ADOPTING EMERGING TECHNOLOGIES: BRIDGING THE GAP IN PREPARING DISTANCE EDUCATORS FOR THE 21ST CENTURY

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Introduction

For over ten years, the Master of Distance Education & E-Learning (MDE) program has been committed to the mission of developing high-quality professionals capable of managing and leading distance learning initiatives in diverse sectors and scenarios. Distance educators are faced with ever-changing environments where the demands for educating future generations are consistently dynamic and often unpredictable. The adoption and use of technology have shed light on the stark differences among educators and learners, highlighting the lag that can and does occur on the journey to becoming a digital citizen. For distance educators it is imperative that they become aware and proactive in continuously developing their technological abilities and skills.

Within the MDE context, the issue of bridging the gap concerning the use of new technologies is particularly urgent and critical due to its mission. In other programs, the need to use technology arises solely from the need to adopt new pedagogical strategies. Within the MDE the need to use technology is broader and deeper than just the novelty of adopting new pedagogical strategies given the field of e-learning. It is about changing the way such professionals deal with future innovations in the field and the rapid adoption of these innovations in our society.

Therefore, the MDE must cross several gaps --- created by technology --- that are not only generational (faculty-faculty, student-student, faculty-student) but also pedagogical (learning and teaching with technology) and institutional (using technology for learner support environments). The ways in which we have built bridges to cross these gaps is the focus of this paper. The paper will provide a contextual background of the MDE (its students, faculty, management, and history), the evolution and use of technology in the program, a description of the challenges and gaps created by technology, and the actions taken by MDE stakeholders to cross these technological gaps. A critical understanding of this process and the lessons learned during this journey are critical to helping distance educators understand their role in the knowledge society and to provide them with the knowledge and skills to strategically prepare for future developments in distance education.

Literature Review

MDE course content is developed based on the underpinning theories that have formed the foundations of and continue to influence the on-going development of distance education, and finding the right balance of pedagogy and technology is a major challenge. To quote Anderson (2009): “it is only in a complex dance between technologies and pedagogies that quality distance education emerges” (p. 2). The most prevalent of these distance education pedagogies used within the MDE is constructivism, which promotes the active participation of the student in his or her own learning process, and which is strongly supported by today’s online technology (Jonassen, Davidson, Collins, Campbell, Bannan Haag, 1995; Anderson & Dron, 2011). Teaching approaches that incorporate constructivism promote: “active learning, learning-by-doing, scaffolded learning, and collaborative learning” (Harasim, 2012, p.68). Emerging theories in distance education, such as connectivism and heutagogy, are also taken into consideration when adopting new technology (Anderson, 2010).

Achieving balance in distance education also requires the ability to effectively adopt and manage innovation. (Rogers in Berkun, 2007) Based on the conceptualization proposed by Veletsianos (2010), we consider emerging technologies to be “tools, concepts, innovations, and advancements utilized in diverse educational settings to serve varied education-related purposes…evolving organisms that experience hype cycles, while at the same time being potentially disruptive, not yet fully understood, and not yet fully researched” (pp. 3-4). Cook et al (2007) describe using technology for learning in an expanded approach focused on a human-centred design “where priority is given to the embedding of learning into specific contexts or designing technologies that are adaptive to specific contextual behaviours of learners” (p.55).
These pedagogical and theoretical principles guide us in supporting and teaching our students and in bridging technological gaps within the MDE. By adopting and using technology in a way that is based on established and emerging theoretical models, we are able to better understand the learning process and use this knowledge to be more effective in designing online classroom activities so that they are optimized for learning (Anderson & Dron, 2011).

**Background of the MDE**

The MDE program vision is to educate and help form the next generation of professionals, new managers, and future leaders to join the workforce in growing distance education and e-learning fields (Bernath & Rubin, 2003). To achieve this goal, the program challenges students to critically engage in the fields of e-learning and distance education in order to understand the broader policy, regulatory, and social issues that arise in e-learning; plan and manage e-learning programs and organizations; select and implement technologies related to e-learning; conduct and evaluate research; and cost and budget e-learning systems in order to train and educate individuals in our society.

**The MDE Student: A Changing Profile**

The majority of students in the MDE are female, and there has been a slight increase in the percentage of this majority in the last five years. This observation correlates closely to anecdotal information we have about the students’ workplace, which are mostly training and educational organizations. The female predominance in distance education is characteristic of any program that relates to education; and many of the students are or wish to be involved in the education field in some way.

MDE students have become more diverse in the last five years. There is a noticeable decrease in the Caucasian segment of the population, giving way to increases in other segments (African-Americans, and Asian). The increase in diversity is expected to grow which creates greater challenges when it comes to student-preparedness, and the need to invest in support services that are effective and efficient in enhancing student chances of success. Technology has the potential to reduce costs, through self-service features and the adoption of learning analytics in a way that has not been possible when considering the more interactive models of online teaching and learning within the virtual classroom setting.

Considering age, there are two interesting highlights from the analysis of the MDE student population: a relative reduction of students in the age range of 40-49, and a significant relative increase of those in the range of 25 to 29 years of age. This can be attributed to shifts in demographics, such as students entering graduate school directly after university studies and the popularity of online learning among younger, Internet-era students. A slight relative increase in the segment of students over age 50 is also observable, which can be explained by general demographic changes, as people who would once be considered no longer an active part of the workforce, now continue to be active professionally and seek re-training or even career changes.

These trends and the existing mix in age illustrate the differing levels of technology familiarity, as well as the level of acceptance and the pace of change in this arena. Such traits emphasize once more the need to adopt and employ emerging technologies, while helping students develop long-lasting fluency in technology skills so they can confidently and competently take on future positions in the online educational market.

**The MDE Faculty: International and Spanning Generations**

The MDE faculty is composed of a broad international group of professionals and academics in the distance education arena, including faculty from Australia, Germany, Norway, Sweden, Israel, South Africa, UK, Canada, and the U.S. All faculty are actively involved in distance education, with a significant majority contributing frequent significant publications to the field. Close to 90% of the MDE faculty are adjunct faculty. According to gender, MDE faculty members show a pattern similar to the one found among students, which is relative to the demographics of this field of study. Nearly 80% of the MDE faculty have terminal degrees, a characteristic that contributes to the quality and recognition of the program.
The Evolution of Technology in the MDE

Since its inaugural debut in 2000, the MDE has experienced the rise of numerous new technologies, which have emerged as distance education and associated technologies have evolved. In the first MDE courses, instructors had only a handful of asynchronous tools available to them within UMUC’s proprietary learning management system (LMS) WebTycho. These tools included study group (collaboration) areas, threaded conferences, and interactive chat. To create their e-portfolios, students used web site creation software such as Dreamweaver, posting through file transfer into UMUC’s students’ reserved web space. Synchronous communication tools were not available at this time other than the telephone, although some teleconferencing was incorporated into select courses. The mid-2000s brought with them the emergence of web 2.0 software, and students and instructors suddenly had a growing assortment of user-friendly tools for use in the online classroom. For students, it meant being able to quickly and easily create online eportfolios. For faculty, it meant the ability to incorporate more synchronous tools such as Skype, Wimba Live Classroom, and Adobe Connect. The toolkit for asynchronous tools also grew, for example, with the introduction of blogs and wikis into instructional classroom activities, as well as into the MDE support network. Google Groups were used to create student, faculty, and alumni forums, as well as discussion areas on central topics such as emerging technologies. Toward the end of the 2000’s, social media became popular amongst students, although its use was initially and primarily for socializing with peers. Social media has since emerged as a tool for research and collaboration, and the MDE continues to experiment with the media as an instructional form within the online classroom (Porto, Blaschke, & Kurtz, 2010; Blaschke, Porto, & Kurtz, 2011). The following graphic provides a visual of the development of technology within the MDE.

Figure 1 – Evolution of Technology within the MDE

Bridging the Gaps

As technology has evolved and been incorporated into the MDE (see Figure 1), a number of challenges have needed to be addressed in order to bridge gaps across multiple dimensions: teaching and learning, faculty development, and community support. There is not simply one gap (e.g., generational) that we need to cross, as we are faced with multi-faceted challenges. It is necessary for us to bridge gaps that cross many levels and dimensions, and we achieve this in our holistic approach to teaching and supporting students with technology, as shown in Figure 2.
Figure 2 – Addressing the gaps through emerging technologies

Teaching and Learning

Each new technology brings with it opportunities for new ways of teaching and of learning. New ways of teaching have emerged, as distance education has become more social, more collaborative, and more learner-centered. A shift in learning has also occurred, as learning becomes more non-linear and digitized (Peters, 2010). There is resistance from students who do not want to change the way they learn, and resistance from faculty who do not want to change the way they teach. A gap exists between how we taught and learned before and how we teach and learn now using the new technologies.

To address this challenge, we incorporate role modelling and scaffolding of activities when teaching with technology. We use a number of established as well as emerging technologies, and the decision to use the technology is based on established pedagogical principles. We also place a strong emphasis on development of practitioner skills, and web 2.0 tools, such as wikis, blogs, YouTube, shared documents, and social media have become an important mechanism for delivering instructional content as well as to support development of learner skills and knowledge through creation of new content. For example, by establishing an e-portfolio at the onset of the MDE program, students develop important skills for the workforce but are also able to demonstrate successful acquisition of those skills. Incorporation of these emerging technologies has also coincided with extensive research within the MDE into the meaningful application of technology in the online classroom. Collaborative learning and content creation are increasingly at the forefront of the teaching and learning methodologies. For example, in addition to collaborating in the study groups created inside the learning management system, learners within the MDE also use interactive tools such as Google Docs and wikis to work together to construct new knowledge and create new content.

In addition, several courses are co-taught by two faculty members, a system that not only enhances the quality of the courses, but also fosters stronger connections between faculty in the MDE community. Another interesting characteristic is that the program has a few faculty members, who completed the program as students, and therefore have an intrinsic understanding of the curriculum. These particular faculty help bring additional cohesiveness into the program.

Faculty Development

Faculty training, support, and retention raise unique challenges in online asynchronous learning environments like UMUC’s. As technologies and best practices evolve, care must be taken to sustain faculty online teaching competencies, while at the same time not burden instructors unduly. Faculty must be provided both computer-
accessible and “human” support to answer their administrative and instructional concerns; and a culture of teaching excellence must be nurtured while building a collegial spirit among a dispersed faculty body. When faculty do not receive the technology training they need, a gap can grow among faculty, as well as between faculty and students. Among faculty, the new technology can create a dissonance, with some faculty adopting new technologies and others unwilling to do so. Within the MDE, there is the added challenge of finding the time to research, experiment with, and incorporate new technologies. A similar gap can exist between faculty (digital immigrants) and students (digital natives) (Prensky, 2001), where younger students may be more comfortable and adept with newer technology than faculty from previous generations; this gap can also exist between students of different generations.

A gap exists between those who are literate in a technology and those who are not.

The approach taken to bridge this gap in based on two main dimensions, namely: bringing faculty into program-wide initiatives and providing individual support in the use of technologies. UMUC promotes high quality support services, so faculty can devote their energy to the teaching and learning process. Many extracurricular program initiatives are created with and through learning technologies; therefore involving faculty in such projects has a two-fold effect of building community and creating a sense of a learning circle amongst faculty, which promotes professional development. The program has also managed to provide in-class support to faculty in the adoption of new technologies, reducing fear and resistance. UMUC’s Center for Teaching and Learning (CTL) (http://www.umuc.edu/ctl/) provides the baseline WebTycho training for all new instructors, along with a wide variety of faculty programs and resources including faculty development workshops, certificate programs, and forum discussions. Instructional support specialists are available by email to answer instructors’ technical questions regarding online classroom management, to help improve course materials as requested, and to provide personal training as needed.

Support and community-building activities include synchronous online meetings with instructor groups using Wimba multimedia conferencing tools with audio, whiteboard, and recording capabilities. These various support structures create an interactive and productive work environment in which to share teaching practices, co-teach, and publish in distance education.

Community and Support

An additional challenge within the MDE is finding the right forums for building community and for supporting students and faculty. These forums need to be secure, while at the same time easily accessible. **A gap exists between the way we support our students and faculty and build communities and how we want to support students and faculty and build community.**

The sense of community has been the focal point of a series of initiatives that compose the ‘MDE support ecosystem’ (Blaschke, Porto & Kurtz, 2010), strongly based on social media tools (Mason & Rennie, 2008) – the MDE Social Media Support Suite, which creates an integrated MDE program-wide community, enabling “unstructured interaction, sharing of information, and creation of an ongoing and long-lasting common knowledge base” (Porto, 2012, p.2).

The advancement on different fronts in connecting to students outside of the virtual classrooms, as well as keeping contacting with the growing alumni group, has created a culture of **community of learning** and collaboration within the program (Porto & Kipta, 2011). Since for MDE graduates, the work done at UMUC is at the core of their competencies as new distance educators, it was natural that the program and the institution could immediately benefit from their direct involvement. This gave rise to a solid group of graduates working as teacher assistants and **writing coaches** within all MDE courses. This support has been a cornerstone for development and quality, and has enabled the implementation for many other initiatives such as peer mentoring program, MDE virtual conference, and the MDE orientation. Students and alumni also interact with each other in a global student and alumni support network - all through a private and closed Google groups, outside the realm of the institutional environment. There is also ample selection of resources to provide information to students through the use of social media, and the MDE has continuously developed a strong presence on the web, from UMUC’s official institutional web site to social networking sites such as Facebook, LinkedIn, and Twitter.
Lessons Learned

As with any process involving innovation and change, decisions and events do not occur in linear fashion, but happen in more of a spiral model, interspersed with moments of reflection, gathering feedback, and collaborative discussion. This process, clearly identified by the action research cycle, in this case in a networked distributed environment, has allowed the researchers and other active participants to filter and solidify important lessons learned, which feed into the planning of the program, as well as recommendations and influence of institutional initiatives. We summarize these in what follows:

**Be open to and aware of new technology.** It is important to keep abreast of new technology developments and their potential for use in the online classroom (innovation).

**Explore different ways of diffusing innovations.** Through leadership and change management strategies, it is important to focus on diffusing innovation, or otherwise run the risk of creating silos and isolation in the program. This is especially critical in a program where most stakeholders have formal yet temporary ties to the institutions involved. Approaches that mix community building, professional development opportunities, one-on-one support and extra curriculum initiatives have a better chance of overcoming resistance and potential fears.

**Apply a systematic approach to exploring technologies.** Within the MDE, we have adjusted our approach to using new technologies, shifting from an ad-hoc approach where adoption happens in an organic, unplanned way, to a more pragmatic and organized approach, where we consider embed and design activities involving and teaching about new technologies into the curriculum and support services (a designed perspective in using new technologies). In this systematic approach, we carefully consider technological innovation within the whole of the system (Bates, 2012).

**Base technology use firmly on established pedagogical theory.** With the incorporation of each new technology, we ask the question: what is the pedagogical benefit of this technology? Our practical application is deeply connected with underlying theories of education and distance education and is not innovation purely for the sake of innovation (Bates, 2012).

**Strive for balance.** As we attempt to bridge the challenges and gaps, there is a balancing act going on, one that is not always structured. Essential to maintaining balance and avoiding stagnation, the MDE keeps transparency and awareness within the MDE environment by incorporating key elements such as: including open discussion of technologies within courses and faculty and student forums, encouraging healthy speculation through experimentation, and engaging in practitioner-based research. Elements that are not relevant might be left behind as the process evolves, and become relevant later on given other contextual changes and needs.

**Encourage development of practical skills that incorporate a strong theoretical basis.** The MDE approach is to develop future managers that are not only knowledgeable of distance education theory but who are also skilled in the practice of using the latest technology. We strive to achieve a balance between theory and practical skills, and managing innovation without neglecting the pillars of the field. There is a pitfall in adopting new technologies without connecting such choices to strategies supported by the theories in the field.

Conclusion

Tasked with developing effective distance educators for the knowledge society of the 21st century, the MDE program is composed of a diverse set of stakeholders who have a diverse set of needs and skill sets. This diversity, combined with the diversity created by technology, creates gaps across various dimensions: generational, pedagogical, and institutional. Learning technologies, which are at the core of the MDE mission, provide the means for developing and delivering the program, while also crossing the many gaps they create. This paper analyzes the evolution of the MDE program in terms of technology inclusion and adoption, discusses the challenges in bridging the gaps that arise from all aspects of diversity, and presents the MDE experience in bridging these gaps through teaching and learning, faculty development, and community support functions, while striking a balance between innovation and sustainability.
References


