

Conducting and Reporting on Educational Technology Research for Institutional Impact

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The advance of educational technology coupled with competitive forces, ever-increasing digitisation, and new entrants into the Higher Education sector, has created an environment of constant change for those working within it. This paper discusses how seven people, in five institutions across three countries joined forces to develop their knowledge, skill and ability in conducting and reporting on educational technology research for institutional impact. Reviewed in this paper are a range of approaches adopted across the different institutions, considerations of which of these have been effective and examination of whether targeted communication strategies have helped overcome inherent barriers.

Keywords: educational technology research; institutional impact; reporting; higher education.

Introduction

The advance of educational technology coupled with competitive forces, ever increasing digitisation and new entrants into the Higher Education sector has created an environment of constant change for those working within it. As both educators specialising in technology and as academics utilising the technology, we have a responsibility to lead, and support those in leadership, in these times of change. We can accomplish this through our dual roles of encouraging users and assisting educational change whilst at the same time supporting academics to embrace a new educational environment. The challenges include developing our knowledge and skill as well as conducting and reporting on educational technology research for institutional impact. The authors review the approaches taken across the different institutions, consider the challenges of those approaches, reflect on the lessons learnt along the way and evaluate the effectiveness of the resultant strategies adopted.

The problem in context

With technology developing at an ever-increasing pace, the information and research on how it can be applied in education is overwhelming. Institutions are relying on technology to solve many of the current and emerging challenges in higher education. In spite of this constant change, academics are slow to adopt new technology

(Laurillard, 2010). The role of the educators who specialise in technology to evaluate the information and report to stakeholders is becoming more important. Leaders who make strategic decisions in this climate of change rely on the information we provide about resourcing and costs. Fellow educationalists are looking for information about features and functionality. Academic staff who need to buy-in as the users of new technology need information on how to apply the technology to the best advantage pedagogically as well as the potential barriers to be overcome. Clearly, there is no single approach that will secure buy-in on all those fronts. In the light of those challenges, we are exploring ways of communicating successfully, drawing on our collective experience in the field.

Multi-national collaboration – what we did

Seven people across five institutions from Australia, New Zealand and South Africa joined the ascilite Community Mentoring Program in 2012 as mentors/mentees to work collaboratively to achieve similar goals. Communication has been through *Skype*, Adobe Connect, emails, a group wiki and other online means. Since 2003, the ascilite Community Mentoring Program has been bringing people together to share experiences and develop their knowledge through dialogue, action and reflection (Reushle, 2012). The benefits of the ascilite Community Mentoring Program are to expand skills, knowledge and experience, develop communication and leadership skills, network and enhance confidence (Reushle, 2012).

The team consists of mentors from the University of New England, Armidale, and Charles Sturt University, Orange, (both Australia), who are mentoring educationalists from North-West University, Potchefstroom Campus, South Africa, University of Pretoria, South Africa, University of Canterbury, New Zealand and two from Charles Sturt University, Wagga Wagga, Australia. The two mentors are academics in ICT Education and Strategic Learning and Teaching Innovation respectively. The mentees are instructional and educational designers, an academic for research methodology programs, a flexible learning advisor and an innovation technology officer, hence defining us collectively as ‘educators specialising in technology’. These seven represent a plethora of experience and knowledge.

The group meets via *Skype* and Adobe Connect because it accommodates the diverse locations, technical skills and is cost effective. A Dropbox folder enables us to share files and a secure wiki facilitated the collaborative writing of this paper. Cut-off dates helped coordinate all contributions into a seamless paper. The research question we posed as an overall theme was:

“How can we, in our different capacities, conduct our own research or keep up to date with the current research, to evaluate and report to different stakeholders on new education technologies for maximum institutional impact?”

Methodology and literature review

As a framework for organising an overview of our institutions’ strategies for communicating educational technology research we drew on strategies developed by Surry and Land (2000) from Keller’s (1987) ARCS model. Keller describes his original model of Attention, Relevance, Confidence and Satisfaction as “a method for improving the motivational appeal of instructional materials” (Keller, 1987, p. 2). Surry and Land (2000) developed a framework of strategies, and it is within this framework that we consider the levels of motivation at which we reach out to our stakeholders to achieve our goals. A meta-analysis of the cases (see Table 1) was carried out to determine if there is any pattern in what works and in which type of environment. In this way we can pinpoint where each institution can learn from other institutions.

The ARCS framework, when used to motivate staff to use teaching technology, identifies reporting to grab the ‘attention’ of the intended audience in order to raise awareness of new technologies and arouse the curiosity. Providing ‘relevance’ to the particular context of staff members can be accomplished by highlighting the ways in which a technology can fulfil their present needs. To engender ‘confidence’ in the use of the technology an extended approach is needed in the form of training and support. Rewarding staff through awards and reporting success stories and innovations creates an environment where staff can set attainable goals, share experiences with like-minded colleagues and experience ‘satisfaction’ which is the highest order of motivation. Surry (2000) writes of using Keller’s (1987) ARCS model to develop strategies to increase faculty motivation to use technology. Attention gaining strategies include demonstrations and showcases, Relevant strategies; include access to equipment and mini grants for research opportunities, Confidence building strategies such as workshops and peer support, and satisfaction strategies such as awards, release time and improve teaching and research.

Reporting research to gain attention is relevant for bottom-up, top-down and sideways dissemination and can utilise technology-assisted gimmicks (bells and whistles). The message can be non-personalised to speak to a wide audience and personal involvement is negligible. The direction we report to will dictate the relevance we add to the communication, as we need different kinds of buy-in from each audience. Knowledge of the different audiences is needed and used to adapt the messages so that the intended audience can recognise themselves in the communication. Connecting people is very important (Laurillard, 2010), as is creating and supporting professional learning communities (Maor & McLoughlin, 2005; Nicolle & Lou, 2008).

To communicate for confidence becomes more specific, as messages need to be tailored to the individual. Personal involvement increases as we often have to spend time with individuals in a mentoring capacity to ensure fluency and confidence. “Instrumentalist theories of change, therefore, are based on the premise that adoption and utilisation of technology are highly individualised and contextualised processes” (Surry & Land, 2000, p. 146). The audience should also be encouraged to reflect on the new information and consider its use in constructing solutions. Satisfaction may be assured by encouraging staff to become innovative and apply their knowledge in new ways, in teaching or another sphere of their academic life.

Much of the literature considers the dissemination of educational technology research, not in isolation, but as an element of a wider program of educating higher education faculty for a particular purpose. This purpose has been to encourage academics in implementing the use of technology for teaching, much of it in a blended learning or online context. A wide variety of methods of dissemination have been used with varying success. The traditional lecture/seminar has been a part of each set of tools used in communication educational technology research, but by no means the most successful. Maor explains that, “a common problem with traditional staff development activities is that they tend to attract the best teachers, or the early adopters or innovators, who have already espoused technology innovation in their teaching” (2005, p. 914). An approach involving authentic contexts and situated learning experiences that lead to reflective practice is likely to be more transformative and sustainable.

Another successful method of disseminating educational technology research is that of peer-to-peer communication. Roberts points out that “early adopters may also assist in raising awareness and acceptance of the new technology by “spreading the word,” providing demonstrations, sharing best practices, and possibly even serving as mentors or consultants to their peers, engaging in real time problem solving as difficulties or questions inevitably arise.” (Roberts, 2008, p. 8).

Academics are overloaded by email, in their own silos – often unaware of external drivers - and are notoriously resistant to change (Bromage, 2006) as well as being entrenched in the traditional transmissive, individualistic, summative type of education. How can we effectively lead them through the array of possibilities to successfully change to teaching and learning for the future? How can we therefore make our communications processes timely, sustainable and at the same time get across the need for changing their learning and teaching approach not just doing what they’ve always done electronically and/or seeing technology as purely for administrative purposes? Sustainability, as Uys (2007) argues, “advocates true partnership between academic and support staff” (p. 15). Without this, as well as policy decision, it is hard to move traditionally conservative higher educational organisations to embrace technological change for learning and teaching rather than for operational effectiveness (Uys, 2007). There is also the need to make sure that “any initiatives designed to facilitate wider use of technologies for learning and teaching need to cater effectively for teaching staff at different stages of technology adoption (Uys, Dalgarno, Carlson, Crampton, Tinkler, 2011, p. 1267).

Background of the institutions

The University of New England (UNE), Australia

UNE is situated in NSW, Australia and was formed in 1938, becoming independent in 1954 (Bennett, 2009; Chick, 1992). There are approximately 18,000 students enrolled at UNE with more than 80% enrolled as off-campus students (Corporate Intelligence Unit, 2011). UNE, although a traditional university, has been a distance education provider since 1955 (Bennett, 2008). In the past, on-campus students experienced their learning through face-to-face lectures, tutorials, workshops and excursions, whilst off-campus students received their study materials in the mail through paper-based resources. In the 1980s this expanded to audio cassettes and, in the 1990s, multimedia CDs. Since 2000, UNE has been providing study resources through their Learning Management System (LMS) and is now providing almost all student learning resources fully online. The university has changed LMS several times in the past few years attempting to find the one that best suits the needs of their students and academics. Resources are provided through downloadable Portable Document Format (PDF), but they also utilise the affordances of the Internet provided through resources such as chat rooms,

discussion boards, wikis, blogs social networking tools and virtual worlds.

The University of Canterbury (UC), New Zealand

UC, New Zealand's second university, was established in Christchurch city in 1873, and moved to its present site in Ilam in 1975. Approximately 12,000 students (UC, 2011) are enrolled across the six colleges/schools of the university. In 2007 New Zealand's second oldest teachers' training college, the Christchurch College of Education, which was established in 1877, merged with the university. The College of Education brought with it the Distance and Flexible Learning Options (FLO) which it had been offering students since 1995 as well as students in satellite campuses in Nelson, Tauranga, Rotorua and New Plymouth. Close to 60% of the College's 3,500 (UC, 2011) students are involved in the FLO program and all College of Education courses have an online presence through the LMS with the majority of courses being actively taught online, as well as on campus. The major earthquakes which began in September 2010 have encouraged an increase in the number of on-campus courses, throughout the university's other colleges, which also make use of the LMS. In February 2011 this increased significantly following the earthquake which closed the campus on the second day of semester one.

The University of Pretoria (UP), South Africa

While social and economic inequalities persist in post-colonial Africa, this country is the door to economic and other opportunities in Africa. Over the past 104 years, UP has become one of the largest residential universities in the country, with about 45,000 on-campus and 14,000 distance students (UP Strategic plan, 2011) spread over seven campuses. UP takes a leading academic institutional role, attracting students from the continent and further, particularly at post-graduate level. The diversity of programs continues into a diverse student and staff population, with focus on accommodating and developing human capital as much as increasing the post-graduate and international research footprint. The faculty of education offers post-graduate courses via paper-based distance education to mostly under-provisioned and under-qualified rural teachers. The rest of the university embraces a blended learning and teaching strategy combining lectures with LMS-delivered resources, activities, assessment, communication and more (Picciano, 2009). Currently about 2,000 subjects¹ have a presence on the LMS. More than 80% of students ((UP, 2011) as found in a recent unpublished survey) have web-enabled cell phones, and the use of other mobile devices is increasing. In response, the university recently launched the roll-out of wireless hotspots over the campus, being the first university in Africa to do this. One of the motivations to 'leapfrog' to mobile learning (m-learning) as an enhancement to contact teaching is to accommodate the students who do not have personal computers or Internet, and depend solely on on-campus computer facilities, to access the LMS. Unlike the other universities, new learning technology is mostly used to supplement lectures in a blended learning approach.

North-West University (NWU), South Africa

The NWU is a multi-campus university with the three campuses situated in two provinces. The Potchefstroom and Mafikeng Campuses are situated in the North-West Province and the Vaal Triangle Campus is in Gauteng. The university was established in 2004 with the merger of the Potchefstroom University for Christian Higher Education and the North-West University. The NWU's slogan "Innovation through diversity" describes the university precisely as the university is accepted as one of the best-managed and most innovative universities in South Africa. The university celebrates and encourages multiculturalism, multilingualism and multinationalism (NWU, 2011). As a multi-campus university, the students are offered a variety of choices, both academically and geographically. The three campuses collectively offer 15 faculties, which in turn offer more than 50 schools with currently 62,557 students enrolled (NWU, 2012). At the School of Continuing Teacher Education, the Interactive Whiteboard (IWB) sessions are used by the lecturers as a synchronous approach of contact with the students and facilitators. Learning materials are mainly paper-based, consisting of study guides, textbooks and a DVD containing additional information such as presentations and video footage. In line with current trends in the field of open distance learning, SCTE has started to implement the use of a LMS, IWB and m-learning to supplement paper-based learning materials.

Charles Sturt University (CSU), Australia

CSU is a multi-campus university with a large proportion of its students studying at a distance rather than on

¹ Many subjects (also known as units, modules or courses in various locations worldwide) contribute credits which make up a student's individual programme of study towards a degree or other qualification, (also known as their course).

campus. Specifically, in 2011 (CSU, 2011) 24,265 students were enrolled in distance mode, 9139 in on-campus mode and 5,003 in a mixture of on-campus and distance modes. In 2011 the University employed 784 full-time equivalent academic staff, in four faculties, as well as adjunct staff in a number of partner institutions within Australia and offshore. The University has required all subjects to have an online presence containing at least the subject outline and a discussion forum since the late 1990s, with online assignment submission available in all distance subjects since the early 2000s. An LMS was introduced in 2009, to increase student engagement and interaction via the provision of an announcements tool and a resource sharing tool in all subjects. Tools such as blogs, wikis and chat rooms were incorporated at the discretion of the academic. Since 2009 additional online educational technologies have been introduced increasing the move towards harnessing the social media, open and participative nature of Web 2.0 technologies.

Conducting and reporting on technology research

There are a variety of ways in which each institution has been conducting and reporting on technology research, which mostly centre on the availability of ICT and the LMS to students, and functionalities which add value to learning and teaching, and learning for the future. Collaborative research with academics consists of technology adoption case studies. Numerous departments provide small-scale 'distance' education programmes while flying under the banner of blended learning. These programmes provide excellent research material, acting as 'laboratories' to explore innovative teaching and learning approaches that respond well to an unique multicultural context.

Results of internal surveys are disseminated upwards to the stakeholders. For example, a task team that investigated a new computer-based testing system for high stakes assessment reported their findings in depth to a steering committee that had to make the final decision on which system to spend their resources on. Another example is an investigation into lecturing capture systems that was requested by the faculty which was reported back to that faculty's deans and management structures.

Completed research comprised of Masters, PhD studies and research grants report their findings as dissertations, journal articles and contributions to conferences. Communication consists of reports and contributions at local and faculty research forums. After this level, a glass ceiling is reached where little information filters through to top management for policy making implementation.

Educational Designers (EDs) and Flexible Learning Advisors (FLAs), though not given research time, carry out 'scholarly activity' to keep up with their subject/domains of interest. Time allocation to concentrate on a particular educational technology or pedagogy allows them to lead knowledge and capability, that is then shared with others via professional development sessions. This way, an increase in knowledge about relevant learning, teaching topics, educational technologies and benefits from the collective and social constructivist advantages of being part of teams, is created and maintained. Such situations are opportunities to put forward relevant and appropriate aspects related to educational technologies and learning and teaching 'philosophy' so that they can provide context, support and enthusiasm for academics around the ever changing world of educational technology. In some universities each school within a faculty has access to a dedicated ED/FLA who is physically located in that school. In other universities the number of EDs/FLAs is limited to a small number in a central location. A variety of ways of reporting on technology research occurs which can be loosely categorised into formal and informal style. Methods of communicating educational technology research have often been chosen to reach a particular audience.

Traditional formal reporting includes presenting at conferences bringing research to the attention of the institution. This approach tends to be generic and not discipline specific or applicable at an institutional level (Uys, et al., 2011). Likewise the usual reporting back through university committees is also conducted to a greater or lesser extent. The impact of this formal approach tends to be quite small, limited and lacks the ability for broader penetration.

A range of structured and organic communication processes has been implemented to augment the formal approach. Structured process can include: daily 'What's New' university wide announcement; book club sharing of practice with prior reading of current research papers applied in practice; learning and teaching symposiums and an internal conference on Learning and Teaching; areas of professional focus where EDs/FLAs are specifically responsible for developing expertise around particular educational technologies; pilots of new technologies with champions and early adopters and road shows when university wide presentations are made around a specific topic or range of topics to raise them to the forefront of conversation. This structured communication is supported through a range of organic communication that centres on inclusive sharing and

creating a collegiate environment. These organic groups include *Yammer*, an online social networking site and an ICT Community of Practice for sharing educational technology related practice. Further organic sharing of practice amongst EDs, FLAs and academic staff encourages continuous collaboration and collegiality.

Written forms of communication have been used. Reports are requested from management on new technologies, but information communicated in a report, is often too wordy for time poor academics to assimilate. Papers and posters published for conferences are seldom viewed by academics. Newsletters and emails containing information may be delivered to everyone, but they are not necessarily read. Courses have been created within the LMS to provide information on new technologies and educational design ideas. Staff have found this helpful, and tend to access the space when they are looking at making changes or thinking about trying something new (Tull & Brooker, 2009).

Planned events such as a university wide 'Showcase' or college level 'Show and Tell' have taken place, where academics share their use of educational technology alongside the ED/FLA who communicates pedagogical uses for new technology developments. Some universities hold a 'Teaching Week' to provide an opportunity to present to a wider audience. These events, more often than not, attract those academics that are already interested in, and looking for, innovation.

Attendance at department meetings and Learning and Teaching committee meetings has met with more success, partly because of a captive audience, but also because there is often more of an opportunity to ask questions in a less formal environment. Sometimes it has been possible for academics to see the technology in action to clarify their understanding of it. Group training sessions and workshops offer similar opportunities, but with the added advantage of being more 'hands on'. Word of mouth, particularly from a colleague, appears to have the most impact across all institutions. Champions are supported and encouraged to work with others in their area. By far the most frequent method of communicating information on new technologies is through one-on-one sessions with academics. The informal session, which is most often focused around course design, provides the opportunity to discuss new methods and technologies.

The use of informal and formal communication methods stimulates conversations about educational technology challenges and opportunities within schools, faculties and the wider institutional context. EDs/FLAs are integral to this conversation and are able to participate in a wide variety of areas that includes school boards, learning and teaching committees, meetings, forums, professional development planning and delivery, morning tea, corridor exchanges and other groups/forums, on demand. These constitute a wide variety of opportunities to provide both leadership and support of leaders in implementing change.

Table 1 shows an aggregation of the known communication methods used by the authors' institutions. These methods have been categorised according to Keller's ARCS framework for motivation (1987). The wide variety of methods is spread across all levels of motivation and the majority of methods are common to all institutions.

Table 1: Comparison of reporting approaches from our institutions

Challenge	Intended Audience	Approach	Institution
Drawing Attention	Leaders	Reports	UC, CSU, UP, UNE, NWU
	EDFLAs ² Academics	Papers	UC, CSU, UNE, NWU
	ED/FLAs, Academics	Posters	UC, CSU, UNE, NWU
	ED/FLAs, Academics	Community of Practice	CSU, UP, UNE, NWU
	ED/FLAs, Academics	Book Club/Writer's Groups	CSU, UNE
	ED/FLAs, Academics	Daily Announcements	CSU, UNE
	ED/FLAs, Academics	Showcase & Road shows	UC, CSU, UP, UNE, NWU
	ED/FLAs, Academics	Show & Tell	UC, CSU, UP, UNE, NWU
	ED/FLAs, Academics	Teaching Week	UC, UP
Demonstrating Relevance	ED/FLAs, Academics	Learning & Teaching Committee Meetings	UC, CSU, UP, UNE, NWU
	Academics	Department Meetings	UC, CSU, UP, UNE, NWU
	Academics	Online examples e-learning space	UC, CSU, UP, UNE, NWU
	Academics	Champions in department	UC, CSU, UP, UNE, NWU
	Academics	Group training sessions	UC, CSU, UP, UNE, NWU
Developing Confidence	Academics	Workshops	UC, CSU, UP, UNE, NWU
	Academics	Drop-in sessions	UC, CSU, UNE
	Academics	Online documentation	UC, CSU, UP, UNE, NWU
	Academics	One-to-one consultations	UC, CSU, UP, UNE, NWU
	Academics	Formal Qualifications (Grad Cert)	UC, CSU, UNE
Developing Satisfaction	Academics	Mini grants	UC, CSU, UNE, NWU
	Academics	Improved teaching	UC, CSU, UP, UNE, NWU
	Academics	Education Innovation Awards	UC, CSU, UP, UNE, NWU
	Academics	Professional development portfolio for promotion	UP, UNE, NWU

Defining our audience, issues and constraints faced

As context is critical for communication, which is rarely carried out in a neutral environment, we need to target audiences in different ways for maximum effect when reporting on educational technology to support or lead change. For comparison purposes, therefore, we divided our audience into three categories; leaders, EDs/FLAs and academics (see Table 1). We further decomposed these headings to include the type of information our audience might need (see Figure 1), including; leaders who make strategic decisions and must focus on implementation relying on information we provide about resourcing and costs, EDs/FLAs, focusing on support are looking for information about features and functionality and academic staff that need to buy-in unequivocally as the users of new technology need information on how to apply the technology, as well as the potential barriers to overcome.

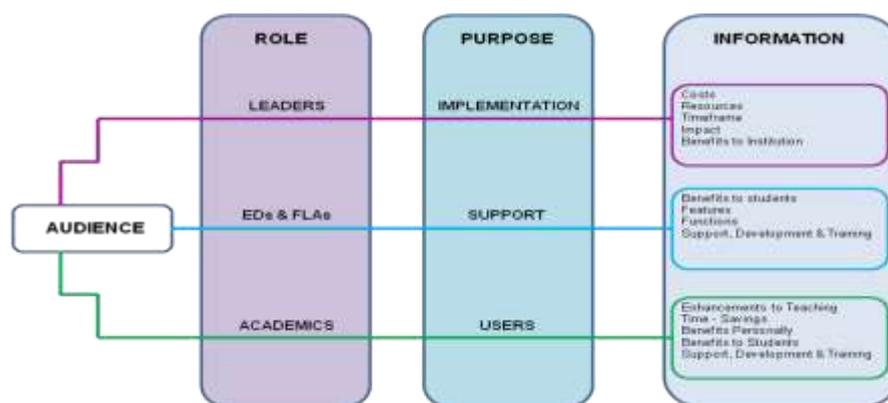


Figure 1: Who is our audience?

Leaders

One of the major barriers to communicating the latest educational technologies can be senior management within faculties and schools as well as within the senior management of the university as a whole. Their potential lack of buy-in or the low priority given to new tools or ways of doing things can have a seriously detrimental effect on the implementation of change around technology. Additionally without careful timing of messages and new

² As different names are used for similar roles across worldwide locations for the purposes of this table we have used Educational Designer (ED), and Flexible Learning Advisors (FLAs)

information, EDs/FLAs can be seen as creating a problem with academics rather than providing a solution. In this climate of constant change, if leaders are shown the features and benefits of technology before they are ready, regardless of the advantages of that specific tool or pedagogy, it is unlikely they will buy in to it.

Educational Designers or Flexible Learning Advisors

As a still relatively new and emerging profession EDs and FLAs come from a range of backgrounds that are either more or less focused on education or technology. ED/FLAs were traditionally paper focused and often seen as proofreaders and editors with high journalistic skills. Working directly with academics on specific subjects they were often involved in the presentation of content above all else. Now, more commonly, EDs/FLAs have a range of higher level curriculum review process and project management abilities along with educational and information systems backgrounds. These combined abilities, coupled with their ability to work collaboratively, (a must in the information age) situate them as change agents for introducing, supporting and implementing new educational technologies. A key requirement is to enable academics to build capability and sustainability whilst at the same time putting in place the strategies that senior management want across the institution. Over and above all the EDs/FLAs must be change agents and culture shifters.

Academic Staff

The rate of educational change is fast moving and constantly changing. Whilst EDs/FLAs are accepting that ‘the only constant is change’, this is not necessarily the case for academics. The academic propensity to work alone, to need time and space to formulate ideas (Bromage, 2006), coupled with research being high on the agenda, related to performance management are perceived by academics as critical to their career means that (often as a survival strategy), learning and teaching is pushed down the agenda. The perception (real or otherwise) of lack of provision of time to embrace new educational technologies for subject design and development adds weight to this. What is vital then is to concentrate on communicating the ‘benefits’ of technologies, in a timely way, in this educational revolution, to teaching staff whilst at the same time making explicit the support mechanisms and very real help and support that can be provided.

What are the issues and constraints?

In developing communications reporting technologies to others in our institutions, there are a number of issues or constraints to be considered so that appropriate changes can be suggested.

Internet Connections

Insufficient Internet access can be seen as one of the major reasons contributing to the failure of the realisation of the potential of e-learning in open distance education in many contexts (Ololube, Ubogu, & Egbezor, 2007). Insufficient Internet speed limits the technologies that can be utilised, particularly those which deliver multimedia content, while excessive taxation of ICT goods and services keep these inequalities entrenched.

Student Diversity

Teaching and learning with technology is often hampered by technological and social inequalities. Many students are multicultural, multilingual, with diverse levels of skills and knowledge, like insufficient reading and writing skills. Other challenges such as the diversity of students in terms of age, gender, language use, culture and living in deep rural areas are at the root of learning inequalities. In order to overcome these challenges a palette of learning technologies to address learning inequalities in an open distance learning environment is used.

Access

M-learning may provide a solution to the challenge of access to the Internet, as the scale and ubiquity of mobile networks often provide the only infrastructure in rural areas (GSMA, 2010). M-learning using these networks offers exciting opportunities to optimise communication between lecturers, facilitators and learners as it offers learning opportunities to rural or remote learners without the necessary infrastructure for conventional access to the Internet (Evans, 2008). As communication and interaction are of pivotal importance in the learning process, m-learning can contribute towards the quality of education. M-learning has all the advantages of e-learning, with the added benefit of portability in the form of devices such as iPods, iPads, tablet PCs and smart phones (Evans, 2008). The challenge for lecturers lies in embracing the strengths of mobile devices and design learning materials that utilise the convenience, connectivity and personalisation that such a platform offer (Griffen,

Mitchell, & Thompson, 2009). The 2012 Horizon report states that tablet computing presents affordable learning opportunities (Johnson & Brown, 2012). The advances of tablet computing with a growing number of features are ideal for one-to-one learning. It also reports that the Zimbabwean government, in partnership with Apple, are planning to bring solar-powered iPad devices to rural institutions without electricity (Johnson & Brown, 2012). South-African institutions should learn from this example and invest in the use of m-learning to address the connection challenges of students. This implies that, with the increased use of mobile and wireless technologies, "the time and place for learning, working, and socialising will blur even more" (Bonk, Kim, & Zeng, 2006 (p. 561). An important implication is that mobile and wireless technologies may create greater opportunities for lifelong learning as learning will be more accessible to a wider range of individuals (Bonk, et al., 2006).

Strategic Alignment

Barriers to incorporation of technology are on all levels, from government policy that limits distance learning to certain institutions, the University's strategic plan, infrastructure, the profile of the student's entrenched social and other inequalities. When the primary focus of a University is to increase its international ranking as a research institution, it can affect innovative teaching with technology. Further barriers to improved teaching are promotions and government subsidies for research outputs.

None of the top down approaches has been found to be very successful. Important information regarding retraining and redesigning for the upgrade of a LMS are often poorly disseminated through the official faculty structures because the people in charge are not the people on the ground and, they have different priorities. From the bottom up, EDs/FLAs communicate and advise in workshops and on a one-on-one base with lecturers who seek out their services. Emails are also sent from the LMS to lecturers and other staff who have a presence there. A middle-out approach is used to get all the EDs/FLAs on the same page, for instance in preparing to implement a new technology institution-wide.

Financial

Across the sector there are restricted funds for implementing new technologies or giving existing staff time off from regular activities to pursue new avenues. The particular difficulty for EDs is that they are not given time to explore new developments nor are their performance management targets related to research in any way to motivate such exploration. In addition, the research life cycle can often be slow in relation to the emergence of a new educational technology lifecycle.

Change management and institutional impact

The pervasive use of educational technology in higher education has made it imperative to understand what the critical issues are when implementing enterprise wide learning strategies to support a digitally enhanced learning environment. Managing change for enterprise-wide impact in higher education in particular is problematic since people are central to the process, and it is therefore necessary. Fullan (1991, p. 350) suggests, "... we explicitly think and worry about the change process" in educational reform.

To ensure institutional impact, when creating sustainability, the situation turns to the challenge of maintaining interest and motivation towards embracing new ideas and technologies. The problem then is how to keep on an academic's radar, how to gain their attention and take interest in what you are reporting to them. Kotter (1996) states that to lead change and gain buy in from necessary stakeholders senior leaders must create 'a sense of urgency'. This does not happen naturally, it comes from people who have the motivation to get things done. He further states that for change to be successful, 75% of an organisation needs to change. His view is that, when there is a disconnect between the internal organisation and external environment, or where there has been 'success' complacency occurs, which leads to inaction.

How do we communicate, to connect?

Having explored the issues and constraints when conducting and reporting on educational technology research for institutional impact, we now examine communication strategies to help connect with our different audiences in leading or supporting change.

Communicating with Leaders

Experience with specific project proposals shows that it is useful to create multiple documents that drill down

into the detail. With complex papers and proposals there is a need to simplify the detail and the message. Detailed documents may not be the best way to present the information. What works better is to create the detailed document and then distil it into one containing one sentence answers addressing: who, what, where, when, why and how much. This is critical for senior management, who prefer knowing that you have addressed the relevant aspects, to having all the details. Speak directly to the leaders. Committees can sometimes interpret and misinterpret your information so going directly can save time and hassle. Offer to present. It is quicker and can have more impact than reading a paper.

Communicating with Academic Staff

Timeliness and workload is the critical factor when communicating to academic staff. They will ask “What is the relevance of this ‘new’ educational technology right now to me as I work through the academic year? Do I have the time to adopt it and will it save me time if I do?” Affordances and pedagogical considerations are often deferred until the end of semester and/or additional resources in terms of time with EDs/FLAs. Often it requires one-to-one support and sharing of practice with another academic to truly buy in to the technology.

Communicating with Educational Designers

Communication at this level tends to be much less formal. Physical proximity may make face to face discussions and impromptu demonstrations of newly discovered technologies possible. Social media sites such as Yammer or Google+ can be used to share information found on the Internet with those who are more distant, or who prefer written communication. Email is often used to pass on information received in this same format. In communicating with this group too though, there are opportunities to share within a more formal presentation, information that has been gathered from conferences or workshops, as well as research undertaken. Affordances, features, benefits and pedagogical relevance are crucial issue to engage EDs/FLAs. Once these are established they are able to ‘transfer technology’ and disseminate both the ‘why’ and ‘how to’ to other audiences.

From reflections on experiences in presenting to different audiences some general communication recommendations emerge regardless of the technology being presented or the mode of presentation. For the purposes of clarity the principles are identified in brief with a fuller explanation (see Table 1) for which the communication channel is most apt.

Table 2: Recommended Communication Channels for our Different Audiences

Principle	Explanation
Be clear	Technology can be complicated so clarity is key. If you cannot sum your main points up in a few sentences your audience will not grasp it.
Illustrate your point	‘A picture speaks a thousand words’ and can often explain complex concepts quickly and easily. Use diagrams, visualisations, mock-ups, personas and analogies to help convey key ideas and contexts.
Simplify complexity into something tangible	Do not get bogged down in detail. Most people do not want to read it but they do want to know you have researched it. Technicalities get in the way of the message. Use appendices, attachments or links to more information.
Create a conversation	Connect with your audience and create a space for questions, answers and contextualisation through a conversation. Creating a dialogue allows the information to flow and allows you to clarify your points or relate it to a specific audience.
Get to the point	Shape your information to be like a pyramid with focused findings at the top and the details at the bottom. This shows the construction of your work with a stable foundation is key
Present your information	With our audience becoming increasingly time poor it is useful to note that it is quicker to listen than to read especially for a large audience. Think mathematically - (time to read paper) x (number of audience) – 1 hour to read x 100 people = 100 hours on your paper.

Conclusion and summary

From the literature reviewed, and examination of the approaches employed within our different organisations, when conducting and reporting on educational technology for institutional impact it is essential to adopt appropriate styles of communication and reporting mechanisms for our different target audiences. In an environment of constant change, specifically targeting our identified audiences with the right media of the message, as well as choosing the right type of messenger is crucial to drawing attention, demonstrating relevance, developing confidence and developing satisfaction. Additionally, we must take into consideration what particular stage of technology adoption our audience is at. If we can get these things right, we can at last lead a change from technology in education being traditionally driven by efficiency and administrative purposes towards truly embracing technology for effective enhancement of the student experience and genuine learning

activities and opportunities.

What we can see from reviewing the literature and examining how we approach conducting and reporting on educational research to our target audiences is that across each of the institutions we have all adopted a range of methods to reach the different audiences we serve that follows current thinking in this area. Are we making it explicit to our audiences that the different approaches we adopt are for different reasons (attention, relevance, confidence, satisfaction)? However, whilst there is clear formal research and focused research, an area that could be developed is examination of just how successful those different audiences found those different approaches presented by EDs/FLAs in particular. To gain feedback from those different voices would add a new dimension to our understanding of how to disseminate educational technology research with impact, in this climate of change.

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