

Reframing Graduate Education

THE APPLIED MODEL

A New Model for a New Era



Taking a “student first” perspective, this white paper proposes that Australian Universities, despite their current prowess, are at risk of sinking into irrelevance.

Australian Universities need a new model which harnesses the potential and enthusiasm of the next generation of students to solve the most difficult problems confronting society.

A model that positions Australia at the forefront of global higher education.

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EXECUTIVE SUMMARY

There are more than one million students enrolled in Australian universities. The majority of these are undergraduate students chasing the dream of a better life. They have enrolled because they believe that if they graduate from university then meaningful employment will shortly follow.

They believe this because it is an ingrained cultural narrative that if you go to university you will get a better job. Unfortunately, these students are following an outdated playbook, and the graduating class of 2018 face an environment where:

1. There are less 'zero-experience' entry level graduate roles than ever; and
2. Employers increasingly do not care that they have a university degree.

The consequence to the student is painful, and the cost to our economy is profound: these graduates are taking roles that someone without an expensive university education can easily fill. If this trend continues then a university education becomes less of a pathway to meaningful employment and more of a luxury good.

Over the past twelve months we have reviewed a vast number of reports discussing the Australian Higher Education sector. A minority of these inappropriately forecast impending doom, while the majority of them present a consistently positive view of the sector and paint a bright future. When viewed in aggregate this literature reveals a government-subsidised industry in comfortable denial.

What stands out to us above all was that the voice of the customer – students – is almost entirely absent from the dialogue. It is this observation that drove us to create this paper, we seek to bring a 'student-first' perspective to this debate.

Our review reveals that the dominant mindset in the sector is that minor advancements to the status quo is all that is needed to continue attracting vast numbers of high calibre, high paying students. In the longer term, prospective students will gradually wake up to the fact that they are seeking employment in a world vastly different to that encountered by the previous generation. If all universities have to offer is their current model, then these future potential students will increasingly abandon the university system.

However, we do not intend for this concept paper to add to the minority of doom & gloom reports. The high domestic and international demand for Australian universities will continue into the medium term – we have not been able to identify a burning platform for the sector.

Our enthusiasm for change is based on a single, largely undiscussed fact about Australia's university students: they represent the largest untapped resource for positive change in Australia.

The next generation of students are likely to have up to 17 different employers across at least five different careers¹. They enter a world burdened by the unsustainable consumption of previous generations, and they need to confront declining biodiversity, increasing global warming, fake news and the re-emergence of dictatorial political leaders. They are the first generation in decades whose standard of living is likely to be materially lower than their parents.

Despite this, they are a cohort of digitally native, idealistic and energetic people. Their potential energy and effort represents the largest untapped resource to drive benefit for Australia – and we believe that universities are key to unleashing it.

HIGHER EDUCATION

HAS ALWAYS CHANGED IN RESPONSE TO SOCIETAL NEED

The global Higher Education system has developed through three significant shiftsⁱⁱ:

1. Elite: starting in the 6th century with monastic schools and later evolving into the medieval European university beginning in Bologna in 1088, higher education existed to mould the minds and characters of the ruling class. In this period universities evolved from being centres of teaching and learning to include research and service to society.

2. Massification: in the late 20th century, the tension between education as a private privilege or a public good prompted the trend to 'massification'. During this period, the higher education system underwent significant change in the size and shape of its systems, including curriculum designs, organisational structures, andragogy methodologies, delivery modes, research patterns, and the relationship between institutions and other external communities. The main goal of mass higher education was preparing large sections of the community for a wide variety of technical and economic roles.

3. Post-Massification: in the current environment the main goal of many countries is adapting the population to rapid social and technological changeⁱⁱⁱ. This has resulted in many advanced and some developing economies recording tertiary participation rates of over 50%, and it has also led to a significant growth of internationalisation, with the OECD forecasting international student mobility to reach 8 million students per year by 2025. This increased participation has created concerns of an 'over supply' of graduates in many economies^{iv}.

Through these evolutions the core purposes of universities have remained generally consistent in that they seek to:

- **Teach:** via the curation and distribution of knowledge.
- **Research:** is built on the work of others to advance/create new knowledge or technology (that is then publicly disclosed).
- **Support Society:** by creating citizens better equipped to question, contribute and lead.

We define this current state approach as the '**Knowledge Model**'. The Knowledge Model is the conventional system which has been built upon the original purpose of a university and focuses on the [1] creation, [2] curation, and [3] distribution of knowledge.

We believe that society needs the higher education system to radically change once again.

We are not alone in this belief. The Commonwealth Government's 'Strategy for International Education 2025'^v, probably the most progressive document developed by the Government for higher education this decade. This report acknowledges the need for significant change, and identifies nine goals that are significant stretch goals for the sector.

Taking a 'student first' perspective, we base our belief in the need for radical change in the higher education system on the following four indicators:

1. Graduate Needs
2. Future Design of Employment and Careers
3. Relevance of Degrees
4. Value to Society

KNOWLEDGE TO APPLICATION

Following a year of reviewing and monitoring a vast number of documents from media, legislative and academic bodies [researchers or research teams, individual institutions and industry associations], leading consultancies and others, as well as numerous discussions with academics, students and others related to higher education in Australia, we propose a fundamental shift in the role Australian universities play in society, a shift from curating knowledge to curating problems.

Our proposed new model requires Australian universities to embrace a design philosophy where they are responsible for [1] the creation of new knowledge, [2] the curation of problems and [3] the direction and credentialing of student efforts in the creation of solutions. Our working title for this new system is the **'Applied Model'**.

The Applied Model is designed to foster and credential an individual's ability to search for and apply relevant knowledge to a defined problem.

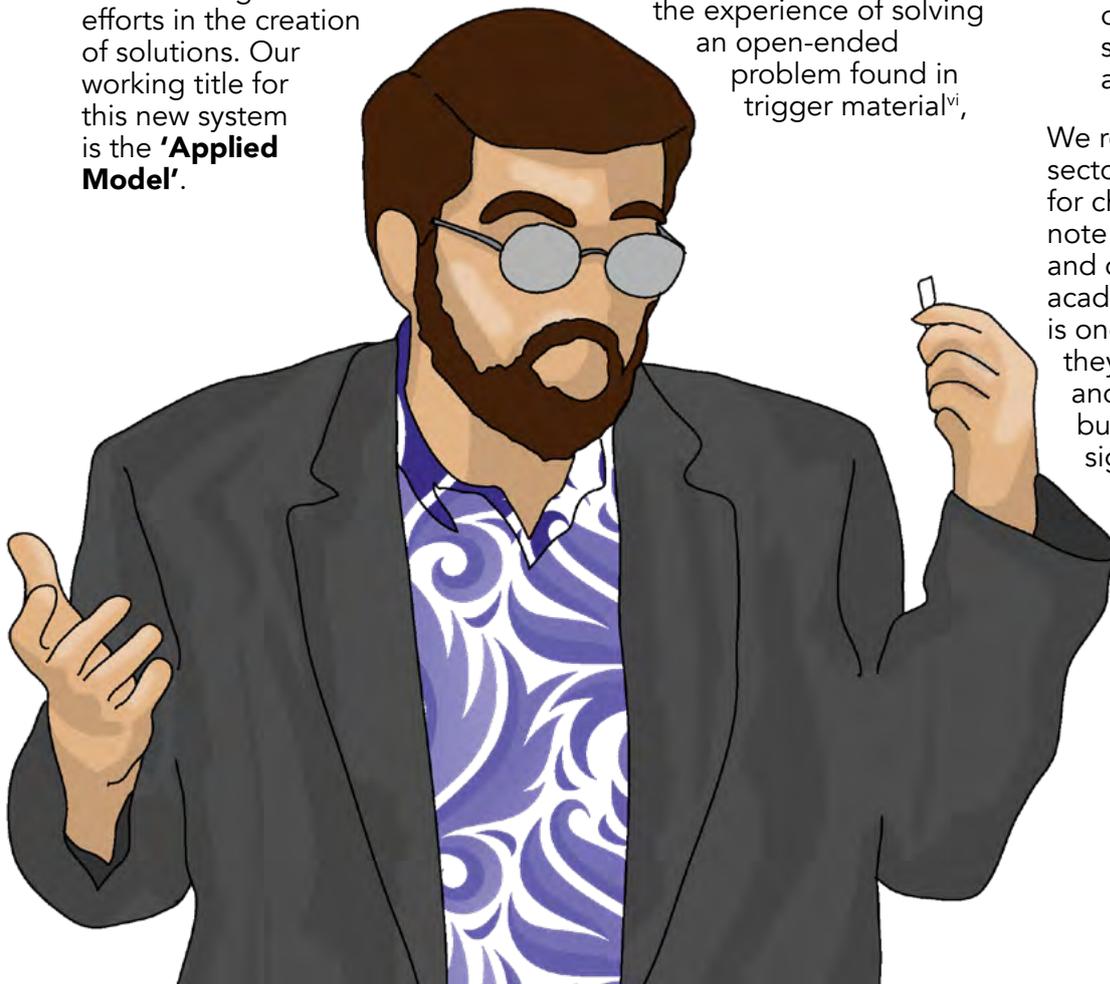
The Applied Model is a concept designed to better cater to the needs of society, business and students today in an environment where the half-life of useful knowledge and skills is on a continuous decline. The economy is placing different demands on graduate students and universities need to in-turn change their product to better prepare graduate students for an erratic career path.

Although not dissimilar to existing student-centred pedagogies like problem-based learning (PBL) in which students learn about a subject through the experience of solving an open-ended problem found in trigger material^{vi},

the Applied Model differs from current offerings in three specific ways:

1. It places greater emphasis on the institution as curator of the "problems" – and in so doing proposes a new role for them in society.
2. It does not focus on one specific discipline but proposes that disciplines or faculties are united across the effort to scope and solve a problem.
3. It suggests that the role of an academic in a student's life must be transitioned from that of lecturer [and a font of singular knowledge sets at a given period in time] to one of a coach across a breadth and wider vision of what is possible, aiding not only in the foundation of a student's knowledge whilst at university and beyond.

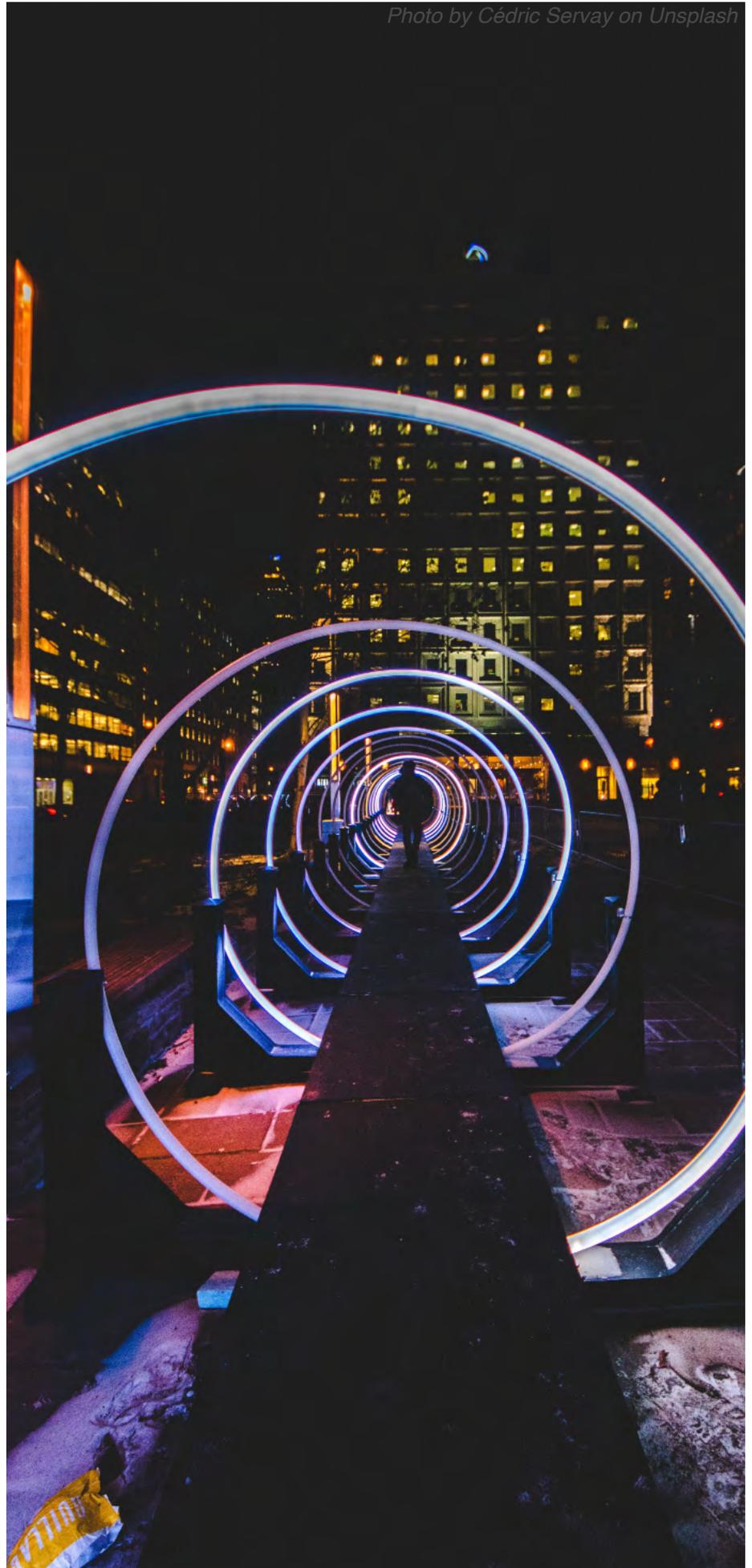
We recognise that many in the sector are aware of the need for change. It is important to note that from our experience and discussions with many academics, such a transition is one many would relish, but they feel the current structure and funding of the university business model creates significant barriers.





We reiterate that the purpose of this document is to voice the need of students for a different approach to learning and propose the principles of a possible future model. Although we outline how this model would likely differ from the status quo and have provided an activation scenario, the more finite discussion of physical implementation is institutionally specific and, as such, beyond the scope of a concept paper.

Universities have played an important role in the development of modern society, but their relevance to students is diminishing. Through our work we seek to draw attention to the danger of comfortable lies – beware those who suggest that minor alterations to the status quo will maintain the global success of Australian universities. In a global, technology driven education market, the high calibre, high paying students are mobile customers.



CHANGE INDICATOR 1

GRADUATE NEEDS

Data from Citibank shows that globally, young people are desperately seeking more real-world preparation – with 78% believing internships and apprenticeships are critical for success. These young people are also frustrated by the lack of options in this space, with 60% saying that they don't have access to these types of opportunities^{vii}.

In America, only 34% of students believe that they will graduate with the skills and knowledge needed to be successful in the current job market^{viii}. These graduates face further challenges post-graduation: by 2030, 75 million to 375 million workers [3 to 14 percent of the global workforce] will need to switch occupational categories in response to increasingly capable machines^{ix}.

Closer to home, The Foundation of Young Australians [FYA] has produced a number of reports indicating that these changes have already commenced. The FYA states that “mindsets need to shift to reflect a more dynamic future for work where linear careers will become far less common and young people will need a portfolio of skills and capabilities ... to navigate a more complex world of work”^x.

The FYA work also reminds us that^{xi}.

a future employment landscape that is difficult to predict.

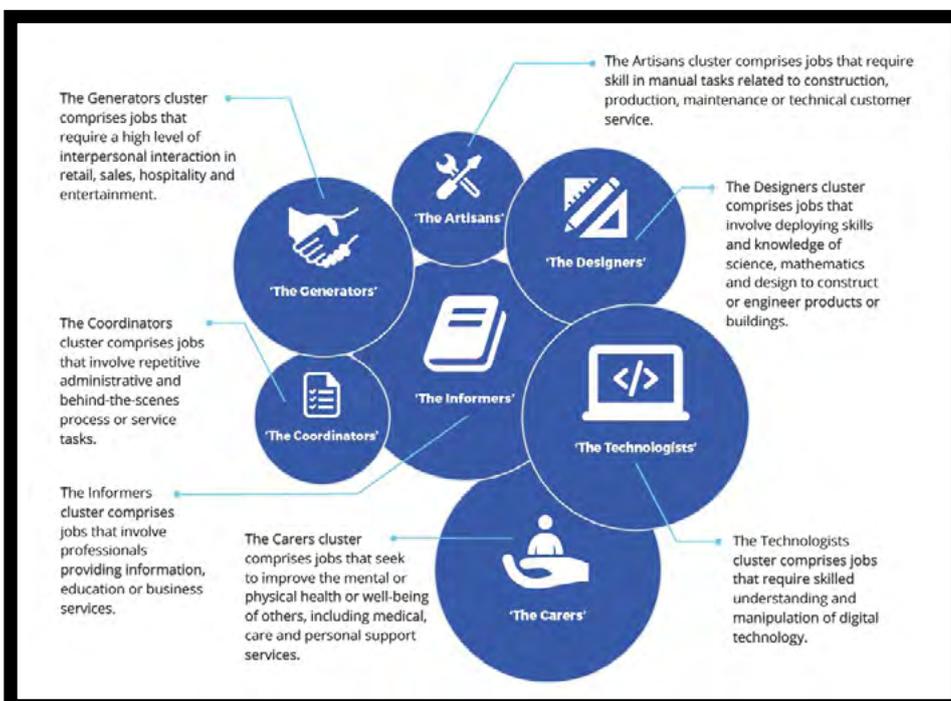
While global metrics tell us that Australia performs relatively strongly on graduate employability (in the latest QS Graduate Employability Rankings, the University of Sydney is fourth in the world^{xii}), the principle of Disruptive Innovation^{xiii} tells us that things can change rapidly and unforgivingly.

“Australia’s 4.3 million young people are our greatest resource”

While they are an enthusiastic, passionate and compassionate new force, they are also the generation to inherit significant problems left by former generations needing to navigate

The long-run trend in graduate employability is negative – and employment in the field of one’s study continues to evade many graduates. Viewed from the eyes of a student the value proposition of a university degree is weak and getting weaker.

FYA’s research shows that this generation is not being properly prepared for the ambiguity they face, and many are already being left behind. This is indicated by nearly one in three people currently unemployed or underemployed in a market where it takes 4.7 years to transfer from full-time education to full-time work^{xiv}.

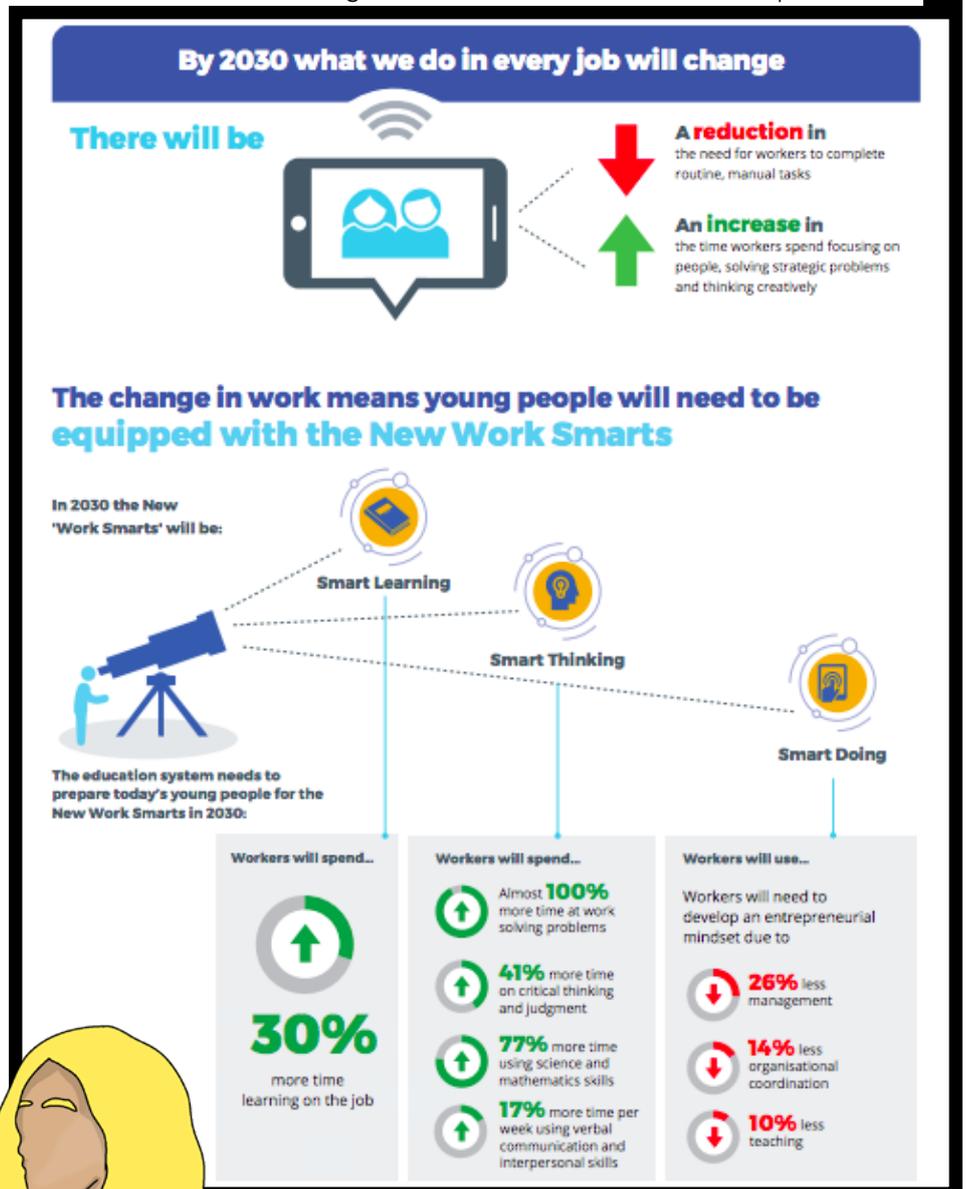


Foundation for Young Australians' - New Work Smarts Report

In these recent reports, FYA sets about identifying skills and capabilities that will matter most in 2030. They group the 1000+ different current occupations into seven distinct clusters based around distinct skill sets that are easily transferable, even to other clusters, illustrating that training for one job provides the skills required for 13 others.

Both pieces illustrate the importance of education in a contextual paradigm, rather than one built around specific content.

The Applied Model, at its core, is based on the context of education and skills more than on learning content.



It proposes that while students will be attending university to acquire one or a set of key academic discipline[s], they should be undertaking experiences which help them obtain far broader and more practical exposure to how the discipline[s] can be practically applied in the real world. Through attacking a specific problem, they learn skills required to work in an ambiguous work environment. This approach better prepares them for a career likely to change dramatically across several industry sectors.



EY: Leapfrogging to Education 4.0: Student at the core Nov 2017

With the advent of the Fourth Industrial Revolution, 'know-how' transitions into an instant and globally transactional commodity, readily available and vastly less expensive than ever before. Its impact on universities and the relevance of their currently structured products has never made universities' roles so questionable.

For potential graduates today, there is plethora of offerings [MOOCs, SPOCs, etc.] and organisations that open access to university qualifications from everywhere. In Australia, the University of NSW Australian Graduate School of Management led the charge for more accessible high calibre degrees with the launch of its MBAX ["the next generation online MBA - a unique online management degree that also allows you to specialise"^{xv}].

Globally, discussions around the future of higher education tend to focus on perpetuation of the conventional model. Much of the discussion focuses on knowledge content (such as greater focus on STEM fields^{xvi}).

Greater decentralisation of knowledge will inevitably outpace any private systems of higher education^{xvii}.

Ultimately this increase of mobility and accessibility to 'knowledge' as a commodity brings into question the value of the academic and their role in the equation.

In August 2017, Navitas Ventures released a report which showed that over \$50B was being invested in EdTech across 15,000 companies from more than 50 countries, all with the purpose of employing innovation to aid what Navitas title the "next generation learning lifecycle"^{xviii}.

GRADUATE NEEDS

Through the introduction of an Applied Model, we would see universities becoming curators and custodians of large real-world problems. In doing so, universities would then frame their degree structure to run across multiple faculties to address the resolution of those problems. Through this process it is believed that we would see universities taking greater advantage of technologies and educational content provided by other sources (such as businesses, academic providers, government institutions, think tanks, etc.) to produce more rounded, agile graduates. Likewise, the role of the academics in this model would become richer and more complex. This is because they do not compete around the curation and distribution of knowledge [Knowledge Model] but aid in the creation of knowledge through the curation of a problem and distribution of solutions; and as such, open the gate to the accessibility and mobility of knowledge as it now exists.

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CHANGE INDICATOR 2

FUTURE DESIGN OF EMPLOYMENT AND CAREERS

The conventional template of employment has changed considerably since the turn of the century and will continue to evolve, as physical and technical constraints erode [e.g. Bank tellers between 1995 and 2005 decreased by approximately 50,000, largely due to the introduction of automated teller machines^{xxix}, with a predicated reduction of a further 20,000 bank employees during 2018 due to technology advancements^{xx}].

Currently this evolution is being driven by the confluence of two digital forces:

- 1.** New platforms allow economic activity to be organised in ways that shift much of what was traditionally accomplished by full-time workers within an organisation to a crowd of individual contractors and on-demand workers.
- 2.** Automation through artificial intelligence and robotics that displace the cognitive and physical tasks that comprise much of today's work.

These factors are dramatically reshaping tomorrow's workplace, leading to a sharp reduction in traditional employer-employee relationships^{xxi}. The result is a more distributed employment model based around casual employment and contracting [freelancers already represent 35% of the United States workforce, while in the European Union, the rate is 16.1%^{xxii}.]

As this progresses it is not only the changing nature of work, but the way we think about work that comes into question and, as a Deloitte paper on redefining education points out, the changing nature of knowledge work is impacting the nature of relationships and the 'trust' that binds firms and individuals together^{xxiii}. As conventional full-time employment diminishes in place of more transactional employer/employee relationships and environments, firms begin to seek agents who can, individually and as a team, create solutions that the firm can deploy to their customers.



FUTURE DESIGN OF EMPLOYMENT AND CAREERS

Businesses are finding it challenging to forecast the skills they will need in the future because they are unsure of the precise nature of these problems or what is required to solve them. In these circumstances, according to Deloitte, firms search for individuals who:

- Have a demonstrable interest in prosecuting the problem at hand
- Have a track record of having solved similar types of problems successfully in the past
- Have broad experience and a track record of integrating new knowledge and skills into their work
- Are connected to a broad range of communities that enable them to tap into a diverse range of new ideas, skills and techniques
- Exhibit behaviours that enable them to integrate into and work effectively as part of a larger team.

The idea of an individual having a “job for life” or a “set career path” is rapidly evaporating. It is anticipated that Generation Z will have an average of six careers in their lifetime^{xxiv}, and according to research by the Foundation for Young Australians^{xxv}, fifteen-year-olds today are estimated to have at least 5 different career changes across 17 different employers^{xxvi}. Thus, people like Jack Hylands, former CEO of Ducere Global Business School, raise questions about the system we use for skilling students, then placing them on a ladder towards corporate success and eventual retirement; as both the ladder and retirement probably won't exist^{xxvii}.

Photo by Lisda Kania Yuliani on Unsplash





Likewise, globalisation, technology and the global nature of a workforce means that employees in Australia are increasingly competing against talent from other countries, which both allows companies to access a much larger pool of global talent and to place downward pressure on wages. To compete in an environment where others may offer similar skills for a lower price, individuals will have to consider how to differentiate themselves. This may be through offering a unique combination of skills, a different perspective, strong personal brand, or a well-developed network^{xxviii}.

In all cases an **Applied Model**, seeing universities curate multidisciplinary problems for graduates [not just a single accounting issue for example] presents a solution. By creating an environment which drives the need for a more diverse

knowledge base and delivers real solutions that can solve an existing issue, a university will better tool a student [and enhance their resume] more than will the traditional Knowledge Model around the creation, curation and distribution of specific knowledge.

In addition to this, if an academic is able, encouraged and desires to broaden their role from that of the custodian and conveyer of a single knowledge pool to a more of a knowledge coach, as suggested in the Applied Model frame, their role in the academic and professional life of a graduate becomes far deeper, richer and potentially rewarding. This concept, which currently may be hard to fathom by some over time, could well be a natural hallmark of the fourth industrial revolution as we learn to embrace and harvest the benefits advanced technology brings.

Universities often claim to ‘teach students how to learn’ – this is misleading. The more accurate assessment is that they “teach students how to learn ... the precise knowledge that we have organised in advance and will test you on later”. Given the fluid nature of work and career it will become equally important to train people how to ‘unlearn’ and rapidly adapt to change and ambiguity. Universities will be far more attractive to future graduates if they can teach them how to approach solving wicked problems.

CHANGE INDICATOR 3

RELEVANCE OF DEGREES

We previously discussed Australia's strong performance on graduate employability [one-third of our universities ranking in the global top 200 in the latest QS Graduate Employability Rankings]. However the Productivity Commission's recent *Shifting the Dial Report*^{xxxix} paints a different, more concerning picture for Australian graduates.

Can you identify a single Australian university that truly has a new method or idea that sets it apart from any other in the world? Given the results from the recent Reuter 100 Most Innovative Universities rankings, the answer must be a resounding no. While the list identified 20 universities from Asia, not one Australian university made the cut^{xxx}.

Both the amount of short-term attrition from university degrees and the number of those not completing degrees at all is trending upwards, at the same time as the rate of post-graduates finding full-time employment is declining^{xxxi} [the latter being reflective of the previously discussed changing design of employment]. These factors indicate that the appreciation and respect graduates and employers currently hold for degrees against real time opportunity and experience is on the wane.

Naturally, some academics^{xxxii} have been quick to vocally criticise the Productivity Commission's report while Universities Australia^{xxxiii} has addressed less positive media commentary that stemmed from the report as being shy of facts around graduate employability,

pointing out that "University graduates fare far better.

On the latest figures, 90 per cent of graduates have landed a full-time job within three years of finishing their studies.

By contrast, school-leavers face stronger competition for fewer entry-level jobs. Anglicare's latest jobs availability snapshot found there were 124,000 jobseekers who didn't have qualifications or experience for 25,979 -advertised entry-level jobs."

Interestingly, this last point is supported in the report but presented from a different perspective that "over a quarter of recent graduates believed they were employed full time in roles unrelated to their studies, to which their degree added no value".



This trend of graduates finding employment in areas unrelated to their degree exists in other countries around the world^{xxxiv}. The important consideration for our economy is that these graduates are taking roles that someone without a costly university education could easily fill. If this trend continues a university education becomes less of a pathway to meaningful employment and more of a luxury good.

There are already powerful signals from the market that university education is a luxury good, not a differentiating signal of quality: many employers of choice are no longer requiring a tertiary degree for vacant roles. Google does not list university degrees among its entry-level job requirements and firms EY and PricewaterhouseCoopers - two of the biggest recruiters of graduate students in the Australia and the world - and major publisher Penguin Random House, are among companies that have removed the need for university degrees in their graduate programs^{xxxv}. This was recently highlighted by Jack Hylands^{xxxvi}:

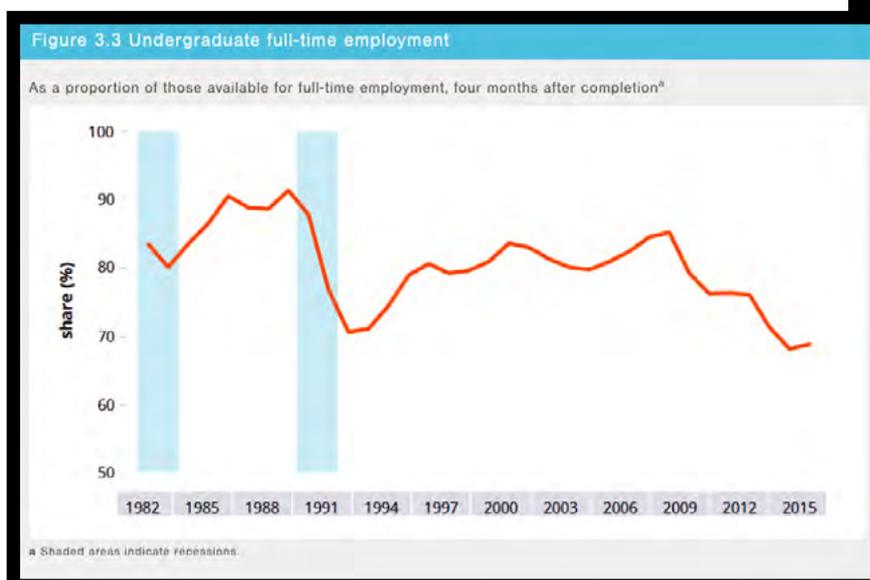
“Industries have started putting some bite behind its long held contention that universities are not providing the skills that graduates need”

There are some careers that can only be accessed via the rigour and credibility of a university and the degree it bestows on its successful graduates. Medicine and engineering are the most obvious, although interestingly these are also the domains which have most aggressively adopted problem based learning.

However, as each industry sector is disrupted by advances in automation (including knowledge search and retrieval), the relevance of a degree will be increasingly questioned.

Information and knowledge are developing (and accumulating) faster than courses can be adapted. Talent pipeline issues are common, and businesses have needed to move away from traditional degrees in preference for other faster knowledge providers of calibre [such as General Assembly]. In fact, geographical and intellectual bellwether areas, such as Silicon

Valley, have begun to realise that the huge talent pool of non-traditional candidates may be the answer to their pipeline problem^{xxxvii}. Sam Ladah, the Head of Talent Organisation for IBM describes these roles for a different type of candidate, to whom a degree is not a relevant bench mark, as “new-collar jobs” and seeks different applicant pools in which to find new talent. “We consider them based on their skills,” he says, and don’t take into account their educational background^{xxxviii}. Looking for talent outside of historical networks and extending recruiting efforts to people who don’t have four-year degrees at alumni schools^{xxxix} is how the technology sector is overcoming their cultural and demographic homogeneity issues.



Productivity Commission, *Shifting the Dial: 5 Year Productivity Review, Inquiry Report*.

If universities continue to rely on the conventional Knowledge Model [the curation, and distribution of knowledge] for graduate education they risk the ability to cater for the technology needs which now underpin or cross over so many mainstream industries and degrees.

However, with introduction of the Applied Model [the creation of knowledge, curation of problems and distribution of solutions] they would develop learnings that integrate technology into every aspect of a degree. More significantly this aggregation of skills and academic perspectives around the solving of real world issues facilitates rapid and diverse cross-skilling of graduates providing them with far greater experience and making them more employable overall.

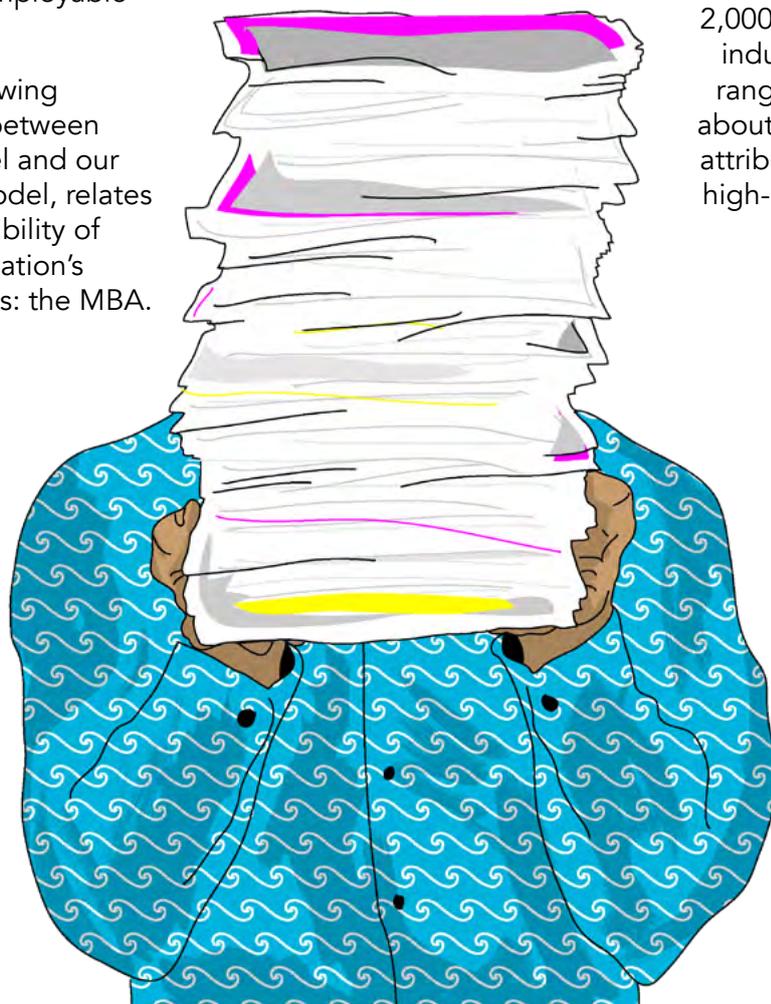
Another narrative drawing potential distinction between the Knowledge Model and our proposed Applied Model, relates to the value and credibility of one of graduate education's most revered products: the MBA.

While more than 40% of American CEOs hold one, several large-scale studies have found that leadership based solely on MBA-trained logic is failing to deliver long-term financial results, and that its logic is often detrimental to an organisation's productivity^{xl}.

There are many famous entrepreneurs who have no degrees or are university drop-outs [Bill Gates, Mark Zuckerberg, Steve Jobs and Richard Branson^{xli} internationally; James Packer, Solomon Lew, Lindsay Fox and Frank Lowy^{xlii} on the local stage], but it is fair to state that a larger number of successful business people have attended and completed university studies, often at post-

graduate levels. However, a historical study of 440 celebrated American CEOs ranging from the 1970's and published in 2016 found that those with MBA's performed significantly worse than those without^{xliii}. A similar study published in the Journal of Business Ethics in 2017^{xliv}, this time looking at 5,000 CEOs arrived at similar conclusions. Research by McGill Management Professor Henry Mintzberg and Joseph Lampel of Manchester Business School also found "significant evidence that MBA head honchos are not as effective as counterparts without the degree^{xlv}".

More recently a 10-year study - the CEO Genome Project^{xlvi} assessing 17,000 C-suite executives, including more than 2,000 CEOs, from all major industry sectors and a full range of company sizes - set about to identify the specific attributes that differentiate high-performing CEOs.



RELEVANCE OF DEGREES

This study found that educational pedigree, or lack thereof, in no way correlated with performance [only 7% of the high-performing CEOs studied had an undergraduate Ivy League education, and 8% of them didn't graduate from college at all].

It revealed that there were four specific attributes that led to success as a CEO:

- 1. Deciding with speed and conviction:** CEO's who consistently made decisions earlier, faster, and with greater conviction.
- 2. Engaging for impact:** CEO's with astute understanding of their stakeholders' needs and motivations, who got people on board by driving for performance and aligning them around the goal of value creation were 75% more successful in the role.
- 3. Adapting proactively:** CEO's who excel at adapting to a rapidly changing environment, [e.g. the aftermath of Brexit and the recent U.S. presidential election] are 6.7 times more likely to succeed.
- 4. Delivering reliably:** Demonstrating the ability to reliably produce results, 94% of the strong CEO candidates analysed scored high on consistently following through on their commitments^{xlvii}.

These are all attributes generally overlooked in the current Knowledge Model and more likely to be fostered and developed through the Applied Model.



Photo by Aron Visuals on Unsplash

CHANGE INDICATOR 4

VALUE TO SOCIETY

Returning to the proposition that throughout the ages the three enduring purposes of university in society across the world have been to:

1. Teach;
2. Research; and
3. Change Society.

It has been the purpose of change [equipping minds to better question, improve and lead] where the dialogue has been quietest over past decades. This is perhaps because it is so entwined in, if not an output of the other

two purposes, likely only to be heard when the dialogue around teaching and research pauses.

One voice that has amplified the dialogue and kept it alive is Ronald Barnett [Emeritus Professor of Higher Education at the Institute of Education, University of London] who for 40 years has been fascinated by one question: *"What is a university?"*^{xlviii}

Over the past decade this journey and "massive global forces affecting universities, such as the emergence of a

global knowledge economy, marketisation and neoliberalism. ...global changes in knowledge creation and circulation ... the rise of the 'entrepreneurial university'^{xlix}, has seen him develop and refine the concept of the Ecological University – "ecological in the sense of being seized of its interconnectedness with and responsibilities in the world. It would look to identify ways in which it could venture beyond aiding the sustainability of the world by also looking to advance global well-being".

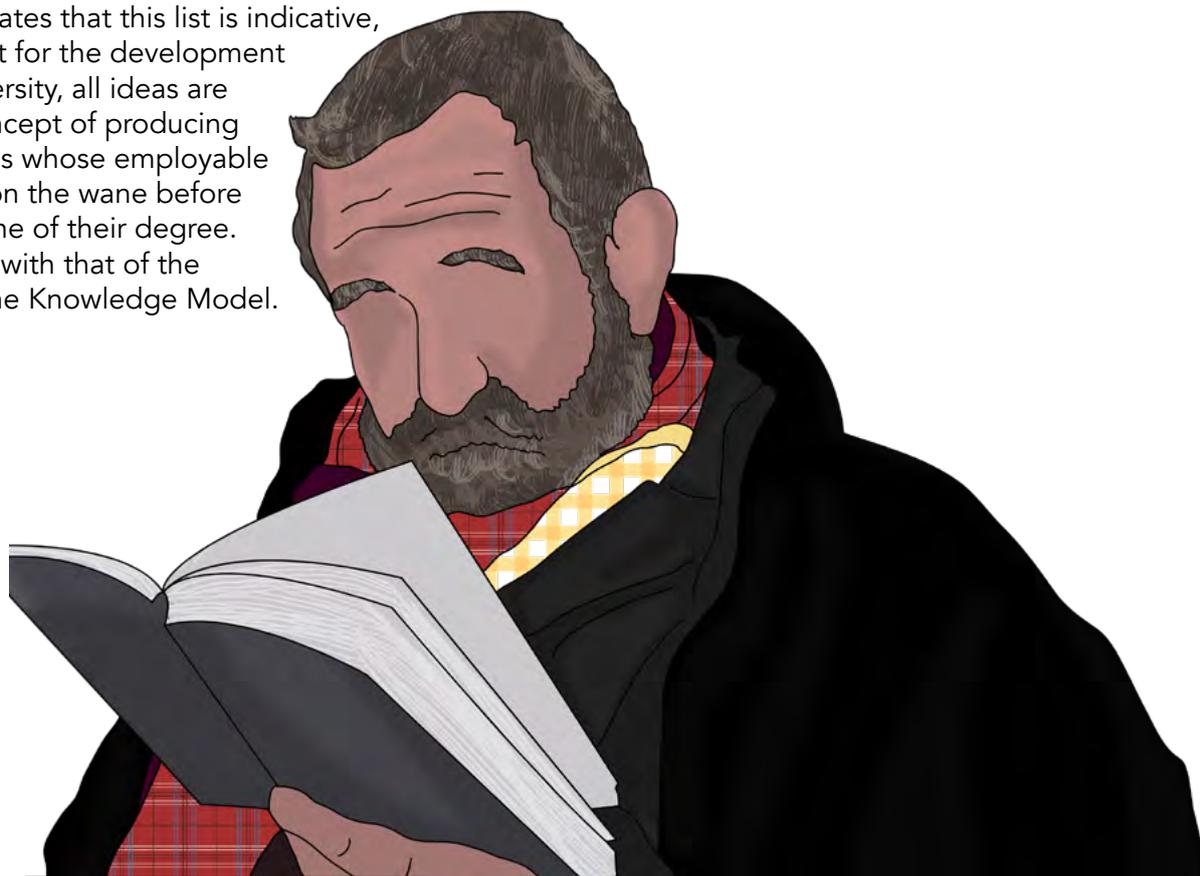


Photo by Pawel Wolbert on Unsplash

In way of visualising how an Ecological University could operate Barnett identifies some possibilities [his own and colleagues'] as:

- developing and vigorously pursuing a strategy of civic and community engagement
- holding public lectures and putting podcasts online
- working with local / regional authorities and community and third sector groups in addressing social issues
- working with groups / communities in the developing world [projects here could include cultural projects as well as technological and social projects]
- offering pro bono advice
- producing materials for public consumption [a university in Colombia produces mini-booklets containing accessible work by its scholars for public consumption at minimal prices]
- research that tackles issues of concern and that might help to alleviate suffering or deprivation [locally and globally]
- putting each class of students in touch with another class in another country to develop trans-national and trans-cultural learning space, so helping the formation of students as 'global citizens'
- offering to accredit the socially-oriented activities of students off campus
- promoting inter-connectedness across disciplines and forging public-oriented programmes of activity [e.g. the University of Durham Institute of Advanced Study bringing "together world-leading researchers from all disciplines to work with Durham colleagues on collaborative projects of major intellectual, scientific, political and practical significance"^{i]}
- universities coming together across the world to promote ecological thinking [e.g. the Talloires movement]
- universities being funded in part from the public purse in regard to the extent to which such a mission of concern towards the wider world is evident in life and activitiesⁱⁱ

Although he clearly states that this list is indicative, rather than a blueprint for the development of an Ecological University, all ideas are far larger than the concept of producing 'work-ready' graduates whose employable appeal is potentially on the wane before they complete year one of their degree. All also align strongly with that of the Applied rather than the Knowledge Model.

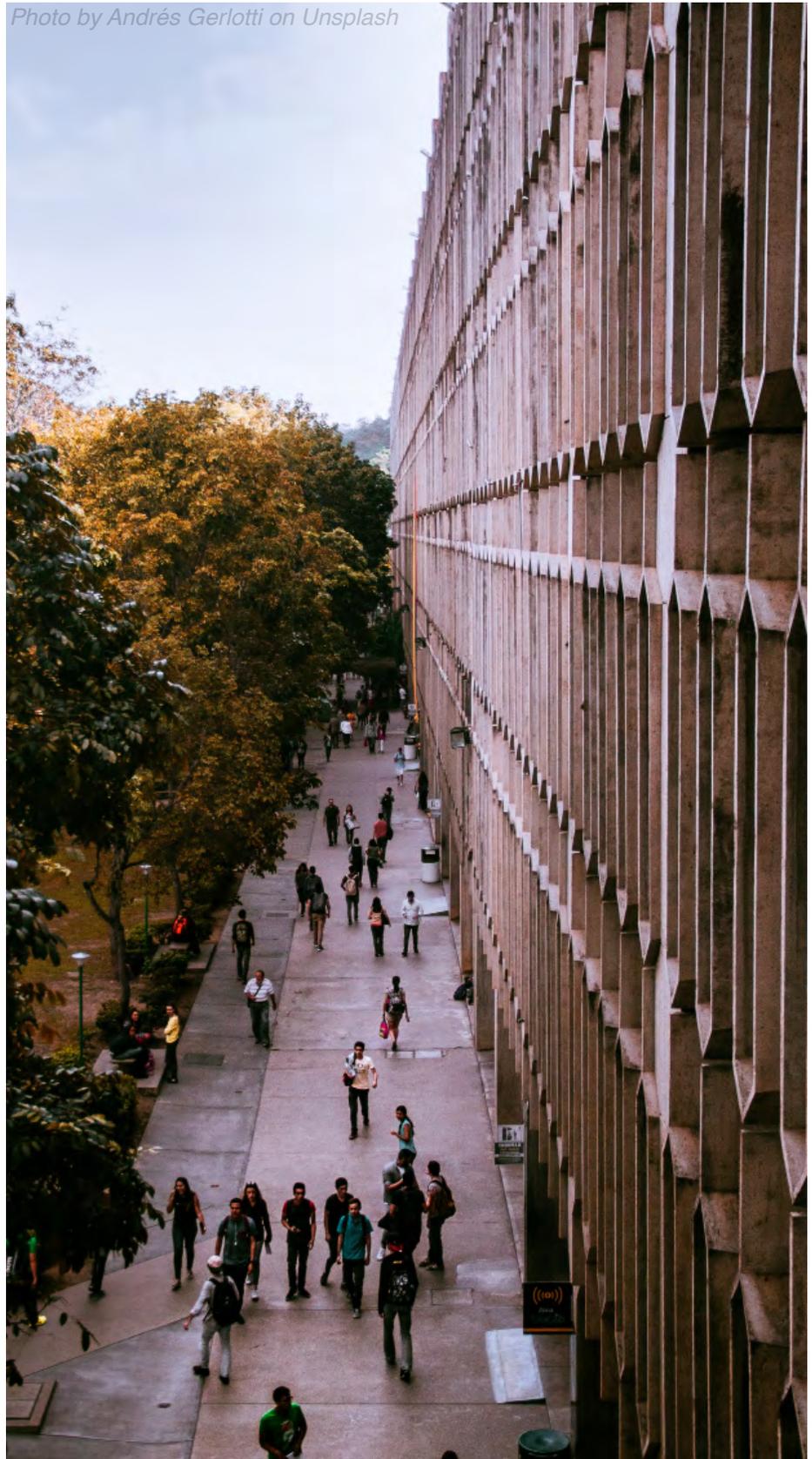


Exit Generation Z. No longer screenagers, this new cohort of digitally native, instantly connected, collaboratively indoctrinated individuals are pushing through the gates of universities ... or not. Shadowed by the brunt of unsustainable and destructive consumption driven practices of previous generations to confront declining bee populations, global warming, a re-emergence of dictatorial political leadership, and increasing geo-political tensions, they are a surprisingly optimistic cohort en masse.

They are also a cohort likely to have up to 17 different employers across five different paths^{liii}, in many jobs yet undefined, across their continuously increasing life span.

Given these factors it is the context rather the content of knowledge which is going to impact the world ahead.

Photo by Andrés Gerlotti on Unsplash



BEYOND

WORK INTEGRATED LEARNING

Work Integrated Learning [WIL] is an umbrella term for a range of approaches and strategies that integrate academic theory with the practice of work within a purposefully designed curriculum. Specifically, WIL is aimed at improving the employability of graduates by giving them valuable practical experience which is directly related to courses being studied at university. WIL also improves the transition from university to work and productivity outcomes for the employer and the economy^{liv}.

The increased significance of WIL and Vocational Education and Training [VET], heralded throughout many papers is driven by a merger of circumstances. Those most significant for graduates are:

1. the aforementioned diversity of careers a graduate is likely to have in a lifetime;
2. the rapid generation of new career roles, yet unfathomed, meaning that universities are equipping students with skill for jobs that won't exist by the time they enter the workforce^{lv} [or providing them with new techniques and skills required in existing roles];
3. the cost associated with talent drain and want for businesses to nurture, support and maintain highly talented individuals [both to keep them within the business for as long as possible and to ensure that their talents are being capitalised]; and
4. the time a university degree takes to complete, especially postgraduate.

With an estimated 60 per cent of graduate professions being dramatically impacted by automation in the next 10 years^{lvi}, a variety of VET or WIL educational products, such as micro-courses, will be integral to the employment model of the future.

“In theory, there is no difference between theory and practice, But, in practice, there is.”

Manfred Eigen, Nobel Prize winning biophysical chemist

Photo by rawpixel on Unsplash



This consideration is not lost on universities: *“The university sector is acutely aware of the importance of arming students with the skills for the fast-changing jobs market in which many jobs, including white-collar ones, are likely to disappear or dramatically alter.*

Their role isn't to prepare students for only one job. It's to help prepare them for a career — and indeed a life

— in an era of constant change in jobs, technology and circumstance ^{lvii}
(Belinda Robinson, CEO Universities Australia.)

Many Australian universities have high-quality WIL programs [such as the industry consulting projects in the Master of Management Program offered by the University of Sydney Business School and the University of Technology Sydney's Bachelor of Creative Intelligence and Innovation] but analysis reveals that no Australian university has been able to deliver a quality WIL program at scale [1000+ students at a time] – primarily due to the complexity of corporate partner acquisition and management.

Another key hindrance seldom addressed is the cognitive character of graduates themselves, their adaptability, resilience, flexibility, enterprise skills, enterprising mind-set and business awareness. These are characteristics that make them both a good employable product and someone capable of absorbing and benefiting from short sharp jabs of knowledge – around subjects sometimes completely disparate to their core competencies.



While the widespread use of industry-based internships and their importance in undergraduate degrees is accepted^{lviii}, the conventional model relates to and focuses on single, at most dual disciplines. And although it has been recognised Australian university graduates need training in knowledge translation skills such as leadership, management, finance, marketing, media and teaching to more effectively and efficiently transition into future careers^{lix} such training tends to come through postgraduate masters programs rather than conventional undergraduate courses.

Through its natural design the conventional Knowledge Model perpetuates the proliferation of myopic academic disciplines which is contrary to the rapid fluidity and changing needs of business today. Due to its origin, the Knowledge Model curtails a student's thirst for divergent cross-discipline knowledge sets and hampers their ability to intuitively rapidly absorb and process diverse arrays of skills and knowledge. In contrast, an Applied Model will better prepare and direct a more receptive, socially collaborative approach, leading to more cognitively agile individuals able to enjoy, indeed thrive, on learning through the solving of problems.

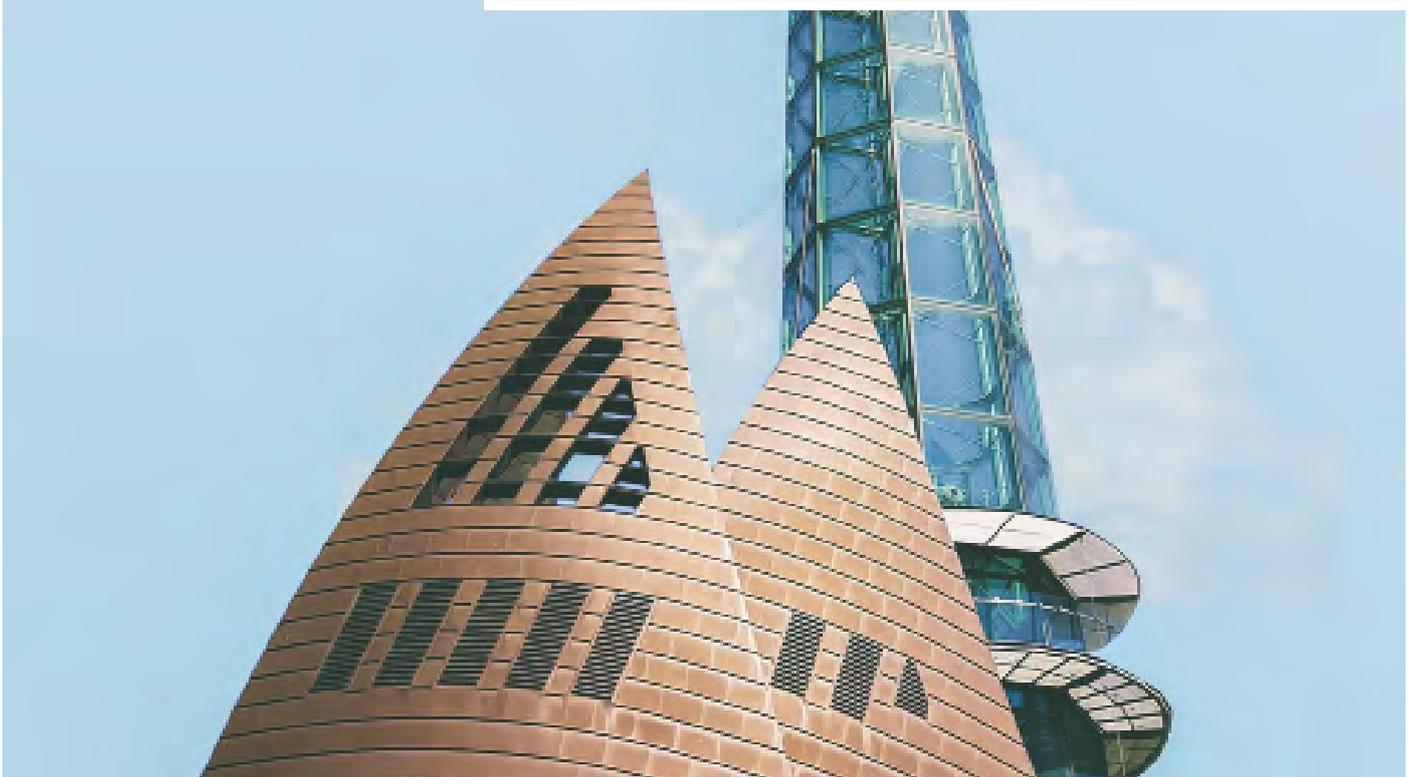
Prof John Shields^{lx} Deputy Dean and Associate Dean [Education] at The University of Sydney Business School offers a further thought to this, as he believes that you can develop certain types of cognitive characteristics in people provided that they are not dispositional [i.e. you can't make someone who's not conscientious be so]. He points out that we need to create both imagineers and technical executors in an organisation and people need to understand what role they must perform at various stages in their careers. Further to this, he believes that while creative thinking is becoming highly desirable, critical thinking is more important than ever before. As information [which may not always be correct] can be accessed at the touch of a button students need to learn how to interpret information to avoid having the wool pulled over their eyes.

The Applied Model which requires deeper thought and awareness of the 'now' in application of solutions, inspires a more enquiring approach than the one which delivers a specific knowledge set which may be academically valid, yet not be relevant to the matter at hand.

Photo by Victor Garcia on Unsplash

“Employers’ frustration with job applicants often relates to the lack of employability skills that they want and need but often can’t find in new graduates.”

*Innes Willox, Chief Executive, Australian Industry Group,
Monday 8 January 2018^{lxi}*



THE INTERNATIONAL MARKET

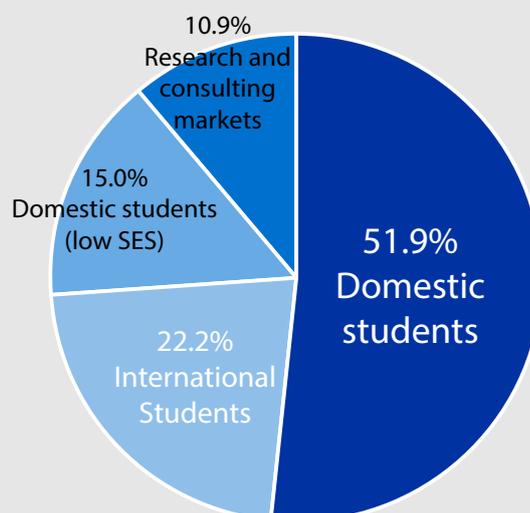
Australia and its education system relies on international students to a greater degree than any other country in the world. Education related travel services are our largest service export (and third largest export item behind iron and coal) last financial year^{lxii} and international education and tourism generated \$28 billion^{lxiii} in income for Australia, with universities accounting for over \$15 billion of that income^{lxiv}. In 2017 higher education attracted 350,475 international enrolments (growing by 15% from 2016)^{lxv} in the first quarter of 2017, with enrolment figures being 336,902 in July 2017 [50% of all education sectors] primarily from Asia and the subcontinent^{lxvi}.

While within the University and Other Higher Education Industry, international students account for approximately one-fifth (22.2%) of the industry's \$31.4 billion revenue^{lxvii}. The true economic importance of international students is best outlined at the organisational level, with a Sydney Morning Herald feature in March 2018 revealing that at Sydney University overseas student fees rose 92% in three years from \$391 million in 2014 to \$752 million last year and at the University of NSW consolidated revenue from overseas student fees jumped 26% between 2015 and 2016 alone to total \$560 million^{lxviii}.

Top 15 exports of goods and services 2016-17			
		A\$ bn	Share (%)
1	Iron ores & concentrates	62.8	16.8
2	Coal	54.3	14.5
3	Education-related travel services	28.0	7.5
4	Natural gas	22.3	6.0
5	Personal travel (excl education) services	21.7	5.8
6	Gold	19.0	5.1
7	Aluminium ores & conc (incl alumina)	7.5	2.0
8	Beef, f.c.f.	7.1	1.9
9	Wheat	6.1	1.6
10	Crude petroleum	5.2	1.4
11	Professional services	4.8	1.3
12	Copper ores & concentrates	4.6	1.2
13	Technical & other business services	4.2	1.1
14	Financial services	4.0	1.1
15	Meat (excl beef), f.c.f.	3.8	1.0
	<i>Subtotal</i>	255.3	68.4
	Total all countries	373.2	100.0
	<i>Education</i>	28.6	7.7
	<i>Tourism satellite account</i>	37.2	10.0

Australian Trade & Investment Commission - Australia's export performance in FY2017. source: <https://bit.ly/2JfPkck>

Major market segmentation (2017-18)



Total \$31.4bn

THE INTERNATIONAL MARKET

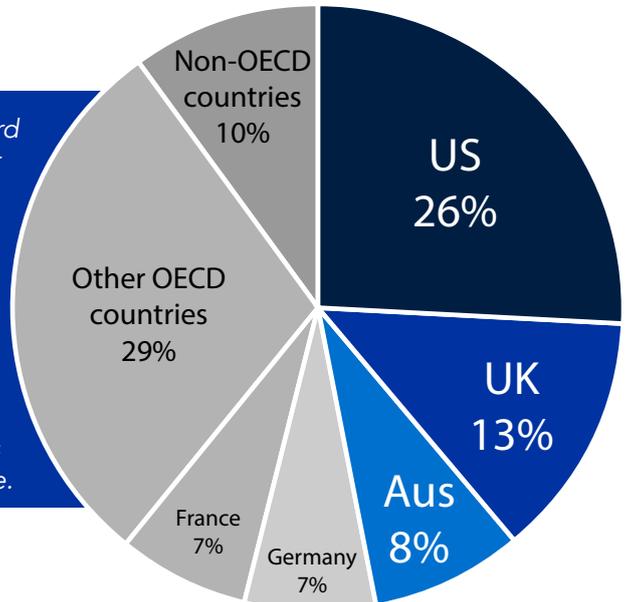
The greatest shares of international students in Australia are at the Master and Doctoral levels, where they comprise 43% and 34% of all students respectively^{lxix}.

At a global level, Australia is ranked in the top three destinations for international students and according to recent research by Times Higher Education 22 Australian universities are in a list of top 200 universities with the highest percentage of international students, behind the UK (72) and USA (27)^{lxx}. Interestingly three of the universities featured in the top five were founded in the past 30 years.

Similarly, on a per capita intake of foreign students we also rank third in the world (with the USA leading the UK in this ranking).

Both data sets illustrate the huge reliance our economy and education system place on our international intake.

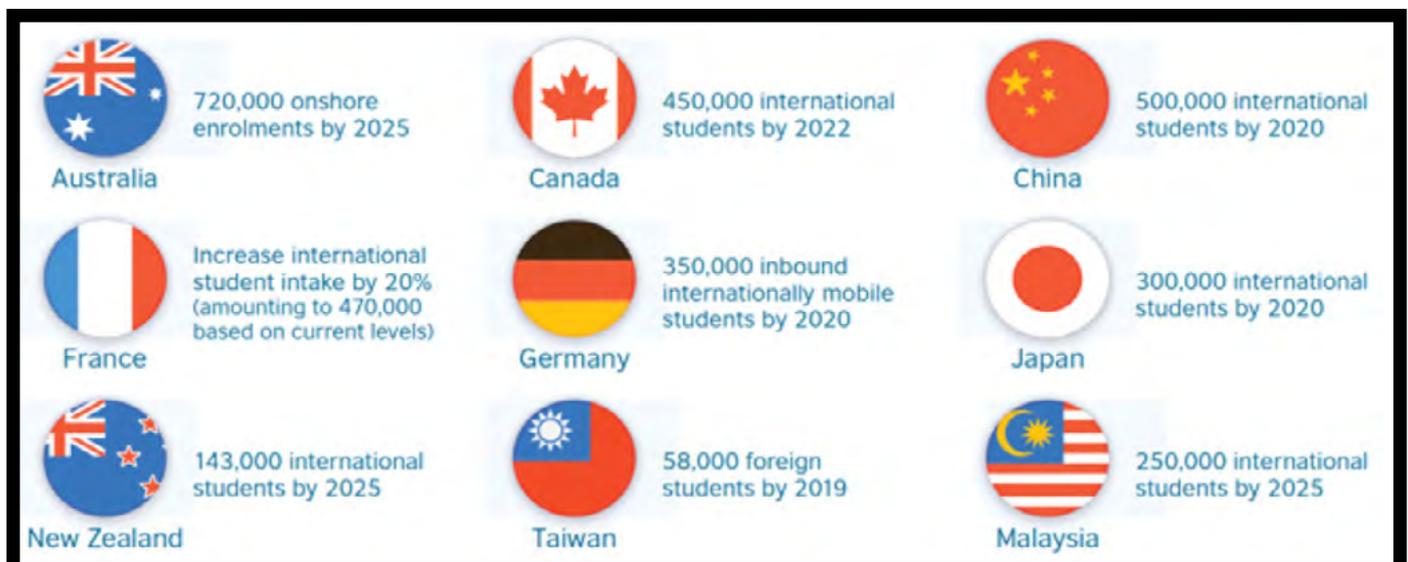
Australia is the third most popular education destination in the world. Approximately 5 million students studied abroad in 2016. Source: International Education Association of Australia & OECD's Education at a Glance.



It is recognised that international education is one of the five super growth sectors contributing to Australia's transition from a resources-based to a modern services economy, offering an unprecedented opportunity for Australia to capitalise on increasing global demand for education services. The Australian Government has developed the National Strategy for International Education 2025 – "a 10-year plan for developing Australia's role as a global leader in education, training and research"^{lxxi}. This market

development roadmap targets an international enrolment of 720,000 students by 2025 – across all education sectors^{lxxii}.

This target was drawn from a Deloitte Access Economics Report developed for Austrade in 2015 based on a compound annual growth rate of 3.8% over the next ten years^{lxxiii}. [It went on to suggest that this projected enrolment could conceivably even reach 990,000 over the next ten years.]



Selected international recruitment targets, as expressed in the national strategies of study destinations. Source: British Council

In the National Strategy for International Education 2025, the first of the nine goals identified is “Building on a world-class education, training and research system” by

1. embracing best practice in all aspects of education, training and research;
2. continuing to develop a diverse, flexible and innovative education and training system;
3. developing and supporting innovative education products and services.

In a different century, or in a different world free of fierce competition such broad objectives and optimistic figures, built on multiples of current numbers as opposed to market considerations, are compelling and may even seem achievable.

But Australian universities don't function in such an environment and just some of the issues that must be considered include:

- China is on a path to becoming the greatest investor in research and development in the world within the next decade^{lxxiv}.
- China aims to be the world's top international education destination by 2049 – investing in 42 institutions to transform them into world-class universities, with a further 95 universities to be provided for specific disciplines^{lxxv}.
- The United Kingdom has allocated AUD\$3 billion over five years to its catapult centres, promoting industry–university collaboration, compared with Australia's \$190 million over the same period for its Growth centre equivalents^{lxxvi}.
- In 2014 the UK Government committed AUD \$3.5 billion to a five-year funding program to finance joint research projects through the UK-China Research and Innovation Partnership Fund^{lxxvii}.
- The United States has outlined significant new investment in higher education, with the goal of having the highest proportion of college graduates in the world by 2020.
- Japan is investing significantly, seeking to become the number one global innovator by 2018.
- Singapore increased its investment in research and development by 20 per cent for 2011–15 from the previous five-year period.
- South Korea has a target of investing five per cent of GDP in research and development by 2020^{lxxviii}.

These initiatives signify investments in education that Australia cannot compete against – at least at a fiscal level.

Consequently, for Australia to have a competitive advantage in the market place it must have a unique, more compelling offering to students that will stand them in front of the market – certainly something far smarter than a nice country to arrive in and good living conditions (where according to the International Student Barometer we outperform the global market by 2% and 1% respectively, while being on par in areas of educational support and learning^{lxxix}).

The current Knowledge Model sits at the heart of the university offering and a continued reliance on this model will inevitably result in a downwards trajectory. To achieve growth in a highly competitive market higher education providers must improve both their product offering and business model in order to determine how they can dramatically reframe the competitive landscape and reposition their offering accordingly.

THE APPLIED MODEL

We have identified four “student first” change indicators that influence the future value of universities to the new student market.

These indicators are:

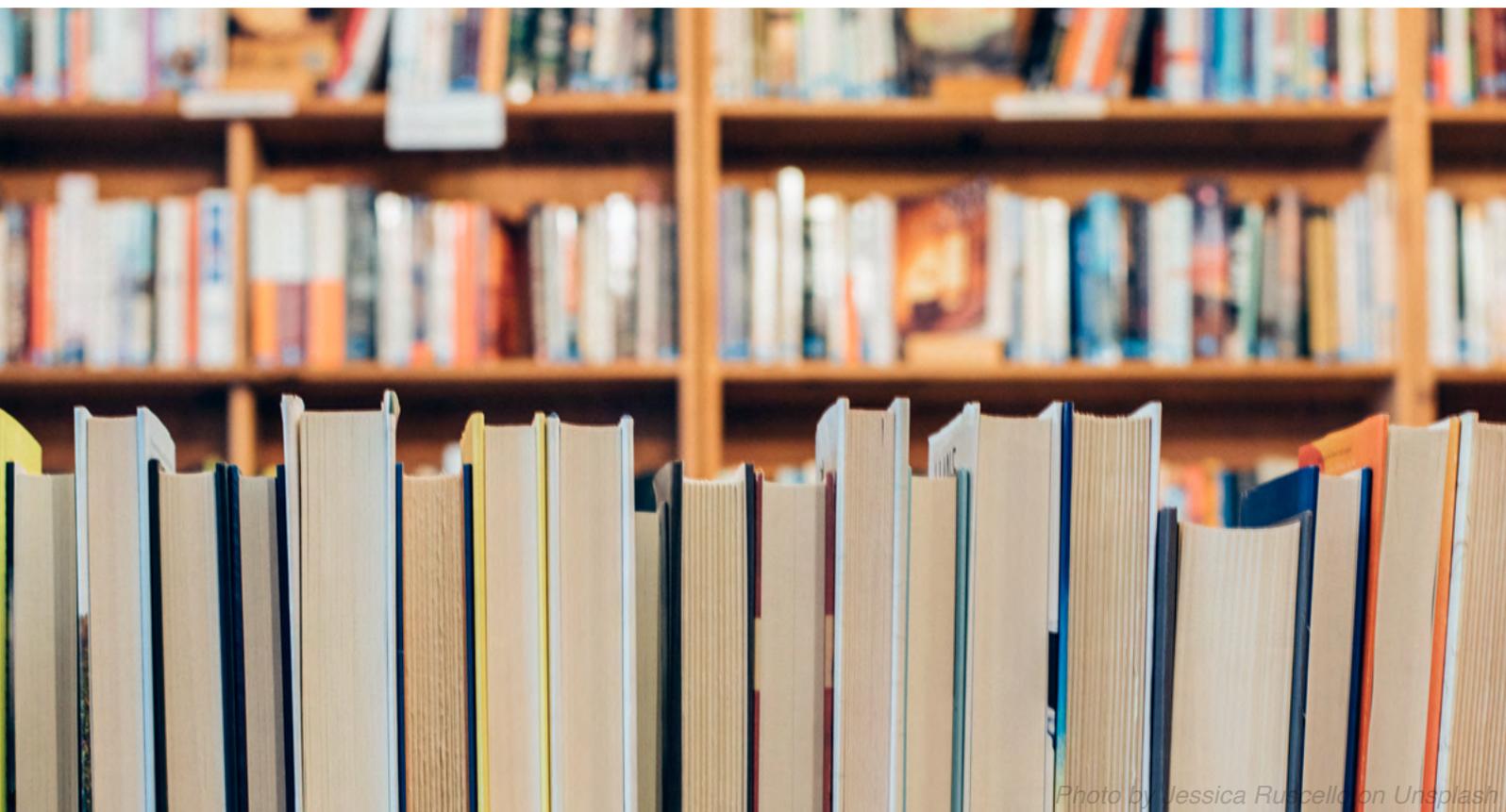
- Graduate Needs
- Future Design of Employment and Careers
- Relevance of Degrees
- Value to Society

We have used these indicators to illustrate that the conventional approach to higher education (the ‘Knowledge Model’) is no longer effective. Our proposed new model (the ‘Applied Model’) requires Australian universities to embrace a design where they are responsible for [1] the creation of new knowledge, [2] the curation

of problem statements and [3] the direction and credentialing of student effort against these problems.

We recognise that the global education sector has recognised the need for change and many different institutions around the world have implemented new approaches. The Faculty of Transitional Learning (at the University of Technology Sydney), Singularity University and the University of Sydney Business School’s Master of Management Program were three of a number cited by Professor Nick Wailes Director AGSM + Deputy Dean^{xxxx}. However, we are unaware of any example where a university has addressed this type of graduate needs at scale.

Millions of hours of student effort are wasted preparing for and completing tasks that test their knowledge. They sit listening to broadcast lectures or undertake theoretical conversations in an intellectual vacuum. All the while wicked problems, many of them a result of market-failure, continue to eat away at the stability of our society. The Applied Model is designed to better cater to the needs of both students and society in an environment where the half-life of new knowledge is on a continuous decline. The economy is placing different demands on graduate students and universities need to in turn change their product to better prepare graduate students for an erratic career path.



The Applied Model is designed to foster and credential an individual's ability to search for and apply relevant knowledge to a defined problem. While this new model is similar to existing student-centred pedagogies like problem-based learning (PBL) in which students learn about a subject through the experience of solving an open-ended problem found in trigger material^{lxxxi}, the Applied Model differs in three specific areas:

- 1.** It places greater emphasis on the institution as curator of the “problems” – and in so doing proposes a new role for them in society which could be seen as an amplification of their research arm in some of the more established universities or perhaps lead to the creation of universities recognised for their skills with regard specific issues-based verticals.
- 2.** It does not focus on one specific discipline (e.g. PBL made its name in medical schools and is now used in various distinct educational areas such as law, math and education) but proposes that members of disciplines or faculties are united across the solving of a problem.
- 3.** It suggests that ultimately the role and tenure of an academic in a graduate's life may be formally transitioned from that of lecturer (and a font of singular knowledge sets at a given period in time) to one of coach across a breadth and wider vision of what is possible, aiding in not only the foundation of a student's knowledge whilst at university but beyond and through their professional journey. To achieve this, academics will need to step beyond siloed areas of specialty and collaborate to create integrated learning and assessment activities that draw from a wide range of discipline areas and focus on teamwork, problem-solving, and creativity as well as the capacity not just to analyse but also to synthesise information into new approaches to challenges and topic areas.

Under this Applied Model the role of the teacher broadens from the custodian of a knowledge pool to that of a coach. These coaches guide students through problem-solving experiences which help them obtain a broad exposure to how knowledge can be practically applied in the real world. Through attacking a specific problem, they learn skills required to work in an ambiguous work environment, an approach that better prepares them for a career likely to change dramatically over time.

From our experience and discussions with academics, such a transition is one many would relish, but they feel that the current structure and funding of the university business model creates significant barriers to adoption. We reiterate that the purpose of this document is to voice the need of graduates for a different approach to learning.

During our research we have had the privilege of investigating and discussing many sound ideas and models that could play some part in redefining Australian universities. Most of them propose only minor alterations of the existing model, and disappointingly focus more on the survival of the institution than the improved development of its end products – the graduates of a new generation. While we dismiss the more outlandish doom and gloom dialogue (which we have deliberately not cited), we do believe that there remains a dangerous naivety in the Australian higher education sector that believes ‘business as usual’ is an acceptable path forward.

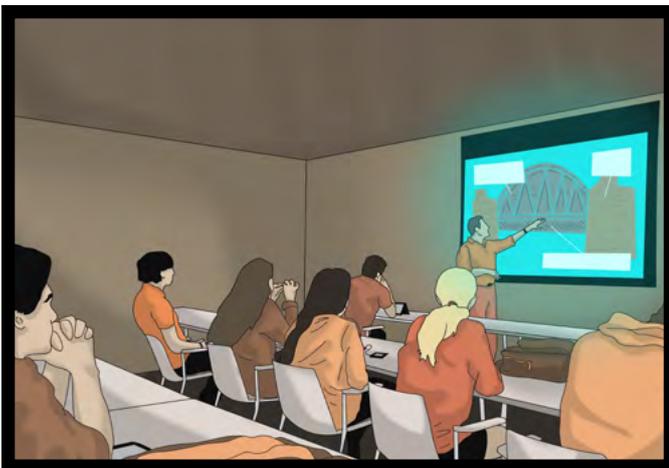
APPLICATION AND ACTIVATION

The Applied Model is a socially collaborative approach to university education that is designed to harness the energy and enthusiasm of the next generation of students, providing them with a platform to engage with society as well as coaches to guide them along the way. It is focused on defining the value of knowledge through context rather than through the historic content of a specific discipline. It proposes that the role of a university is to curate a portfolio of wicked, large scale problems for students to direct their effort against. In so doing, the university guiding and credentialing students during their degree forms a partnership with them that ideally lasts throughout the rest of their life.

For the Applied Model to be successful three significant constructs of the conventional university need to be reframed:

1. Resourcing the curation of problems;
2. Incentivising the whole institution [faculties, disciplines and academics] to participate in this new model; and
3. Expanding the roles of academics beyond discipline-based, short-term engagement with students.

THE KNOWLEDGE MODEL



- [1] Creation
- [2] Curation, and
- [3] The distribution of knowledge.

Millions of hours of student effort wasted in broadcast lectures, theoretical conversations and repetitive drudgery aimed at building and testing knowledge often out of date before the degree is completed.

OR

THE APPLIED MODEL



- [1] Creation of knowledge
- [2] Curation of problems, and
- [3] The direction and credentialing of student effort to solve these problems.

Largescale problems being addressed in socially collaborative scenarios across multiple subjects, degrees and faculties. Harnessing the energy and enthusiasm of students, by academics coaching them to actively and continuously achieve and question knowledge in context – beyond the historic content of a specific academic discipline.

AN ACTIVATION SCENARIO

An example of how the Model can work can be shown by expanding on an existing initiative by the University of New England [UNE] and their SMART Farms [Sustainable, Manageable, Rural Technologies]. If UNE was to reframe its purpose to become a centre of global excellence and expertise in 'sustainable agriculture' it could focus the whole institution on addressing one specific arguably unsolvable problem 'sustainable agriculture'. This general problem is underpinned by a vast number of deep and expansive subsets of significant global appeal to government, industry and society which present opportunities for exploration, learning and improvement to all disciplines.

While such a distinctive positioning for a regional university has obvious advantages of global proportion, the benefits to the students is in the problems UNE would curate for them. Be it a tight number of mid-sized problems, one more significant problem or a larger number of micro-problems presented to an incoming cohort to work on for their period with UNE, the solutions developed would involve the collaboration of a multitude of disciplines and faculties.

This approach does not merely provide a united narrative and focus on a real-world problem it provides exposure to and engagement with a mass of other individuals in other fields that a graduate will need to understand, rely on and support in their career. While an obvious advantage of attending an institution with a specific focus is the ease to move into a role related to that sector [i.e. social sustainability or agriculture], the real cross-discipline training it provides [project management, creative and critical thinking, collaboration, entrepreneurial and enterprise skills, etc.] ensures that the graduate is vastly more skilled, experienced and capable to adapt to any sector they choose to pursue than competing graduates educated through the Knowledge Model.

Likewise, the role of the academic, simply by the nature of the model will be changed. They will naturally have greater exposure to and engagement with peers from other faculties. Although their principal area of expertise will remain paramount, it will never be applied in isolation and hence their delivery and knowledge will need to be as robust in context as it is in content.

More so their purpose as a coach and facilitator of the learning experience will be greatly enhanced, moving them beyond a purveyor of knowledge, to an expert constantly challenging themselves and their students in order to bring their studies to life in an actionable and accountable manner. By getting their academic hands dirty, as such, on a real problem with real consequences, they are forging a stronger and deeper relationship with their students. This in turn will see those who are good at it and desire to do so, continuing to play a role in the professional life of their graduates, well beyond the university gate – and extending their share of wallet and life of customer for many years forward.

CONCLUSION

The Applied Model is being proposed to enhance the discussion around Australian higher education and how it can help future students face an uncertain and economically hostile world.

With this concept paper we seek to highlight that focusing only on minor shifts to the academic playbook leave significant value on the table. We suggest that students and society need Australian Universities to transform their model away from the [1] creation, [2] curation, and [3] distribution of knowledge and instead focus on a more socially collaborative model whose purpose is the [1] creation of knowledge, [2] curation of problems and [3] the direction and credentialing of student effort to solve these problems.

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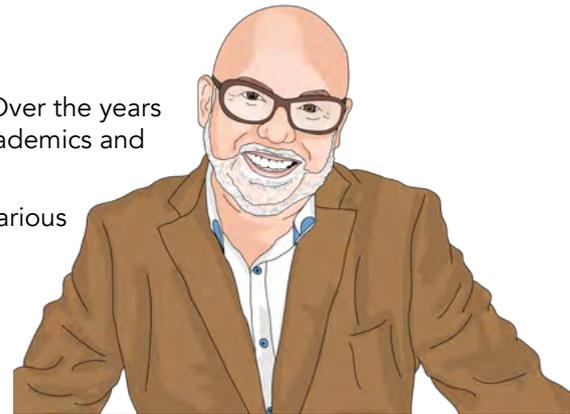
Prior to this role David has been a Strategy Advisor with CSIRO and has worked as a Business Development Executive for KPMG. David is a Non-Executive Director of the Planet Ark Environmental Foundation, an Australian not-for-profit organisation with a vision of a world where people live in balance with nature and David also teaches strategy, innovation and entrepreneurship at the University of Sydney.



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All additional images [photographs + infographics + graphs] carry captions appropriately attributing their origins, please refer to each for details on their source.

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