



UNLOCKING DIGITAL POSSIBILITIES

# The Future of Tertiary Education in Australia and New Zealand



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## INTRODUCTION

# Tertiary Education in Australia and New Zealand: The Digital Possibilities

**Like many industries, tertiary education is in the midst of a period of unprecedented change, uncertainty, and opportunity.**

Remote work and online interaction became essential during the pandemic with institutions quickly pivoting work and study to keep their institutions viable. Organisations are now looking to develop from what they have learned from their experiences during and post COVID-19, integrating that with the unprecedented opportunities presented by emergent technologies like Generative AI in both the public and private sectors.

Amazon Web Services (AWS) participated in candid conversations with industry leaders about the future of tertiary education to explore how digital innovation can assist in this evolution. A number of thought leaders, educators, and partners across the sector shared their thoughts with AWS about the key challenges they currently face as well as the opportunities they see for further innovation.

Many common themes emerged across the institutions we engaged with. What became clear in our conversations was the significant appetite for change among the sector's thought leaders.

The pandemic dispelled the notion of tertiary education change as untenable, and the challenge now is balancing technical potential with human application, nurturing both to allow new cultures to evolve. With that in mind, this eBook addresses some of the key areas tertiary education institutions can focus on to facilitate long-term, impactful change.



# Changing the mindset

**“Post COVID and as we engage in Gen AI discussions, now is the perfect time for universities to have conversations about their purpose and re-evaluate if the existing structures are delivering the goods. I think there needs to be a mindset shift about the way we think about the educational experience.**

**Often, we centre much of the question or problem formulation on ourselves rather than our customers. There is a real opportunity here for all stakeholders to be heard and for them to co-create a value proposition of the university for future generations.”**

**Morgan Popely**  
Startup Community Manager  
University of Technology Sydney



# Evolution over revolution

**Our conversations with thought leaders across the sector revealed that today's learners expect and need something different from past generations.**

They are demanding different arrays of tailored materials, support, and services. Embracing the idea of constant evolution supported by digital innovation provides institutions with the opportunity to stay at the forefront of tertiary education and support future workforces who have the experience, ability, and appetite to learn emergent technologies.

Digital transformation is inherent to how we are supporting institutions to deliver on this drive for change. Cloud-based systems are flexible and can support roll-outs of modernised applications through what AWS describe as two-way doors. A two-way door decision is reversible – even after a system is implemented, there is an easy way back through the door if required. While we recognise that it's not total overnight transformation, elements can be introduced gradually in support of emergent pedagogies, along with systems integrations and modernisations. Digital transformation can also be scaled up or down, added to, and even [switched off temporarily](#) to save costs. Building cloud-based infrastructure with [architectural 2-way doors](#) allows for low-risk trial and error,

which plays to the strengths of an industry founded on the notion of research and progressive experimentation.

Shifting mindsets towards a digital evolution, rather than a revolution, is the first step towards sustainable change.





# Key Priorities for Tertiary Education

Cross-organisational transformation is ultimately achievable. However, to gain the momentum required for institutional change, our interviewees were unanimous on the need to address four key areas.

## 01 DIGITAL SYSTEMS

**“There are systems of systems; you can’t just change one part of it. That’s why change can be slow internally.”**

**George Siemens**  
Professor and Director  
Centre for Change and Complexity in Learning  
University of South Australia

## 02 STUDENT ENGAGEMENT

**“Students make very pragmatic choices about what they do and what they consume. If they don’t see the value in a learning activity – they won’t participate.”**

**Danny Toohey**  
Senior Lecturer  
School of Management and Marketing  
Curtin University



### 03 ACCESS AND EQUITY

**“We currently add things on instead of using Universal Design as our underpinning framework. By changing that—and using Universal Design from the outset—we could see some big gains in terms of making universities a more accessible and safer place for all students to study.”**

**Jess Vanderleile**  
Deputy Vice-Chancellor of Education  
LaTrobe University

### 04 MODALITY

**“In future, we will have a much more open and flexible tertiary education system with timetables that look completely different from what we have at the moment. You’ll almost get to the point where you won’t be able to separate the learning from the assessment – the assessment will be part of learning and the learning will be part of the assessment.”**

**Geoffrey Crisp**  
Deputy Vice-Chancellor (Academic)  
University of Canberra

01

# Digital Systems

**“Almost every time we deal with a reasonably sophisticated technology company, the experience is generally frictionless. It’s very consumer friendly and the end-user experience has been extensively articulated and fine-tuned. To attract and retain future learners, Universities need to be able to match that high-quality user experience.”**

**George Siemens**  
Professor and Director  
Centre for Change and Complexity in Learning  
University of South Australia



**Ease of use is a significant part of the end-user experience. Inefficient, disjointed, and difficult-to-use systems can put students—and parents—off as early as the registration process. As digital infrastructures become increasingly sophisticated, universities are encouraged to remain competitive by keeping up with technological advancements and prioritising user-friendly systems that support efficient customer service.**

The University of Auckland successfully [improved customer service](#) by creating an omnichannel contact centre powered by [Amazon Connect](#). By consolidating customer interactions into a single cloud-based interface, agents could access informative, real-time data. This enabled them to provide a faster and more personalised service to current and prospective students, particularly during peak periods like enrolment and results days.



# Migrate and modernise

**“Every university has a number of platforms – the SMS, the LMS, ERPS or the middleware that ties them all together... If you want to implement something new, it has to connect to 16 other pieces and go through privacy and security etc... How do we fix that?”**

**Sherman Young**  
Deputy Vice-Chancellor  
of Education and Vice President  
RMIT

Legacy technology can be a barrier to change, but updating outdated software, streamlining multiple platforms, and eliminating unnecessary middleware can be done quickly and cost-effectively. Migrating programs and applications to the cloud can integrate siloed systems as well as provide tailored upgrades to the latest Software-as-a-Service (SaaS). A cloud-first strategy eliminates inefficiencies and significantly improves the user experience, allowing users to access critical, decision-driving data in support of students and faculty.

University of Newcastle adopted a cloud-first strategy in 2018, working with AWS and a Consulting Partner to migrate 139 applications in nine months. This reduced IT infrastructure costs by 20% and accelerated speed of research by streamlining access to academic resources. It also reduced the university's carbon footprint,

which could decrease even further by 2025 when AWS is powered with 100% renewable energy.

Migrating to the cloud also enabled The Office of eResearch at Queensland University of Technology (eResearch@QUT) to develop an open-source digital platform to collect and analyse health data. Using Amazon Virtual Private Cloud, eResearch@QUT enables individuals living with Angelman Syndrome to self-register and share information to accelerate clinical research. This was the first platform to support this kind of data gathering on a global scale, and is now being used to achieve similar results across other conditions.

02

# Student Engagement

**“My daughter’s studying and they have over 20 contact hours a week. She then works at night to make some money; so, if a class doesn’t work for her she doesn’t go. She’ll watch a recording, she’ll watch at 1.5 speed and she’ll replay the bits that are interesting.”**

**Danny Toohey**  
Senior Lecturer  
School of Management and Marketing  
Curtin University





# Students want choice and flexibility

**The digital-native generation makes sophisticated choices about the content and environments they engage with. Students want courses that prepare them for the challenges of the future workplace, and they want to be able to fit them around life – choosing when, where, and how they learn.**

A 2023 digital skills [report by AlphaBeta](#) noted that in order to meet future demand for technology skills, Australia will need 6.5 million newly skilled and re-skilled digital workers by 2025. [University of NSW's CyberSECurity Education Network](#) is collaborating with AWS to reduce this skills shortage

and provide career pathways for future cyber professionals. Meanwhile, University of Adelaide used the cloud to provide [hands-on virtual training for 152 bioinformaticians](#) across Australia. Using tools like [Amazon Elastic Compute Cloud](#) (Amazon EC2) and [AWS Auto Scaling](#), the university collaborated with active research scientists and research organisations to provide real-world training scenarios for future bioinformaticians. This approach also ensured that students accessed the same resources regardless of their location or local infrastructure.

Supplying these kinds of highly relevant courses that prepare students for the future workforce can help tertiary education institutions to remain competitive and attract new students. However, in order to retain these students, a delivery model that includes a variety of methods including

face-to-face, remote, and the option to flit back and forth between the two is key. With the student population becoming increasingly diverse—as highlighted in the [2022 Data Snapshot report by Universities Australia](#) – it's also important to design flexible programs, systems, and delivery models that work for multiple demographics. Meeting these challenges provides an opportunity for universities to remain relevant, appeal to wider learner populations, and fulfil their obligations to provide accessible education for all.



# Earning the student commute

**Digital learning creates a wealth of learning opportunities and provides an opportunity to accentuate the value of face-to-face, on-campus interaction.**

Effective delivery of engaging content and initial practice through efficient systems opens up the classroom for a focus on personal development, a sense of community, and dialogue across various cultures and different ways of thinking. These critical aspects of the university experience leading to true work-readiness can be fostered through thoughtful enhancement of remote and in-person experiences.

The range of online resources available to students means that they need to see a real value-add to travel on crowded trains and buses to make it to campus. Institutions are realising that they need to provide more obvious value-adds in class to earn their students' commutes. Creating authentic, interactive, engaging lecture experiences will encourage students to re-engage with the campus and the classroom. Better technical systems leading to better data sources and ultimately to optimised student experiences is the path that most of our interviewees envisioned when asked to visualise the future. Changing student demographics and mindsets make this an even greater imperative.

University of Melbourne (UoM) tackled many of these issues by adopting a [smart campus methodology](#). By collaborating with AWS, they combined technologies like [Internet of Things \(IoT\)](#), [Machine Learning \(ML\)](#), Open Databases, and [Edge Computing \(EC\)](#) to support innovative information delivery across multiple campuses. Backed by real-time student data, UoM can make insight-based decisions that continuously optimise the student experience and provide frictionless, engaging, and relevant learning both at home and on campus.



# Access and Equity

The [2022 Data Snapshot report](#) by Universities Australia revealed that the number of students with a disability grew by 169% between 2008 and 2020. In that same time period, the First Nations student population grew by 135% and a 63% increase was seen in students from low socioeconomic backgrounds. Meanwhile, the remote and regional student population also grew by 43%.

To meet the needs of this diverse and ever-growing range of communities, groups, and social issues, universities need the structural agility to be responsive, accommodating, and thoughtful.



# Universal design

**“In order to create courses that allow students with disabilities, mental health conditions, or students from different cultures to succeed, we need to apply Universal Design as our underpinning framework. This will go a long way in making universities a better and safer place for more diverse students to study.”**

**Jess Vanderleile**

Deputy Vice-Chancellor of Education  
LaTrobe University

Addressing equity and diversity is already a priority across the sector. As we begin to reimagine tertiary education in general, we have an opportunity to design brand-new courses and delivery methods with integrated innovations that further promote inclusivity across the entire learning journey. Emergent technologies like Augmented Reality (AR), Virtual Reality (VR), and Digital Twins could provide additional opportunities to deliver experiential learning. Using the scalability of the cloud, these kinds of technologies could also bring authentic learning to students in areas where actual resources or facilities are scarce.

# Integrated solutions for student support

**Some of the tools required for addressing the needs of various student cohorts already exist. For example, AWS services like [Amazon Transcribe](#) and [Amazon Translate](#) which use Artificial Intelligence (AI) and ML, can be used to automatically translate instructions and directions in universities.**

Such services are also being implemented by education technology organisations. For example, AWS Partner Studiosity worked with [Central Queensland University](#) to provide academic support to their students at times that work for them given their work, family and other commitments. CQU Studiosity users on average had a 16.45% higher rate of retention than the rest of the cohort and were 17.31% less likely to be placed on academic probation.

Digital technology can also help identify if and when students are struggling. By bringing disparate data sources together, the [University of Manchester in the UK](#) used smart data analytics to track student engagement and spot areas of concern as early as possible. With a similar holistic, cloud-based approach to student data, institutions

can respond to the [Suicide Prevention Competency Framework for Universities](#), allowing earlier intervention and support for students struggling with workloads, adjusting to university, or mental health concerns in general.



# Modality

**“The idea of courses is quite antiquated. I don’t think that’s a sustainable model, I think we’re instead going to look at what’s called computed curriculum. That’s curriculum generated in real-time based on what it is that you need to know to be an expert in a particular topic area, as well as each individual’s personal learning graph.”**

**George Siemens**  
Professor and Director  
Centre for Change and Complexity in Learning  
University of South Australia



**Digital innovation provides an opportunity to evolve away from traditional three or four-year degrees consisting of 12-week courses led by individual professors.**

Instead, institutions could create high-flexibility content and assessment structures powered by team-based support. [The Future of Higher Education in a Disruptive World](#) report supports this vision, predicting that institutions will journey towards experiential learning and competency-based education supported by curated degrees and micro-credentialing.

Our interviewees largely agreed that the future would bring more permeability between studying and the workplace, with greater importance placed on intra-disciplinary and transfer learning. Some also envisioned opportunities for students to continuously engage with adaptive AI-driven content along with AR-VR simulations and access to 24/7 augmented chatbot support.



# Work-based training and micro-credentials

**“Microcredentialling is something that might be more predominant in only a few years from now - with a curated or planned approach to attaining multiple micro-credentials that are very tailored to you and what you like to do; what you’re really good at and what is marketable to an employer.”**

**Dr Jim Wagstaff**

Co-founder and Chief Learning Officer  
Noodle Factory

Greater alignment with industry needs and rapidly evolving technology could increase the viability of micro-credentials as an alternative to homogenous credit-based courses. By continually assessing students through authentic learning internships and work-based training, micro-credentials could tailor the learning and assessment process to suit students’ individual needs.

For Australia to be able to meet the national goal of 1.2M tech and digital workers by 2030, more flexible and adaptive ways of skill acquisition embracing VET pathways are needed.

The AWS Skills to Jobs VET Virtual Work Placement Program, developed in collaboration with Schools Industry Partnership and the New South Wales Department of Education, provides a curated week of professional and technical workshops to inspire builders of the future. The program is open to students undertaking VET learning pathways, and includes students in rural and regional areas.

AWS continues to provide learning opportunities to a broad cohort of learners through programs such as [AWS Academy](#), [AWS Educate](#), and the [AWS restart](#) and engages broadly across industry groups, such as Tech Council Australia, and government organisations like the Future Skills Organisation.

These activities inform our approach to national skilling and workforce development challenges leading to initiatives like the AWS Digital Apprenticeship program which infuses accredited training via vocational education providers with a variety of in-demand industry certifications and work placement opportunities.

# AI-driven education

## AI will undoubtedly impact universities in future.

While safeguarding the validity of assessments is a legitimate concern, many of the educators we engaged believed that adjusting the mindset to focus on the opportunities AI, particularly Generative AI, can create would better serve the sector. Capitalising on these emerging technologies with the support of a flexible, cloud-based framework could allow universities to futureproof operations and attract a wider range of students as well as larger volumes.

**“Work-based training will become more of the norm. Technology is going to make that a reality - connecting with the AI side of things for automatic grading, which is great as everyone wants instantaneous feedback. A student in an on-the-job, style of learning will have their technology with them; their phone / the app. They’re filming what they’re seeing and then they’re putting in their comments and they’re getting real-time feedback – instantly.**

**The best way to learn from your peers is in situ; learning from your peers on what’s going on - seeing how they react...”**

**Garth Hehir**  
Customer Development Director  
Elumina ELearning



# The future of tertiary education

**A common consensus among the thought leaders we interviewed was that the ultimate goal is to create a fluid learning experience that can be continuously tailored to suit future generations.**

This vision includes connected systems that allow a seamless user experience for students, administrators, and faculty members. It is supported by an agile IT infrastructure that integrates with innovative solutions for diversity, inclusion, and flexible industry-based learning.

**“The universities that are doing exceptionally well in terms of growth in student numbers, profile, student success, and other factors - almost all of them that come to mind are aggressive innovators. They’re the ones who are tinkering with the systems, trying to find new ways of doing things”**

**George Siemens**  
Professor and Director  
Centre for Change and Complexity in Learning  
University of South Australia

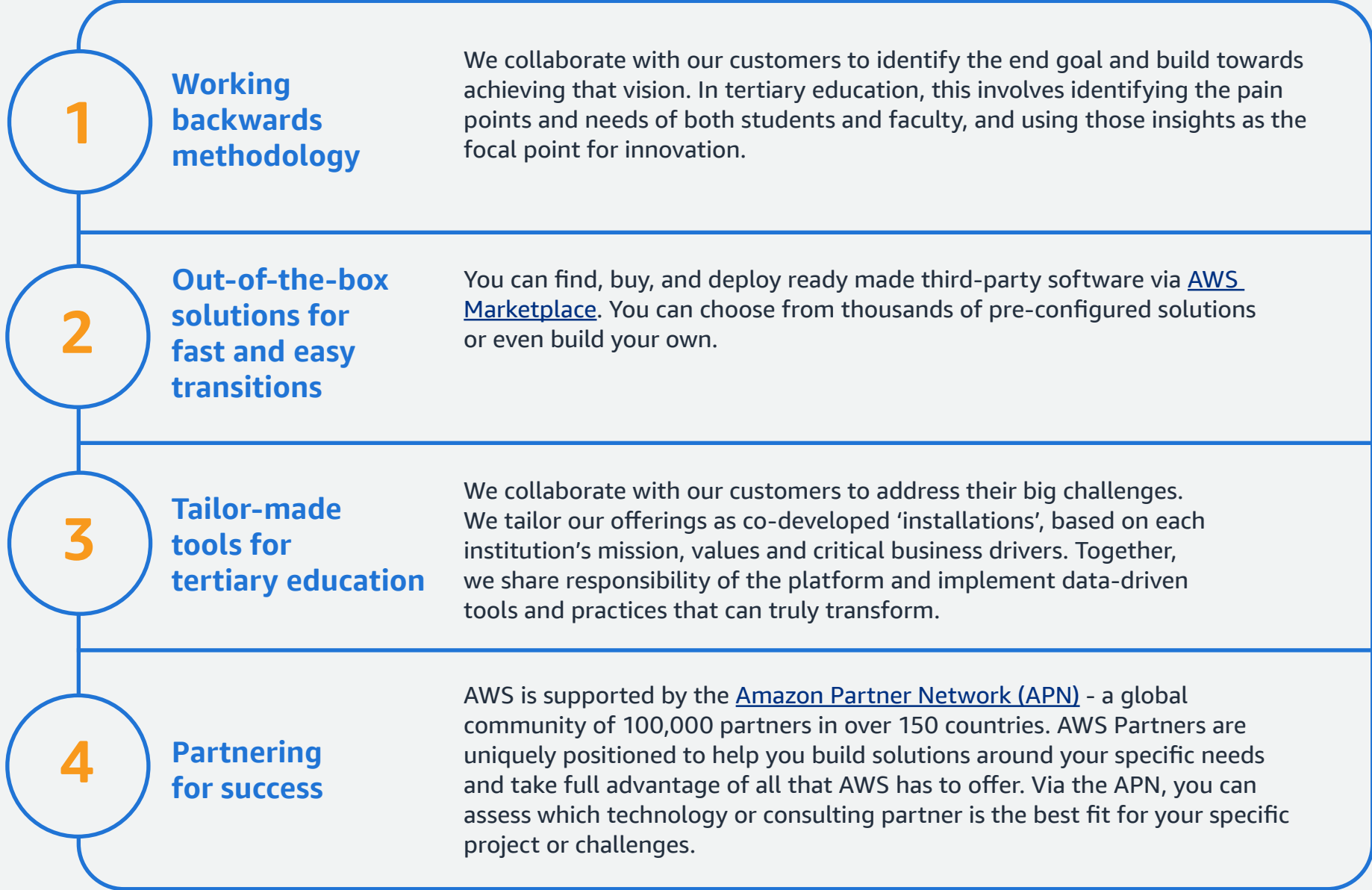




# Driving digital transformation with AWS

**AWS works with a number of tertiary education institutions to find, allocate, and develop new solutions that responds to their challenges and opportunities. Here are some of the key ways we help our customers in the education sector to transform and evolve with the changing demands of the industry.**





# Building a future together

**“I can see places like Amazon Web Services (AWS) and other corporate players becoming, even more, a core part of the tertiary education sector. Instead of running separate (stand-alone) programs, they will become part of the university or the university will become part of them. We will still have tertiary education as a thing but with this permeability, flexibility and being able to move in and out much more readily.”**

**Geoffrey Crisp**  
Deputy Vice-Chancellor (Academic)  
University of Canberra



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# Let's start the conversation

If you're ready to dive deep into digital transformation in tertiary education, contact [Dr. Kevin Bell](#) to discuss upcoming events and roundtable discussions as part of the AWS-FutureEd incubator.



# Credits

Kevin Bell has led digital-technology initiatives at a number of institutions across the globe. He served as Chief Academic Officer at Southern New Hampshire University before moving on to Northeastern University, where he founded the award-winning Online Experiential Learning team and sat on the Gates Foundation reviewing emergent (Next Gen) Tech platforms. He completed his doctorate at the University of Pennsylvania with research focused on intrinsic motivators for students from under-represented minorities. Relocating to Australia as WSU's PVC-Digital Futures, in 2021 he joined AWS as their Head of Higher Education and Research for ANZO. At AWS he is focused on how systems organisation allied to emergent technologies can be applied to contemporary challenges in academia.



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