

Online Learning and the Infinite Replicability of Digitised Knowledge

fusion-journal.com/online-learning-and-the-infinite-replicability-of-digitised-knowledge/

Authors

Benjamin Habib, Rebecca Miles and Nicholas Pawsey

Abstract

Knowledge is central to the work and currency of universities. Through teaching and research, the project of the university incorporates both the generation of new knowledge and the transfer of knowledge to students and the public. However, contemporary universities, like other information-provision industries, are grappling with the near-zero marginal cost of the production of information that has arisen through digitisation, modularisation and other online technologies. In effect, information is now infinitely replicable, an outcome which has significant implications for knowledge transmission and the provision of online education.

Online learning practices frequently demonstrate a misunderstanding of the possibilities and limitations posed by the infinite replicability of information. Often they are employed by university managers as labour productivity tools to de-skill lecturing work and save money on labour costs by breaking the lecturing role into component tasks, some of which can be automated. As an outgrowth of this productivity agenda, automated assessment tasks are also often promoted by teaching and learning departments as a time-saving teaching short cut to increase the “efficiency” of assessment. This leads to two questions, one commercial and the other pedagogical. Firstly, if information is infinitely replicable online, what is the value-added component of online learning that makes it worth paying for? Secondly, what online learning models and assessment tasks maximise the value-added component of online education when information is infinitely replicable?

Our article presents a discussion of these questions, structured in four parts: First, the article reflects on the evolution of teaching delivery in higher education in response to constraints on funding of the higher education sector. Second, it introduces the concept of the infinite replicability of digitised information and evaluates the implications of this phenomenon for higher education delivery. Third, it argues for a pedagogical approach to online and blended learning that incorporates an understanding of the challenges of infinitely replicable information in the online environment. Finally, the article posits teaching interventions trialled by the authors in the disciplines of international relations, education and business, based on models of online learning with a constructivist and andragogical focus. These interventions have been designed to help create deep learning experiences that extend beyond knowledge transmission which provide a tangible value-added educational component to online learning.

Shifting sands in higher education delivery

Over recent decades, the commercial landscape of university education in Australia has been characterised by an ongoing deterioration in government funding despite increasing pressure to promote student access (Parker, 2011). The crowding of the university sector has compounded these funding challenges. Today, an increasing number of both public and private sector institutions look to make use of the latest technologies, the newest approach to teaching, and offer the most unique courses, within what is now undoubtedly a global market. In response to these competitive pressures, Universities have generally shifted to a mass delivery model servicing a drastically expanded student cohort and class sizes (Coates & Goedegebuure, 2012; Parker, 2011, 2013; Shore, 2010). Staff numbers have not kept pace with the growth in student numbers (Coates & Goedegebuure, 2012) and, paralleling trends globally, equivalent full-time student/staff ratios within Australia have significantly declined from 12.9:1 in 1990 to 20.5:1 in 2006 (Parker, 2013). Further on the staffing side of the equation, with staffing costs representing the most

significant cost of most universities[1], university human resource practices have increasingly favoured casualisation and fixed term contracts (Bexley et al., 2013; Parker, 2011).

Shifts within the university sector towards mass delivery and more flexible staffing arrangements are symptomatic of the outcomes of neoliberal reforms and the corporatisation of universities which increasingly “look and act the same” as private sector, profit driven institutions (Parker 2012, p. 258). Within such institutions, new managerialism (see Deem & Brehony, 2005) and a financial outcome emphasis have become increasingly apparent. University Vice Chancellors are now akin to Chief Executive Officers (CEOs), and professors and heads of school akin to middle managers, as corporate language has become the vernacular (Parker, 2011; Kimber & Ehrich, 2015). Within the commercialised university (Parker, 2012), students are often treated as customers or consumers with their subjects, courses and materials conceptualised as products and services (Woodall et al., 2012; Kimber & Ehrich, 2015; Parker, 2011). Accounting information has played an important role in the promotion of an audit culture in which Key Performance Indicators (KPI) reflect efficiency improvements, cost savings, entrepreneurship, revenue generation, and operating surpluses (Parker, 2011, 2012, 2013; Shore, 2010; Fredman & Doughney, 2012; Kimber & Ehrich, 2015; Deem, 2001; Santiago & Carvalho, 2008).

As product differentiation, cost leader and market responsiveness strategies (see Parker, 2013) take prominence, unsurprisingly universities have attempted to leverage off the pre-packaging of learning resources (see Parker, 2011, 2013), with “technological innovations designed to improve the delivery of the now-proclaimed product to customers with more effectiveness” increasingly emphasised (Sementell & Garrett 2015, p. 461).

Such developments are exemplified in Table 1, which makes reference to technological innovation priorities embodied within the strategy documents of the Australian universities ranking in the Top 400 (QS). Amongst these universities, all make reference to the possible role that various technologies have in supporting their teaching strategies. The ability of technologies to personalise or enhance the student learning experience serves as common justification for such initiatives. In some cases, the number of subjects or courses delivered in online or blended learning is now a KPI of success.

Table 1: Online learning strategies of Top 400 Australian Universities

University (ordered by rank)	Strategy Document	Example Technological Strategy/Target/Priority/Aspiration
Australian National University	ANU by 2020	” The ANU educational advantage will consist of: ... innovative learning and teaching, including the appropriate use of technology.”
Melbourne University	2015-2020 Growing Esteem	“The Melbourne Curriculum will use mainstream and leading edge technologies to provide material and resources to students online, freeing up class time for students to interact with great teachers, discuss ideas in small groups and engage in peer-based learning experiences.”
The University of Sydney	2016-2020 Strategic Plan Building a Culture of Educational Excellence	“That the University: -- reviews the current collection of enterprise-level educational technologies with a view to developing and maintaining a single, integrated state-of-the-art suite (including a single learning management system) to support enquiry-based and collaborative learning designs, the development of high quality learning resources, the capacity for an interactive virtual extension of every University of Sydney class, and the Open Learning Environment.”

UNSW	Learning and Teaching Strategy 2014-2018	“UNSW will leverage our extensive local, national and international linkages, our expertise and commitment to research, and the opportunities created by innovative educational technologies to integrate an outstanding campus-based experience with high quality on-line learning and teaching.”
The University of Queensland	Strategic Plan 2014-2017	“We will be recognised as a national leader in innovative online learning to enhance the student experience and the quality of our teaching.”
Monash University	Focus Monash: Strategic Plan 2015-2020	“We will support the best pedagogy and flexible delivery through contemporary technologies and learning spaces and effective management of our education.”
The University of Western Australia	UWA 2020 Vision Strategic Plan: 2014-2020	“UWA will be recognised by the following defining characteristics: ... – Technologically-innovative, to maintain our currency and maximise our flexibility; ...”
The University of Adelaide	Strategic Plan 2013-2023 Beacon of Enlightenment	“reach out to a still broader student body – provide flexible learning and e-learning to meet the new student needs.”
University of Technology Sydney	UTS Strategic Plan 2009-2018 Own the Future	“3. Our curriculum, co-curricular activities and informed use of technology coherently support students’ professional identities and graduate capability formation during their studies and into their careers 4. Our innovative approaches to blended learning are aligned with our workforce and infrastructure planning and change 5. Our physical and virtual learning environments seamlessly combine to form an integrated learning environment and ‘sticky campus’...”
Macquarie University	Our University: A Framing of Futures	“... infuse cutting-edge technology into our learning environment to delivery world-class learning and teaching on campus and online.”
University of Wollongong	Strategic Plan 2013-2018	“Deliver student-centered, challenging programs to the highest standards in a technology-rich learning environment that attracts high quality students and develops all students for their graduate roles in society and the global workplace.”
The University of Newcastle	NeW Directions Strategic Plan 2013-2015	“Establish ‘UoNline Plus’ as an initiative that will support the expansion and quality of online and ‘blended’ (virtual+) approaches across 80 per cent of the University’s courses through building academic and professional staff capacity, and the provision of world-class virtual and physical learning environments.”
QUT	Blueprint 4 (May 2014)	“Evolving technologies of automation, personalisation and big data are advancing disciplines, transforming professions and disrupting business models. QUT is beginning to build critical mass in these enabling technologies and is well positioned to differentiate its research and teaching by exploiting their application. This technological edge, coupled with our interdisciplinary culture and willingness to work with end users, represents an important competitive advantage for QUT.”

RMIT	Strategic Plan 2015 Transforming the Future	“We expect and will support our academic and teaching staff to use new knowledge, educational techniques and technologies effectively, to understand the future needs of industry and the professions and requirements for international accreditation and recognition of our qualifications.”
Curtin	Strategic Plan 2013-2017	“...providing opportunities for individual and collaborative learning, and the flexibility to access learning materials from anywhere, at any time and on any device.”
University of South Australia	Strategic Action Plan 2013-2018	“Combine online preparation and tutor-mediated learning in the UniSA approach to the flipped classroom with flexible curriculum that meets the needs of learners.”
Deakin University	Live the Future Agenda 2020	<p>“Capitalising on the new technologies, Deakin delivers responsive programs wherever students are geographically (at home, on campus, in the community, at the workplace, in Australia or elsewhere); wherever students are in their learning preparedness; and wherever students are in their career trajectory and life stage.</p> <p>Deakin provides accessible, media-rich, interactive and relevant educational experiences designed for excellent learning outcomes and optimum employability. Deakin programs incorporate the best that Deakin has to offer together with excellent external resources available from around the world.”</p>
Griffith University	Strategic Plan 2013-2017	<p>“To increase Griffith’s online delivery</p> <p>To grow Open Universities Australia Load</p> <p>To commence at least 4 major programs fully online and to increase the number of programs available online each year.”</p>
University of Tasmania	Open to Talent Strategic Plan 2012 – Onwards	“Early rollout of the National Broadband Network in Tasmania positions us to embrace technology as a key component of the learning experience, and to deliver curriculum with the flexibility required by students who may be restricted by geography or the demands of work.”
La Trobe University	Future Ready Strategic Plan 2013-2017	“There will be increased use of technology-enabled online learning, drawing on the rich resources of online educational resources relevant to student learning, blended with more traditional face-to-face delivery.”

From a purely financial or efficiency perspective in terms of greater output for less input (see Parker 2012), the drive to digitise learning resources and automate teaching processes has clear attractions. Re-useable, video lecture recordings can do away with the need to allocate academic staff time to prepare and deliver lectures in person and potentially defer the need to make significant capital investments to increase lecture facility capacity to handle increased student numbers. Simply collating *YouTube* clips, textbook publisher materials, and other online resources within learning management systems, could potentially do away with the need to prepare a lecture (online or in-person) altogether. Subject development thus devolves into a low skilled activity of Googling relevant resources. Online automated feedback can dramatically reduce casual budgets. Flipped classrooms and large workshop-based delivery can reduce the need for “less efficient” smaller-class tutorial discussions. Through the creation of subject content databases and modularisation, curriculum designers can re-purpose existing materials to create an endless array of new courses and subjects in response to the latest market research and the drive to create an “individualised” student experience.

The above examples of the potential role of digital learning innovations in delivering financial returns to universities illustrate how such innovations could further promote the trend towards the de-professionalisation of academic work (Shore, 2010). In the extreme, the developments could be construed as examples of what Nadolny and Ryan (2013) described as the *McDonaldisation* of academic work. This collectively reflects the “growing managerialism, increasing student to staff ratios, mass enrolments and the use of low-wage casually employed academic labour, all of which combine to undermine the integrity of the academy” (p. 144).

The infinite replicability of information

As outlined above, there are many corporate drivers of digital learning innovations in universities through online and blended learning. While much has been written about the merits of online learning from a pedagogical position the debate has been typically divided between technophiles who reflexively champion the latest online learning technologies and traditional devotees of face-to-face learning who advocate for the intellectual and social benefits of bricks and mortar education. There has been an increase in attention paid to blended learning as a middle ground between these two positions, which describes a spectrum of potential learning strategies combining complimentary elements of online platforms and face-to-face delivery.

The rapid rise and questionable success of the massive open online course (MOOC) phenomenon (see Sementell & Garret, 2015) is illustrative of a trend in the production of information that does not appear to be well understood across the teaching fraternity: the near-zero marginal cost of production of information. The marginal cost of production is the addition to the total cost of producing additional units of a good, over and above the initial cost of producing the first unit. In higher education, like other information-provision industries, the marginal cost of production of information has arguably declined to essentially zero as a result of digitisation and online technologies (Rifkin, 2014; Koiso-Kanttila, 2004). In effect, information is now infinitely replicable; an outcome which has significant implications for knowledge transmission and the provision of online education.

We have seen the impact of digitisation in other economic sectors based on content provision—the music and film industries, and print media to cite a few—where the infinite replicability of digitised content has radically altered the business models through which that content was sold (see Lambrecht, 2014). Under zero marginal cost conditions, content on its own has lost its economic value. This has elicited a number of responses from digital content providers:

1. There have been attempts to artificially enforce the property rights of scarcity through legal sanction (Lambrecht, 2014), of which the famous lawsuit by metal band Metallica against peer-to-peer file sharing site *Napster*, along with the more recent legal case against the internet service provider *iNet* on behalf of distributors of the movie “Dallas Buyers Club,” are examples.
2. Subscription-based business models have been established in which consumers can access large databases of content for a recurring fee (Lambrecht, 2014), as illustrated by streaming video provider *Netflix*, along with the subscription models used by numerous news media websites.
3. New ways have been developed to augment the experience of consuming content in order to re-engineer a value-added product that consumers are willing to pay for, such as gold pass premium seating at movie theatres.
4. By providing digital content for free as a means of cultivating a consumer following (Bawa and Shoemaker 2004), as many music artists are doing with podcasting as a means of attracting an audience to live performances.
5. By providing content for free through open source platforms, using licences such as *Creative Commons*

The higher education sector has been slower to experiment with effective business and pedagogical models for online learning. In fact, many online learning proposals seem to miss the point of the infinite replicability of information. As noted above, they are employed by university managers as labour productivity tools to de-skill lecturing work and save money on labour costs. As an outgrowth of this productivity agenda, automated assessment tasks such as online quizzes are also often promoted by teaching and learning departments as a time-saving teaching short cut to increase the “efficiency” of assessment. As a university educational designer remarked to one author recently, “You could mark all of the assessment items, but then, who wants to do that?”

The infinite replicability of digital information has led to a reality where we have access to more knowledge than at any other time in human history (Earl, 2009). However, the proliferation of raw information does not automatically lead to an expansion of student ability to interpret and apply that knowledge (Earl, 2009). This leads to two questions, one pedagogical and the other commercial. Firstly, if information is infinitely replicable online, what learning models maximise the interpretation and application of infinitely replicable knowledge? It is not immediately clear whether online or face-to-face learning pedagogies are the superior models in delivering on these skill-building functions, nor whether the debate of superiority is even appropriate with the diverse learning opportunities afforded through the technological developments of the twenty-first century. Secondly, from a commercial perspective, given the consumption-based model of higher education currently promoted, what is the value-added component of online learning that makes it worth paying for?

The pedagogical defense for online and blended learning

Given the problems identified above with the corporate push for cost saving through the digitization of teaching and learning via blended and online deliveries, we now consider how design online teaching and learning in a pedagogically sound manner that provides the value-added component necessary in an era of infinitely replicable knowledge. In other words, we argue that online and blended teaching and learning, as for all learning, needs to be addressed pedagogically. Further, those involved in its practice need to be appropriately and adequately trained for the pedagogical and theoretical aspects rather than simply the technologies and tools.

In this discussion, we draw from prior research alongside reflection on our own teaching practice in the academy. These experiences cut across seemingly diverse disciplines in Accounting, Teacher Education and Political Science, whilst illustrating pedagogical commonalities in our practice.

The growth in interest in online education has provided a challenge to higher education institutions, in particular “to rethink their cultural, academic, organizational, and pedagogical structures in adapting to a new culture of teaching and learning” (Baran, Correia & Thompson, 2011, p.421). Whilst institutional and economic pressures have led to increased adoption of online and blended learning deliveries, rising to this challenge does not often move beyond managerial directives for increased online and blended subject and course offerings. As a result, many online higher education teachers’ claim “they lack pedagogical and instructional support” (Bailey & Card, 2009, p. 152).

Criticism of training provided to academics in preparation for online teaching indicates that a technical focus, where online competencies and roles are dictated from above, has led to a transmission-based learning focus. In such learning, the demonstrations of knowledge required from learners are predominantly functional rather than analytic, creative, or applied (Koehler & Mishra, 2005; Baran, Correia & Thompson, 2011; Ooman-Early & Murphy, 2009; Bailey & Card, 2009). Further, Koehler and Mishra (2005, p. 132) highlighted that the introduction of technology to educational settings “is not enough to ensure technology integration since technology alone does not lead to change”. As such, there is a call for training for academics involved in online learning to focus on opportunities to “engage in pedagogical problem-solving and discovery about online teaching” (Kreber & Kanuka, 2006, p. 122) and provides them with theoretical and pedagogical foundations for their practice (Ooman-Early & Murphy, 2009; Baran, Correia & Thompson, 2011).

Technological and functionalist based online learning training denies the affordances of internet based technologies and communications to learning processes which foster problem-based, exploratory learning where learners apply newly constructed knowledge. Additionally, it denies the changing roles that develop when constructivist and transformative pedagogical models for online learning are utilised.

Pedagogical models for online learning

Whilst models for online learning pedagogy can vary, typically the key theoretical models advocated by experts in online and blended learning are andragogy and constructivism (Bailey & Card, 2009). Andragogy provides for the learner to be understood within the unique role of adult learner. This contrasts with the more commonly used term 'pedagogy' which is drawn from child and adolescent learning theories. Understanding higher education students through an andragogical lens allows for the focus of (online) learning to:

- Foster relationships, particularly through student-academic contact and communication;
- Build engagement, through active and problem-based, real world and authentic learning situations and experiences;
- Ensure prompt feedback, understood as formative to ongoing learning;
- Provide organization, with courses and subjects presented clearly, consistently, and delivered in ways that allow the student to study according to their own schedule and availability;
- Utilise technologies, demonstrating competence and appropriate use of multi-media and online tools to facilitate the teaching and learning process;
- Have defined expectations, allowing students to work flexibly, with clear understanding of what is expected of them as learners (Bailey & Card, 2009).

Constructivist models of learning and teaching take that learners actively construct their understandings based on their prior knowledge and experiences. As such, each learner comes to a learning experience with different knowledges that they draw from to construct new understandings. Further, constructivist theory recognizes the learner as actively involved in the learning process as they construct new understandings (Bonk & Cunningham, 1998; Jonassen, 2000; Partlow & Gibbs, 2003; Bailey & Card, 2009). Therefore, the role of the teacher is to scaffold and facilitate student learning, "helping students collaborate with each other in order to develop personal understanding of course content, linking students to learning resources, and encouraging student initiative" (Bailey & Card, 2009, p. xxx). This initiative for autonomous action is critical for students if they wish to succeed in the absence of the motivation of direct face-to-face contact with teaching staff in the online realm.

As Garrison (2009, para. 14) suggests, constructivist approaches require a different way of conceiving the teacher-learner dynamic, whereby the learning experience is, "a dialectic process dynamically supported through collaborative exchanges with another person who knows more than the student and who has a wider, more balanced view". According to Bangert (2004, p. 218), the constructivist model suits online learning, as it makes use of "authentic examples, judicious feedback, and enhanced self-efficacy, in addition to active and collaborative learning strategies, ... capable of promoting deep and durable learning".

The misnomer of 'online' learning, can result in an overemphasis of the online nature of the experience, rather than of learning. The grounding of learning in constructivist and andragogy models require problem-based, creative and inquiry learning experiences to be provided to students, which can move away from the virtual as the only place for learning to occur. Moving away from the online platform as the site of learning opens up possibilities to undertake tangible learning activities in the material world, in effect turning the students' world into their classroom and adding value to the learning experience beyond knowledge transmission. The examples cited below from the authors' teaching practice across the disciplines of international relations, education and business illustrate possibilities for andragogical teaching and learning design in the online realm.

Illustrative Example from International Relations

In political science, debates have raged over the relative “reality” of the online world versus the physical world in the context of activism and political engagement. For example, does online activism constitute a tangible political act, or does it need to be augmented by boots-on-the-ground action? In the professionally based teacher education and accounting disciplines, similar concerns are raised in relation to the modelling of professional competencies and practices, which become further distanced from the ‘real world’ when removed from face to face tutorials. These challenges can be transposed onto online education with the challenge of addressing the complexity of providing adequate opportunities for constructivist learning to occur. In these circumstances, online and real-world practices need to occur in a simultaneous, symbiotic process to achieve an optimal outcome demonstrating the relevance and connection of the subject material to their lives. In the political sphere, online activism is most effective when accompanied by mutually reinforcing actions of protest that pressure key institutions and targeted economic interventions that impact on the economic power of those institutions. In the professions, the practice of competencies and skills can be modelled through video and analysis of practice, reinforced by the opportunities for industry and school based work integrated learning (Grossman, 2011; Alexander & Boud, 2001).

In a number of online and blended-learning undergraduate international relations subjects, co-author Benjamin Habib utilises blogs as a platform for students to report on learning activities they complete away from the computer. For each teaching week of the semester students are required to compile a blog post based on the lecture material and readings. In each posting students are required to reference each of the lecture videos and compulsory readings, and comment on three postings written by classmates.

The objective of the blog activities is to get students to explore each weekly topic with greater analytical depth than they otherwise might, to provide a carrot-and-stick incentive for students to watch the lecture videos and read the reading materials and most importantly, to foster informed discussion both within the class group and with actors outside of the classroom in the wider community. This practice helps to provide a real-world grounding of subject material, helps students establish relationships with actors outside of the university as well as in the student group and identify potential career niches, as well as involving the students in a diffusion of their knowledge from the university out into their personal networks.

Students are asked to undertake active, problem-based learning activities away from the screen, such as, for example, interviewing representatives of NGO and business organisations about the impact of climate change policy on their operations, photographing and analysing a climate change impact in their local neighbourhood, and creating short video presentations about the United Nations Framework Convention on Climate Change (see Figure 1).

Figure 1: Student video presentations for the third year undergraduate subject International Politics of Climate Change.

Here the online blog in the subject online learning management system (Moodle) is used as a platform to report back to peers and teachers on learning activities conducted away from the screen, rather than as the primary site of learning itself. Detailed written feedback is provided to the group via the blog forum addressing issues arising from the activity.

In compiling this assessment the students make use of video and audio recording equipment and editing software and online hosting platforms such as *YouTube* and *SoundCloud*. Social media platforms such as *YouTube* and *SoundCloud* are useful vehicles to reach students with subject-relevant information (see Figure 2) and useful links to academic research material, including our own. Social media are the online environments in which increasing numbers of the student population engage and in order to reach them, online learning practitioners need to become comfortable operating in this terrain. When used carefully and thoughtfully, social media platforms can be an

excellent means of developing student competencies with online and audio-visual technologies to compliment problem-based and inquiry learning models.

Figure 2: [SoundCloud podcast](#) produced by members of the La Trobe International Relations Association (LIRA) featuring international relations students in conversation with academic staff.

These kinds of andragogically-designed activities lend themselves to asynchronous, reflective and deep learning. Asynchronous learning provides students with the space to craft well-researched, considered real-world engagement in their learning activities and interactions, complimented by relationship-building and development of technological competencies.

Illustrative Example from Education

Co-author Rebecca Miles designed this assessment task in a subject that asked students to develop their professional understandings of theory and pedagogy drawing from research and evidence. This assessment task was introduced to encourage student interaction with each other, facilitate deeper reflection and understanding, and model a predominately peer based form of assessment. Drawing on constructivist principles, the aim was to foster deeper engagement and critique with a range of forms of teaching pedagogy and theory in order to disrupt the tendency of per-service teachers to base their personal teaching philosophy on their experiences as students (Korthagen, Loughran & Russell, 2006).

The task involved several steps. First students needed to form groups of four, in which they worked on a two week cycle where one member would take the lead and the rest of the members would participate, after two weeks, the leadership would rotate to another group member. The leader would select a reading from a set list, with each fortnight's readings based on different notions of pedagogy – classroom community building, student choice, radical pedagogy, and learning mindset. At the beginning of the fortnight, it was the leader's job to notify the rest of the group about the chosen reading and organise where the discussion would take place and whether it would be synchronous or asynchronous – and if asynchronous, the leader needed to designate the timeline for the discussion to take place. As long as the discussion could be recorded and submitted (i.e. a forum, discussion board, wiki, webcam recording) it was at the discretion of the group to decide how they would do this. This allowed groups to work to their level of technological competence and also promoted peers assisting each other and learning new technologies.

The leader was tasked with providing prompting questions and facilitating the discussion. Clear rubrics were provided for peers to assess the leader, as well as a self-assessment for the leader to complete, which meant everyone had clear expectations. In particular, the assessment rubric was designed to promote skills in questioning, using evidence to support reasoning, reflection, and critical thinking.

At the end of the fortnight, group members would submit peer assessments and the leader would submit their self-assessment as well as the record of the discussion. These were then amalgamated as a final score for the leader of that cycle, as well as comments censored for unreasonable criticism before being provided to the leader – however throughout the entire process there was no need for such censoring as students approached the task professionally. Throughout the process, there was no teacher assessment, although there was teacher presence in troubleshooting any issues that arose and also in the final administration of the grades and general feedback provided to groups regarding their approach to the task.

Theoretically, this assessment task drew on several key constructivist and andragogical principles. Notably, a key component of this task was the promotion of student led discussion and choice, as well as mirroring, albeit online, professional learning team discussions base on real-world situations (Bailey & Card, 2009). Further, it promoted dialogical and collaborative learning that was exploratory, interactive and allowed students to reflect on their own experiences as learners and teachers while accommodating new understandings (Bangert, 2004; Brinthaupt, Fisher, Gardner, Raffo & Woodard, 2011; Garrison, 2009).

Illustrative Example from Business

Video lecture resources have a number of potential uses within higher education. Research into the use of film as a teaching aid indicates that films and documentaries can help students to contextualise and improve their understanding of important international relations theories (Simpson & Kausler, 2009). Similarly, in teacher education, video has been shown to successfully introduce to students the intricacies of specific day-to-day teaching practices, allowing them to focus on observation and analysis of explicit practice outside of the overwhelming busyness of the classroom experienced during placements (Blomberg et al., 2013). Indeed, many students arrive at university with under-developed textual analytical and writing skills, but with great capacity to comprehend and critique visual images. This is likely to be the result of the bombardment of visual imagery that young people encounter in their daily lives through television and internet media (Weber, 2001).

As part of the delivery of a second year, undergraduate, cost accounting subject, co-author Nicholas Pawsey has sought to develop a range of high quality, relevant, 10-15 minute [lecture summaries](#). The subject is delivered in blended mode and it is made clear to students that the videos are intended to be viewed before they complete the prescribe topic readings and attend the weekly topic face-to-face workshop.

Drawing on key pedagogical principles, a number of features were incorporated into the design of these cost accounting video summaries. At the outset of each video lecture, students were reminded of the linkage between the current topic and prior topics, and informed of the nature and purpose of the video. The focus of the videos was to inform students of the key concepts for the week, providing a brief discussion of these along with examples to help to illustrate these concepts. To maintain the students' interest, the videos were professionally produced, adopting a television news style presentation and making use of a range of imagery including creative commons, stock footage to help students to visualise the concepts. Text callouts were also used to further highlight key points and definitions. Responsibility for video lecture development was shared across three lecturers, to enable students to hear from the perspective of different academics on different topics. Throughout the videos, a range of authentic case studies were used to enable student to appreciate the application of the concept to real world businesses. Finally, to further enhance video usage rates, the videos were aligned with a pre-workshop, assessable only quiz.

Student on the videos has been positive in regards to their quality and value as a learning resource. The availability of these resources has further contributed to positive trends in regards to student engagement and usage of online resources. In commenting on the videos, students often make favourable comparisons to the use of the much-maligned long-narrated PowerPoint videos as used within many other subjects.

Conclusion

The automation of online teaching faces the risk of being based on dubious theoretical foundations, potentially diminishing the constructivist and value-added learning experience for the student. We argue that the most effective online learning designs incorporate learning activities that integrate creative and varied modes of content delivery, asynchronously, and maximise the opportunity for real-world interactive, collaborative and problem-based learning. This aligns with the constructivist and andragogical models outlined above.

Drawing on these models for online learning, a constructivist and andragogy focus in online learning enables the role of the teacher and the role of the student to be understood differently from traditional didactic and Socratic approaches in higher education. When we argue for a pedagogical defense of online learning, we are arguing for learning experiences to extend beyond knowledge transmission to incorporate a value-added component. We are arguing that student-clients are paying to learn for understanding and that experiences should be crafted and constructed in ways that the learners are enabled to develop a depth of knowledge. This is likely to occur through learning that is:

- Exploratory;

- Dialogical and socially interactive;
- Capitalising on knowledge networks;
- Problem-based, and,
- Collaborative.

The teaching and learning interventions we have documented above are an attempt to design an integrated suite of creative content delivery combined with complimentary social media platforms designed around a series of innovative, non-traditional assessment activities tie together the experiential learning, student engagement and social agency objectives of the subject with the university's graduate capabilities.

Reference List

- Bailey, C. J., & Card, K. A. (2009). Effective pedagogical practices for online teaching: Perception of experienced instructors. *The Internet and Higher Education*, 12(3–4), 152-155. doi:http://dx.doi.org/10.1016/j.iheduc.2009.08.002
- Bangert, A. W. (2004). The Seven Principles of Good Practice: A framework for evaluating on-line teaching. *The Internet and Higher Education*, 7(3), 217-232. doi:http://dx.doi.org/10.1016/j.iheduc.2004.06.003
- Baran, E., Correia, A.-P., & Thompson, A. (2011). Transforming online teaching practice: critical analysis of the literature on the roles and competencies of online teachers. *Distance Education*, 32(3), 421-439. doi:10.1080/01587919.2011.610293
- Bawa, Kapil, & Shoemaker, Robert. (2004). The Effects of Free Sample Promotions on Incremental Brand Sales. *Marketing Science*, 23(3), 345-363. doi: 10.1287/mksc.1030.0052.
- Bexley, E., Arkoudis, S., & James, R. (2013). The motivations, values and future plans of Australian academics. *Higher Education*, 65(3), 385-400.
- Blomberg, G., Renkl, A., Gamoran Sherin, M., Borko, H., & Seidel, T. (2013). Five research-based heuristics for using video in pre-service teacher education. *Journal for educational research online*, 5(1), 90-114.
- Bonk, C. J., & Cunningham, D. J. (1998). Searching for learner-centered, constructivist, and sociocultural components of collaborative educational learning tools. In C. J. Bonk, & K. S. King (Eds.), *Electronic collaborators: Learner-centered technologies for literacy, apprenticeship, and discourse* (pp. 25–50). Mahwah, NJ7 Erlbaum.
- Brinthaupt, T., Fisher, L., Gardner, J., Raffo, D., & Woodard, J. (2011). What the best online teachers should do. *Journal of Online Learning and Teaching*, 7(4), 515-524. Retrieved from http://jolt.merlot.org/vol7no4/brinthaupt_1211.htm
- Coates, H., & Goedegebuure, L. (2012). Recasting the academic workforce: why the attractiveness of the academic profession needs to be increased and eight possible strategies for how to go about this from an Australian perspective. *Higher Education*, 64(6), 875-889.
- Dabbagh, N. (2007). The Online Learner: Characteristics and Pedagogical Implications. *Contemporary Issues in Technology and Teacher Education*, 7(3), 217-226.
- Deem, R. (2001). Globalisation, New Managerialism, Academic Capitalism and Entrepreneurialism in Universities: Is the local dimension still important? *Comparative Education*, 37(1), 7-20. doi: 10.1080/03050060020020408
- Deem, R., & Brehony, K. J. (2005). Management as ideology: the case of 'new managerialism' in higher education. *Oxford Review of Education*, 31(2), 217-235. doi: 10.1080/03054980500117827

- Earl, Peter E. (2009). Information Technology and the Economics of Storing, Spreading and Generating Knowledge. *Prometheus*, 27(4), 389-401. doi: 10.1080/08109020903414275.
- Fredman, N., & Doughney, J. (2012). Academic dissatisfaction, managerial change and neo-liberalism. *Higher Education*, 64(1), 41-58.
- Garrison, R. (2009). Implications of Online Learning for the Conceptual Development and Practice of Distance Education. *Journal of Distance Education*, 23(2), 93-104.
- Grossman, P. (2011) Framework for teaching practice: A brief history of an idea, *Teachers College Record*, 113(12), December, 2836-2843.
- Jordan, A., Glenn, C., & McGhie-Richmond, D. (2010). The Supporting Effective Teaching (SET) project: The relationship of inclusive teaching practices to teachers' beliefs about disability and ability, and about their roles as teachers. *Teaching and Teacher Education*, 26(2), 259-266. doi:http://dx.doi.org/10.1016/j.tate.2009.03.005
- Jonassen, D. H. (2000). *Computers as mindtools for schools*. Upper Saddle River, NJ7 Merrill Prentice Hall.
- Kimber, M., & Ehrich, L. C. (2015). Are Australia's universities in deficit? A tale of generic managers, audit culture and casualisation. *Journal of Higher Education Policy and Management*, 37(1), 83-97. doi: 10.1080/1360080X.2014.991535
- Koehler, M. J., & Mishra, P. (2005). What Happens When Teachers Design Educational Technology? The Development of Technological Pedagogical Content Knowledge. *Journal of Educational Computing Research*, 32(2), 131-152. doi:10.2190/0ew7-01wb-bkhl-qdyv
- Koiso-Kanttila, Nina. (2010). Digital Content Marketing: A Literature Synthesis. *Journal of Marketing Management*, 20(1-2), 45-65. doi: 10.1362/026725704773041122.
- Korthagen, F., Loughran, J., & Russell, T. (2006). Developing fundamental principles for teacher education programs and practices. *Teaching and Teacher Education*, 22(8), 1020-1041. doi:http://dx.doi.org/10.1016/j.tate.2006.04.022
- Kreber, C., & Kanuka, H. (2006). The scholarship of teaching and learning and the online classroom. *Canadian Journal of University Continuing Education*, 32(2), 109–131. Retrieved from <http://www.extension.usask.ca/cjuce/>
- Lambrecht, Anja, Goldfarb, Avi, Bonatti, Alessandro, Ghose, Anindya, Goldstein, Daniel G., Lewis, Randall, Rao, Anita, Sahni, Navdeep, and Yao, Song. (2014). How do firms make money selling digital goods online? *Marketing Letters*, 25(3), 331–341. doi: 10.1007/s11002-014-9310-5.
- Nadolny, A., & Ryan, S. (2013). McUniversities revisited: a comparison of university and McDonald's casual employee experiences in Australia. *Studies in Higher Education*, 40(1), 142-157. doi: 10.1080/03075079.2013.818642
- Oomen-Early, J., & Murphy, L. (2009). Self-actualization and E-learning: A qualitative investigation of university faculty's perceived needs for effective online instruction. *International Journal of E-Learning*, 8(2), 223–240.
- Parker, L. (2011). University corporatisation: Driving redefinition. *Critical Perspectives on Accounting*, 22(4), 434-450. doi: <http://dx.doi.org/10.1016/j.cpa.2010.11.002>
- Parker, L. D. (2012). From Privatised to Hybrid Corporatised Higher Education: A Global Financial Management Discourse. *Financial Accountability & Management*, 28(3), 247-268. doi: 10.1111/j.1468-0408.2012.00544.x
- Parker, L. D. (2013). Contemporary University Strategising: The Financial Imperative. *Financial Accountability & Management*, 29(1), 1-25. doi: 10.1111/faam.12000

Partlow, K. M., & Gibbs, W. J. (2003). Indicators of constructivist principles in Internet-based courses. *Journal of Computing in Higher Education*, 14(2), 68–97

Rifkin, Jeremy. (2014). *The Zero Marginal Cost Society: The Internet of Things, The Collaborative Commons, and the Eclipse of Capitalism*. New York: Palgrave Macmillan.

Santiago, R., & Carvalho, T. (2008). Academics in a New Work Environment: the Impact of New Public Management on Work Conditions. *Higher Education Quarterly*, 62(3), 204-223. doi: 10.1111/j.1468-2273.2008.00390.x

Sementelli, A. J., & Garrett, T. M. (2015). MOOCs: meaningful learning tools for public administration education or academic simulacra? *Education + Training*, 57(4), 461-470. doi: doi:10.1108/ET-03-2014-0031

Shore, C. (2010). Beyond the multiversity: neoliberalism and the rise of the schizophrenic university. *Social Anthropology*, 18(1), 15-29. doi: 10.1111/j.1469-8676.2009.00094.x

Woodall, T., Hiller, A., & Resnick, S. (2012). Making sense of higher education: students as consumers and the value of the university experience. *Studies in Higher Education*, 39(1), 48-67. doi: 10.1080/03075079.2011.648373

About the Authors

Dr. Benjamin Habib is a Lecturer in Politics and International Relations at La Trobe University, Melbourne, Australia. Ben is an internationally published scholar with research and teaching interests including the political economy of North Korea's nuclear program, East Asian security, international politics of climate change. He also teaches on global environmental politics, Australian politics and contemporary China.

Dr Rebecca Miles is a researcher and teacher in pre-service teacher education. Her research interests are centred on (and converge in) 1) knowledge, curriculum theory and inquiry, 2) teacher professional practice, 3) pedagogy in online teaching and learning, and 4) place-based education. Rebecca's teaching focuses on social and cultural contexts in education and teacher research. Rebecca's PhD research was on place-based environmental education, drawing on practice theories to consider ways that place, knowledge and practice intersect in educating primary school students about being in the world. Her PhD dissertation was a recipient of the 2014 NSW Institute of Educational Research Beth Southwell Outstanding Thesis Award.

Nicholas Pawsey is a senior lecturer in the Faculty of Business at Charles Sturt University, Australia. He was previously a lecturer at La Trobe University, Australia. His research interests include international accounting and the convergence of accounting standards, accounting education, and public sector accounting. Nicholas is experienced in teaching a range of financial and management accounting subjects. As part of his PhD study, Nicholas explored the costs and benefits of the adoption of IFRS for Australian companies.

[1] Staffing costs are the major cost of most universities, typically constituting more than 50% of an institution's total costs (see, for example, VAGO 2014).