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Interactive Multimodal Technology-mediated Distance Education Courses: The Academic's Perspective

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Advances in educational technology and the continued emergence of the Internet as a major source of global information have encouraged educators to take advantage of this growing array of resources and move beyond traditional face-to-face and distance education correspondence modes toward a rich technology-mediated e-learning environment. Moreover, ready access to multimedia at the desk-top has provided an opportunity for educators to develop flexible, engaging and interactive learning resources, incorporating multimedia and hypermedia. This paper presents the findings of a study that investigated individual factors influencing academics' adoption and integration of educational technology at an Australian university, for the purpose of developing interactive multimodal technology-mediated distance education courses. These distance education courses include a range of multimodal learning objects and multiple representations of content in order to cater for different learning styles and modal preferences, with the aims of providing a more inclusive curriculum that more closely reflects the on-campus learning experience and improved learning outcomes. Individual factors influencing academics' development of these courses included pragmatic, opportunistic and personal motivations and concerns. Implications for distance education providers and individual marketing educators arising from these factors and subsequent recommendations are presented.

Keyword : distance education, e-learning, educational innovation, marketing education

INTRODUCTION

The focus of the qualitative study reported in this paper was on academics' development of interactive multimodal technology-mediated distance education courses. An interactive multimodal technology-mediated course uses multimedia and information and communication technology (ICT) to develop engaging and interactive course resources and uses multiple presentation modes to represent the content knowledge and appeal to different learning styles and modal preferences (Birch & Sankey 2008). The study

focused on the experience of a major distance education and e-learning provider in Australia, where in 2003, academics commenced the process of converting traditional print-based distance education materials to an interactive multimodal technology-mediated e-learning format. This paper focuses on individual factors, including pragmatic, opportunistic and personal motivations and concerns influencing academics' development of interactive multimodal technology-mediated distance education courses. The paper commences with an explanation of the institutional context for the study. Next,

the transformation of distance education and the development of interactive multimodal technology-mediated courseware for distance education students are discussed. Then, individual factors which influence academics to develop interactive multimodal technology mediated distance education courses are addressed. Finally, implications are discussed and recommendations for distance education institutions and individual marketing educators are provided.

INSTITUTIONAL CONTEXT

The study reported in this paper focused on factors influencing academics' development of interactive multimodal technology-mediated distance education courses at an Australian university. The university is a major provider of distance education and e-learning courses, and has established an international reputation for excellence in the use of educational technology and the delivery of online education. Enrolments exceed 26,000 students each year from over 120 nationalities and approximately 20 percent of enrolments are international students. Approximately two-thirds of the university's students study in distance education mode, either as an external or web student. Traditionally, distance education courses at the university have been delivered via static, print-based packages, typically comprising an introductory book, a study guide and a book of selected readings. Since 2000, each course has been supplemented by an online course homepage. In 2003, university management identified an opportunity to convert the print-based distance education study materials to a technology-mediated format (CD/online), and thus

reduce the considerable costs of printing and distributing print-based packages. Marketing academics at the university embraced this opportunity and led the way by converting the entire undergraduate marketing program to interactive multimodal technology-mediated format. Despite the uptake by the majority of marketing academics, by the end of 2007, less than ten percent of the 1000 courses on offer at the university, across five faculties, had been converted to technology-mediated format.

THE TRANSFORMATION OF DISTANCE EDUCATION

Advances in educational and communications technology have placed pressure on higher distance education institutions to move beyond traditional face-to-face and distance education correspondence modes toward a rich technology-mediated e-learning environment, in order to remain viable in an increasingly competitive global distance education market (Bates 2006). The World Wide Web and desktop access to multimedia has created opportunities for educators to develop interactive and engaging e-learning resources that enhance the learning environment (Gill 2004). Technological and societal changes mean that traditional approaches to distance education will not meet the needs of distance learners in the future (Taylor 2004). For example, today's younger "techno-savvy" students (the digital generation) have grown up in a highly visual interactive electronic world, while mature-age students, many of whom are working full-time while studying part-time, require more flexible, mobile and convenient learning options (Jafari, McGee & Carmean 2006;

Oliver & Goerke 2007). In recent times, static, print-based distance education courses are being transformed through the adoption and integration of educational technology and the development of more interactive blended, hybrid or multimodal technology-mediated courses (McDonald & Mayes 2005). Many distance education courses are now being delivered fully online and/or via other electronic means, including CD ROM or DVD.

Interactive multimodal technology-mediated distance education courses involve the use of multimedia and information and communication technology (ICT) to develop engaging and interactive course resources and use multiple presentation modes to represent the content knowledge and appeal to different learning styles and modal preferences (Birch & Sankey 2008; Fleming 2001). Interactive multimodal technology-mediated courses for distance education at the case university typically comprise a printed introductory book and an interactive CD, and are supplemented, to varying degrees, by an online course homepage. The interactive CD houses most of the course resources and includes introductory information, study modules, assessment items, readings and other useful resources. The multimedia enhancements may include video and audio introductions, recorded lecture presentations, interactive audio-enhanced diagrams and simulations, interactive quizzes and crosswords, video and audio content and graphics. Technology-mediated delivery allows the embedding of links to useful websites and hyperlinked examples and activities, including links to the course textbook website, educational websites, generic university resources and online course homepages.

Material presented in a variety of

presentation modes (multimodal presentation) appeals to different sensory modes and may lead learners to perceive that it is easier to learn and improve attention rates, thus leading to improved learning performance, in particular for lower-achieving students (Moreno & Mayer 2007; Zywno 2003). Previous research has revealed a range of pedagogical motivations for the development of interactive multimodal technology-mediated distance education courses including catering more effectively to the learning needs of different student groups, improved learning outcomes, retention and progression rates, challenging students to become learner-centred, self-directed, resourceful and independent learners, replicating aspects of the on-campus experience, engaging students in the learning experience, revitalising and re-energising the curriculum, and providing a rich e-learning environment (Birch & Sankey 2008; Sankey & St Hill 2005). Given these pedagogical motivations and benefits for students, why have so many academics at the case university been reluctant to convert their traditional print-based distance education courses to interactive multimodal technology-mediated format? This study sought to address this problem and identify individual academic factors that influence the development of interactive multimodal technology-mediated distance education courses.

INDIVIDUAL FACTORS INFLUENCING ACADEMICS' ADOPTION AND INTEGRATION OF EDUCATIONAL TECHNOLOGY

The development of an interactive multimodal distance education course

requires academics to adopt and integrate educational technology. The literature reveals that a range of individual factors influence academics' adoption and integration of educational technology, including pragmatic, opportunistic or personal motivators and inhibitors. Academics' pragmatic motivations for the adoption and integration of educational technology include the desire to develop courses that better cater to student needs for greater access, flexibility and convenience (Maguire 2005). In particular, meeting the unique needs of distance education students, many of who are working full-time and/or raising a family, and are unable to access the traditional on-campus experience (Wolcott & Betts 1999). The convenience of being able to communicate effectively with students via electronic means, independent of time and place, is perceived by many academics to be a genuine practical advantage (McCorkle, Alexander & Reardon 2001). Other academics have adopted and integrated educational technology as a means of catering more effectively to the changing needs of the "digital generation" (Oliver & Goerke 2007). Pragmatic inhibitors to the adoption of educational technology include lack of time and the subsequent negative impact on academic workloads (Moser 2007). Exacerbating the time problem may be the institution's reluctance or inability to allow release time or teaching relief for this purpose (Chizmar & Williams 2001). Academics have also reacted to student concerns about the shift from printed to electronically-delivered distance education materials (McPhail & Birch 2004). Student resistance has arisen due to the costs associated with printing materials from the web, lack of access to the required hardware

and software and lack of computing skills (Jones & Kelley 2003).

Some academics are excited by the opportunity to access advanced technology and multimedia as a means of enhancing their teaching profile, being seen to be innovative, "state of the art" and progressive (Betts 1998; Cowan, 2006; Schifter 2002). However, other academics perceive that embracing new technology may result in personal and career costs, such as less time to devote to research and other activities that lead to promotion and tenure (Maguire 2005). However, studies have indicated that academics are undecided as to whether adopting and integrating educational technology into their courses will facilitate or hinder promotion and tenure (Wolcott & Betts 1999). Many academics feel personally motivated to use technology, enjoying the intellectual challenge, and gaining personal satisfaction and self-gratification from so doing (Capobianco & Lehman 2004). The application of educational technology has appealed to some academics, in terms of the excitement or novelty of doing something new, different or innovative (Cowan 2006; Weston 2005). The adoption and integration of educational technology may facilitate renewal and regeneration, with some academics reporting a desire to "energise" their teaching (Jones & Kelley 2003). However, the need to adapt one's teaching style, redesign their course and undertake more rigorous course planning has deterred some academics from changing familiar or entrenched instructional practices, tools and pedagogies (Covington, Petherbridge & Egan Warren 2005).

Resistance to change and a lack of willingness to take risks has also been identified as a major impediment to technology

adoption and integration (McGee & Diaz 2007). Some academics have expressed anxiety and fear that they will lose autonomy or control over the curriculum if they embrace organisational initiatives regarding technology (Weston 2005). Moreover, the fear of negative impacts on student evaluations, if the technology does not work or is not accepted by students, has been found to be a major deterrent for some academics (McCorkle, Alexander & Reardon 2001). Lack of rewards and recognition from management and peers have been found to inhibit academics' willingness to adopt and integrate educational technology (Chizmar & Williams 2001; Maguire 2005; Moser 2007). The personal characteristics of the academic may also influence the adoption and integration of educational technology. Innovators and early adopters of educational technology may be more adventurous, less risk averse, comfortable with change and like to try new and novel ideas (Moser 2007; Rogers 1995). The need to acquire "cutting-edge" status and dissatisfaction with the status quo have been major driving forces for some academics in adopting educational technology (McCorkle, Alexander & Reardon 2001). Moreover, an academic's attitudes toward technology, in terms of their perceptions of its relative advantage over current methods, compatibility with current practices, usefulness and ease of use, are primary determinants of whether a technology will be adopted (Davis, Bagozzi & Warshaw 1989).

RESEARCH METHODOLOGY

An exploratory case study was used to investigate the factors influencing academics'

adoption and integration of educational technology for the purpose of developing interactive multimodal technology-mediated distance education courses at an Australian university (Yin 2003). The primary source of information to address the research question was gathered from in-depth, semi-structured interviews. Fourteen academics (including four pioneers, six early adopters, and four non-adopters) and three instructional designers were interviewed for the study. The academics came from various disciplines across three different faculties, and included, among others, academics teaching in the fields of marketing, public relations and mass communications. The analysis of the interviews transcripts was conducted with the assistance of NVivo software, which allowed the researcher to identify key themes and issues from the interview data. The themes and issues were clustered into three major areas representing individual, institutional and pedagogical factors. This paper reports the main findings and implications related to individual factors.

FINDINGS AND DISCUSSION

A number of individual factors influencing academics' development of interactive multimodal technology-mediated courses were raised during the interviews. Issues were categorised as being primarily pragmatic, opportunistic or personal in nature. A summary of the individual factors is presented in table 1, and then each factor is briefly addressed.

Table 1 Interview subjects (N=17) by category, faculty, discipline and gender

Category	Faculty	Discipline	Gender
Pioneer	Arts	Mass communications	Female
Pioneer	Business	Project management	Male
Pioneer	Business	Economics	Male
Pioneer	Business	Human resource management	Male
Early Adopter	Arts	Mass communications	Female
Early Adopter	Arts	Public relations	Female
Early Adopter	Arts	Public relations	Male
Early Adopter	Business	Marketing	Male
Early Adopter	Business	Accounting	Male
Early Adopter	Education	Early childhood	Female
Non-Adopter	Arts	Public relations	Male
Non-Adopter	Arts	Mass communication	Female
Non-Adopter	Business	Accounting	Female
Non-Adopter	Business	Human resource management	Male
Instructional Designer	Business		Female
Instructional Designer	Education/Business		Female
Instructional Designer	Arts/Business		Male

Pragmatic factors. Pioneers and early adopters expressed a desire to provide flexible, convenient and mobile study options for distance education students, in particular for students who are studying part-time and working to support a family (Maguire 2005). For example, interactive multimodal technology-mediated courses can be viewed on a computer laptop while the student is using public transport or listened to while driving. Interviewees perceived technology-mediated courses allow students, across the globe, faster and easier access to their distance

education materials and a more convenient means of communicating independent of time and place (McCorkle, Alexander & Reardon 2001). One pioneer provided the example of a student studying at a station in Antarctica, who with the enablement of technology is able to communicate and submit assignments electronically and gain timely feedback. Pioneers and early adopters perceived that today's students are technology literate, have higher expectations, and are more discerning and sophisticated in "the way they take in and use information" (Oliver & Goerke 2007;

Table 2 Individual factors influencing academics' development of interactive multimodal technology-mediated distance education courses

Factor	Issues raised
Pragmatic	<ul style="list-style-type: none"> • providing flexible and convenient study options • catering for new-age and generation Y students • concern about equitable student access • lack of time and increased academic workloads
Opportunistic	<ul style="list-style-type: none"> • exploring new ways of delivering distance education courses • being seen to be progressive • impact on research output • impact on academic promotion
Personal	<ul style="list-style-type: none"> • the academic's attitude toward teaching • a renewed and re-energized approach to teaching • self-improvement and personal challenge • the academic's personal characteristics • the academic's attitude toward change and technology • lack of rewards and recognition from management and peers • intrinsic rewards and recognition from students

Sankey, 2005). A number of those interviewed observed that generation Y students are not accustomed to extensive reading; rather, they “are more into seeing things done in an animated multimedia rich way”. Hence, according to one early adopter, if the university “wants to stay viable and be seen as innovative and leaders in education”, academics should “be willing to change the product in order to suit our students”, and meet the “requirements of today’s new-age students”. However, some interviewees perceived that delivering courses purely online may lead to inequities, due to limited and costly access to the Internet and slow dial-in for some students (Eastman & Owens Swift 2001; Jones & Kelley 2003). Hence, until equitable access for all students can be assured, CD or DVD, rather than pure online delivery, was perceived by

interviewees to be a more viable and inclusive option.

Lack of time and the subsequent negative impact on academic workloads were identified by interviewees as major inhibitors for academics’ development of interactive multimodal technology-mediated distance education courses (Moser 2007; O’Quinn & Corry 2002). Early adopters and non-adopters expressed concerns about the lack of time to think, research, strategise, conceptualise, plan, train, develop, edit, update and maintain (Franklin et al. 2001). The development of multimedia elements involves trial and error, and “takes quite a bit of a mindset leap, and that needs time”. Pioneers commented on the time it takes to update and “ensure currency” of technology-mediated courses (Weston 2005). Less technologically-competent academics

may require even more time to learn how to use technology. Moreover, institutions may be reluctant or financially unable to offer release time to develop and update course materials (Chizmar & Williams 2001). Interviewees agreed that unless workload is allocated for this purpose, wide-scale development of interactive multimodal technology-mediated courses, as well as the realisation of the full potential of the use of multimedia and information technology within these courses, may not

eventuate. The need to allow adequate time for the development of an interactive multimodal technology-mediated course and to take a staged-approach to development was identified. A number of those interviewed advised against including “time-sensitive” information, thus reducing the need for “constant updating”. One pioneer emphasised the value of developing re-usable learning objects, in particular, when teaching an undergraduate and postgraduate course in a similar area.

Table 3 *Academics’ pragmatic motivators for and inhibitors to adopting and integrating educational technology*

Pragmatic motivators	Pragmatic inhibitors
<ul style="list-style-type: none"> • student demands and need for greater access, flexibility and convenience • convenience of communicating via electronic means • response to organisational directives and concern for the commercial viability of the organisation 	<ul style="list-style-type: none"> • lack of time and academic workloads • time and cost of training and development • student resistance due to printing costs, access issues and technological ability • concerns about security issues, including copyright and intellectual property

Opportunistic factors. Pioneers and early adopters perceived that developing interactive multimodal technology-mediated learning materials provided them with an exciting opportunity to explore new ways of delivering distance education courses and “review the way they presented their materials” (Earle 2002). One early adopter had “waited for a long time to be able to explore new things in education practice”. Pioneers and early adopters were motivated by “using new technology, being innovative, keeping up with what’s out there, and using leading-edge technology or new things”

(McCorkle, Alexander & Reardon 2001). Some interviewees perceived the opportunity to improve and challenge themselves (Capobianco & Lehman 2004; Jones & Kelley 2003). Some of those interviewed agreed that reduced time for undertaking discipline-based research is an inhibitor (Smith 2001). However, a number of those interviewed had taken the opportunity to conduct education-based research on the development of interactive multimodal technology-mediated courses, with one pioneer reporting seven published research outputs. Some interviewees perceived that development of an interactive multimodal

technology-mediated would have a negative or neutral impact on promotional opportunities; however, a number of pioneers and early adopters perceived it had enhanced their promotional prospects (Maguire 2005; Wolcott

& Betts 1999). For example, an early adopter reported that her involvement had favourably influenced the promotion panel, because it demonstrated she was “willing to look at new ideas”.[^]

Table 4 *Academics’ opportunistic motivators for and inhibitors to adopting and integrating educational technology*

Opportunistic motivators	Opportunistic inhibitors
<ul style="list-style-type: none"> • access to advanced technology and multimedia • be seen to be innovative, “state of the art” and progressive and thus enhance their teaching profile 	<ul style="list-style-type: none"> • a focus on research rather than teaching • a focus on activities that are more likely to lead to promotion and tenure

Personal factors. Interviewees revealed that the development of interactive multimodal technology-mediated distance education courses may depend upon the importance academics place on teaching relative to other academic pursuits, such as research. One instructional designer observed that academics who “are intrinsically motivated to give the most for the students”, have “a love of teaching”, are “dedicated to the learning outcomes of their students” appear to be more likely to develop an interactive multimodal technology-mediated course. A lack of understanding of, or concern for, pedagogy may present a barrier to the development of interactive multimodal technology-mediated courses, with one pioneer proposing that “80 percent of the people in the Faculty of Business probably wouldn’t even know what pedagogy was, let alone be concerned about it”. Moreover, an academic’s willingness to reflect on their teaching practice and embrace

modern learning and teaching philosophies may also be an influencing or “triggering” factor. For example, one instructional designer observed that “the innovators that are doing the hybrid multimodal things are constantly reflecting on their practices”. A number of pioneers and adopters perceived that their involvement in the development of interactive multimodal technology-mediated courses had allowed them to re-energise and renew their interest in, and approach to, teaching (Jones & Kelley 2003). One pioneer explained that print-based distance education materials are a “tired format” and it was “more fun doing things online or electronically”. Developing interactive multimodal technology-mediated courses had “revitalised” their interest in teaching, “renewed” their enthusiasm and challenged them to teach in a more effective manner.

The personal characteristics of the academic may influence the adoption and integration of educational technology (McGee

& Diaz 2007; Rogers 1995). One instructional designer explained that some academics are more “risk-averse” and prefer to “wait for others to take the first step”. For example, one early adopter explained that while he does not perceive himself to be risk-averse, he does not “rush overboard into the first gimmick”; rather he waits for the technology “to settle down just a little” before embracing it (Moser 2007). Willingness to change, move on, try new things and receptivity to new technologies also appears to influence academics’ development of interactive multimodal technology-mediated distance education courses (Weston 2005). For example, one pioneer explained, “I certainly don’t remain wedded to entrenched views”. Conversely, the lack of adoption by academics may be partially attributed to “constant change” in technologies being introduced, with one pioneer stating “we’ve had so many changes to how we teach, but we’ve never been given very much time to learn those new systems”. According to one non-adopter, when it comes to new technologies being introduced, “there’s been a lot of resistance to change generally”. For example, one instructional designer emphasised the “unfortunate timing” of the “hybrid delivery” initiative, which had coincided with a “whole lot of angst about WebCT”.

An interest in, and liking for, technology appears to influence the development of interactive multimodal technology-mediated courses, but it is not necessarily a predictor (Davis, Bagozzi & Warshaw 1989). Not all of the academics interviewed fitted neatly into their predicted category, with some of the pioneers and early adopters perceiving themselves to be somewhat risk-averse with respect to technology and some of the non-

adopters considering themselves to be early adopters of technology. For example, one non-adopter declared “I love technology, it just makes life so much easier and I think provides a lot more opportunities”. Conversely, one of the pioneers was difficult to persuade when it comes to trying new technologies, because he does not “like technology for technology sake”, and needs to “see the benefit it’s likely to produce for students”. Moreover, some of the pioneers and early adopters did not consider themselves to be particularly technologically capable; while, some of the non-adopters indicated that they are both interested in, and very capable with, technology. One early adopter described some academics as “techno-phobic”, while others do not consider using technology to be “part of an academic’s role”. For example, one non-adopter saw his role as “facilitating learning” and “distributing knowledge”, rather than being “a specialist in development like this”. Indeed, according to one early adopter, for wide-scale adoption of interactive multimodal technology-mediated courses to occur, some academics will need to “be dragged to their keyboards kicking and screaming”, in particular, some older academics. For example, one older non-adopter, having received negative reports from one of the pioneers who had become frustrated and experienced set-backs with the technology, had been dissuaded from even attempting to adopt educational technology, stating “it will ruin my life” (Moser 2007). This non-adopter confessed he had been avoiding technology, which he perceived to be “threatening” and explained “perhaps my age is showing and my generation is showing here, my culture was a culture of print”. One early adopter suggested some academics may be ‘hostile to it or are

resistant to it, because they don't see how it might improve what they're doing'. Hence, one of the non-adopters advised against simply "imposing" new technologies on educators and suggested the need to discuss with educators how the new technology could be used and the implications for implementation.

A lack of extrinsic rewards inhibits academics' development of interactive multimodal technology-mediated distance education courses (Moser 2007). One early adopter perceived "there's really no reward systems, no compensation for you doing it", while another observed "from the Faculty point of view it's, well, that's what you'

re employed to do". Early adopters argued that if academics were encouraged and saw a "reward mechanism or something in it for themselves", such as a "reduced marking load" or "some teaching relief", then they would be more likely to get involved. Due to the lack of extrinsic rewards, one of the instructional designers believed "a lot of academics will make the call that their time is better spent on research than devoting themselves to teaching". Lack of recognition by management and peers for the time and effort involved in adopting and integrating educational technology also appears to be a major barrier (Maguire 2005). For example, when asked if

Table 5 *Academics' personal motivators for and inhibitors to adopting and integrating educational technology and personal characteristics of adopters of educational technology*

Personal motivators	Personal inhibitors
<ul style="list-style-type: none"> • personal motivation to use technology • enjoyment in the intellectual challenge • personal satisfaction and self-gratification • development of new ideas – novelty • acquisition of cutting-edge status and dissatisfaction with the status quo • attitude and approach to teaching • regeneration and energising of teaching 	<ul style="list-style-type: none"> • entrenched instructional practices • resistance to change • fear of loss of autonomy or control over the curriculum • lack of incentives • a need to adapt one's teaching style, develop new skills and redesign course content • a need for more rigorous course planning • deviation from entrenched instructional practices
Personal characteristics of adopters of educational technology	
<ul style="list-style-type: none"> • innovative • willing to take risks • positive attitude toward technology • adequate technological ability – "techno-savvy" 	<ul style="list-style-type: none"> • conservative • risk-averse • negative attitude toward technology • limited technological ability – "techno-phobic" • lack of perceived self-efficacy

he felt he had been rewarded or recognized for his efforts in developing his interactive multimodal technology-mediated course, one pioneer responded “apart from the fact that you’re sitting here talking to me now, I don’t think anyone else in the faculty could give a damn about it”. One of the non-adopters cryptically observed “you can go to a lot of work for a package, and it’s not valued, and there’s no one looks at it, except the students”. Hence, one of the non-adopters considered this lack of recognition was a good reason “not to engage in it, because why bother”. However, one early adopter perceived that, as a senior lecturer, it was “incumbent” on him “to do something without having to expect another reward”. Moreover, some of the pioneers and early adopters indicated that they had found the experience to be intrinsically motivating and rewarding and expressed a sense of “self-satisfaction”, “achievement” and “self-gratification” (Capobianco & Lehman 2004). The development of interactive multimodal technology-mediated courses appears to have been an enjoyable, exciting and satisfying experience for the academics involved. In addition to intrinsic rewards, recognition from students was also identified as a valued reward.

IMPLICATIONS AND RECOMMENDATIONS

Interactive multimodal technology mediated distance education courses provide flexible, convenient and mobile study options, faster and easier access to materials and the convenience of communicating effectively, independent of time and place. Hence, in order for distance education providers to remain viable in an increasing competitive global market, academics need to be encouraged,

supported and rewarded to develop e-learning environments that more closely match the requirements of today’s digital generation, and as a means of revitalising the curriculum and improving course delivery. While, intrinsic rewards and recognition from students may motivate and encourage pioneers and earlier adopters, later adopters may need to be motivated by extrinsic rewards, such as a reduced marking load or teaching relief, as well as recognition from management and peers. Moreover, academics should be encouraged to conduct research on their learning and teaching practices, including how they design and deliver their distance education courses. Promotional policies and panels also need to place greater value on effective teaching practice and the design and delivery of innovative distance education resources.

Given the time it takes to develop and maintain an interactive multimodal technology-mediated course, wide-scale adoption and integration will only eventuate if workload allocations are made. Moreover, due to the time required to develop, maintain and update interactive multimodal technology-mediated courses, it is important to encourage cost-effective and sustainable development. Thus, academics should be encouraged to take a staged approach to development, avoid including information that is time-sensitive, and where possible, develop re-usable learning objects. The amount and pace of change in technologies may create resistance amongst some academics, and in particular older and “techno-phobic” academics. Hence, distance education providers need to consider the impact of technological change and the way in which technologies are implemented on academics’ willingness to embrace those

technologies and integrate them into their teaching practice. Moreover, a lack of understanding or appreciation of how educational technology can be effectively used to assist students to learn may inhibit academics' development of these courses, in particular, those with entrenched traditional teaching practices. Hence, academics' preconceptions and traditional methodologies should be challenged, and academics need to understand the nexus between technology and pedagogy. Institutions should encourage academics to be reflective about their teaching practice and explore how educational technology can be used to improve student learning outcomes. Personal factors influencing academics' adoption and integration of educational technology are varied; hence, institutions should recognise the different needs of different adopter groups and tailor support and training initiatives accordingly.

LIMITATIONS AND FUTURE RESEARCH

This paper addressed individual factors that influence academics' development of interactive multimodal technology-mediated distance education courses. This case study was confined to one Australian university, which while being a major provider, is only one of many providers of distance education across the globe. Due to contextual issues, individual factors that influence academics' adoption and integration of educational technology for the purpose of developing interactive multimodal technology-mediated distance education courses at the case university may differ from other distance education providers. Hence, other distance education providers who are

developing or intend to develop interactive multimodal technology-mediated distance education courses may need to conduct a similar study to determine if the factors that impact on academics at the case university differ, in anyway, from their institution. Indeed, given the case university's extensive experience and expertise in distance education, and more recently in e-learning, other institutions with less experience in distance education may not have established the same level of expertise and infrastructure support, and thus may face even greater challenges. Conversely, tertiary institutions who are receiving higher levels of government funding than the case university may not be experiencing the same resource constraints, and thus may be able to provide higher levels of support to academics.

CONCLUSION

The findings of this study revealed that a number of individual factors of a pragmatic, opportunistic and personal nature influence academics development of interactive multimodal technology-mediated distance education courses. Pragmatic motivators included the perceived need to provide flexible and convenient study options and cater for "new-age" and generation Y students. However, pragmatic inhibitors included concerns about equitable student Internet access and slow download times, as well as lack of time and increased academic workloads. Strategies for mitigating time and workload problems include allowing adequate time for development, taking a staged approach to development, developing re-usable learning objects and avoiding time-sensitive content. Opportunistic factors

included the opportunity for academics to explore new ways of delivering distance education courses, be seen to be progressive or “state of the art”, and improve their teaching or challenge themselves. Development of an interactive multimodal technology-mediated course may lead to education-based research and may positively impact on promotional prospects. Personal factors influencing academics’ development of interactive multimodal technology-mediated distance education courses included the academic’s attitude toward and approach to teaching and, in some cases, their desire for a renewed and reenergized interest in and approach to teaching. Moreover, the academic’s personal characteristics and their attitude toward change and technology, and in particular their understanding of how technology can be used to improve learning outcomes, appear to influence their propensity to develop technology-mediated courses. While the apparent lack of recognition and rewards from management and peers may inhibit the development of interactive multimodal technology-mediated courses by later adopters, pioneers and early adopters perceived that intrinsic rewards and recognition from students motivated them.

REFERENCES

- Bates, Tony (2006), *Technology, e-Learning and distance education* New York: Abingdon.
- Betts, Kristen (1998), “An institutional overview: Factors influencing faculty participation in distance education in the United States: An institutional study” *Online Journal of Distance Learning Administration* Vol.1 (3) Fall. Retrieved August 30, 2005 from <http://www.westga.edu/~distance/betts13.html>
- Birch, Dawn and Sankey, Michael (2008), “Drivers for and obstacles to academics’ development of interactive multimodal technology-mediated distance education courses” *International Journal of Education and Development using ICT* Vol. 4 (1)
- Capobianco, Brenda, and Lehman, James (2004), “Using Technology to Promote Inquiry in Elementary Science Teacher Education: A Case Study of One Teacher Educator’s Initiatives” *Society for Information Technology and Teacher Education International Conference 2004* Vol. 1 pp. 4625–4630. Retrieved March 4, 2005 from http://p3t3.education.purdue.edu/SITE_2004_Capobianco.pdf
- Chizmar, John and Williams, David (2001), “What do faculty want?” *Educause Quarterly*, Vol.1 Spring pp. 18-24
- Covington, David, Petherbridge, Donna and Egan Warren, Sarah (2005), “Best practices: A triangulated support approach in transitioning academic to online teaching” *Online Journal of Distance Learning Administration* Vol. 8 (1) Spring. Retrieved April 16, 2005 from <http://www.westga.edu/%7Edistance/ojdl/spring81/covington81.htm>
- Cowan, John (2006), *On becoming an innovative university teacher*. New York: Open University Press.

- Davis, Fred, Bagozzi, Richard and Warshaw, Paul (1989), "User acceptance of computer technology: A comparison of two theoretical models" *Management Science* Vol. 35 (8) pp. 982-1003.
- Earle, Rodney (2002), "The integration of instructional technology into public education: promises and challenges" *Educational Technology Magazine* Vol. 42 (1) pp. 5-13.
- Eastman, Jacqueline and Owens Swift, Cathy (2001), "New Horizons in distance education: The online learner-centred marketing class" *Journal of Marketing Education* Vol. 23 (1) April pp. 25-34.
- Fleming, Neil (2001) "VARK: A guide to learning styles" Retrieved November 30, 4 from <http://www.vark-learn.com/english/page.asp?p=questionnaire>
- Franklin, Teresa, Turner, Sandra, Kariuki, Mumbi and Duran, Mesat (2001), "Mentoring overcomes barriers to technology integration" *Journal of Computing in Teacher Education* Vol. 18 (1) pp 26-30.
- Gill, T. Grandon (2004), "Distance learning strategies that make sense: A micro analysis" *eLearn Magazine* Vol. 3 (2) March. Retrieved November 28, 2004 from <http://delivery.acm.org/10.1145/1080000/1070942/p2-gill.html>
- Jafari, Ali, McGee, Patricia and Carmean, Colleen (2006), "Managing courses, defining learning: What faculty, students, and administration want" *EDUCAUSE* July-August 2006 pp. 50-70.
- Jones, Kirby and Kelley, Craig (2003), "Teaching marketing via the Internet: Lessons learned and challenges to be met" *Marketing Education Review* Vol. 13 (1) Spring pp. 81-89.
- Maguire, Loreal (2005), "Literature review: Faculty participation in online distance education: Barriers and motivators" *Online Journal of Distance Learning Administration* Vol. 8 (1) Spring. Retrieved April 4, 2005 from <http://www.westga.edu/~distance/ojdla/spring81/maguire81.htm>
- McCorkle, Denny Alexander, Joe and Reardon, Janice (2001), "Integrating business technology and marketing education: Enhancing the diffusion process through technology champions" *Journal of Marketing Education* Vol. 23 (1) April pp. 16-24.
- McDonald, Jacquelin and Mayes, Terry (2005). Pedagogically challenged: A framework for the support of course designers in an Australian distance learning university. *Proceedings of the Centre for Research in Lifelong Learning International Conference, June 24-26, 2005, Stirling, Scotland.*
- McGee, Patricia and Diaz, Veronica (2007), "Wikis and podcasts and blogs! On, my! What is a faculty member supposed to do?" *EDUCAUSE* September-October 2007 pp. 28-40.
- McPhail, Janelle and Birch, Dawn (2004), "Students' attitudes towards technology-

- enhanced learning resources for an introductory marketing course” *Proceedings of Australia and New Zealand Marketing Educators Conference, November 29 – December 1, Wellington, New Zealand.*
- Moreno, Roxana and Mayer, Richard (2007), “Interactive multimodal learning environments” *Educational Psychological Review* Vol. 19, pp. 309–326.
- Moser, Franziska (2007), “Faculty adoption of educational technology” *Educause Quarterly* 1 pp. 66–69.
- Oliver, Beverley and Goerke, Veronica (2007), “Australian undergraduates’ use and ownership of emerging technologies: Implications and opportunities for creating engaging learning experiences for the Net Generation” *Australasian Journal of Educational Technology* Vol. 23 (2) pp. 171–186.
- O’Quinn, Lisa and Corry, Michael (2002), “Factors that deter faculty from participating in distance education” *Online Journal of Distance Learning Administration* Vol. 5 (4) Winter pp. 1–18. Retrieved March 24, 2005 from <http://www.westga.edu/~distance/ojdla/winter54/Quinn54.htm>
- Rogers, Everett (1995), *Diffusion of innovations* 4th edition New York: Free Press.
- Sankey, Michael (2005), “Multimodal design and the neomillennial learner” *Proceedings of OLT2005: Beyond Delivery Conference, September 27, 2005, Queensland University of Technology, Brisbane* pp. 251–259.
- Sankey, Michael and St Hill, Rod (2005), “Multimodal design for hybrid learning materials in a second level economics course” *Proceedings of 11th Australasian Teaching Economics Conference: Innovation for Student Engagement in Economics July 11–12, 2005, University of Sydney, Australia* pp. 98–106.
- Schifter, Catherine (2002), “Perception differences about participating in distance education” *Online Journal of Distance Learning Administration* Vol. 5 (1) Spring. Retrieved January 12, 2005, from <http://www.westga.edu/~distance/ojdla/spring51/schifter51.html>
- Smith, Lois (2001), “Content and delivery: A comparison and contrast of electronic and traditional MBA marketing planning courses” *Journal of Marketing Education* Vol. 23 (1) April pp 35–44.
- Taylor, Jim (2004), “Will universities become extinct in the networked world?” *Proceedings of ICDE World Conference on Open and Distance Learning, Hong Kong, 2004.*
- Weston, Timothy (2005), “Why faculty did - or did not - integrate instructional software in their undergraduate classrooms” *Innovative Higher Education* Vol. 30 (2) pp. 99–115.
- Wolcott, Linda and Betts, Kristen (1999), “What’s in it for me? Incentives for faculty participation in distance education” *Journal of Distance Education* Vol. 14 (2) pp. 34–49.

Yin, Robert (2003), *Case study research: Design and methods* 3rd edition Thousand Oaks: Sage.

Zywno, Margarita (2003), "Hypermedia instruction and learning outcomes at different levels of Bloom's taxonomy of cognitive domain" *Global Journal of Engineering Education* Vol. 7 (1) pp. 59-70

双方向的マルチモーダル技術を介在した遠隔教育の授業 — 大学教育の視点から —

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教育工学の進歩とグローバルな情報の供給源としてのインターネットの出現は、教育者に豊富な資源を利用することを促し、伝統的な対面教育や遠隔教育に変化をもたらし、豊富な技術が介在するeラーニング環境を実現した。さらに、マルチメディアの利用が容易になり、教育者に、柔軟性があり魅力的で双方向的な学習資源を開発する機会を提供した。本研究は、双方向的マルチモーダル技術を介在した遠隔教育の授業を開発するために、オーストラリアの大学において、教育工学の採用と統合に影響を与える要因を明らかにすることを目的とする。こうした遠隔教育の授業は、大学内での学習経験と学習成果を反映する、より包括的なカリキュラムを提供する目的を持ちつつ、様々な学習スタイルや方法の選択を提供するために、マルチモーダルな学習目的と学習内容の多様な提示形式を含んでいる。こうした遠隔教育の授業を大学が開発するときに影響を及ぼす要因は、実用的、日和見主義的、かつ、個人的な動機と関心であった。そして、これらの要因に基づく示唆、および提言が、遠隔教育の提供者とマーケティング教育者に対して示された。

キーワード：遠隔教育， 大学教育， eラーニング， 教育工学， マーケティング教育