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Technology as a tool or tyrant: universities responding to the challenges of learning and teaching in an information rich environment[1]

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Abstract

In this paper I identify challenges I face as an academic leader working to improve and sustain quality learning and teaching in an information rich environment. If the possibilities provided through ICT are over estimated in the short term and under estimated in the long term then considerable expenditure may well be spent on resources that have surface appeal of being innovative but do not add much value to the quality of student learning.

Introduction

I write this paper from the position of someone who has management and leadership responsibility for eLearning, among other things, in a large, comprehensive, research intensive university. In 2005 I commissioned a review of eLearning across the University, and recently established a cross-university governance committee, incorporating academic and infrastructure portfolios to oversee the development and implementation of an eLearning strategy across the University. I am not a “techie” but I have had a long standing interest in flexible learning and pedagogy and how ICT can be used as a tool to improve access to learning of various equity groups. My paper is based on lessons learnt and insights gained in what should be seen as a significant period of organisational transformation and enhancement of student learning and the quality of teaching.

While labels like ‘eLearning’, ‘mLearning’ or blended learning come and go, the use of ICT in teaching and learning is here to stay. It is now the core business of higher education and needs continuing strategic management and investment (Goodyear, Reimann and Mahony, 2006). Zealots and politicians alike make claims about the efficiencies gained through technology, how access to education and training can be improved, how the quality of student learning is improved, how costs of education are reduced and how technology can improve the cost effectiveness of education. And from where I sit that looks and sounds good. But … do we have the evidence to support such claims?

Arthur C. Clarke made the astute observation: “When it comes to technology, most people over-estimate it in the short term and under-estimate it in the longer term.” My argument here is that if the possibilities provided through ICT as a tool to enhance student learning and the delivery of teaching are over estimated in the short term and under estimated in the long term then considerable expenditure may well be spent on resources that have surface appeal of being innovative but do not add much value to a student’s overall learning experience. In trying to ascertain what is over-estimated and under-estimated I attempt to take into account student, academic and institutional needs and aspirations.

The Context of Higher Education: NetGen learners

The social, economic and political context of higher education plays as significant role in the provision of higher education at the level of policy and practice. The Australian government like other western democracies acknowledges the importance and potential of higher education as an economic resource. Higher education is the third

highest generator of income behind coal and tourism. In Australia alone $6 billion is generated through education. Two inter-related forces are at play here, that of globalization and the life long learning requirements of professions for their members to be engaged in continuing education for accreditation and registration purposes. New technologies have contributed to what Cunningham et al (1998) call “borderless higher education”. Borderless-ness includes the removal of the impact of geographic borders as learners and knowledge become mobile. It also refers to borders of time and space, as lifelong learners choose to experience their learning while still employed and therefore need access to information in more flexible modes (Bjarnason 2006).

Many students, especially the NetGen, come to university digitally literate in both computing and network technology, and with expectations that a university campus will be wired, subjects will be on line and that resources will be immediately accessible and available. These students are always connected, they are able to multi-task, expect immediate feedback, learn experientially and are very social – they like to interact, email mails or SMS messaging is their preferred form of communication. MP3 players, PDAs and other hand held devices are now part of a student’s academic and social tool kit. Hilton (2006: 60) observes that “Today’s students want to be able to take content from other people. They want to mix it, in new creative ways – to produce it, publish it, and to distribute it.” Quite some challenge for some academics who are socialized in pre-technological contexts.

There is now increasing evidence about the learning styles and interests of these students. My colleague Peter Reimann (2005) claims that research on these students indicates that they have broad but shallow information literacy and are consumers rather than producers of information, are over reliant on Google, they multi-task, are apt to begin tasks randomly – perhaps in the middle, are graphics oriented, thrive on change and demand quick or immediate gratification.

Goodyear et al (2006:15) argue that Strategies for eLearning – for the effective use of ICT in learning and teaching – need firm roots in the students’ experience of the University. The suggest that we should be using ICT (a) to enhance students’ participation in the intellectual and cultural life of the University (b) to help ensure that the precious time they spend on campus is used to good effect. This *can* mean that a good use of ICT is to allow students to have first contact with new ideas *away* from campus – that time on campus is used primarily for those things that can *only* be done face-to-face, or that require access to equipment and other resources unavailable elsewhere.

Ellis (2006) identifies four areas where eLearning meets the needs of students: i. students expect eLearning as part of their tertiary education and they have already experienced the benefits of social and knowledge networks for their personal and

educational lives;

ii. Students expect flexibility in their tertiary education to allow them to combine study with work and family commitments;

iii. Disciplinary bodies are increasingly providing eLearning resources (data bases, multimedia resources, e-texts) that offer activities difficult to replicate without ICTs;

iv. Society has embraced information technology and communication technologies as a way of life and business and employers expect graduate to know how to exploit their affordances across a range of attributes.

Before turning to some data it is worth clarifying the eLearning at the University of Sydney complements face to face experience, it elaborates and enhances. This is a different beast from to eLearning in a distance education program.
The following comments from the University of Sydney 2005 SCEQ data provide some evidence of students response to eLearning at Sydney. For them the best aspects are:

- Online resources and the ability to contact lecturers and tutors online. They give instant access to people that ordinarily would not be so close (Agriculture)
- Sufficient resources (online, library and WebCT, etc) enable students to fully facilitate their research imagination. (Law)
- I've really liked the capacity to engage in learning online through off campus library access, MyUni, Blackboard and WebCT etc, especially because I am studying part time and working full time (Arts)
- Through online learning I can get access to all resources, unlike the library. I can work around my lifestyle. I can do it on line after I finish work, after office hours (Arts)
- Online resources are good because they enable us to integrate what we learn in lectures with what is on WebCT. With lecture notes, it is easier to follow what the lecturer is saying and we are able to read over note before the lecture if we want to know roughly what the lecturer is going to talk about. (Pharmacy)

There were also suggestions as to how the University could improve its provision. The following are indicative of students having clear views of about not only the quality of resources but also what these resources should be:

- The online/written information is frequently out of date, inadequate or irrelevant. This is frustrating in preparing for examinations, as there is no focus(Dentistry)
- More journals and books should be made available online through WebCT or MyUni. Could be more computers at access centres, or more access centres.

- Less trial and error with new methods; for example on line approaches need to be piloted first and the problems worked on and method refined prior to broader use (Education and Social Work)

Given how these students learn and their expectations what then should higher education institutions do to be receptive of their needs and skills? Reimann (2005) suggests the following:

i. maintain our core business of knowledge creation, human capital building and social capability building while developing relevance for this new generation.

ii. align student's personal IT with that of the University. This will have significant implications in terms of infrastructure investment, especially bandwidth, security and intellectual property.

iii. Provide multiple options and types of learning spaces – both formal and informal.

Having given some contextual information I now return to Arthur C Clark and elaborate what has been over-estimated about technology in the short term and under-estimated in the long term. I present what I believe are the common half dozen issues around technology.

What is over estimated

Student readiness and access: there is the assumption that all our students are of the NetGen, however in many universities school leavers are a minority. Many students are post graduate or retraining in another field. Organizing programs and modes of delivery to suit a diversity of student expectations, needs and abilities is important. Flexibility then is critical as is the recognition that there are differing levels of ICT literacy and capability.

Students lives are complex, no longer are they just studying full time; for many of them they are having to balance outside employment (sometimes nearing 30 hours a week just to survive) with study, family commitments and at the same time have a social life. They want to have access to libraries, learning commons, help desks, learning resources and terminals outside of usual office hours. There is certainly considerable pressure for university resources to be available 24/7. While most universities are enhancing their wireless spaces, students still want access while traveling on public transport to and from home.

Robustness of technology and the quality of learning objects and resources: for many of us experience would have it that when it comes to technology, Murphy's law comes in to play – "if something is going to go wrong it will happen in my lecture" – the technology won't work, access to the web won't be available, wireless connections will suddenly dissipate and so on. We need to ask how flexible is the hardware and software, and more importantly, how flexible is the pedagogy that supports learning.

If improved learning outcomes are to be achieved, then it is imperative that students have access to high quality learning materials. All too often the use of ICT in classrooms can be described as a technological book where print material has been transcribed into the LMS, or worse still students are lulled into a near catatonic state through presentations that can be described as relying "powerpointlessness" . In such situations teaching itself becomes a performance piece, where students are entertained by being taken through a powerpoint presentation with all of its bells and whistles (if the academic has those skills in the first place). Moreover, at its worst, the activities that students are asked to engage in are not challenging and do not extend the learning experiences nor the intellectual capacity of students. Teaching here is about transmission of information, not about developing skills of critical thinking or analysis.

Academic ability to integrate technology into teaching is fundamental to ensure that the pedagogical possibilities and opportunities of ICT are achieved. At its most basic this requires that teachers resocialize themselves as learners, and learn how best to use the technology and to engage in some critical reflection about what kind of content can best be delivered through technology, what value does the use of technology add to a learning experience and finally, what is the role of the lecture or tutorial in an information rich environment?

Most significantly it demands that teachers are able to be flexible in how they work and in their ability to change their practices, and to fundamentally rethink how they design the content of the curriculum, how it is assessed and how it is evaluated. Put quite simply is requires that teachers make judgments based on their experience and expertise about how students learn and how technology can be used to facilitate that learning.

What is under-estimated

Having indicated the areas where technology is overestimated in the short term I now indicate six areas where it has been under-estimated in the long term.

Workload: as ICT becomes ubiquitous in everyday life and academic life pressure is being felt by academics and students learning in an information rich environment. For

academics putting learning materials and objects on-line, promoting learning through electronic discussion groups or blogs creates expectations that academic will always be available, accessible and responsive to students at any time. There is certainly a body of anecdotal evidence emerging of students becoming abusive when academics are not responding immediately to student questions or proving instant feedback to student work.

Sustainability: implementing change and new initiatives is relatively straight forward, sustaining them and keeping the momentum going is much more difficult. Sustaining the effort and interest of staff, when there are competing demands, especially in a research intensive environment effort needs to be considered at the individual and corporate level. Goodyear et al (2006: 16) capture the essence of the broader strategic challenge. It is worth quoting them in detail:

"To mainstream eLearning in the organisation, it must be profitable for the individual academic to engage in related activities. For this to happen, at least the following requirements need to be met:

- Clear workload policies in place, acknowledging the efforts invested for developing materials as well as running the single unit of study, stream of units of study, or the course.
- Sufficient support. This comprises human resources (technical and instructional/web design support), a set of tools, and opportunities for training and knowledge exchange.
- Long-term perspective and strategic alignment with organisational objectives: technology and support must not disappear suddenly (or be perceived that it might), thus rendering previous investments meaningless. Staff will not invest effort into an area with uncertain institutional commitment

In addition to these minimal requirements, we think that academics will be more motivated to 'get their feet wet' and maintain a high level of effort when they see these additional benefits occurring:

- Teaching accomplished more efficiently; in particular, when time-consuming and repetitive activities such as receiving, marking and giving feedback on assignments can be performed with the use of ICT.
- Significant returns in personal productivity and in quality of the learning experience for upfront investment in ICT supported learning strategies that make use of the unique qualities of the medium.
- More flexible allocation of time for teaching; an academic's work is not the same each week; research requirements, conferences, presentations, visitors, and

administrative demands frequently punctuate the “regular” schedule. Being able to arrange time invested in teaching more flexibly is a strong incentive for busy academics.

- Synergies with research and technology-transfer.
- Higher levels of competence developed in students, along with increased student satisfaction”.

Leadership: At the corporate level “the introduction of ICT into the core activities of an enterprise involves disruption, a questioning of assumptions about existing and future ways of working and the creation of opportunities for synergy between what were previously seen as separate areas of activity. Effective use of ICT in academic work must involved strategic thinking and management at high levels”. (Goodyear, Reimann and Mahony 2006: p. 26) This stewardship of an agenda that must integrate both academic and infrastructure pressures and priorities must come from a senior level if it is to have any effectiveness. As Goodyear et al (2006: 12) observe “the cost, if this does not happen will be further fragmentation of the academic role, an intensification of the competition between teaching and research, missed opportunities for strengthening research-led teaching and the development of parallel but disconnected infrastructures for research ICT and teaching/learning ICT”. At the University of Sydney we are developing an integrated learning strategy to ensure that there is no fragmentation between the academic and infrastructure portfolios and that there is a seamlessness between the physical and virtual learning environments to ensure both cost effectiveness, strategic benefit and sustainability of interest, effort and resources.

Conclusion

In this paper I have reflected on the challenges facing me as an academic administrator managing learning and teaching in an information rich environment. On the basis of my experience my position demands the strategic allocation of resources through investment in people, hardware and soft ware. Bjarnason (2006: 389) captures the major challenge for universities; he observes that “without adequate investment in helping academics to learn capability of technologies, and then investing further in creating the opportunity for them to experiment and begin to embed technologies in their day to day teaching – little will change in the short to medium term.”

Learning technologies hold great potential for student learning, both in terms of access and learning styles. It holds great opportunities to be innovative in how information is presented to students. However, one must not overestimate what technology can do- it is essentially a tool to enhance student learning! We must not be held captive to the imaginings of what might be over the horizon and be tyrannized by what may often be

seen as a magic bullet by academic managers like myself. Seymour Papert's idea of "hard fun" seems like an appropriate analogy to describe the challenges ahead!

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