



THE UNIVERSITY OF
SYDNEY

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Senator Murray Watt
Chair
Senate Select Committee on the Future of Work and Workers
by email: futureofwork.sen@aph.gov.au

Dear Senator Watt,

Future of work and workers inquiry

Thank you for the opportunity to provide input to the Committee's inquiry into the impact of technological and other change on the future of work and workers in Australia.

I am pleased to provide the attached submission on behalf of the University of Sydney and look forward to discussing these important issues with you and other members of the Committee in Sydney on 21 February.

I have also taken the opportunity of attaching the University's 2016-2020 Strategic Plan, which sets out our current priorities and initiatives in curriculum reform, work-integrated learning, research, community and industry-engagement highly relevant to the review's terms of reference.

Yours sincerely,

(Signature removed)

Professor Pip Pattison AO
Deputy Vice-Chancellor (Education)

Appendix University of Sydney Submission to the Senate Select Committee's Inquiry into the Future of Work and Workers, February 2018

Separate attachment University of Sydney Strategic Plan 2016-20

University of Sydney Submission to the Senate Select Committee's Inquiry into the Future of Work and Workers, February 2018

Executive summary

A prosperous future for all Australians depends on a high quality, fair and accessible education system from early childhood to tertiary education.

The so-called fourth industrial revolution has the potential to create global increases in prosperity akin to those achieved in previous industrial revolutions. While there is currently widespread concern for the future of people dependent on lower-skilled or repetitive jobs, the history of previous economic transformations suggests that – barring global catastrophe due to environmental change, disease or war – the overall quality of human life will improve due to innovations arising from advances in knowledge and technology.

For advanced economies like Australia, building on this positive vision for a prosperous future may include diversified working patterns, where individuals can take advantage of technologies to better balance their working lives with other aspects of their lives including health and wellbeing, family and other caring duties, and personal commitments and interests including study, art or musical and sporting or free intellectual endeavour.

Over time, improvements in levels of education, combined with sustained multicultural population growth, stable and relatively sound political and legal systems, have underpinned the prosperity enjoyed by the majority of Australians today.

Improved global health, better management of the environment and its diversity, and new reaches in science and the arts are what we can look forward to in the wake of the fourth industrial revolution; provided that we focus sufficient attention on the current 'wicked' problems confronting humanity and the planet.

A vision for further prosperity and even greater improvements to quality of life will make three key demands on Australian and other global societies: delivering prosperity for all; ensuring an ever-improving future; and embracing and managing the 'burden of freedom'.

It will come as no surprise to the Committee that at the University of Sydney we believe that the key to Australia meeting these challenges can be found in education, research and knowledge translation.

Recommendations

Recommendation 1

Establish under the Council of Australia Governments (COAG) an independent expert commission to advise governments on the design of a unified overarching governance and policy framework to guide the allocation of investment in education and training from early childhood to initial tertiary education and beyond, and to improve educational outcomes through ongoing research, international benchmarking, monitoring and review.

Recommendation 2

Ensure our policies and practices support inclusive and life-long learning, enabling people to develop new skills to support productive employment throughout their lives.

Recommendation 3

Ensure all stages of the education process focus on instilling foundational skills and competencies that support ongoing learning rather than simply the retention of specific knowledge.

Challenge 1 ***Delivering prosperity for all***

The first and most fundamental challenge is to ensure that all members of society have equal access to the benefits of prosperity and technological advancement, and that none are left behind. There is a critical risk here, as inequality in Australia and some other developed countries is on a widening trajectory. Mitigating this risk is quite clearly linked to access to education, and in particular, access to high quality education that meets the challenges of different equity groups.

With predictions that technology will make more than 5 million existing lower-skilled Australian jobs obsolete in the next decade or so, our entire system of education needs to be strengthened if we are to equip our young people with the high-level skills and attributes they will need for success in a rapidly changing global economy. While job security and longevity in some roles may diminish, following the current pattern of an outcomes-based 'gig economy', workers with high-level skills will always be in demand. Governments will have a role to play in setting and regulating working conditions and must be ready to move quickly on emerging issues in a rapidly-changing world of work.

Universities will also play a critical role in preparing Australians for the future world of work. However, the capacity of universities to contribute depends to a large degree on the quality of the pipeline of students produced by our schools and vocational education systems.

Unless we can lift pre-tertiary learning outcomes – particularly in enabling Science Technology Engineering and Mathematics (STEM) disciplines and in second-language acquisition – we risk leaving many millions of people behind both economically and socially. If this occurs it is likely that there will be significant budget implications for future governments due to reduced economic growth, and higher welfare, health and other costs.

There will be both opportunities and risks for regional Australia in the future world of work. As remote work for white-collar workers presents an increasingly realistic option, regional centres with fast, affordable and reliable internet capability and transport linkages to major metropolitan centres, will reap the benefits of such workers basing themselves in regional Australia instead of in cities. Such worker movements could have massive positive flow-on effects for regional Australia, and as such should be encouraged by all levels of government, at the worker level and at the employer level. Technology will also have a massive impact, largely positive, on many of our regional workers including farmers and associated supply chains, and the productivity of the mining and energy industries.

The key risks for regional Australia are access to education, technology and transport options that will enable regional workers to reap the quality of life benefits of the technological revolution. Governments must work to ensure that policy and regulation support a quality of education in regional areas that is a match for that achievable in city centres. The University of Sydney will continue to work in regional areas to help achieve parity in educational inputs and outcomes. Our recent submission to the independent review into regional, rural and remote education, commissioned by the Federal Minister for Education and Training, Senator the Hon Simon Birmingham in 2017 and led by Emeritus Professor John Halsey may be of interest to the Committee. It outlines the contribution the University of Sydney currently makes in rural and regional Australia, particularly in relation to improving health, education and economic outcomes for local communities.¹

Life-long education for the future of work

According to the Reserve Bank of Australia there are two standout trends where Australia's jobs growth has occurred over the last 25 years. First, by far the largest gains have occurred in positions that require high level qualifications. Second, the bulk of Australia's new jobs have come in the service industries. More than 3.5 million positions have been created in these sectors since the early 1990s, compared to

¹http://sydney.edu.au/about/government/2017/20170829%20DVCE%20to%20John%20Halsey%20re%20regional%20education%20review_no%20sig.pdf

just over 500,000 in the goods producing industries (manufacturing, mining, construction etc). These new services jobs requiring high level qualifications have been created largely in the health, education, community and personal services, retail, finance, engineering, information technology, software design, telecommunications and tourism sectors etc.²

Australia is a high wage country with an ageing population. With the next wave of economic growth predicted to come from industries such as gas, agribusiness, tourism, education, health and financial services, strong demand for people with high level tertiary qualifications looks certain to remain a feature of Australia's economy for the foreseeable future.³ In this context, Philip Lowe, Governor of the Reserve Bank, has argued that Australia's future competitiveness and prosperity depends on:

- our national capacity for high-level cognitive skills and the ability to understand and solve complex problems;
- having people who are curious, able to grasp new opportunities, and able to transform and interpret information in new ways using new technology;
- the strength of our workforce's interpersonal skills to provide the premium services that will attract premium prices in the global marketplace; and
- on our national capacity to develop a culture that promotes and rewards creativity, flexibility, innovation, excellence, entrepreneurship and risk taking.⁴

The University of Sydney has been doing much to prepare our graduates for the future world of work. We are aware of the pace of technological and workplace change and are constantly reviewing our educational programs, as well as our approach to industry engagement, knowledge transfer and research commercialisation.

Over the course of our 2016-20 Strategic Plan we are transforming our generalist, professional and higher degree by research programs to further equip graduates for work in the future, and importantly, for life outside of traditional work. Our transformed curriculum ensures that all of our students will not only graduate with expertise in their primary field of study but also with the skills to work effectively across cultural and disciplinary boundaries and to collaborate with others to solve problems that require expertise from many fields. All of our students can also choose to develop expertise in a second field of study, and hence build the versatility of mind likely to be required by the rapidly changing nature of work, or master increasingly applicable and complementary knowledge and skills in areas such as computing, data science, design, digital cultures, entrepreneurship, information technology, mathematics and statistics, and project management.

The excellent *Australia's future workforce* report released by the Committee for Economic Development of Australia (CEDA) in June 2015 predicted that almost 40 per cent, or 5 million, Australian jobs face a high probability of being replaced in the next decade or two as a result of technological advances, with another 20% of roles facing a medium probability of redundancy. The report predicted that jobs that involve low levels of social interaction, low levels of creativity, or low levels of mobility and dexterity are most likely to be replaced by computer technology.

CEDA's report made four helpful recommendations relevant to our education system:

- develop a unified, overarching policy framework to guide the allocation of investment in education and training from early childhood to tertiary education;
- ensure all stages of the education process focus on instilling competencies rather than the retention of specific knowledge;

² Philip Lowe, Deputy Governor, Reserve Bank of Australia (Nov 2014) [Address to the Australian Business Economists \(ABE\) Annual Dinner](#)

³ Deloitte (2014), [Positioning for prosperity: catching the next wave](#)

⁴ Ibid.

- examine extending the formal education system to include a public learning-focused childcare and preschool system as an affordable part of the early education package; and
- establish digital literacy as a basic competency for all workers in the future.⁵

As digital disruption causes industries to change rapidly, there is a need for greater emphasis on lifelong learning to support people to transition across different careers throughout their lives. Traditionally, education has typically been ‘front loaded’ into an individual’s lifespan with the majority of formal education occurring during childhood and early adulthood. Though tertiary courses have always admitted mature students, they are far outnumbered by school leavers. However, as globalisation, digital disruption and the rise of interdisciplinary ‘wicked’ problems cause mass change, there is a need for alternative ways to support continual lifelong learning so that individuals are supported in navigating rapidly changing economic and workplace landscapes. Universities are well-positioned to create new, more accessible forms of post-Bachelor education, from short courses that provide targeted and modular education in very specific domains (e.g. so called micro-credentials) through to award courses providing access to new, more specialised fields (e.g. a Masters degree in cybersecurity) and to preparation for a research career (e.g. PhD).

At the University of Sydney we are considering seriously our role in a future that is likely to require workers to engage more regularly in continuing and lifelong educational opportunities. We are entering an era in which rates of career change and the need to acquire new skills are not only increasing but widely believed to be accelerating. In support of learner access to these opportunities is the potential of ubiquitous access to learning resources, of educational technologies that support rich and immersive virtual and augmented learning environments, and of communication capabilities that support high fidelity interaction over large distances. While these changes have been seen by some commentators as slow to take hold, there are now signs of more sustained change. One manifestation of this, for example, is the rise and growing richness of form of online education at graduate level. These forms range from high-scale, low-fee, non-award education directed at career advancement, career change and curiosity-led learning to low-scale, high-fee, high quality, online graduate degrees.

Massive Open Online Courses (MOOCs) are one potential form of supplementary education of this kind (e.g. the University of Sydney offers MOOCs in eHealth, data-driven astronomy, cultural competence – Aboriginal Sydney, ethical social media, as well as a university preparation course in information and digital literacy; the University also has courses in preparation on design thinking and business entrepreneurship, both supported by the NSW Government, as well as a course on the Australian economy in partnership with the Reserve Bank). Other avenues may include workplace training and continual professional development (CPD) for some professions. Outside of these formal options are informal learning approaches, many of which are afforded by the internet. Online resources such as the Khan Academy, Wootube, TEDed, and the ability to search, access and self-teach new skills are valuable.

While there is undeniable power and opportunity for digital resources and online tools, there will always remain a need for face-to-face teaching and education. Learning is most effective in social and interactive settings and lifelong learning is a skill that is itself acquired most effectively in educator- and peer-supported, formal learning settings. As the extensive data available on learning in MOOCs has demonstrated, the vast majority of those benefitting from open educational resources are learners who already hold at least a Bachelor degree. It is perhaps not surprising that someone who has already experienced a face to face tertiary program is better able to navigate and learn from additional digital resources.

We must consider how to equip people to be lifelong learners and avoid putting all responsibility for this onto the individual or an approach whereby individuals can be blamed for not “keeping up”. This may lead to increasing social exclusion and a greater digital divide. We must keep working to break down the silos that persist between the different levels of our education system and do more to

⁵ CEDA (June 2015) *Australia’s future workforce*, p.8

encourage business to support lifelong learning for current workers, and to partner with education providers to offer substantially more work-based learning opportunities for future generations of workers. Our “federated” education system is extremely complex, with responsibility for the different parts (early childhood, schools, vocational education and higher education) spread between different levels of government. We see a need, under the COAG Education Ministers’ Council, for a body capable of providing ministers with holistic, high quality, independent and evidence-based advice on the design and performance of our education system.

Wider policy and practices must also support people to update their skills throughout their working lives, so they can adapt to changes in the economy and take advantage of new employment opportunities as they emerge. For instance, the current tax deduction for self-education expenses applies only to expenses related to a person’s current position. Extending this to cover training in a new field of employment, or for a higher-level position in the same area, would support workers to move into roles requiring higher skills.

Recommendation 1

Establish under the Council of Australia Governments (COAG) an independent expert commission to advise governments on the design of a unified overarching governance and policy framework to guide the allocation of investment in education and training from early childhood to initial tertiary education and beyond, and to improve educational outcomes through ongoing research, international benchmarking, monitoring and review.

Recommendation 2

Ensure our policies and practices support inclusive and life-long learning, enabling people to develop new skills to support productive employment throughout their lives.

Challenge 2 *Ensuring an ever-improving future*

The second key challenge we see for society in this age of technology is to ensure that future workers are equipped to solve humanity’s evolving and critical challenges, many of them the result of earlier waves of improvement in the quality of life and life-expectancy of our own species or subgroups of it. These are the so-called ‘wicked’ problems such as climate change, indigenous disadvantage, obesity, and possibly the societal consequences of technological change.

Like many universities, we are currently giving much thought and effort to ensure that our students meet this demand in society. We predict that to contribute effectively in today’s rapidly changing world, university graduates will not only need deep disciplinary knowledge, but well-developed skills for critical thinking, problem solving, communication and teamwork. They will also need the capabilities for independent research, and lifelong learning for updating their knowledge, and skills for information literacy. Moreover, they will benefit from foreign language acquisition, and from developing the flexibility and breadth of perspective necessary to interact productively and creatively across cultural, disciplinary and professional boundaries. They will need, too, the personal resilience to deal with uncertainty and failure, and the sureness of personal values and clarity of social purpose to make ethical responses to whatever challenges confront them in their workplaces and communities. To these ends we have developed the following new set of qualities for our graduates, and we have renewed our degree and curriculum framework to yield these qualities:

Qualities	
Depth of disciplinary expertise	To excel in applying and continuing to develop disciplinary expertise
Broader skills: critical thinking and problem solving communication (oral and written) information/digital literacy inventiveness	To increase the impact of expertise, and to learn and respond effectively and creatively to novel problems
Cultural competence	To work productively, collaboratively and openly in diverse groups and across cultural boundaries
Interdisciplinary effectiveness	To work effectively in interdisciplinary (including inter-professional) settings, and to build broader perspective, innovative vision, and more contextualised and systemic forms of understanding
An integrated professional, ethical and personal identity	To build integrity, confidence and personal resilience, and the capacity to manage challenges and uncertainty
Influence	To be effective in exercising professional and social responsibility and making a positive contribution to society

University of Sydney, *Developing a distinctive undergraduate education, Strategic Planning for 2016-20, Discussion Paper No. 1, p.10 June 2015*

Recommendation 3

Ensure all stages of the education process focus on instilling foundational skills and competencies that support ongoing learning rather than simply the retention of specific knowledge.

Challenge 3 *Embracing and managing the ‘burden of freedom’*

The third challenge that we believe society will face in the wake of the fourth industrial revolution is more nebulous than the first two but will be no less pressing. It is to ensure that future governments, communities, employers, families and workers embrace and manage the consequences of the increased freedom that will come with advances in prosperity and technological displacement. In the ‘new economy’ we foresee, all Australians are enabled to find inner purpose when the demands of sheer survival diminish. Creativity and productivity define our new world and we leave behind the potential for social disengagement, loss of purpose, and the wide-ranging issues of mental health that invariably arise from economic inequality and social isolation.

In January 2017 Finland began a trial of a universal basic income for 2000 unemployed participants aged between 25 and 58. While the Finnish trial’s purpose is largely to determine whether the universal basic income (UBI) will reduce barriers to paid employment⁶, the idea has been in circulation for a number of years now as a suggestion for a future where automation has drastically

⁶ <https://www.theguardian.com/inequality/2018/jan/12/money-for-nothing-is-finlands-universal-basic-income-trial-too-good-to-be-true>

reduced the number of paying jobs available to certain workers, particularly those who may have been dependent on industrial labour.

As the needs of sheer survival increasingly diminish, the innate energy of members of our society must be directed towards socially positive outcomes. In this endeavour too, we believe universities have an important role to play. Many people have a deep desire for higher learning, whether this be for the purpose of achieving some great goal, as discussed above, to achieve an employment outcome, or simply for the love of learning itself. Universities must remain viable (including affordable) avenues for higher education in all fields of endeavour in Australia, so that people of all social and cultural backgrounds, interests and ambitions can find avenues for bettering themselves and society into the future.

We understand the short-term budgetary reasons behind the Government's recent cuts and changes to tertiary education funding and policy. We are concerned, however, that at a time when the need has arguably never been greater, we do not have a long-term vision for the future of our tertiary education system, particularly its role in lifelong learning. As the data below demonstrate, the long-term benefits to individuals and society from higher rates of participation in tertiary education are compelling. On average, across the OECD in 2015:

- 80% of tertiary-educated people are employed, compared with 70% of people who complete secondary school, and less than 60% of those who do not complete school;
- adults with a tertiary degree earn 60% more than adults who only complete secondary school;
- people with a master or doctoral degree have the highest earning advantages;
- the gross earning benefit for individuals with a tertiary qualification over the course of a lifetime are US \$477,500 for men and US \$332,600 for women; and
- the net public return on investment in tertiary education is 2.5 times the public cost for males, and 1.2 times for females.⁷

There is an urgent need for a national conversation about the future of Australia's tertiary education system and we are pleased the Business Council of Australia has recently sought to facilitate such a discussion in recognition of the importance of the tertiary education sector in underpinning national prosperity and competitiveness. While we do not agree with every proposal the BCA has put forward in its *Future-Proof* discussion paper, many of its ideas have merit. We commend the BCA for stepping in to create a forum for a national discussion about future directions for our tertiary education sector. Should it be of interest to the Committee our recent feedback on the BCA's Future-Proof consultation paper is available on our submissions website.⁸

Ends/

⁷ OECD (Nov 2015), *Education at Glance 2015: OECD Indicators*, pp. 92-133

⁸http://sydney.edu.au/about/government/2018/20180122%20DVCE%20to%20Nous%20Group%20re%20BCA%20Future-Proof%20paper_no%20sig.pdf