ENTERING THE FOURTH WAVE OF EDUCATION ENGAGEMENT
Keynote address for Broadband For The Bush 2015, Darwin NT

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ACKNOWLEDGE LARRAKIA

I acknowledge the traditional custodians of the land on which we meet, the Larrakia, and pay my respects to their elders past, present and future. I am confident, and will try my best to ensure, that our purpose here this week would meet with their endorsement.

INTRODUCTION

We are here because we have a keen interest in advancing human endeavours though the affordances provided by the Internet, but doing so in a way that is fully inclusive and empowering of people in regional and remote Australia.

At Charles Darwin University we are a leader in technology-enabled education. This has helped us reach people throughout the NT and throughout Australia who are, for whatever reason, unable to access on-campus education. It has not always been an easy journey, largely because of people's uneven access to adequate Internet, be that in terms of infrastructure, end point access or user capability (all of which are consequences of lower socioeconomic power). So, while pursuing the opportunities that the Internet provides, we have also had to pursue alternative methods such as visiting staff, postal services, and even portable classrooms and workshops.

However, we are now at a new and interesting stage. Not only are we more reliant than ever before on the Internet, but actually we are entering into a fourth wave of higher education delivery in which we are using the technology to engage learners in a powerful new way that I predict will supersede the effectiveness of all previous modes of learning.

That's a big call. Happily, as with all predictions, you cannot say right now with certainty that I am wrong, but over the next few minutes let me tell you why I think I am right – and what the implications are.

PARADIGMS

First, a quick discussion about paradigms. It is a well-established phenomenon that new technologies are typically defined by what they replaced.

For a time, the car was known as the horseless carriage. Indeed, that's what the earliest cars were – carriages with an engine where the horse would have been. It was some time before cars were seen for what they could be in and of themselves, and not just in terms of what they replaced.

Similarly, television was initially known as radio with pictures. It took some time before the world cottoned on to what TV could be and do in its own right. Early TV programmes were primarily talking head news broadcasters, partly because the idea of a more dynamic visual, let alone narrative, had not yet sunk in.

This is not just an old phenomenon. The T in ATM stands for Teller in Automated Teller Machine. First introduced to the general public by Lloyds in 1972, we still think about the ATM in terms of replacing the functions of a human teller at a bank. Over time however, and particularly with the progression to a more broadly available system for electronic funds transfer at point of sale a decade later (i.e. EFT-POS), the potential of ATMs to fulfil other types of activities expanded. For example, at Multibanco ATMs in Portugal, one can donate to charities, update a cell phone account or purchase a range of tickets such as for trains or concerts.

Here's the point. Each of these innovations was, in the first instance, not a game changer. They replaced, updated and improved upon what went before. But it was only when humans realised the entirely new possibilities that these innovations afforded in and of themselves, that they come of age. Then, the innovation doesn't merely continue extant practices, but rather completely changes or replaces them with entirely new activities. That is the point at which a new technology becomes not just innovative but, in today's parlance, *disruptive*.

PARADIGM SHIFTS IN HIGHER EDUCATION ENGAGEMENT

Let us now turn that concept to what is happening in higher education.

The primary method of student course engagement (also, although unhelpfully, known as "modality") is entering a fourth wave. Each of these waves has sought to respond to emerging demands for access to higher education by using the available facilities and technologies. In the process, these changes have iteratively informed, incorporated and sometimes limited various pedagogies. Let's quickly step through them.

FIRST WAVE OF HIGHER EDUCATION – ON-CAMPUS, FACE TO FACE.

In the thousand years since the western (or Judeo-Christian) concept of universities began at Bologna, the dominant mode of higher education has been on campus and face to face. Until relatively recently, this mode focused on information transmission. Lectures were, by definition, about content provision. Students were expected to take notes. The primary facilities and resources used were physical spaces such as lecture theatres and laboratories, printed textbooks and hard copy libraries. Perhaps the only truly significant change over this millenium was the invention of the printing press, which made written information far more accessible.

We will all have some familiarity with this mode, as it continues to this day (although typically with pedagogical practices placing lesser emphasis on didacticism and greater emphasis on problem-based learning, work integrated learning, experiential learning etc.). The incredible thing is that after 1000 years of its endurance, the next three waves have all occurred in our lifetime.

SECOND WAVE OF HIGHER EDUCATION – CORRESPONDENCE

In the 1960s, the concept of engaging in higher education studies by correspondence emerged in Australasia[1] – led by such universities as the University of New England and, in New Zealand, Massey University.

The primary purpose was to expand access. Consistent with all such evolutions, the new mode was initially framed in terms of what it sought to replace rather than any new paradigm. Content

[1] It was already well established elsewhere, most notably the University of London.

ordinarily transmitted by lectures was distributed using postal services to the learner in the form of printed documents, audio or video tape cassettes, then CDs and DVDs. Radio and (pre-digital) TV were also tried, but generally did not take hold: the costs were high, and for the learner, having to be available at a specified time for a one-way transmission was less attractive than being able to view or listen to a cassette at the time of one's own choosing.

Such was the hesitation of the academy and, no doubt, society generally that for decades it was still deemed essential that these "extramural" or "external" students (how's that for non-inclusive language!) attended compulsory on-campus intensives in order to achieve a quality education. This was irrespective of the nature of learning activities and outcomes involved. We still offer on-campus intensives to online students today, but it is usually only mandatory for those learning activities that cannot be undertaken any other way (such as highly specialised laboratory or field trip activities).

Correspondence education still exists, but is now rare (for CDU, just a handful of units per year). It has been almost fully replaced by the third wave.

THIRD WAVE OF HIGHER EDUCATION – LEARNING MANAGEMENT SYSTEMS (LMS)

From the late 1990s, with the rise of the Internet, the use of Learning Management Systems (such as WebCT, Blackboard, Moodle, Desire2Learn) revolutionised the way in which higher education at a distance occurred. Initially, this was really just an electronic version of correspondence mode, whereby new ways were found of disseminating types of content. In fact, MOODLE stands for Modular[2] Object-Oriented Digital Learning Environment. So, it was about transmitting content; printed documents were replaced with PDF and DOC files; video cassettes were replaced with MPEG and Quicktime files.

Pedagogically, the 24hrs x 7 days availability of content via the LMS helped enable the notion of flipping the classroom: a strategy whereby precious teacher-student contact time focuses on activities promoting the construction of meaning, rather than the transmission of information[3,4]. This has benefited on-campus and off-campus students.

And as people realised the broader possibilities of the Internet, the features of LMSs expanded to include interactive activities such as discussion boards, blogs, and wikis to replace tutorials, and online classrooms to replace on-campus lectures.

Indeed, there can be no doubt that the technologies for content production and dissemination, and for human engagement, have expanded at an almost unmanageable rate. This has also enabled digital learning resources to grow in sophistication, to the point that they are now interactive.

FOURTH WAVE OF HIGHER EDUCATION – TECHNOLOGY-ENABLED SOCIAL LEARNING

But, for universities, all of this was still fundamentally bound by traditional thinking of learning and teaching (not withstanding advances in pedagogical practices), and how technology could replace the on-campus experience. Now we are stepping back and asking ourselves – what are the opportunities that the Internet affords in and of itself? What can the car do that the horseless carriage didn't? The

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2 Originally Martin's (from Martin Dougiamas)

3 Eric Mazur (1997). Peer Instruction: A User's Manual Series in Educational Innovation. Prentice Hall, Upper Saddle River, NJ

4 Maureen Lage, Glenn Platt, Michael Treglia (2000), Inverting the Classroom: A gateway to Creating an Inclusive Learning Environment, Journal of Economic Education

answer is both challenging and exciting, and places us at the cusp of the fourth wave of education engagement: technology-enabled social learning.

The social learning concept itself is not new (it dates back to Albert Bandura and others in the late 1970s[5]). We know that students will learn more effectively when the learning outcomes and associated materials are relevant to them, when they can contextualise them within their own world of meaning. This involves not just passively reading and watching files, but interacting with them and exploring them in a diverse range of contexts: some of their own choosing, and some towards which they are guided by their teachers in order to stretch their knowledge and understanding. Exploring within these contexts would involve sharing ideas and resources, discussing with a broader range of people, co-discovering and co-authoring contributing content. Insodoing, students develop social interaction and mobility skills, information sourcing and creative approaches.

But traditional classes are primarily closed communities. They include the teacher/s and the enrolled students. Content is shared within that class community, and participation in the learning and assessment activities is, for the most part, limited to members of that community (notwithstanding WIL, live case studies etc.). This makes it very difficult to enable students to explore the intended learning objectives within a range of personally relevant contexts – let alone within entirely new contexts to which the teacher could guide them.

Enter the new possibilities that the Internet enables. Possibilities that don't merely replicate the on-campus experience, but have the opportunity to massively extend it. I refer, of course, to social applications. Many of these are also no longer especially new (such as LinkedIn, Facebook, Pinterest, Twitter, Snapchat, Tumblr and XING). However, the ability to strategically exploit social media for social learning is, internationally, an emerging practice.

Early research shows that while students love using social applications, part of what makes social applications effective and popular is the perceived control a person has over their own privacy settings. Students do not want persons with authority over them, such as teachers (and, often, parents!), to have unfettered access to their personal social accounts.

In response, new education-specific social applications such as Ning, UCroo and Yammer are rolling out. New applications are emerging at pace. For example, OpenLearning – an Australian-based social learning platform – was launched in June 2015.

We may not be there yet, but the very near future of Higher Education builds upon these advances in interactive online technologies, with a new pedagogical underpinning that emphasises replacing traditional class boundaries with a more inclusive and participatory approach to constructing the learning journey. Unlike traditional classes which had precise boundaries around the teacher, students, content and assessment activities, these new classes are porous. Staff, students and interested stakeholders (such as industry and the professions) will draw in, share and co-create the networks, resources and activities that will help achieve the desired learning outcomes. Virtual learning communities will evolve into meaningful communities because they are established and shaped by the students themselves, in partnership with the University.

This is not just about using technology differently; it is a profound change in pedagogy that is truly student-centric, relevant, engaging and dynamic. Its potential for positively addressing current barriers to educational engagement is extraordinary.

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[5] For example, Bandura, A. (1977) Self-efficacy: Toward a unifying theory of behavioural change, *Psychology Today*, Vol.24, No.2, pp191-215.

CHALLENGES

There will be challenges with moving Higher Education to social learning platforms. Given the time available, I will mention just five:

1. the rapid rate of product upgrades and new products means that even the most dynamic and flexible enterprise-wide approach may not be able to keep up with advances;
2. most social applications are not covered by federated authentication, meaning that the experience will not be seamless for students;
3. (and related to 2 above) the fact that most social applications sit outside of Learning Analytics, meaning that the recently gained advantages of being able to digitally track how a student engages online will be more limited (ideally, we require *federated analytics*); and
4. social learning via multiple communities may require a paradigm shift in how we approach the assessment of authentic student learning.

CLOSING COMMENTS

This is, obviously, a complex and broad-reaching vision. I cannot possibly to it justice in 15 minutes. But let me conclude by saying this.

Universities have been embroiled in the debate as to whether we should educate for life or for work. While most academics like to cling to the former, the incessant public focus on graduate employment rates and the increasing proportion of private funding (mainly in the form of student tuition fees) places pressure to educate for immediate employment purposes.

This is, however, a false dichotomy. The skills, knowledge and attributes required to be successful in work overlap considerably with those required to be successful throughout life.

The recent CEDA Report on Australia's Future Workforce (released 16 June 2015) suggests the high probability that 40% of Australia's workforce (that's 5 million jobs) will be replaced by automation in the next 10 to 15 years, with a further 18.4% being at medium risk of a similar fate. According to CEDA, "jobs that involve low levels of social interaction, low levels of creativity, or low levels of mobility and dexterity are more likely to be replaced by automation".[6]

So, universities need to develop a pedagogy that, irrespective of the discipline a student studies, will help develop social interaction skills, creativity and dexterity. Technology-enabled social learning will do that – on a level never seen before – drawing upon not just the knowledge, networks and resources of the class, but of the world.

But – this means that access to the Internet is no longer a nice optional extra. It has become an essential.

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[6] CEDA, "Australia's Future Workforce" (June 2015), p8.