e-Learning and the Reconfiguration of Higher Education – Disruptive, Innovative and Inevitable

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Abstract

This first part of this paper gives a concise overview of how e-learning 'works'. The second part suggests the inevitability of more and more teaching and learning taking place in the e-learning context. It touches on some of the communication challenges academics face in moving from the lecture format to the online format and describes some of the challenges that lecturers, tutors and managers face in implementing e-learning successfully.

Keywords: e-learning, MOOCs, higher education, communication, New Zealand, change, challenge, BYOD.

Introduction

This contribution is based on a paper presented at the *New Zealand Communication Association Conference 2012*, Waikato Institute of Technology, Hamilton, 26 November 2012.

I have spent the last seven years 'doing' e-teaching at the Open Polytechnic, having spent most of my 30 year teaching career in traditional face-to-face universities in several countries. As a result of this radical shift in the way that one teaches (and the way one's students learn), I was inspired to do research on e-learning from a communication perspective. Drawing on communication theory I offered alternative perspectives on understanding, describing, and scrutinising online communication and challenging educators to consider the effects of technology on the processes of online communication and interaction (for example, see Mersham 2008; 2009; Maathuis-Smith & Mersham 2011; 2012).

Purpose and Method

My purpose today is to share with you some of my experiences with e-learn-

ing as a tutor and lecturer and to briefly look at development of MOOCs. My method is based on a literature review, drawing on my own research and actual experiences over the past seven years.

One finding of my research is that teaching online has numerous definitions and perceived understandings. Terminology is inconsistent often making it difficult for teaching staff and managers to articulate the multitude of issues that arise in implementing new online courses. My own definition is that teaching and learning is the negotiation of meaning through communication (Mersham 2009).

Notably, one finds few references to e-teaching, and, as I have argued, e-learning as a term is limited, referring to only one half of the communication equation. The term 'e-teaching' has little currency.

The second important finding is that most faculty members find they spend more time on their online courses than they do on traditional courses. The multiplicity of tasks now required of academics in this area is rarely documented. Nagy et al. (2011) note that the skills required for this critical role are most usually not specified and may be of a non-disciplinary nature (Nagy et al. 2011).

Institutional management perceptions of teaching online should be more closely aligned with the reality of the workload as perceived by teaching staff within current workload models. Staff require more transparent participation and negotiation about appropriate workload models.

Below is a general list of faculty tasks. How many of these are indicated in your job description and KPI's ?

Prepare the Coursework

- Design course for on-line presentation in teams; write/edit/revise material
- Upload content to LMS/submit to QA staff before upload and respond to QA queries
- Research for updated information
- Ensure that ancillary materials are mailed (if required)
- Create discussion questions
- Write netiquette
- Set up CMS

- Prepare students for on-line study (orientation)
- Coordinate and sign off with instructional design/QA staff read materials

Present Information

- Monitor and contribute to discussion boards/forums
- Post material
- Post discussion questions

Practice and Guidance

Answer emails (responses required usually within 24-48 hours)

- Post to discussion boards
- Online live sessions (if used)
- Provide technical support
- Provide practice quizzes
- Deal with conflicts promptly
- Model effective online interaction
- Monitor progress and encourage lagging students

Testing and Assessment

- Grade assignments
- Set up online tests
- Grade tests (automatic)
- Provide feedback on assignments
- Develop test content
- Develop exams
- Assess messages in online discussions
- Test online testing process

Provide Feedback

- e-mail (responses required usually within 24-48 hours)
- Class announcements
- Discussion question responses
- Automated responses to study quizzes

- Create feedback rubric for common questions

The above tasks are often in addition to preparations for face-to-face classes

From a Practical Perspective

1. Tethered to your computer. Interface between you and the machine has become intimate and mandatory for your course management and communication with students
2. You become a participant in a (post) Industrial team model – time spent on working with colleagues (for example subject expert writers, technical editors, Instructional Designers, Educational Designers and project managers) and dealing with technical aspects means big changes to the way academics work – and a loss of academic freedom. This signifies a move from relative autonomy to team player. Independent nature of the work changes to team work.
3. More for less. Increasingly faculty management do not teach (less understanding of issues and challenges) and believe that online courses mean "more for less" and therefore should generate cost savings.

Change and Challenge

I have questioned e-learning, challenged it, and argued the opportunity of it lies in the pedagogy, and the threat of it lies in managerial administrators who see it as an industrial system, in which more revenue to gained through less work. So for example for as long as I remember contact hours, the time the lecturer spends in one to one consultation with students has always been prescribed in the list of duties or job outcomes. E-learning is has no such boundaries. In e-learning, 'consultation' becomes interaction. Email and phone calls, forum posts and notifications come in continuously, unbounded by time frames. Faculty formulae seem to avoid trying to calculate the time that attention to these communication exchanges take.

I argued in 2001 that education was one of the last bastions to avoid complete transformation by the 'digital revolution' (Mersham & Skinner 2001). The Internet is threatening to revolutionise education, as it has

already done with music, retail and journalism. Jim Whitehurst, in his recent TEDx presentation described as "the new oil that will drive the information revolution (http://opensource.com/12/10/education-new-oil-will-drive-information-revolution).

Don Tapscott, author of Wikinomics, and Grown Up Digital says that our current education system is not only not meeting the needs of our students, but its failure to adapt since its creation will be its demise.

Tapscott said, "All these kids that have grown up collaborating and thinking differently walk into a university and they're asked to sit there and passively listen to someone talking." He says new research shows that students in our classrooms now learn differently because of the world they live in and yet we are still teaching them the same way we taught people when the classroom was invented. We ask students to listen and read, and to be containers for information instead of creators.

Because online learning has much in common with distance learning, the two are have been clumped together in the literature for many years. In a similar way proxemic learning, i.e. on campus learning has remained unchallenged as face to face learning when a great deal of it really does not meet the strict definition of face to face. Today we see that online learning is increasingly part of all learning, whether at so-called face to face institutions or distance institutions, whether on-campus or off campus.

Teachers are particularly concerned about the challenges of new technologies on the traditional paradigm, and have voiced these concerns. The changes affect the very fabric of the teaching process, from the conceptualisation of a course through to its delivery and evaluation. Teaching on-line requires the teacher to move away from a role as 'the source of all knowledge' and more towards the role of mentor or guide in a constructivist approach.

Technology is now substantially all-pervasive, influencing the way teachers create and develop courses, how they deliver, assess and evaluate, and fundamentally, how they think about these processes. Mainly differences are in pedagogy and communication - constructivism, reflection, negotiated meaning, and the full exploitation of synchronic and asynchronic communication.

We can distinguish three main changes in role (Cuppola *et al* 2002). First in the cognitive role, which relates to mental processes of learning,

information storage, and thinking, the shift is towards one of deeper cognitive complexity.

In the second, the affective role, which relates to influencing the relationships and communication between students, the instructor, and the sense of belonging to a cohort (class) online requires faculty to find new tools.

Thirdly, the managerial role, which deals with class and course management, now requires greater attention to detail, more structure, and additional student monitoring.

Overall, as Cuppola *et al* (2002) indicate, faculty report changes in their teaching persona, toward more precision in their presentation of materials and instructions, combined with a shift to student centeredness, a more Socratic pedagogy, emphasizing multilogues with students and early identification of students needing support.

Why Is It Changing?

The biggest change lies with the economics. The cost of a degree is such that most of the Western world's graduates are looking at a decade or more of degree debt. There are two inflationary effects in tertiary education. Costs of attending campus degrees have spiralled upwards and credential inflation has meant higher sub minimum standards for credentialing. Bill Anderson, the University of Otago's director of distance learning says, "I think it's fair to say that with more and more people acquiring bachelor's qualifications we're seeing some credential inflation." For example, whereas teachers today require a bachelor's degree, the minimum qualification used to be a diploma, and before that a certificate. And that's not the end: there is mounting pressure for the entry point for the profession to be lifted to postgraduate level. "That might be partly an illustration of the increased standard required of teachers, but I'm tempted to think there's more to it than that" (quoted in Doesburg 2012).

Why would students or learners choose to go to university or tertiary institutions these days when so much is available online?" The answer used to be to gain a credential. E-learning is seen as an response to expensive degrees.

A Culture of Uncertainty

All changes bring uncertainty and anxiety, and the management of this change must be sensitive. Without these changes, education may be in danger of stagnation, but with them practitioners and learners will be required to quickly adapt to new knowledge, skills and modes of working. Understandably, these changes have brought with them a culture of uncertainty. Practitioners struggle to keep up with speed of change. A commonly voiced concern of faculty members about e-learning in general is that technocrats might see the courses as an easy way to replace academics with tutors, likely sacrificing academic quality in the process.

Educational managers have a key role to play in the amelioration of these fears, by providing timely, relevant and up to date information on new developments and innovations, and how these will impact on teaching and learning.

MOOCs - The Higher Education Buzzword

One of the biggest recent developments has come with the introduction of numerous massive open online courses (MOOC's) and thereby the implications of distributed learning networks for conventional higher education. One of the defining features of MOOCs are that they are offered entirely in the online mode (see Table 1 *Typical course classifications*).

Proportion of Content Delivered Online	Type of Course	Typical Description
0%	Traditional	Course with no online technology used — content is delivered in writing or orally.
1 to 29%	Web Facilitated	Course that uses web-based technology to facilitate what is essentially a face-to-face course. May use a course management system (CMS) or web pages to post the syllabus and assignments.
30 to 79%	Blended/Hybrid	Course that blends online and face-to-face delivery. Substantial proportion of the content is delivered online, typically uses online discussions, and typically has a reduced number of face-to-face meetings.
80+%	Online	A course where most or all of the content is delivered online. Typically have no face-to-face meetings.

Table 1: Typical course classifications. Source: Allen & Seaman (2010)

MOOCs tend to provoke strong feelings in the academy. Comment becomes more portentous and apocalyptic all the time. There are four main MOOC's that are cited: Coursera, edX, Udacity and iTunes U.

iTunes U, for example, offers Apple's free catalogue of hundreds of thousands of educational content items from about 1000 institutions, including four in New Zealand (University of Waikato, Southern Institute of Technology, University of Otago and University of Canterbury) are among 1000 institutions in 26 countries that make content available to anyone with a device that runs iTunes. Apple worked out before anyone else how to make money from online music sales with its iTunes Store, claims to be the largest digital catalogue of educational content.

Media coverage and commentary associated with MOOCs has been focused opening up elite brands to the masses and the idea of 'education for free'. While these are worthy principles, can they be met with the teaching and learning challenges at the heart of online courses?

There are three scenarios for teachers and learners:

- already enrolled in introductory classes using MOOCs as study aids
- using MOOCs in conjunction with classroom-based courses
- enrolling solely in a MOOC to earn formal credit

It's the last case – taking MOOCs for credit – has been the most challenging for higher education institutions, and looks set to become a "disrupter" of traditional higher education (Fain 2012).

Format War

Alliances of major US universities have been in a race to develop online courses - in a kind of academic format between edX project (Harvard brand - led) and Coursera (Standford brand-led).

So far, edX offers just a handful of mostly computing-related papers, but Coursera covers a much broader range of subjects. Among the nearly 200 papers listed on its website is everything from archaeology to animal behaviour. At the time of writing, nearly 1.5 million people have registered on the site.

edX

The edX project, a not-for-profit online learning initiative, provides courses from Harvard, the Massachusetts Institute of Technology and the University of California, Berkeley.

Education company Pearson VUE (or Pearson Virtual University Enterprises), will provide authorised test centres for the edX online courses. Pearson VUE operates in 162 countries, with more than 4,400 testing centres (including Weltec, Petone). In the forerunner to edX, MITx, an online course in electronics 155,000 students registered, 9,000 reached mid-term, 7,200 passed Among the 340 perfect scores was a 15 year old in Mongolia (BBC 2012) had been studied by more students than all the university's previous living alumni combined. In September of this year a deal between edX and Pearson VUE was announced that will allow students who have studied online to sit edX exams in supervised centres around the world, including in New Zealand., where their work can be formally tested. Students, who will have to pay a fee for this service, will be able to use test centres run by Pearson VUE. So far, edX offers just a handful of mostly computing-related papers.

In 2013 it announced its partnership with Google to jointly develop the edX open source learning platform, Open edX, and expand the availability of the platform and its learning tools to individuals and institutions around the world. (edx.org 2013).

A rival project called Coursera was launched by academics from Stanford in California. Coursera made headlines as universities signed up to offer courses (16 institutions and 116 courses, 800, 000 students, at latest count). Courses are free, delivered entirely over the Internet, - and almost all of them are not formally accredited.

Initial evidence show that (MOOCs) work best for motivated and academically prepared students (Fain 2012). The Bill and Melinda Gates Foundation has recently announced a series of grants for the creation of MOOCs for remedial coursework. Are MOOCs, which are based on economies of scale, compatible with the personalized support students typically require to succeed?

Unintended Effects: Textbooks and Support Materials

Recently I published public relations textbook, which became New Zealand's first public relations electronically available textbook courtesy of our publisher, Pearson. In the days when print was the only option, students had plenty of free or cheap ways to get required textbooks by borrowing one from a friend, checking out a copy from the library or buy a used copy for a fraction of the price. It is even possible to rent a copy through one of several companies providing that service.

But textbooks and the latest textbook enhancements, which require individual access codes to get to bonus materials online, threaten to displace all of those alternatives. Most access codes are good only for a limited time, and once they are activated they can't be used by other students. So my students tell me that while the price of the set work textbook is around 40% cheaper than the print version, they can't on-sell it.

Buying access to online textbook supplements is more like buying a software app than a book. Once you've paid to download software for your phone or computer, you know there's no easy way to resell it.

The majority of university courses still use printed textbooks without requiring online supplements. But the use of added online materials is growing fast, raising the issue of personal data privacy.

Online Education Privacy Issues

Higher education institutions are collecting and analysing student data for economic reasons as well as learning outcomes. While it can be argued that different goals than that of online advertisers in general and presumably students are choosing to participate in an online learning environment where they know their data will be used to help them learn and provide feedback to their instructor. They also might be more used to being monitored online. Even given these unspoken rules, can anything be foreshadowed?

Will students just accept that we will now know which textbook page they read, at what time, and for how long… and potentially act on that information? Or will students eventually want more control of the data they "produce?"

New Zealand

What do these developments mean for local institutions? It seems the ever-growing costs of higher education globally is a key driver.

The University of Auckland vice-chancellor Professor Stuart McCutcheon has been quoted as saying they are well aware of the trend. But would Auckland join Coursera, as the University of Melbourne has opted to do? "I don't think we'd spurn any opportunity. But we've thought carefully about the nature of the education we offer and we've committed to research-led, primarily face-to-face education with the support of technology. At the moment, that model is viable and I think it's what our students want," McCutcheon says (Doesburg 2012).

Steve Maharey, vice-chancellor of Massey University, which has decades of experience of distance teaching and claim hundreds of thousands of extramural graduates, hints that they could get involved in a Mooc-like venture, although he doesn't expect free online courses to suddenly turn higher education on its head (Doesburg 2012).

University of Canterbury e-learning team leader Herbert Thomas says Moocs and associated developments are part of a "constantly changing" higher education environment. Canterbury is adapting by revising its use of technology in teaching – partly a response to the earthquakes – and by collaborating with overseas and local institutions on courses and qualifications.

"Moocs don't pose a direct threat to bricks-and-mortar universities […] it's not as simple as one replacing the other – is make planning a lot more complex," Thomas says. A lot of the literature suggests there might be a 20:80 split, with 20% of students wanting a full on-campus lifestyle experience at a top university and 80% of students studying online because it's cost-effective." (Doesburg 2012).

OER University

In 2011, a Times Higher Education story led with the headline "'OER university'" (open educational resources university) to cut cost of degree (Attwood 2001).

OERu aims to create "a parallel learning universe" based on freely available course content. The universities of Auckland, Waikato, Canterbury, Otago polytechnic, the Open Polytechnic of NZ, North Tech

and the Southern Institute of Technology are OER University foundation partners along with others from Australia, the United States, Canada and South Africa have also become foundation partners.

These include University of South Africa, University of Southern Queensland, University of Wollongong, University of the South Pacific, Athabasca University, BAOU (Gujarat's open university), Empire State College, Southern New Hampshire University, Thompson Rivers University, Excelsior College, Open University of Catalonia ,Thomas Edison State College, University of Glamorgan.

Wayne Mackintosh, a founder of WikiEducator , director of the Open Education Resource Foundation, and champion of the OERu argues that Universities in Australia, Canada and New Zealand are hoping to achieve "a quantum shift" in open educational resources (OERs) by launching an "OER university" (Mackintosh in Thibaut 2011).

The plan is draw together existing free online learning materials from around the world and develop new OERs to create whole degree programmes that can be studied via the Internet for free.

The project will focus on how to offer students using OERs the opportunity to earn academic credit and have their work assessed at a significantly reduced cost.

It is suggested that these degrees could cost up to 90 per cent less than a traditional qualification gained through on-campus study. Mackintosh said an OER university would help widen access to higher education in the developing world as well as helping students in the developed world faced with rising tuition fees.

He envisages the OER university developing into a "parallel" university system that could also give traditional students more flexibility.

Mackintosh believes it is "just a question of time" before other universities join the scheme.

"OER is a sustainable and a renewable resource...It is up to universities to see the opportunities and live out their vocations. Why should taxpayers have to pay twice for learning materials? We are publicly funded institutions," he said.

The OERu anchor partners have shortlisted eight university- and college-level courses to be developed as prototypes for refining the OERu delivery system:

- College Composition
- Art Appreciation and Techniques
- Regional relations in Asia and the Pacific
- A Mathematical Journey
- General and Applied Psychology
- Critical Reasoning
- Why Sustainable Practice
- Introduction to Management

Prototype courses are running in a number of founding partner institutes this year. The OER will not confer degrees as that will remain with individual partner institutions.

The problem is that learners who access digital OERs on the web and acquire knowledge and skills either formally or informally, cannot readily have their learning assessed and subsequently receive credible credentials in recognition for their efforts.

The OERu collaboration will offer courses and programmes based entirely on OER and open textbooks. Through the community service mission of participating institutions, the OERu network will open pathways for OER learners to earn formal academic credit and pay reduced fees for assessment and credit services.

NMIT has "come on board to ensure it continues to source and deliver content to learners", chief executive Tony Gray (in Neal 2012).

Mr Gray said NMIT recognised the world of tertiary education was changing quickly in terms of demand from learners and the way in which it needed to deliver to learners.

"Technology is changing and the way in which governments can fund tertiary institutes is changing. This is a way for us to concentrate on making sure we are also sourcing the very best content we can for our programmes," Mr Gray said.

OER Foundation founding director Wayne Mackintosh was in Nelson as a keynote speaker at the national tertiary learning and teaching conference. He said the cost of replicating digital knowledge was "near zero" but access was being denied to those who could not afford it (Macintosh in Thibaut 2011).

Creative Commons licensing is a central pillar of this development. It has adopted the Free Cultural Works approved licenses (CC BY and CC BY-SA) as the default for OERu courses.

Traditional Publishers and e-Learning (Pearson)

Pearson, a publishing and education company whose products include books, newspapers, and online services, announced a major acquisition on Tuesday that will deepen its commitment to becoming a major player in online education.

The company, which owns the Financial Times and the Penguin Group book publisher, paid $650-million to buy EmbanetCompass, a business that provides support services to colleges and universities that are moving their programs online. EmbanetCompass helps colleges design online programs, recruit students, train faculty members, and keep tabs on student progress through data analytics.

The announcement comes after Pearson's move last year to start a free, cloud-based learning-management system called OpenClass, a software company called Knewton to replace some of its software packages with programs that adapt to each learner with interactive tutors, quizzes, and explanatory videos.

Mobile Communication: Bring Your own Device (BYOD) and the Disappearing Desktop

The exponential and continuing growth of mobile computing, and the BYOD era is another major "disrupter" of traditional higher education. Many students are bringing to campus two or three devices a mobile phone, a tablet, and a laptop, and they may be also using a campus device at the same time. They (and staff) expect their institutions to provide ubiquitous, reliable wireless connectivity and they expect seamless connection to campus networks. Mobile communication has had two main effects. First online coursework has to be designed to be accessible across both desktop and mobile platforms applications (for example, IoS and Android, proprietary and open source) found on devices such as tablets and smartphones on and off campus. A major disconnect occurs when administrators commonly cite the need to use technology to enhance student learning as one of their top two priorities, but are not instrumental in driving the improvement and

enhancement of IT, often because of ingrained view that IT systems and policies are 'untouchable' or 'too technical' for their direct intervention on behalf of academics.

Experience at the AUT University in the BYOD era is instructive. Student demand for wireless, mobile platforms drove the process to have it implemented, conquering initial resistance by the IT department. This is commonly the case across bricks and mortar institutions around the world. The old model of top down control by the institutional Information Technology departments is being challenged. In AUT's case, one result is that since Apple has made their i-book authoring tool available for free, and the University made wireless Internet ubiquitous, AUT now boasts 700 i-books jointly authored by staff and students (Luukkonen, 2012).

Typically institutions are focusing their mobile app focus as shown in Table 2.

Primary website	40%
Learning/course management system	38%
Library catalogue and other library services	31 %
Student recruitment and admissions	23%
Administrative services for student information	22%

Table 2: Mobile app focus. Source: http://www.edtechmagazine.com

Cloud Labour

Just as businesses are turning to cloud computing instead of having their own computers and software services, "cloud labour" has the potential of delivering higher education institutions a much more efficient and productive way of servicing their needs and requirements. Indeed at the Open Polytechnic has for many years made use of short contract off-campus assignment reviewers and markers. The Internet enables the business to do without the traditional employee at all. HR interviews and staffing costs are unnecessary.

The main benefit of cloud computing is that it is frictionless and scalable. Frictionless refers to the ability to easily (and relatively inexpensively) set up the computers and software needed. Scalability refers

to the ability for cloud computing to expand or contract in line with needs. These features have been applied in the cloud labour market to give businesses flexibility.

A Global Academic Labour Pool?

The most well-known of cloud labour platforms is Amazon's Mechanical Turk which provides a platform for requesters to submit tasks that pay as little as a few cents each that can be done by qualified providers. Typical tasks that are carried out on Mechanical Turk are transcription, analysis of images, searching for information on the Internet, surveys and posting links. Other companies such as oDesk and MobileWorks are providing more skilled services including programming, sales and marketing, admininstration support and design. As with Mechanical Turk, jobs are pitched with a rate of pay.

From the worker's perspective, being part of a cloud labour force has its attractions. Finding work is simplified and it can usually be fitted into a flexible schedule and environment. The work can be done in any part of the world from any other part, increasing the availability of work. The negative of course is that workers are competing on a global marketplace and this serves to drive the rates of pay down. Web developers for example list themselves at rates as low as $10 an hour on oDesk. Along with this comes the outsourcing of issues with education, labour relations and health problems to the nations providing the cloud labour.

More for Less

About.com, asks the rhetorical question: How Will EdX Change Online Learning?" EdX courses are sure to act as an inspiration for distance learning departments that must work in a stricter budget."

OER Foundation founding director Wayne Mackintosh, in Nelson as a keynote speaker at the national tertiary learning and teaching conference, said the cost of replicating digital knowledge was "near zero" but access was being denied to those who could not afford it (Macintosh in Thibaut 2011). According to Don Kilburn, chief executive officer of Pearson Learning Solutions, the acquisition would take advantage of the trend away from print, and "As more and more schools face budget cuts, they're looking to

online education as a way to increase access, achievement, and affordability," he said. "We see this as a strong area of growth."

Conclusions

The role of disruptive innovation in educational renewal is summarised well in a recent wide-ranging Australian survey (Tynan *et al.,* 2012) that found, *inter alia*, that:

1. The workload associated with online and blended teaching is ill-defined and poorly understood. It is no longer possible to work in ways that belong to a transmission era of university teaching. As access and connectivity penetrate deeply into our personal, transactional, work and learning lives, interactivity and constructivist pedagogies must be considered routine, not 'add-ons' in teaching, and must therefore be reflected in prospective workload models which recognise the higher quantum of teaching tasks associated with e-teaching, and students' needs for a teacher to 'be there' – what is called 'online presence'.
2. Teaching workloads need to be adjusted to acknowledge the greater number of tasks associated with new technologies being incorporated into education systems.
3. Staff should be enabled to participate actively in their professional development and have their work recognised and valued within performance assessment, development and review. Institutions should ensure business processes and infrastructure are adequately resourced for this purpose.
4. Institutional management perceptions of teaching online should be more closely aligned with the reality of the workload as perceived by teaching staff within current workload models. Staff require more transparent participation and negotiation about appropriate workload models, taking into account a plethora of additional coordination tasks, e.g. online marking, management of off campus faculty. The appropriation and use of technology into curriculum requires a recasting of the role of academics within universities.
5. A re-identification of the roles and responsibilities of teachers, and their actual time using various applications and their perceived cost-benefit is

required so that universities to develop more appropriate yet efficient workload models.

6. Since almost all staff are involved in teaching online, appropriate selection criteria, probation criteria, performance indicators and a commitment to professional development in e-teaching by institutions and their staff are imperative.
7. The multiplicity of tasks now required of academics is rarely documented. Nagy *et al*. (2011) in their study of Position Descriptions for Unit Coordinators, note that of four universities surveyed, only one specified the particular skills required for this critical leadership role. Their description of the non-disciplinary knowledge (management skills, comprehensive policy content, regulations and legal matters, technical skills) now needed in unit coordination is daunting (Nagy *et al*. 2011).
8. Many Vice Chancellors and the majority of IT executives, including Bill Gates see online services supplanting physical face to face lecture formats. Others envisage a future where the campus still attracts school leavers seeking a vestigial 'university experience', through a blended education of independent learning online plus some face-to-face interactions, but where the majority of adults transact their learning 'at a distance'. The blended model remains the predominant 'delivery' mode in higher education, despite an increasing number of fully online programs.

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