PEDAGOGY, M-LEARNING AND FINANCIAL STRINGENCY*

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ABSTRACT

This article serves two functions. First, some universities are charging headlong into blended learning, offering courses in virtual mode and developing massive open online courses. It is not unambiguously clear from the available education literature that the investment undertaken to achieve these ends will achieve a desirable payoff. We examine a subset of the literature on blended learning and find that there are grounds for scepticism about the overall benefits to student learning outcomes. Secondly, we present a case study of real decision making processes in an Australian university where it can be argued that decisions made on the basis of questionable strategies around such things as m-learning are displacing tried, tested and successful strategies for managing teaching programs.

Keywords: e-learning, traditional teaching methods, university administration.

JEL classifications: A20, A22.

1. INTRODUCTION

Blended learning is the new flavour of the month in many Australian universities. Blended learning refers to integrating the best aspects of face-to-face and online interactions for each discipline, using appropriate Information Communication Technology (hereafter ICT).

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While many Australian universities are keen to harness new technologies in the provision of education, the application of ICT to teaching is not without complications and difficulties. The developing literature that tracks the use of ICT in education certainly emphasises the potential for valuable contributions. However, that same literature also raises some significant concerns and limitations in the ability of ICT to improve educational outcomes. If there is one underlying moral of this literature, it is that the appropriate use of ICT in higher education is yet to be discovered, and that a hasty application of such technology is likely to be fraught with problems.

The purpose of this paper is to demonstrate how real decision-making processes in universities, made on the basis of questionable ICT strategies based around concepts such as m-learning, can displace tried, tested and successful strategies for managing teaching programs. The first part of the paper critically surveys key parts of the academic literature on ICT in higher education. This highlights the variable efficacy of ICT for tertiary education, and the likely errors of hasty adoption. In the second part of the paper, we present a case study in which a demonstrably successful economics program, where teachers were performing to a high standard and which was very popular with students, was effectively dismantled as part of a strategy that included the adoption of m-learning. The final part of the paper summarises and draws some conclusions.

2. FROM “E-LEARNING” TO “M-LEARNING”: MOBILE DEVICES IN TERTIARY EDUCATION

The advent of the internet and its associated tools has been responsible for dramatic changes in education. We intend to shed some light on one particular aspect of these changes, the use of mobile technology in education. Following from the notion of “e-learning”, the growth of mobile technology in education is now being referred to as “m-learning”. In short, m-learning is the use of electronic mobile devices by students as a central part of their educational experience. Accessing, storing, and interacting with information via such mobile devices allows students to pursue their study while either “off-location”, or even in transit, i.e., travelling. Already, many students are using technology in this way, and this is only likely to increase.

There is an extensive use of mobile devices by students – particularly now iPads. The days of carrying binders and spiral bound notebooks around campus seem to be largely over, as even those students who
make their own written notes are eager to transfer them to their computer storage. A critical investigation of the academic literature which has analysed this growth in m-learning, seems appropriate.

While this growth in m-learning is continuing, it is also fair to claim that these adjustments in education driven by the use of mobile devices are still evolving. The literature reveals a set of mixed outcomes, and that much is yet to be learned about the use of these devices. Moreover, the research here is not as conclusive as first appears.

We begin this investigation of the m-learning literature by consulting a recent paper by Wu et al. (2012). This study provides a solid overview of the topics within this broad literature. It does not aim to explain the precise details of any study, but instead examines the general categories and types of studies that have been performed. The studies that are considered by this analysis are all written between 2003 and 2010, and a total of 164 articles are included in the analysis. In terms of the types of methods used in the literature, surveys, experiments, with a smaller number using descriptive methods, are the primary forms of investigation within this area of study (Wu et al. 2012, p.820). The authors offer a number of definitions of mobile learning. The one they lead with is one that emphasises mobility: “O’Malley et al. . . . have defined mobile learning as taking place when the learner is not at a fixed, predetermined location, or when the learner takes advantage of learning opportunities offered by mobile technologies” (Wu et al. 2012, p.818).

The types of papers included in this survey generally fall between the following two categories: (1) Evaluating effectiveness of mobile learning, and (2) Designing mobile learning systems. The group of studies that explore the effectiveness of mobile learning (the first category identified above) suggest that the majority of the studies demonstrate a positive effectiveness of mobile learning (Wu et al. 2012, p.818). The problem is that the papers cited as being in support of the effectiveness of mobile learning are primarily referring to the perceptions of students. This is no doubt important, but it is not proof of the effectiveness of mobile learning relative to teaching methods used in the absence of mobile devices. For example, the first paper discussed, and the most cited paper in this literature (Evans 2008), uses the preferences of a student group as the defining test in deciding the effectiveness of the devices.
The survey also cites a small number of papers that query the effectiveness of mobile learning. The study by Doolittle & Mariano (2008), for example, is one of the few that is cited as presenting a case that is critical of mobile learning. However, we have noted that it is actually a more rigorous test in terms of effectiveness of mobile learning than most other studies in this field, and merits some further discussion below. A key finding of this paper is that students that work within a stationary (rather than mobile) learning environment perform much better, while those students with a low personal level of working memory capacity are particularly vulnerable in a mobile instructional environment.

The second of the two categories, those papers that focus on the effectiveness of mobile learning systems, found positive results when an appropriate learning system was generated that helped facilitate the use of a mobile device. For example, a noteworthy study demonstrated that when a learning tool is devised with student learning in mind, the outcome is much better. Indeed, the tool that was used to encourage further self-testing was very effective, as demonstrated by de-Marcos et al. (2010). Their survey presents an interesting overall picture of the literature. In terms of the types of devices used, at higher education institutions the use of mobile phones and personal digital assistants (PDAs) is by far the device most commonly studied in this literature, with laptops trailing behind.\(^1\) This suggests that laptops, while strictly mobile, are considered somewhat peripheral in achieving mobile learning.\(^2\) The deMarcos paper is explored in further detail below.

Overall, the studies of m-learning look to be interesting, and generally supportive. However, as foreshadowed, there are a number of methodological issues that weaken the claims of some of these studies. The next section moves beyond this overview, and summarises and critiques some of these papers, and also a number of others, in further detail.

3. AN ANALYSIS OF SPECIFIC STUDIES

The detailed analysis of specific contributions begins with one of the pieces identified by Wu et al. (2012). The paper by Chris Evans (2008)

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\(^1\) To be clear, this is use by studies, i.e., the studies that consider mobile learning are using these devices as the means by which m-learning is pursued. It is not necessarily indicative of student device ownership or behaviour. For further detail see de-Marcos et al. (2010, p.820, and the table on p. 822).

\(^2\) See de-Marcos et al. (2010, p.823) for these statistics and details.
examines the efficacy of podcasts as review tools. This is one of the most highly cited papers in the literature, a point made by Wu et al. (2012), and corroborated by our own check of citations. Evans’ study is both interesting and useful. However, it also demonstrates some significant shortcomings. Like most authors in this field, Evans presents a definition of m-learning early in the paper, establishing the link between e-learning and m-learning:

Compared with traditional lectures, e-learning has the advantage of allowing learners to choose (within constraints) when, where, and how they study. It also allows learners to review material and gain feedback . . . Mobile learning (m-learning) inherits these advantages from e-learning, but extends their reach by making use of portable (handheld) wireless technologies. Suitable devices include digital media players (e.g., iPods, MP3 players), smartphones (e.g., blackberry, iPhone), and Personal Digital Assistants or PDAs (e.g., Palm, Pocket PC).

(Evans 2008, p.492)

Also, Evans writes:

The ability to study whilst travelling on transport uniquely distinguishes m-learning from e-learning, since (with the possible exception of the more cumbersome laptop) the latter normally requires access to a desktop computer and wired Internet access.

(Evans 2008, p.492)

Evans explains that Podcasts are excellent examples of m-learning, which allow the student to download, automatically if desired, lectures and listen and even watch a lecture in their own time and leisure, and on their own mobile device. This would seem to fit perfectly with the various definitions of m-learning noted above. Furthermore, Evans deals with a salient concern: that access to such devices might be a barrier to their use. He counters this concern by citing evidence that, in his study, the possession of iPods is approximately 75%, and likely to climb. Many of those students who do not currently possess an iPod claim that they are likely to buy one in the near future.

The specific purpose of Evans’ paper is to analyse the effect of podcasts when they are used as a supplement to attendance at the lecture, and accessed before the final examination. In this way, the podcast serves as an opportunity for the student to review material they have already observed. While we will not reproduce the six hypotheses verbatim, the hypotheses proposed are ones that address the ease, effectiveness, and efficiency of podcasts as revision tools in comparison to lecture notes, text books, and revision lectures. Two of the
hypotheses addressed students’ perceptions of podcasts as a lecture revision tool. The subjects were 196 volunteers from an undergraduate Business Management program at a London university. Ages ranged from 18 to 25, with the mean age of 19.27 years. Students were given a simple guide informing them how to access the podcast either by a PC or using an iPod. There were only 3 podcasts that provided revision material, released at one week intervals in the three week period between the final exam, and the last class.

The results of the analysis demonstrated student perception of effectiveness of podcasts as being favourable. Students believed that revising with iPod was quicker than revising with notes, and that revising with podcast was more effective than revising with textbook. Furthermore, students were more receptive to the material and the lecturer when the material was delivered by podcast rather than textbooks or even traditional lectures. These are good results, and deserve to be reported by the author.

On other hand, there was not a significant difference between the number of students who believed in the greater effectiveness of podcasts for revision, or effectiveness of the podcasts relative to lecture notes. This was downplayed, all too quickly, as explained below. To begin, the rejection of one hypothesis—the fact that a majority of students did not agree that podcasts were more effective for revision than student lecture notes—is actually cited as indicative of another benefit of the podcasts:

> The fact that they report that they don’t find podcasts more effective than notes suggests that the summarising format of the podcasts was of particular benefit in helping learners focus on the important aspects to the subject without getting side-tracked by detail.

(Evans 2008, p.496)

This argument is unsatisfactory. This eagerness to cite only the benefits of podcasts, and to largely ignore any reluctance of students to endorse their use, significantly weakens the paper. This is indicative of the rush to endorse the benefits of these technologies without taking the time to analyse their use appropriately.

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3 See Evans (2008, p.493) for fine details of the specific hypotheses.
4 In terms of methodology, the paper can be considered somewhat of an experiment with students as the “subjects”.
5 Furthermore, the students did not significantly relate to the lecturer due to podcast revisions.
A further weakness of Evans’ paper is that the short length of each podcast (i.e., they are only 5 minutes each) is not revealed until the penultimate page of the article. It would be highly unusual that a 5 minute podcast can possibly cover significant amounts of course content. It also does not demand much time from students, making it very easy for them to access at low cost. The author is forced to admit that this “quickness” might skew student perceptions in favour of podcasts. Evans, however, refuses to concede any real ground on this point, and instead of dealing with this challenge in a balanced way, redirects the argument such that one of the rejected hypotheses can be used as a defence of the validity of the method. The following is the relevant paragraph:

One alternative interpretation of the “quickness” results is that it is merely indicating the fact that the podcasts do not last very long (they each have duration of about 5 min). If this were the case, then you would reasonably expect the data to reflect the belief that the podcasts are less effective since students would typically spend longer revising from their notes. However, the answers to the questions about effectiveness showed no evidence that they find the podcasts any less effective.

(Evans 2008, p.496)

This is a highly dubious argument. Recall, the students did not find podcasts to be more effective than using lecture notes for revision. Later, the author uses the two rejected hypotheses (i.e., students did not find podcasts as more effective than lecture notes, and receptiveness of podcasts is no greater than that of revision lectures) as a defence of methodology (Evans 2008, p.497). More specifically, the author uses these findings as evidence of discerning decisions by the student respondents, and therefore useful in refuting any claims that the survey was weakened by students giving answers that were socially acceptable, rather than honest.

Evans’ paper is overly optimistic about the use of podcasts, and the questions are too concerned with the students’ perception. More importantly, the author is not paying due consideration to those findings that are against his primary hypotheses. Instead of presenting the results as an insightful test of general student attitudes toward simple podcast supplements to the classroom activities, the article reads like a polemic claiming benefits of podcasts that are not yet clearly proven. We were very disappointed with this paper, and do not believe it merits the citations it is currently receiving.
A more balanced appraisal of podcasts is presented by O’Bannon et al. (2011). The authors study the effects of a podcast in comparison to traditional lectures, and find that while initially appealing to students, the results revealed that there was no significant difference between the achievement of students who used podcasts and those who did not. This is not to suggest they had a negative impact on student learning—the podcasts simply did not make a significant improvement in student outcomes. Furthermore, although some response to the podcasts were positive, the students did not suggest that podcasts should replace lectures at all, and should remain a supplement:

Another major finding of the study is that although students found the podcasts easy to use and their use was not detrimental to their achievement, they were not comfortable using podcasts to replace lecture and suggested that they be used for supplemental purposes only (O’Bannon et al. 2011, p.1891)

This study represents a big improvement over the work of Evans (2008). It offers a realistic test of podcasts, and while it identifies some benefits, it does also note some difficulties and challenges in the use of podcasts that can be overcome. Furthermore, it does not put all its stock in student perceptions, and instead consults some objectively measurable learning outcomes.

While podcasts are one of the most common utilisations of m-learning, the more general relationship between m-learning and an individual learner’s characteristics would seem to be an important consideration and scope for research. In a categorisation not dissimilar from Wu et al. (2012), Doolittle & Mariano (2008) emphasise that the m-learning literature has been investigated across three broad areas: new technology development, new technology evaluation, and existing technology application (p.513). However, they also note a lacuna in the literature in terms of the relationship between mobile technologies, and individual learner characteristics, and this is precisely where they see their own contribution. In particular, the specific characteristic that they are interested in is called working memory capacity (hereafter WMC). They define WMC as the following:

Working memory capacity (WMC) represents the ability of an individual to maintain focus on a primary task while also maintaining relevant information in working memory and retrieving relevant

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information from long-term memory, especially in the presence of
distraction . . .

(Doolittle & Marianna 2008, p.514)

They further explain the literature that links WMC to the cognitive
performance of various complex activities. Importantly, an individual’s
level of WMC is related to various aspects of their learning. Following
this logic, the interaction between mobile learning environments and
the various levels of WMC demonstrated among individuals, is
important in affecting the learning potential of those individuals.

Doolittle & Mariano (2008) measure the individual level of WMC
among 87 undergraduate students. They then track the performance of
these individuals, who naturally possessed different levels of WMC, in
both stationary and mobile environments. To begin, individual students
in a stationary learning environment performed at superior levels than
students in a mobile learning environment. However, the interactive
effects of WMC with learning environment were significant. The
findings show that while individuals with high or low WMC performed
at lower levels when shifted to a mobile learning environment, those
individuals with low levels of WMC suffered drastic reductions in
performance when making the transition from stationary to mobile
learning environments.

These are valuable and interesting findings, but the reader must think
carefully about what is being tested here, and how the use of mobile
technology makes a difference to teaching outcomes. More specifically,
the results do not mean the mobile device itself is the problem; it is the
environment that is having a significant impact here. It is also important
that this paper emphasises the potential for a wide variation in outcomes
for different individuals. The following paragraph is a good summary
of the conclusions:

The current results indicate that students who have poor attentional
control, or who are susceptible to external distraction, are likely to be
disadvantaged in mobile multimedia learning environments where
distractions may be high. As the creation and application of mobile
multimedia learning environments moves forward, it is important that
individual differences be considered so that a portion of the population
is not left behind.

(Doolittle & Mariano 2008, p.526)

While Doolittle & Mariano (2008) have contributed an important
study that considers how different types of individuals might respond
to mobile devices, it would also be worthwhile to consider the different
types of mobile devices themselves. The next paper to be discussed considers precisely this issue. In a very recent study, Morris et al. (2012) investigate the impact of tablet use on undergraduate student learning. In their study, Morris et al., planned and organised the allocation of a preconfigured tablet to a group of biology students. In addition to its preconfigured settings, the tablet also tracked the usage of each individual student. This last point underscores the purpose of the exercise, which was to identify the students’ use of the tablet device in their study activities. Importantly, the course itself was not adjusted in any way to facilitate easier use of the tablet device:

This study was purposely conducted without altering the curriculum, availability of learning resources, or teaching strategies to illustrate the experience of many students who will enter university campuses with a tablet device where the university has made no particular provision for learners with such sophisticated tools.

(Morris et al. 2012, p.97)

In their own review, the literature surveyed by these authors demonstrates significant variation in the extent of technology adoption and use by students in their scholastic activities, and notes a variance in recreational use (which is typically high), versus study utilisation, which can often be much lower. The method they apply is “controlled” in the sense that from the outset the intention is to orchestrate a clear intervention in the student activities.\(^7\)

A control period was established as the first 10 weeks of first semester, while a trial period was identified as 10 weeks in the second semester. 48 students were recruited for the study, 27 women and 21 men. The age range was 17 to 45 years, and a range of year levels was incorporated across a number of biological science programs. Furthermore, the students were all full-time. Out of the 48 student total, 25 actually received iPads (10 male and 15 female). iPad participants reported reduced usage of laptop computers or netbooks for learning.

One interesting result of the study was that students claimed that use of the device was convenient, particularly when on campus, and that little training was needed to enable use of the device. The authors claim

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\(^7\) “Previous studies have quantified students’ use of technology, tools and services at a single point in time, but there is little empirical evidence measuring students’ changes in behaviour as a result of intervention with a mobile device. The aims of this study were to provide quantitative and qualitative data on the effect of providing undergraduate biological sciences students with a tablet device on their use of technology for learning and their study behaviours.” (Morris et al. 2012, p.97).
that these findings are supported by previous studies that highlight the integration of “mobile devices into classroom settings to complement fact-to-face teaching with positive results.” (Morris et al. 2012, p.105). Some other interesting results of the study are that students reported an increase in word processing and an associated reduction in the use of paper and pen. These findings suggest that perhaps students began typing lecture notes or even completing assignments on the iPad, rather than usual in-class writing. Furthermore, the students also reported a significant reduction in the use of printed materials, which again suggests they began using the mobile device to access their class reading. Perhaps the most significant finding of the study, in regards to the use of the device by the students, was the large extent to which students used the application known as Soundnote. This application allowed them to record the audio in their classes while taking written notes that were synchronised with the audio file.

This paper was an interesting contribution and presents honest findings about the addition of a mobile device to classroom activities. The findings themselves were somewhat mixed in terms of their support for the use of iPads by students. However, the results do suggest that with the further integration of online activities, i.e., discretionary incorporation of blended learning, the usage of the iPad would have been more extensive. In this regard, the reader should recall that the curriculum was not altered in any way. Finally, sample size was small, and in our own view there was selection bias in the sample as students self-selected for participation. However, it seems the authors are aware of this (Morris et al. 2012, p.99).

A recent article by Russell & Posada (2011) examines both mobile and online resources within curriculum design in the engineering discipline. It is important to note at the outset that this is an exploratory paper, in the sense that the contribution is to document the progress of using e-learning and m-learning. In this sense, it is a good exercise, and worth considering the various channels through which “e” and “m” technologies might be used. The paper was also instructive as it attempts to couch its investigation and analysis of e-learning and m-learning within some of the dominant educational theories. We will offer a brief introduction to these, before considering the detail of the paper.

- The first learning theory the paper identifies is individual learning. This is essentially the individual’s cognitive process,
and how discursive activities, such as lectures and tutorials, or perhaps even experiential processes, affect this cognitive process. This process may incorporate some conversational exchange between student and teacher.

• Second, social learning is perhaps more straightforward, and focuses on how people learn in a social context. Students might access knowledge that exists beyond any one individual, and instead in a social context. This theory of learning has indeed been applied to the “e-context”, and Russell & Posada cite Salmon (2000) as having presented a “5-step e-moderating model” that engenders social learning in an online context.

• Third, situated learning refers to the process by which an individual learns in a real work context, rather than a traditional classroom context. This is not always easy to create, beyond a real work placement experience, but it is possible to create an experience of situated learning in the academic environment, and can be achieved through such things as project work.

The paper is best summarised as an attempt to connect some of the educational theories to the various modes of available technology. This is a sensible task, and the authors admit this is a first step rather than a conclusive statement. In this the paper is instructive, as an indication of where things are currently at, but also highlights some difficulties in this literature. The authors explain that iPods are being used for a number of tasks, including classroom voting and peer marking. Importantly, they explain:

We have also developed a mobile marking application that provides marking rubrics for iPod, iPad or iPhone linked to a web server. We have built a simple web application that allows the teacher to build a scoring rubric on items, activities or groups.

(Russell & Posada 2011, p. 1100)

This is, we think, the most important paragraph in the paper in terms of mobile learning. It demonstrates the authors’ awareness that any effective use of mobile device will require the use of some application that can be made available to students. The earlier discussed work by Morris et al. (2012) suggests that user friendly applications are the key to effective student use of mobile technology (i.e., the students use of the application Soundnote). Simply owning mobile devices is not sufficient, and using them meaningfully for the purposes of education requires these additional investments. The range of technological
applications is extensive, and categories of learning activity are identified: Mobile Devices, Online Tools, and Virtual Contexts. Significant effort was clearly made by the authors to create potential for usage of the devices.\footnote{Perhaps inadvertently, the authors highlight the time required to adjust the video-recorded lecture for the purposes of presenting to students:}

Although the paper offers an excellent summary of the range of combinations available, a limitation is its inability to demonstrate a coherent relationship between the various modes of electronic and mobile learning. Russell & Posada (2011, p.1104) Figure 3 titled “Learning technologies in engineering education as an open distributed knowledge system”, presents a flow chart of relationships between the various modes of learning: Individual Learning, Social/Team Learning, and Situated Learning, with the various learning technologies. The problem is that it is difficult to understand the relational and causal relationships between these things, and the flow chart does not clarify precisely how these fit together. It is a difficult task no doubt, but we think the authors can ultimately improve upon this.

A final paper to be considered is De-Marcos et al. (2010) who propose the use of a newly created tool to facilitate the use of mobile devices. The key to understanding their article is to understand the device that they have created. The specific device is intended as a tool for mobile self-assessment.\footnote{Interestingly, they identify a similar weakness in the literature to that we have identified: a lack of systematic testing of the actual effectiveness of mobile learning. Consider the following quotation: “None of the previously cited research included similar surveys which would have enabled us to draw any real conclusions about the true effect of mobile self-assessment on learning actions, and our aim was to fill that gap” (De-Marcos et al. 2010, p.1070).} Using both Java and XSLT transformation sheets, the authors devise a system whereby a web-based set of questions is presented for students to test their understanding of class material. Most importantly, the system is run through a mobile application that runs via students mobile phones. The technical details of the application created for the experiment can be found on pp.1070-
1073 inclusive. For the purposes of the current discussion it is sufficient to emphasise that the authors ensured it was created with minimal software requirements for the mobile devices owned by students. This is important in maintaining wide usage.

Three groups were used: two at secondary school and one at a tertiary level. We will focus on the results for this latter group, which was a university level Nursery course during a Life Sciences degree program. The specific learning objectives that were tested were primarily practical types of objectives. The authors report modest improvements for the experimental group in comparison to the control group, i.e., students who used the self-assessment application performed slightly better than those students who did not use the application (the control group). The final scores of the experimental group are higher, and the magnitudes range from 3.84% to 8.46% depending on the learning objective. It should be emphasised that none of these results are statistically significant, a likely product of small sample size (n = 28 for this group – largely impossible to obtain statistically significant results).

While the study did not generate the type of statistical results that are convincing to us, we think it still generates a number of important lessons. Firstly, the practical nature of the learning objectives in this case, meant that use of the mobile device for the purposes of self-assessment may not be appropriate. Secondly, the authors note some technical problems that occurred due to the variance in the type of device that different students possessed.

Having analysed a sample of key studies, we now look at the implications for teaching.

4. IMPLICATIONS FOR TEACHING

There is no doubt that during our teaching careers more and more use will be made of mobile technology for educational purposes. Although this area of education practice is still evolving, even at this early stage there are some salient lessons that can be learnt from the literature summarised above. To begin, mobile technology is likely to be popular with students, and the perceptions of students are important. If they are enthusiastic about the use of a technology in their learning, they are no doubt likely to obtain a better outcome. However, the student perception cannot be the sole focus. Much attention also needs to be devoted to measuring outcomes that are derived from the use of technology. Students can detect if the technology is not suited to the specific learning activity, and their reluctance to use mobile devices for
some tasks needs to be recognised and considered just as deeply as their enthusiasm for others.

The “big picture” issues of how m-learning relates to the dominant learning theories, also deserves more attention. Just as student perception should not be overemphasised, the perceptions of educators should not be too readily accommodated either. Reading some of these studies leads us to believe that there will likely be some “over-shooting” in the use of mobile technology during the next decade, as some overzealous educators allow themselves to be carried by the wave of demand that there is for more and more online and mobile educational experience. However, as scholars slowly start to investigate the use of technology in relation to some of the more established branches of educational knowledge, we believe there will be some “pull-back” as educators realise that “more” is not always “better”.

For the present, various lessons about how to use mobile technology can easily be identified. The student possession of mobile devices may not be sufficient for a beneficial m-learning experience. It is one thing to have students access data via their mobile devices, such as lecture notes, or reading summaries. But to really make use of the technology, some form of application is the best way to try and achieve a learning outcome. Furthermore, many students are still learning how to use a mobile device, and they may use different platforms to access information on their device. Therefore, in the design and use of mobile applications, the software demands need to be relatively simple, especially at these early stages. There also needs to be some support for technical challenges. We have noted from our own experiences using online assessment tools, students can be very frustrated and upset when technology breaks down. Finally, it is also clear that context matters. Although mobile devices can facilitate student learning at different locations, it does not mean learning can occur at any location. Some students will need an environment where distractions are limited. Students need to be encouraged to consider the appropriate types of environments to use their mobile device for educational purposes.

5. CASE STUDY OF DECISION-MAKING AT AN AUSTRALIAN UNIVERSITY

In this section we present a case study in which a highly successful School of Economics and Finance at an Australian university was effectively dismantled and its programs shut down as part of a strategy that embraced the kinds of ICT considered in the previous two sections.
This university was operating in an increasingly competitive and deregulated higher education market that no longer had any quotas on enrolments. The result was significant pressure on the revenue side of the university’s budget and this was addressed using a two-pronged strategy: aggressive reduction of operating expenditures; and a re-branding of the university’s educational product with an emphasis on the use of up to date educational technology.

Central to the first part of this strategy was that courses and subjects deemed to be ‘not attractive to students’ were to disappear from university offerings. Electives were to be cut as part of a process by which programs were deliberately streamlined down to the basic minimum of prescribed subjects. It was reported that 30 percent of all subjects that the university taught would no longer be offered. Under the second part of the strategy the university would reinvent itself to create a new brand which would differentiate its offerings from competitors. This approach embraced blended learning and courses in virtual mode. Significant investment was made in ICT that allowed students to access on-line materials with ease from both inside and outside the university, and a blended learning model was introduced for all courses. Whole courses were in fact slated for on-line delivery and blended-learning or ‘flipped’ strategies were employed in virtually all other courses by directive.\(^{10}\)

These measures had a significant impact on the School of Economics and Finance which had until that point been one of the most effective and successful teaching schools within the university. Student numbers in this school had grown over the period 2004 to 2010 by 40 per cent. On the basis of comparative data on Equivalent Full Time Student Load it was the eighth largest School in the University. In Higher Degree and Honours student loads it was ranked sixth, while in terms of academic staff it was the fourth smallest.\(^{11}\) The School’s main postgraduate coursework program, the Master of Applied Finance (MAF), was the second largest program in terms of international student numbers in the university (the largest one being Nursing). Student demand for

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\(^{11}\) In terms of Research Publications (sum of weighted Higher Education Research Data Collection points), per full time equivalent staff member, the School average was double the university average.
postgraduate coursework offerings led to a growth of subjects offered for study from 19 in 2007 to 39 in 2012. Student numbers in the MAF tripled from 2007 to 2012.

In terms of student feedback on teaching, by 2011 student surveys results had become outstanding, though this high level of student satisfaction was not always the case. Aggregate comparative data for 2005 showed that performance was below the university average. In summary terms, using the Student Feedback on Units data from 2005 onwards, the improvement in results is clearly apparent. In 2005.2 Q13 – ‘Overall Experience: Overall, I’ve had a satisfactory learning experience in this unit’ - was 3.8 (out of 5) and there were only two questions out of 13 which had a score of 4.0 or higher (two ‘green lights’). By 2009 there were 12 out of 13 questions with 4.0 or higher. This compares with the overall university result of having only three questions with 4.0 or greater. Note that these improved results were in the context of substantial increases in student numbers. So the improved student feedback came at a time when staff had been asked to teach a far greater number of students.

In comparative terms it was the second best performing School in 2011, following the School of Education, on the basis of Q13 – Overall Experience. On the 13 student feedback questions the School scored 8 greens and 5 yellows – equal best result, again with the School of Education. Of the responses all exceeded 3.8 (the criterion used in the AUQA audit) except feedback which was 3.79. The response rate was a healthy 61% (the university average was 53%). In terms of individual units, 54 units were assessed and of these 37 rated green (68.5%), 14 rated yellow (26%) and three units rated red (5.5%). Of the 54 units, 20 were postgraduate units and of those 15 (75%) were rated green. A green rating meant a student approval rating of 4 or more out of 5; a yellow rating was between 3.5 and 4 and a red rating was less than 3.5.

The concerted effort that was made by the faculty teaching within the School can also be identified in awards and citations. Since 2007 one staff member had been awarded the Carrick Citation Award for Outstanding Contributions to Student Learning. Another was awarded the Australian Learning and Teaching Council Citation for Outstanding Contributions to Student Learning while a third staff member was ranked 14th in a Lecturer of the Year Competition which attracted a total of 20,162 nominations from a field of 2,641 lecturers across all disciplines in Australia.
Mention might also be made of contributions to the scholarship of learning and teaching. The school hosted one economics teaching conference itself and regularly sent staff to present papers at other such conferences hosted around the country including the annual Australasian Teaching Economics Conference (ATEC) and the annual Quantitative Teaching and Learning Forum at the University of Melbourne.

Finally, the Peer Assisted Support Scheme (PASS) might be mentioned. Figures for spring 2011 show 439 of the School’s students participated in PASS sessions. This represented 17.6 per cent of all university PASS attendees. Economics was the leading School in terms of participation in this program. One of its long-term PASS facilitators was selected as one of the winners of the National PASS Outstanding Leader Awards and another of its PASS facilitators won the National Outstanding Senior PASS Leader/Mentor Award around this period.

In summary, it is clear that the Economics Program at this university was a highly successful teaching program. While beginning at a relatively low level of student satisfaction in 2005, by the middle of 2011 the program was receiving some of the very best survey results at the university, and many staff were actively engaged in teaching related conferences and research in the scholarship of teaching. Other factors indicative of the program’s success, which we have not discussed here, include the excellent outcomes with regard to graduate destinations, particularly for economics honours students. There is little doubt that the program was making significant contributions to quality teaching and learning outcomes.

Despite this impressive performance, an important result of the university wide strategy outlined above was that this economics program was effectively dismantled within a very short time-period. A full account of these events is not within the remit of this paper, but a short summary follows. In May of the year in question, it was announced that the School of Economics was to be abolished and merged with other schools into one large School of Business without separate departments. The Economics and Finance major, that in the same year attracted just fewer than 300 students, would also no longer be offered in the main undergraduate business degree. All these changes were effective from January 1 of the following year. The argument at the time was that the study of economics would be concentrated in the Bachelor of Economics degree alone. However, within 18 months of
this announcement a proposal was distributed recommending abolition of the B.Ec, B.Ec (Hons) and B.Ec/LLB programs effective within three months. Eleven staff from the School of Economics and Finance were regarded as surplus to requirements and applications for voluntary redundancies were sought, with eight staff subsequently leaving under these arrangements and another three through forced redundancies. The change proposal, in its original version, thus represented the disappearance of economics as a discipline from the university.

6. DISCUSSION
The changes outlined above constituted a mere subset of much wider organizational change implemented across the university around the same time, and while the processes involving this change could be discussed at length, it is the blended learning aspects of this change that we focus on here. This strategy was embraced with alacrity by university administrators. This can be contrasted with the puzzlement by academics that mostly were comfortable with face-to-face student contact in a traditional two hour lecture and one hour tutorial in most subjects. Moreover these ‘traditional’ approaches had proved to be highly successful. Academics were unclear as to what blended learning meant or if there was a substantial body of literature that strongly supported this approach. Our earlier discussion suggests that faculty scepticism of the efficacy of such programs is not without foundation.

Blended learning is promoted everywhere. It has been alleged that blended learning designs are central to securing a sustainable future for teaching units. Administrators may perceive blended learning as a means to cut costs. Launer (2010, pp.13-14) explains in detail why blended learning is not necessarily cheaper than face-to-face learning but also reveals the pedagogy behind it, namely, “constructivist learning theory” and we may well ask if our students fit the profile of the motivated, self-directed and reflective students that this model assumes. Experiences with non-face-to-face learning does indicate serious concerns with retention and failure rates unless students are mature and self-disciplined (see also Atchley, Wingenbach & Akers 2013). The paper by O’Connor, Mortimer & Bond (2011) chronicles in detail what not to do in implementing blended learning and the problems that occurred when it was introduced in a very large subject. It concludes
that blended learning might not lead to a reduction in face-to-face teaching at all (p.80).\textsuperscript{12}

The university embarked on an intensified campaign to introduce the extensive application of ICT for the purposes of both undergraduate and postgraduate teaching. The literature we have just surveyed indicates we should be very careful before we leap head-first into blended learning.\textsuperscript{13} This has not happened. Lectures are under threat. Student contact hours are being reduced and class sizes increased. Funding concerns had also impacted on tutorial sizes in the period during which the changes described above occurred with these class sizes increasing to 35 student per tutorial. Yet while there was little funding available for normal ‘standard’ teaching, there was significant funding available for capital works to transform normal classrooms into “social learning spaces”. The net effect seemed to be that rooms held fewer students than previously (although the rooms did become very colourful with beanbags and all sorts of e-devices available).

7. CONCLUSION

There is currently considerable concern in Australian universities around blended learning and staff workload. Blended learning facilitators and quality assurance officers have been hired in great numbers to torment staff and curriculum mapping projects are all the rage. Moreover, there are many other changes afoot in the teaching and learning space that absorb the time of academics. There is the threat from massive open online courses (MOOC) – but see (King 2013) – and the ever accumulating documentation required, often to satisfy external agencies like TEQSA that we are fulfilling our requirements under the

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\textsuperscript{12} A sampling of the work that Professor Joe Wolfe, School of Physics, UNSW has done with his multimedia modules – \textit{Einsteinlight} and \textit{Physclips} – is instructive. He has won lots of awards for the outstanding quality of his online material but it has taken him many years and extensive resources to reach that level. In the contemporary rush to adopt blended learning we do not seem to have either the time or the IT support to replicate Wolfe’s quality outcomes.

Higher Education Standards Framework. Some of the frustration and annoyance related to this process is articulated by Oslington (2012):

The current obsession with learning objectives and graduate attributes is essentially about describing what universities are doing in language fashionable among the current regime of educational bureaucrats … lots of meetings, paper, and box ticking … this guff has little to do with the quality of what goes on at the educational coalface … I have never met a student who has actually read the guff in a course outline – at most they have a bit of a giggle before turning the pages to the course content and assessment. There is no real evidence that the current obsession with process makes any difference to the quality of education.

(Oslington 2012, p.50)

Craig Freedman, in an email to the authors dated 20th May 2013, added fuel to this fire:

Rent seeking and self-interest. This group of educational bureaucrats provide the appearance that the quality of education is checked and standards upheld. This accords well with the rise of faux accountability in Universities. Educational bureaucrats have established a cottage industry for themselves which has enabled them to hire more of their kind. To further their ends they have to push for unified standards and methods, a one size fits all approach. This allows them to tick off boxes set against each course and lecturer. It is a mistaken concern for homogeneous inputs instead of looking at outputs. An economist would claim that Universities state clearly what their objectives are and then let the lecturers figure out how best to achieve them. Given the diversity of skills, each should play to his or her strengths. There should only be some system of assistance for those lecturers not achieving reasonable results.

(E-mail correspondence, 20th May 2013)

One feels that sentiments such as those above will not stop the inevitable blended-learning tsunami and the increased bureaucratisation of teaching. It may be necessary to join the blended learning movement to survive as our traditional teaching styles are increasingly under threat. Our case study highlighted the success of an economics program, its speedy destruction, and the further hurried application of an ICT strategy that now seems to dominate university decision-making. In particular, our discussion emphasises the speed with which successful programs can be dispensed with, and the potential for the credulous adoption of new fashions and trends in higher education offerings and pedagogy, often without clear or convincing evidence in support of the changes. Indeed, the Australian university sector is in the midst of a turn
to “blended learning”, or applied ICT in education. The precise impact this will have on the teaching of economics in Australian universities is likely to be heterogeneous and unpredictable. Furthermore, it is unlikely that all these changes will be successful substitutes for many tried and tested methods. Economists, who are trained to be critical and analytical thinkers, and always inclined to rigorously test ideas and concepts empirically, will find much in these new approaches to be sceptical of in terms of their overall impact on student learning.

REFERENCES


