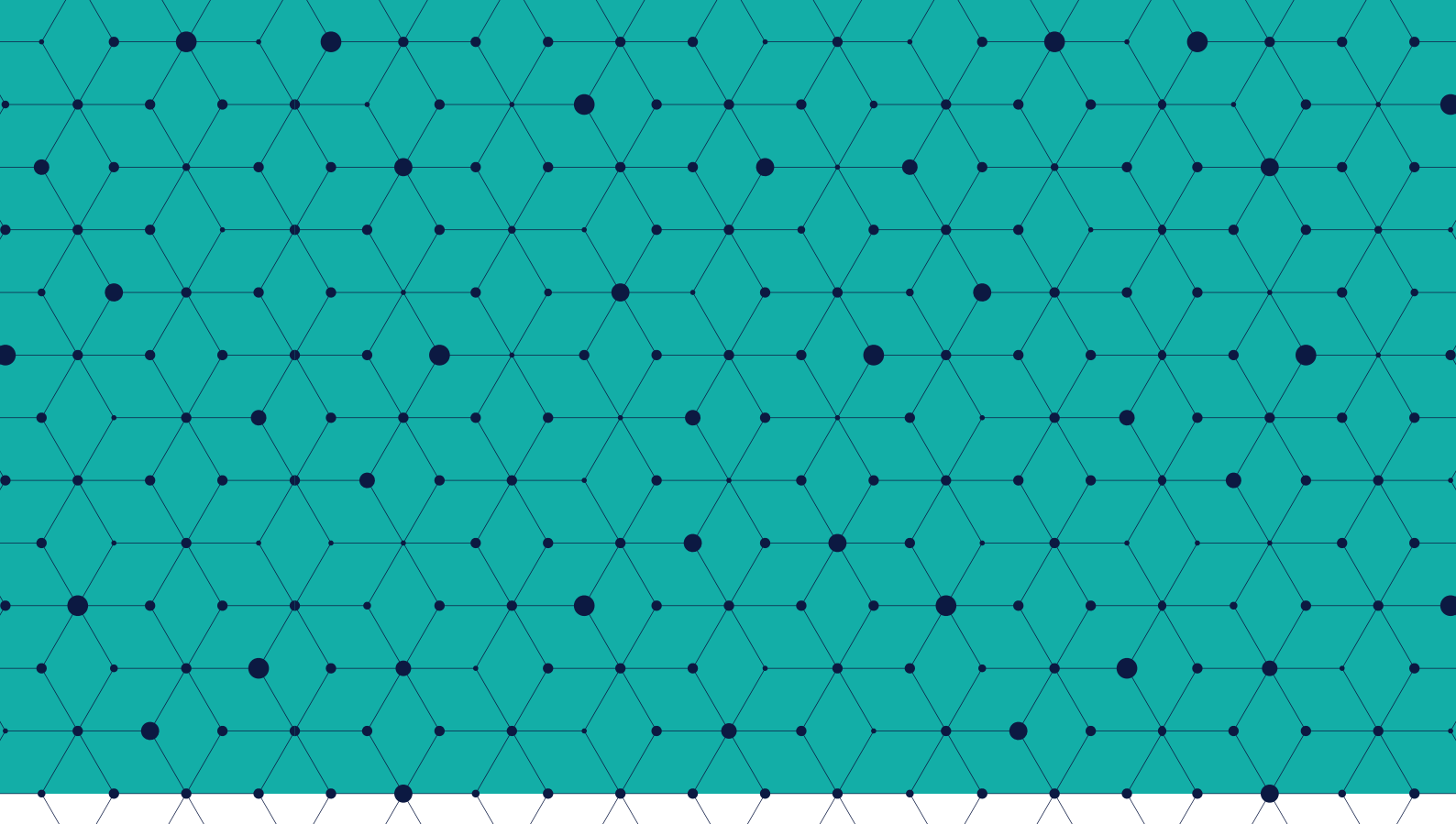
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