FUTURE TRENDS IN TEACHING AND LEARNING IN HIGHER EDUCATION

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Contents

Executive summary

This paper presents a synthesis of future trends in teaching and learning in higher education drawn. It consists of two parts:

Part 1 describes the context of the changes affecting higher education. It discusses the broader landscape of universities, the changing student and academic profiles, skills for the 21st century for teachers and learners, the proliferation of technology and its impact, and finally, the nature of teaching and learning.

Part 2 considers how universities might respond to change.

The literature leaves no doubt that the higher education sector must change and that change will be difficult and expensive. Trends indicate that universities must make decisions about their academic programs and as such, what students they want to attract. This will impact on how they change their structure and business model. Central to this will be how the university embraces technology and contemporary models of teaching and learning. Upskilling of academic staff must occur but this will not happen unless there is significant support over an extended period of time.

PART 1: The context of change

1.1 The landscape of universities

It is argued that over the past thirty years, universities have faced major challenges, and undergone major transformations, in their nature and scope, their governance structures, the nature and value of knowledge, and their relationship with the economy and society (Robertson, 2010). A 2009 UNESCO Report (Altback, et al., 2009:xii) identified that higher education is increasingly viewed as a major engine of economic development with university-government-industry linkages (the so-called 'triple-helix') driving noticeable organizational changes within universities.

Bates however (2015, 15) argues that there is a real danger in tying the university too closely to immediate labour market needs. As tuition and fees increase and public funding for educational institutions decreases, some authors (Robertson, 2010; Barack, 2014) are proposing that many students are already judging higher education as a poor economic investment given their decreasing chance of employment after graduation.

In light of these changes, the fundamental question is 'whether a university education is a good preparation for working life and citizenship in the 21st century or, more precisely, whether it will continue to be seen as good value, given the remorseless rise in the cost of a university education over recent decades' (Barber, et al., 2013:1). Ernst & Young (2012:4) argue that 'the dominant university model in Australia — a broad-based teaching and research institution, supported by a large asset base and a large, predominantly in-house back office — will prove unviable in all but a few cases over the next 10-15 years'. As such, a key challenge for higher education facing the significant forces of technological change, intense competition and constrained resourcing will be 'to determine the optimal mix of online and on-campus teaching and learning, both within individual institutions and across whole systems of higher education' (Gallagher & Garrett, 2013:9).

Universities are fundamental to the creation, evaluation, maintenance and dissemination of knowledge. Bates (2015), de Sousa Santos (2012) and Robertson (2010) strongly support the continuing role of universities as central to knowledge creation. The following questions (de Sousa Santos, 2012:9) may be useful for universities when considering the impact of change on their knowledge production and dissemination:

- What is the place of the university as a center of knowledge production and dissemination when many other centers are similarly involved?
- How does the commercialisation and commodification of knowledge within the university change the nature of knowledge that is produced?
- Does the range of knowledges being funded and disseminated become limited by the potential immediate commercial value?
- Who is valued in the university as knowledge producers, and how are the cultural, social and political dimensions of critical knowledge production catered for in a highly commercially-oriented approach to knowledge?

The following table (Table 1) identifies enablers and/or blockers of change.

Laurillard (2008: 14)	Ernst & Young (2012:4)	Gallagher & Garrett (2013: 3)	Wellings (2013: 8)
Education is a complex system of powerful drivers – assessment, curriculum, inspection/quality requirements, funding flows, promotion criteria – none of which have changed significantly in recognition of what technology offers.	Democratisation of knowledge and access — the massive increase in the availability of 'knowledge' online and the expansion of access to university education in developed/developing markets means a change in the role of universities as originators and keepers of knowledge.	Access and higher education as a positional good	The emergence of the digital economy and new technology – universities must change their teaching, research, structure and business models supported by access to high-speed broadband services.
Technological change is very rapid and universities have not yet had time to make the radical changes afforded by digital technologies.	Ubiquitous content	Pedagogy and the industrialisation of learning	Globalisation and the Asian century – universities must maintain and enhance Australia's global position.
The education system is run by leaders who are not comfortable with either the detail or the implications of the technology potential. Those who are comfortable with them are not powerful enough within the system.	Broadening of access to higher education	New sectoral and institutional geographies of universities	Economic and industrial restructuring - universities are central to providing skilled workers that can meet the economy's changing needs.
Education does not easily become commercialised or globalised, and therefore avoids being subject to the innovation that market forces encourage.	Increased participation in emerging markets	The rise of for-profit firms engaged in all aspects of higher education governance	The need to improve productivity - universities must become more productive in the face of tightened government budgets and other fiscal pressures.
Education systems change slowly because they tend to be hierarchical command and control systems, rather than devolved-power adaptive systems.		The commercialisation of ideas, knowledge and education.	

TABLE 1 - **ENABLERS AND/OR BLOCKERS OF CHANGE.**

If universities are to change to meet changing external pressures, this change must come from within the organization (see Appendix #1 - Australian examples). It is the faculty that must see the need for change and be willing to make those changes themselves.

1.2 The nature of students

There is no doubt that the changing nature of the student population (Altback et al., 2009; Lai, 2011) is impacting on higher education institutions. This is exemplified through 'the provision of higher education opportunities with flexible formats for working adults, increased popularity of professionally oriented programs in fields such as business, and information and communication technology, and the growth in new universities or modification of existing institutions' (Altback et al., 2009:101).

Significant increases in student enrolments have resulted in diversification of student populations which now include more international students, students from lower socioeconomic backgrounds and mature and part-time students. Many of these students have 'different expectations from the traditional school leavers about what facilities and services are needed to support their learning; demand more flexibility in the teaching and learning process, and expect that technologies should be widely used in teaching and learning, (Lai, 2011:1264).

Of interest, is the emerging concept of 'relevance' as applied to higher education (Altback et al., 2009). Students want educational experiences that are relevant to their personal and/or professional objectives, particularly as they relate to employability. Given the 'growing anxiety around the world about youth unemployment, even among college graduates' (Barber, et al., 2013:1), the question of relevance has immediacy. Programs stressing "real world" applications have seen an appreciable rise in popularity.

The extent to which this generation of students has reduced their exposure time to television mainly due to the attention given to other digital media, particularly through the internet, makes this student group unique. Pedro's (2006:11) description of the consumption patterns of these learners provides insights in their 'uniqueness':

- physical isolation tends to be reinforced, even if cyberspaces for social relationship emerge as alternative exchange fora.
- digital-related activity is extended longer and tends to cover time spans previously devoted to rest.
- immediate responses and quick reaction speeds are seen as the norm in personal communication.

- multimedia content is considered to be, by its very nature, of higher value than mere text.
- writing becomes increasingly important due to the physical constraints imposed by the devices and services used, up to the extent of generating new languages.

These students are looking for more connected and mobile learning opportunities and for learning that goes beyond the traditional delivery of information. This growing use of technology by all students is having an impact on teaching and learning as students are increasingly seeking to use their own technologies to engage in a range of academic activities. Many higher education institutions 'are ill-prepared for these changes and a gap is emerging between student expectations and student experience' (Andrews & Tynan, 2011:118).

1.3 The nature of academics

Australia has an ageing academic workforce and the nation's capacity to refresh, build and maintain this workforce during a period of expansion in tertiary education participation needs urgent consideration. Coates et al., 2009 report that 'there is a clear, present and growing demand for academic work, a demand being propelled by system growth, looming retirements, and increased international mobility. The response to these demands has largely been through increasing the proportion of casual staff undertaking academic work but this approach lacks coherence, strength and vision (Coates et al., 2009: 2).

The intention to leave Australian higher education is highest among the younger age groups with the most common reasons being around issues of job security, remuneration levels, and lack of research funding. Close to 40 per cent of academics under 30 years of age plan to leave Australian higher education in the next five to ten years.

When asked about their primary interest in aspects of academic work (Bexley et al., 2011), 'most academics surveyed (38.9 per cent) chose both teaching and research, but leaning toward research. About a quarter chose research (25.9 per cent), or teaching and research, but leaning toward teaching (23.1 per cent)'. Only 7.4 per cent choose teaching (Bexley et al., 2011; Coates, 2009). In the same 2011 survey, only 25 per cent of academics saw improving teaching as a specific priority.

Significantly, only 37.3 per cent of academics surveyed have ever undertaken training in university teaching with 72.1 per cent indicating that training is not mandatory in their institution. Bexley et al., (2011) report that 'calls for more obligatory participation in training for

all staff with a teaching role are unlikely to meet a positive response from academic staff (Bexley et al., 2011:26). This attitude towards professional development is occurring at a time of significant change exemplified by increased participation by international students who often require intensive pedagogical support as well as by the integration of new technologies into mainstream teaching and learning practices.

Academics are also split on whether they have the time to teach well, with 36.8 per cent indicating that they do, and 36.0 per cent that they do not with 60.4 per cent of academics indicating that they spend too much time teaching basic skills due to student deficiencies (Bexley et al., 2011:30). However, the majority of academics still believe that teaching expertise and research activity should be equally valued within the promotions process.

1.3 Skills for all in the 21st Century

As nations shift from an industrial to a knowledge society, there is an urgent need to develop young people's competency to work creatively and innovatively with knowledge (Lai, 2011:1265). This presents higher education institutions with a great challenge in how to prepare their students to meet the demands of the knowledge society.

The CEDA Report (2015:55) identifies a lack of insight into the critical skills required for the current and future workforce. The Report emphasises that it is 'the ability to deal nimbly with complex and often ambiguous knowledge that is far more important than an accumulation of facts'. Indeed, in rapidly changing job markets, what students have learned in higher education may not equip them well in the labour markets, as they may have to change jobs frequently, and many of the skills learned in schools and universities now have a much shorter shelf life.

Tertiary-level educators have new kinds of responsibilities. Typically, universities would acknowledge the metacognitive, problem solving, and collaborative skills that citizens need to successfully participate in the knowledge society. The need to raise the literacy levels and information management skills of graduates in order to improve employability would also receive agreement. However, more nuanced thinking about skills for the 21st century has emerged from the literature.

The European Parliament (2006) published *Key Competences for Lifelong Learning: A European Reference Framework* which included eight broad competencies in which lifelong learners should be proficient. They are:

- communication in the mother tongue

- communication in foreign languages
- mathematical competence and basic competences in science and technology
- digital competency
- learning to learn
- social and civic competencies
- sense of initiative and entrepreneurship
- cultural awareness and expression

The 2009 UNESCO Report argues that in higher education there has been a profound and pervasive disconnect between employing new ICTs and leveraging them to enhance quality, particularly in terms of teaching and learning. The Report argues the universities need to strenuously reinforce certain skill including:

- reading and writing
- problem identification
- problem solving
- the ability to engage in effective "complex communication" with others
- the need to foster disciplined thinking
- navigate ethical dilemmas
- the need to develop creativity and initiative (Altback et al., 2009:129).

Textual literacy remains a central skill in the 21st century, however, new media literacies also need to be considered as essential. Jenkins (2006) argues for the development of 21st century literacy defined as 'the set of abilities and skills where aural, visual, and digital literacy overlap. These include the ability to understand the power of images and sounds, to recognize and use that power, to manipulate and transform digital media, to distribute them pervasively, and to easily adapt them to new forms' (Jenkins, 2006:28).

While Jenkins (2006) acknowledges the essentialness of textual literacy, he sets out a wider range of skills (Table 2) that students need in order to successfully negotiate the interconnected world of the 21st century.

Play	The capacity to experiment with the surroundings as a form of problem solving.
Performance	The ability to adopt alternative identities for the purpose of improvisation and discovery.
Simulation	The ability to interpret and construct dynamic models of real-world processes.
Appropriation	The ability to meaningfully sample and remix media content.
Multitasking	The ability to scan the environment and shift focus onto salient details.

Collective intelligence	The ability to pool knowledge and compare notes with others toward a common goal.
Distributed cognition	The ability to interact meaningfully with tools that expand mental capacities.
Judgment	The ability to evaluate the reliability and credibility of different information sources.
Transmedia navigation	The ability to follow the flow of stories and information across multiple modalities.
Networking	The ability to search for, synthesize, and disseminate information.
Negotiation	The ability to travel across diverse communities, discerning and respecting multiple perspectives, and grasping and following alternative norms.

TABLE 2 - THE NEW SKILLS (JENKINS, 2006:XIV)

Similarly, Bates (2015) proposes a skills set (Table 3) that he identifies as essential for the knowledge world.

Communication skills	Reading, speaking and writing coherently and clearly as well as the social media communication skills.
Independent learning	Taking responsibility for working out what one needs to know, and where to find that knowledge.
Ethics and responsibility	Building trust (particularly in informal social networks), and a greater degree of reliance on others to accomplish one's own goals
Teamwork and flexibility	Building collaboration and good teamwork, sharing knowledge, working virtually and at a distance, with colleagues, clients and partners.
Thinking skills	Developing the critical thinking, problem-solving, creativity, originality, and strategizing that are needed in a knowledge-based society.
Digital skills embedded within the knowledge domain in which learning takes place	Knowledge management - how to find, evaluate, analyze, apply and disseminate information, within a particular context. Appropriate teaching methods and technologies need to be adopted. Adequate practice must be provided for learners to reach mastery and consistency. Skills should be taught in small steps and regular feedback provided.

TABLE 3 - THE SKILLS REQUIRED IN A KNOWLEDGE SOCIETY (BATES, 2015:16).

1.4 The technology landscape

ICTs are now common in the higher education sector and constitute a basic part of institutional infrastructure. In the last decade, the presence of these technologies has expanded exponentially (Altback et al., 2009: 126) yet there are enormous costs and difficulties for hardware, software, technical support, training, and upgrades. Despite the costs, Web 2.0 tools are changing practices. Canole & Alevizou (2010:10) highlight how the web is no longer seen just as a content repository and information retrieval mechanism but rather a web that 'enables more social mediation and user generation of content'.

Andrews & Tynan (2011) however are highly critical of how the university sector has embraced Web 2.0 tools - 'despite the rapid acquisition of technology and the increasing focus on

blended learning, most universities remain largely mired in a 20th century approach to pedagogy which focuses on transmission of knowledge. Technology serves mainly as a means of delivering information rather than supporting and fostering engagement. Web 2.0 tools are either overlooked by the majority of lecturers or adapted in a simple manner' (Andrews & Tynan, 2011:120).

When universities consider the inclusion of technology for teaching, there are two fundamental questions that should be answered:

- What is best done face-to-face and what online, and in what contexts?
- What is the role of the human teacher, and can/should/will the human teacher be replaced by technology? (Bates, 2015:251).

The following models of teaching online are discussed at length by Siemens et al., (2015); Bates (2015); and Gallagher & Garrett (2013).

1. Distance education

- Distance education, when properly planned, designed, and supported by the appropriate mix of technology and pedagogy can be as effective as traditional face-to-face classroom instruction.
- The use of email, web-based resources, learning management systems, and online discussion boards are some of the primary supporting technologies.
- Distance education is associated with reduced costs of education, and an increase in student retention and effectiveness.
- Learners need high levels of digital literacy and should be self-efficient and properly motivated to productively engage in learning activities.
- Flexibility, personalization, use of small group learning and designed interactions, and soundness of pedagogies, technologies, and media mix are key design characteristics.
- The quality of technological infrastructure, support for academic staff, role of academic management, level of coordination between involved parties, and governmental support and policy are also important.

2. Online learning

- Online learning is a form of distance education where technology mediates the learning process, teaching is delivered completely using the Internet, and students and instructors are not required to be available at the same time and place.

- It does not include more traditional distance education instruction methods, such as print-based correspondence education, broadcast television or radio, videoconferencing in its traditional form, videocassettes/DVDs and stand-alone educational software programs.
- The most promising approaches to fostering learning in online environments are structured online discussions with clear guidelines and expectations, well-designed courses with interactive content and flexible deadlines, and continuous instructor involvement including the provision of individualized, timely, and formative feedback.

3. Blended/hybrid learning

- Online learning is blended with face-to-face teaching, but without changing the basic classroom teaching model to supplement to traditional teaching.
- Learning management systems are used to store lecture notes in the form of slides or PDFs, links to online readings may be provided, or online forums for discussion may be established.
- When a lecture is recorded, students can view this in their own time, and then the classroom time could be used for more interactive sessions. This model has become known as the ‘flipped classroom’ (Bates, 2015).

4. Online collaborative learning (OCL)

- In online collaborative learning (OCL), students are encouraged and supported to work together to create knowledge: to invent, to explore ways to innovate, and to seek the conceptual knowledge needed to solve problems rather than recite what they think is the right answer.
- In OCL, the teacher plays a key role not as a fellow-learner, but as the link to the knowledge community, or state of the art in that discipline.
- Learning is defined as conceptual change and is the key to building knowledge (Bates, 2015).

5. Open educational resources (OER) including Massive Open Online Courses (MOOCs)

- Open educational resources (OER) are digital educational materials freely available over the Internet that can be downloaded by instructors (or students) without charge, and if necessary adapted or amended.

- OER include full courses, course materials, modules, textbooks, videos, tests, software, and any other means of conveying knowledge.
- Open educational resources offer many benefits but they need to be well designed and embedded within a rich learning environment to be effective.
- Massive Open Online Courses (MOOCs) were developed under the OER umbrella as a new form of online learning that aims at unlimited participation and open access to learning (and teaching resources) using the Internet (Bates, 2015).
- MOOCs enable truly international 'cloud classrooms' and cross-cultural learning. MOOCs provide students with an opportunity to 'try before they buy', get customised feedback from peers and only engage when they want.
- MOOCs generate massive data sets of information that can inform curriculum design and redesign.
- MOOCs aren't mere video captures of whole hour plus lectures. They are typically modules of less than 15 minutes with high production values interspersed with mini progression quizzes that students can select, repeat or fast forward through—all personalized to their own learning styles, needs and backgrounds (Gallagher & Garrett, 2013).
- MOOCs allow universities to project their brands globally and to identify quality students.
- Understanding student motivation, metacognitive skills, learning strategies, and attitudes is of paramount importance for research and practice of learning and teaching in MOOCs.
- MOOC design should incorporate factors of knowledge construction (especially in group activities), authentic learning, and personalized learning experience rather than knowledge transmission.
- MOOCs cater to the better educated, older and employed sectors of society.
- MOOCs may undermine what is admittedly an expensive public higher education system.
- MOOCs are far from degrees and providing credit towards degrees would be a massive change. Low-priced certification of completion of individual MOOCs seems the most sensible business model.

As the technology landscape of universities continues to evolve, students will increasingly look to institutions for learning support and help with the development of skills needed in a digital age rather than with the delivery of content. This will have major consequences for the role of teachers/instructors and the design of courses. OER, MOOCs, open textbooks and other digital forms of open-ness are important in helping to widen access to learning opportunities,

but ultimately these are enhancements rather than a replacement for a well-funded public education system, which remains the core foundation for enabling equal access to educational opportunities.

1.5 Teaching and Learning

The use of social media/Web 2.0 tools has become widespread in universities. How can such tools support student learning? The answer is pedagogic rather than technical – 'knowing *why* and *how* to use technologies *effectively* in practice' (Higher Education Authority, 2009:7).

ICTs have fundamentally changed students' experiences of higher learning. However, ICTs are predominately used to support existing, outmoded approaches to learning with new ideas and approaches to teaching and learning remaining largely ignored. Numerous authors have expressed concerns about the ineffective and superficial use being made of digital technology to improve the learning experiences of students (Sledge & Fishman, 2014; Kirkwood & Price, 2014; Laurillard, 2008, Resnick, 2002; Yelland & Tsembas, 2008). As such, it can be concluded that 'higher education institutions have been slow in taking the fullest advantage of the potential benefits that can be afforded by the use of ICT' (Lai, 2011:1266).

Numerous reasons are proposed for why this situation exists:

- The lack of understanding of why and how technology should be embedded in pedagogy.
- The lack of professional development opportunities.
- Tertiary teachers still subscribe to the top-down knowledge transmission model.
- Tertiary teachers believe that technology should be used to increase teaching efficiency, without any need for fundamental changes in pedagogy.
- Career advancement is dependent primarily on research outputs, which provides little incentive for academic staff to invest their time and energy on new pedagogic practices.
- Little or no funds have been placed in the hands of the educators to develop either campus based or online courses, which are innovative and challenging.
- Academics are fearful of the size and complexity of the task, about their lack of knowledge, and about their lack of understanding of the pedagogical use in order to develop relevant learning experiences for their students.

Learning is an active process in which people construct new knowledge through situated and authentic tasks, either individually or collaboratively, and through active exploration, experimentation, discussion, and reflection (Resnick, 2002).

Lai (2011) argues that 'the potential of digital technology lies in its capability for supporting a more interactive and communicative process, facilitating a participatory pedagogy by supporting one-to-many and many-to-many communications, and also supporting the development of online learning communities (Lai, 2011:1269).

However, for the full potential of digital technology to be realised, Yelland & Tsembas (2008) suggest that teachers first give serious consideration to a number of design issues including:

- delineating the aims and objectives of the course.
- interrogating the nature of the content in the course - in which ways will technology enhance students' understandings of the content and the processes of inquiry.
- articulating a set of beliefs about learning and the ways in which it is believed that students learn best.
- outlining the ways in which the new technologies will be used.
- considering how learning will be evaluated (Yelland & Tsembas, 2008:99).

Kirkwood & Price (2014) are even more cautious about the impact of technology on learning and suggest that there should be evidence that changes in teaching practices involving the use of technology have actually enhanced student learning.

They sharpen the focus on teachers' design processes:

- Exactly what will be enhanced when technology is used for teaching and learning, How will enhancement be achieved?
- How can an enhancement be determined?
- Is the enhancement concerned with: increasing technology use? improving the circumstances/environment in which educational activities are undertaken? improving teaching practices? improving (quantitatively and/or qualitatively) student learning outcomes? (Kirkwood & Price, 2014:3).

PART 2: Responding to change

The changing needs of the learners and the impact of digital technologies on teaching and learning require at least two profound mindset changes for universities. 'First, universities must understand that creating knowledge and sharing it with students is no longer enough and second, universities will have to be much more self-reflective and self-critical when it comes to what they do, with more focus on the students' (Gallagher & Garrett, 2013:10). At a minimum, universities will need to streamline and in some cases reconfigure their operations and asset base, at the same time as incorporating new teaching and learning delivery mechanisms, a diffusion of channels to market, and stakeholder expectations for increased impact (Ernst & Young, 2012).

How then can traditional place-based universities invest in their own systems as well as thrive in a technology-enabled world? Gallagher & Garrett (2013) suggest a number of keys considerations:

- increase the efficiency of university preparation and general education courses using the scale economies embodied in MOOCs.
- make large upfront investments in technology (online pedagogy and technology-enabled formal classrooms and informal learning spaces) and decommission lecture theatres in favour of de-centred and smaller learning spaces.
- lead a process of culture change among academics to rethink the teaching part of their jobs—encouraging them to see it not as imparting knowledge to students but facilitating intellectual and personal growth in students.
- turn commuter campuses into rich living ecosystems, beginning with but not limited to providing residential accommodation for a large proportion of the student body.
- integrate leadership training, professional placements and international experiences as core parts of a degree for the 21st century (Gallagher & Garrett, 2013:54).

2.1 Determining the model

Universities must consider the efficiency and effectiveness of their current model of operation. Gallagher & Garrett (2013) argue that 'the current trajectory of ever bigger campus-based universities, relying on large lectures as the core mechanism for teaching students, and increasing tuition fees to cover ever higher fixed costs including research' will be rendered obsolete' (Gallagher & Garrett, 2013:16). Students are already rethinking the value of a traditional university education. New models that provide both the opportunity to save money and progress more quickly through degree programs will become increasingly sought after.

To deal with the current context, university leaders will need a strong rationale and framework for organisational change. Ernst & Young (2012:12) signal a number ways in which universities will have to adapt:

- breadth of programs - maintain a competitive position across a broad range of programs, or concentrate resources on a smaller range of programs.
- target customers - have a clear strategy and execution around target student segments and their specific needs and preferences.
- channels to market - rethink the role of digital channels and third party partnerships in recruiting students and delivering teaching and research programs.
- back office - the asset base and university administration will need to be significantly leaner.

Christensen & Eyring (2011) similarly offer options:

- resources could focus on just a few unique or particularly outstanding programs and the delivery of them globally
- programs could be organised differently to take advantage of a combination of programmatic strengths
- partnerships could be developed to support weaknesses in programs, delivery, service to students, or other areas important to offering quality programs (Christensen & Eyring, 2011:93).

The following table (Table 4) provides a summary of university models:

Ernst & Young (2012:4)	Barber et al., (2013:56)	Christensen & Eyring (2011:68)
Streamlined Status Quo: Operate as broad-based teaching and research institutions. Transform how services are delivered and organisation administered.	Elite University: Teaching and learning will need to adapt. Technology is big part of the learning process and schools. Faculties will need to benchmark themselves against global peers.	Extended traditional university: Offer programs of traditional universities specifically organized and designed to serve a primarily non-residential, external adult audience.
Niche Dominators: Fundamentally reshape and refine the range of services and markets in which they operate, targeting particular 'customer' segments with tailored education, research and related services.	Niche University: Each niche university will be different from the others.	For profit adult-centred university: Have carefully delineated a focused educational market. Very responsive to the demands of the educational marketplace. Programs are almost always career focused
Transformers: Private providers and new entrants will carve out new positions in the 'traditional'	Mass University: Will use predominantly online or blended approaches. The variety of courses will be beyond what is	Distance education- technology based university: Organized around a technology-based approach to learning that

sector; create new market spaces that merge parts of the higher education sector with other sectors.	offered at a traditional university, allowing students to customise their learning,	minimizes the physical separation of the learner from the instructor or from other learners.
	Local University: Deliver and organise the local student experience. Teach subjects that require in-person practice and training.	Corporate university: Focus attention and resources on core business.
	Lifelong learning mechanism: Add educational, career achievements and qualifications to the database. Enrol in a mentoring programme with a specialist organisation. Take a series of modules from different academic institutions.	University-industry strategic alliance: Deliver educational programs and services that are created cooperatively and collaboratively across two or more organizations
		Degree/certification competency based organisations: Meet the need for certification, primarily in the area of corporate training. Develop certification and competency-based learning as major products.
		Global multinational universities

TABLE 4 - **SUMMARY OF PROPOSED UNIVERSITY MODELS.**

Against the plethora of university models, Christensen & Eyring (2011) see the traditional universities as having real advantage over other models through their ability to blend online and face-to-face learning experiences. They suggest that innovative traditional universities can deliver 'good quality low-cost, convenient online learning blended with periodic classroom-based instruction' (Christensen & Eyring, 2001:51) as well as providing the benefits of the on-campus experience. The combination of online technology and the campus experience has the potential to take innovative traditional universities to new levels, allowing them not only to respond to disruptive competition but also to serve more students with their existing resources.

As part of the development of the model, universities will also need to develop policies and procedures that enhance the quality of teaching and assessment across all departments. The 2009 UNESCO Report highlights the key role that a teaching and learning development centre can play in quality advancement by 'providing university-wide staff development in line with the institution's approach to teaching, student learning outcomes, and best practices revealed through the scholarship of teaching and learning' (Altback et al., 2009:117).

2.2 Becoming a technology-enabled university

Higher education is undergoing a transformation. Australian universities are increasingly using sophisticated digital technologies supported by widespread access to high-speed broadband services to deliver new and innovative content. However, the public conversation about the digital age and higher education is characterised by a 'narrow debate about how it will cheaply replace traditional face-to-face teaching' (Wellings, 2013:52).

Few university students are solely on-campus with no access to the cloud or off-campus simply receiving and absorbing learning resources digitally. When students travel to a university site, they expect technology-rich learning spaces and seamless single sign on access to a wide range of resources - anywhere, anytime, from any device and with no hassle (CEDA, 2015).

Universities are looking for ways to provide high quality service and more learning opportunities at lower costs. Digital technologies will transform (i) the way education is delivered and supported through applications that enable real-time student feedback, (ii) the way education is accessed in remote and regional areas and (iii) the way value is created within higher education and related industries but these technologies will be expensive to implement.

MOOCs are seen as forcing a rapidly evolving technology-enabled revolution in higher education. The resultant outcome will see a mushrooming of higher quality and more interactive online degrees and traditional place-based universities integrating technology into everything they do. Gallagher & Garrett (2013:35) suggest that the inclusion of MOOCs enable six strategic benefits for place-based universities:

- MOOCs allow universities to project their brands globally at relatively low cost.
- MOOCs enable universities to find high quality students.
- MOOCs enable universities to associate their brands with MOOC pioneers.
- MOOCs offer the prospect of large-scale field experiments in real time in educational pedagogy.
- Universities are experimenting with MOOCs because the real benefits specific to each institution will be determined through learning by doing at all levels, from senior leadership to academics to students.
- MOOCs might inspire more academics to be better and more creative teachers.

There is a counter argument however (Johnson et al., 2015; Altback et al., 2009) that beyond MOOCs, online learning is helping to facilitate entire new areas of focus and growth for universities. While MOOCs are at the forefront of change, the 2009 UNESCO Report on *Trends in Global Higher Education* strongly supported distance education as an important option for expansion and as a means of meeting the needs of the changing and growing student population.

2.3 Re-imagining teaching and learning

The challenge facing higher education today is to determine the optimal mix of online and on-campus teaching and learning, both within individual institutions and across whole systems of higher education. The changing nature of both the student body and available technologies has required academics to change their approaches to teaching. Academics are under pressure to embed ICTs into their face-to-face teaching and to work in blended and online modes (du Boulay et al., 2008; O'Neill et al., 2004). These modes are described as:

- Same time, same place – is a traditional face-to-face approach where the instructor and learners are in the same geographical location at the same time. However, today some people might consider using synchronous technology tools such as Wimba, Elluminate or Skype to interact with others at the same time in the same virtual space.
- Different time, same place – participants interact in the same space but at a time they choose; for example, in asynchronous online discussions.
- Same time, different place – individual students working independently but at the same time, not located at the same place.
- Different time, different place – learners and instructors are separated geographically and also by time. Email is an example of this (Redmond, 2011:1051).

To be effective in an online environment, academics need a range of knowledge and skills such as the use of appropriate pedagogical approaches to enable the design, facilitation and assessment of the course, the ability to support the social and emotional well-being of the students and technical skills (Redmond (2011). Canole (2010) and Dabbagh (2005) offer views on the necessity for relevant learning theories to underpin the construction of learning experiences. Dabbagh describes three components that need to work together to foster meaningful learning in e-environments:

- pedagogical models or constructs (e.g., open/flexible learning, distributed learning, knowledge building communities)

- instructional and learning strategies (e.g., collaboration, articulation, reflection, role-playing, exploration, problem solving)
- pedagogical tools or online learning technologies (e.g., asynchronous & synchronous communication tools, hypermedia & multimedia tools, Web authoring tools, course management systems) (i.e., Internet and Web-based technologies) (Dabbagh, 2005:32).

Blended and fully online learning require a range of design skills that most academics do not have. Clearly, access to media producers who can create videos, digital graphics, animations, simulations, web sites, and access to blog and wiki software is essential. Without access to such technology support, academics are more likely to fall back on tried and true classroom teaching. Many academics are not conversant with learning theory. As such, education designers also need to be considered as learning goals and relevant skills should be embedded into the design (see Appendix #2: Bates 2015:327). Additionally, regular teacher presence is essential for student success. Quality face-to-face or online communication between teacher/students and student/students is essential.

The Education Technology Action Group (2014) suggests that online teaching involves several new kinds of teaching activity:

- planning for how students will learn in the mix of the physical, digital and social learning spaces designed for them;
- curating and adapting existing digital content resources (for reading, listening, watching);
- selecting the online tools and resources for all types of active learning (for inquiry, discussion, practice, collaboration, production);
- designing and developing the independent learning activities for all these types of learning;
- developing the personalised and adaptive teaching that improves on conventional methods;
- scheduling for flexibility in blended learning options;
- managing the tutor role in online discussion groups;
- using technology to improve the efficiency of qualitative feedback
- designing, monitoring, interpreting and using the new and more sophisticated learning analytics, which can give the teacher a clearer representation of where the teaching needs to improve. (Education Technology Action Group, 2014:29).

One clear trend in the literature (CEDA, 2015; Gallagher & Garrett, 2013; Johnson et al., 2015) on which there is significant consensus is the inclusion of the 'flipped' classroom model in universities. This model sees lectures replaced by online material that students can access in their own time and at their own pace. Online material could take the form of watching video lectures, listening to podcasts, perusing enhanced e-book content, or collaborating with peers in online communities. Campus time is then used for discussion and the development of higher cognitive skills and for active, project-based learning in which students work together to solve real-world problems. The model meets the growing demand from students for more accessible learning opportunities and blended learning (combining online and face-to-face instruction). However, creating this hybrid university will be expensive.

It is likely in the future universities will contribute MOOCs to a MOOC platform (or do it in-house), run their own online degrees, and have intensive place-based degrees all at the same time. They will also use MOOCs in online programs and use lecture material from online degrees as core elements in the flipped classroom of place-based degrees.

2.4 Re-designing the spaces for learning

As universities move from lectures to more interactive learning, consideration must be given to the nature of the spaces in which learning will take place, and how pedagogy, online learning and the design of learning spaces influence one another (Bates, 2015; Johnson et al., 2015; Andrews & Tynan, 2011). To make it worthwhile for students to come to campus when they do increasing amounts of their study online, the on-campus activities must be meaningful. The provision of flexible and well-equipped spaces for students to work will play a key role.

Any investment in new or adapted physical classroom space to support, for example, 'flipped' classrooms should be driven by decisions to change pedagogy/teaching methods. This will mean bringing together academics, IT support staff, instructional designers and staff from facilities, as well as architects and furniture suppliers. Providing teachers with a flexible, well-designed learning environment is likely to encourage major changes in their teaching. When universities start re-examining their future plans for buildings, Bates (2015) proposes the following:

- Will additional classrooms and additional lecture theatre buildings be needed if students are spending up to half their time studying online or in flipped classes?
- Are there enough learning areas where large numbers of students can work in small groups and can then quickly reconvene?

- Are there technical facilities that allow students to work and study seamlessly both face-to-face and online, and to share and capture the work when working physically together on campus?
- Would it be better investing in the re-design of existing space rather than building new learning spaces? (Bates, 2015:332).

Because space impacts on learning, spaces need to support the pedagogies and technology in the room so that teachers can provide real-time feedback and support to students in small group, peer-to-peer learning. The integration of pedagogy, technology and space define new active learning with particular attention being paid to mobility, flexibility and multiple device usage.

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APPENDIX:

1. Examples of approaches to change in Australian universities:

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2. Bates (2015:327) – questions for consideration regarding course design:

- What kind of learners are likely to take this course? What are their needs? Which mode(s) of delivery will be most appropriate to these kinds of learners? Could I reach more or different types of learners by choosing a particular mode of delivery?
- What is my view of how learners can best learn on this course? What is my preferred method(s) of teaching to facilitate that kind of learning on this course?
- What is the main content (facts, theory, data, processes) that needs to be covered on this course? How will I assess understanding of this content?
- What are the main skills that learners will need to develop on this course? What are the ways in which they can develop/practice these skills? How will I assess these skills?
- How can technology help with the presentation of content on this course?
- How can technology help with the development of skills on this course?
- When I list the content and skills to be taught, which of these could be taught:
    - fully online
    - partly online and partly face-to-face
    - can only be taught face-to-face?
- What resources do I have available for this course in terms of:
    - professional help from instructional designers and media producers;
    - possible sources of funding for release time and media production;
    - good quality open educational resources.
- What kind of classroom space will I need to teach the way I wish? Can I adapt existing spaces or will I need to press for major changes to be made before I can teach the way I want to?
- In the light of the answers to all these questions, which mode of delivery makes most sense?

3. Commonly available learning technologies:

- learning managements systems (such as Blackboard, Moodle, Desire2Learn, Canvas);
- synchronous technologies (such as Blackboard Collaborate, Adobe Connect, and Big Blue Button);
- lecture recording technologies (such as podcasts and lecture capture);
- tablets and mobile devices, such as iPads, mobile phones, and the apps that run on them;
- MOOCs and their many variants (SPOCs, TOOCs, etc.);

- other social media, such as blogging software, wikis, Google Hangout, Google Docs, and Twitter;
- learner-generated tools, such as e-portfolios.

4. Important developments in educational technology for higher education (Johnson et al., 2015:34)

Consumer Technologies	3D Video Drones Electronic Publishing Mobile Apps	Quantified Self Tablet Computing Telepresence Wearable Technology
Internet Technologies	Cloud Computing The Internet of Things Real-Time Translation	Semantic Applications Single Sign-On Syndication Tools
Social Media Technologies	Collaborative Environments Collective Intelligence Crowdfunding Crowdsourcing	Digital Identity Social Networks Tacit Intelligence
Digital Strategies	Bring Your Own Device (BYOD) Flipped Classroom Games and Gamification	Location Intelligence Makerspaces Preservation/Conservation Technologies
Learning Technologies	Badges/Microcredit Learning Analytics Massive Open Online Courses Mobile Learning	Online Learning Open Content Open Licensing Virtual and Remote Laboratories
Visualization Technologies	3D Printing/Rapid Prototyping Augmented Reality Information Visualization	Visual Data Analysis Volumetric and Holographic Displays
Enabling Technologies	Affective Computing Cellular Networks Electrovibration Flexible Displays Geolocation Location-Based Services Machine Learning Mesh Networks Mobile Broadband	Natural User Interfaces Near Field Communication Next-Generation Batteries Open Hardware Speech-to-Speech Translation Statistical Machine Translation Virtual Assistants Wireless Power