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Abstract

Learning Technologies Selection: Design and Application is a new course in UBC's online Master of Educational Technology (MET) program. In this paper I reflect on the development process for this course. First I explore the literature we position within the course for MET students to inform their practices theoretically. Next I describe some of the pedagogical principles employed. Subsequently I map out our educational design pathway. Finally I examine how the core development team aligned these three components, including challenges, successes and lessons learned.

Intro

The University of British Columbia's wholly online Master of Educational Technology (MET) program has been in operation since 2002. Over that time 175 educational and technological professionals have completed the MET, studying on either a full-time or part-time basis. Educators working at the primary, secondary and tertiary levels; in workforce training; IT consultants; educational designers; and non-profit managers have all enrolled. Currently there are students enrolled based in Canada, the United States, Mexico, China, Hong Kong, Turkey, and Jamaica.

From its inception, the MET's emphasis has been on informed, critical analysis of the implementation of technology in learning environments. In addition to core courses in research methods, instructional design, educational technology foundations, and learning theory, MET students choose from a range of elective courses structured around different subject matters (such as math and science or arts education), indigeneity and educational technology, and curriculum. In addition, all MET students complete an e-portfolio capstone project as the final requirement of the program, which represents the overall depth and breadth of their learning.

There has been interest in an applications course almost from the very beginning of the MET. However, for a number of reasons this course was only launched in May 2009, These include the challenge of creating:

- a course relevant to students of all skill levels, from intrigued novice to train-the-trainer expert;
- a course relevant across the overall body of MET students, regardless of the context of practice; and

- managing a workshop-like course in a wholly online, largely asynchronous environment with students across 15 time zones.

However, once Learning Technologies Selection: Design and Application (ETEC 565A) was approved by the University Senate, the development process moved apace rather quickly. The core development team included three course co-authors from the University of British Columbia's Office of Learning Technology:

- the Director, a recognized international expert in educational technology, particularly online;
- the Manager of Distance Learning, who has been involved with the MET since its inception and has served as its primary instructional designer; and
- an Instructional Designer and Project Manager (and, subsequently, Instructor) for ETEC 565A, who had previously designed and delivered a similar applications course in a blended (face-to-face and online) environment in the university's Bachelor of Education teacher certification program.

As I sat down to write the course, one key question informed our work: what sort of core competencies would *we* expect someone who had completed a post-graduate qualification in educational technology to possess? However, having taken a competency-based approach to ETEC 565A, I did not wholly focus on instrumental, "how-to" technical competencies. Rather, I chose a tack that included a range of knowledges, attitudes, skills, and literatures related to the selection, design and application of educational technology. And while online delivered learning has been strongly emphasized throughout the development process, the integration of technologies using other delivery platforms (such as DVD authoring) were also included.

In this paper I reflect upon the design and delivery of ETEC 565A first offerings. I discuss the key theoretical literature that informs this work, the important pedagogical principles built into ETEC 565A, and our strategies in terms of educational design. To conclude I reflect on some of the challenges encountered, successes achieved, and lessons learned.

Emphasizing the theoretical

A cornerstone of the MET program is exceptional practice informed by theory, including (but not limited to) educational theory: in this respect ETEC 565A is no different. Of the various readings involved, four theoretical contributions are particularly prominent: Bates and Poole's SECTIONS model (2003), Chickering and Gamson's principles for effective teaching (1987), Chickering and Ehrmann's application of Chickering's earlier work specifically to technology (1996), and Anderson's theory of online learning (2008).

Bates and Poole's SECTIONS model for evaluating educational technologies (2003) is introduced early in the course and re-referenced throughout. SECTIONS offers an excellent starting point, regardless of where any individual is in the MET program (their first, 5th or final course). It offer a structure for comprehensive, systematic and manageable evaluation of educational technologies. SECTIONS requires no fluency in educational technology jargon (which sometimes intimidates new MET students) and keep learning as its focal point. Most MET students, regardless of context, find resonance with SECTIONS.

Second, Chickering and Gamson's seven principles for effective teaching in higher education (1987) addresses matters of effective pedagogy. Though ostensibly specific to higher education, MET students find much of their work relevant to primary, secondary, adult and community education settings. Building up these principles, Chickering and Ehrmann (1996) focus on educational technology grounds all subsequent discussions regarding teaching and learning.

Finally, Anderson's (2008) model for online learning, and its two emphases—on examining learning environments from different lenses (specifically learner centered, knowledge centered, assessment centered and community centered), and on different types of interactions in online education (student-content, student-teacher, teacher-content, teacher-teacher, content-content, student-student)—bring an analysis based on interactions into the conversation. Many MET students shift between their experiences as educators and as learners, in terms of reflection. Anderson's typologies offer a scaffold upon which to do so systematically. In any teaching and learning context, insight into the particular combination of interactions is essential to appreciate how these relationships will define the manner in which different educational technologies can be deployed to support teaching and learning

Together, these analyses of context, pedagogy, and interactions offers ETEC 565A students a range of approach to take in their individual learning activities. While a comprehensive selection, there is also scope within the course to focus on any one of them across various activities.

Pedagogical Principles

Our approach in ETEC 565A has been informed by a number of pedagogical principles. In an applications course its easy to focus on learning *how to deploy* technology rather than *how to effectively and purposeful implement* educational technologies in order to achieve goals and objectives. However, learning the "how to" is important: educators unable to confidently use new technologies simply will not try. Thus our approach combines several pedagogical principles, including constructivism, competency-based education, and collaborative learning.

All ETEC565A learning activities are informed by constructivist (Piaget, 1950) principles. Much of the interactivity in the course occurs in asynchronous class-wide discussion forums. These were design within two broad streams: responses to real-world scenarios, or the reflective application of a reading to one's own experience—as educator, learner or other educational stakeholder.

Competency-based education, "the habitual and judicious use of communication, knowledge, technical skills, … reasoning, emotions, values, and reflection in daily practice for the benefit of the individual and community being served" (Epstein & Hundart, 2002), is structured around a set (or sets) of core competencies required to demonstrate comprehensive knowledge at the professional level. For ETEC 565A the following core competencies included selection, design and application competency.

The core competencies for ETEC 565A include:

1. A solid understanding of key literatures
2. Familiarity with professional standards related to educational technology
3. Ability to create an object-oriented LMS site

4. Ability to create a sophisticated assessment object (quiz or exam), using a range of question types and assessment strategies
5. Multimedia design principles, including digital images, audio and video
6. Integration of two or more communication tools, in addition to email
7. Experience using weblogs and wikis for site design and as learning objects
8. Mindfulness of issues related to intellectual property, confidentiality, and data ownership
9. Design for accessibility,
10. Engaging in an ongoing practice of self-reflection

Equally important were questions of process. All too often educators are encouraged—or required—to work in isolation. Some educators have reliable and flexible technical support available to them, but for many *they* are their own tech support. There is a wealth of knowledges and skills among MET students; collegial support and advice are positioned firmly at the centre of most aspects of the course.

The development team reached consensus early on that fomenting a learning community, ideally one that formed the basis of an ongoing community of practice after the MET, was important. Thus, we employed a range of strategies to foster collaborative learning. First, we constituted small groups, in which specific tasks were completed, such as creating an evaluation rubric for assessing various LMSs. Students were also encouraged to "workshop" their individual assignments with their peers before submitting them for summative assessment. Thus throughout these activities students are encouraged to act as critical friends for one another, offering forthright, respectful critique (McNiff, Lomax and Whitehead, 1996).

Educational design

Educators training their colleagues face some particular challenges. Many of us have very clear, often strong views about what constitutes effective educational design. We also tend to—whether we wish to or not—analyzed any educational activities in which we participate as learners with respect to design. In any MET course we endeavour to integrate a variety of learning activities: ETEC 565A the added dimension of stress and anxiety that often accompanies learning new competencies made getting the balance right terribly important. In the end we focused on four different instrumentalities: competency-based education, inquiry-based learning, problem-based learning, and summative e-portfolio assessment.

Offering a course that integrates a range of educational technologies—including a skills building component for each—required a much broader range of expertises than the core development team. The Office of Learning Technology has a number of staff persons highly skilled in very particular areas. In order to exploit these—while keeping processes manageable for all—a wiki-based e-Learning tool kit (http://sites.wiki.ubc.ca/etec565/index.php/Main_Page) was created. The tool kit offers students a series of self-directed skills building activities, each situated in the context of creating an online course within a learning management system (LMS) site, with an accompanying WordPress to create e-portfolio for reflective components.

The components of each page include:

- Description of the competency
- Background information
- A structured inquiry activity
- A reflection
- Additional resources for more information

Students engaged in various self-directed skills building activities
Although certain pages of the tool kit needed to be completed sequentially (namely those related to LMS selection initial setup), for the most part students set their own priorities, determined individual timetables and managed their own time.

Inquiry- and Problem-based learning

Inquiry-based learning: one of the challenges in an applications course is the (very human) tendency to focus on solution identification prior to definition of the issue, challenge or problem. Inquiry-based learning (IBL) is "the creation of a classroom where students are engaged in essentially open-ended, student- centered, hands-on activities. (Colburn, 2000). Early in the course, students are given a scenario and asked to come up with *one important question* they think is most relevant to the situation presented. As world-class problem solvers, staying on-task is challenging for many!

However, this inclination to find solutions needs to be encouraged as well. Thus the second activity was a problem-based learning scenario. According to Schmidt problem-based learning (PBL) "students with knowledge suitable for problem solving…measured against three principles of learning: activation of prior knowledge, elaboration and encoding specificity (1983, p. 11). For this activity, each group was given a specific fictive scenario (using real organizations as the setting for a scenario composite) related to selecting an LMS platform and asked to develop an LMS evaluation rubric that key decision makers could apply when evaluating various LMS products. After each group finalized its rubric, they posted theirs (along with a précis) of the scenario they were given, and had to give formative feedback to their peers' work. Seeing how the same ostensive problem was responded to differently, allowed learners to validate—and interrogate—their individual approaches to the task. With three different sections of ETEC 565A running concurrently, groups sharing the same scenario (but in different sections) were later allow to compare their rubrics against other groups wrestling with the same scenario.

Both these learning activities shared a common structure: a "trigger" scenario, a range of resources to be consulted, and a limited timeframe in which to complete their work. For IBL or PBL to work well, there is a great deal of preliminary design work: the trigger and resources must be vetted in a way that there's little scope for groups to get off track. Wordsmithing the materials is particularly important. Both activities were well received and operated within their intended scope

E-Portfolio assessment

In terms of measuring student performance, each ETEC565A student completes a multi-component e-portfolio, combining both instrumental and reflective aspects. These components, all related to building an LMS course site, are:

- A "flight path" outlining prior learning and goals for the course
- An LMS platform proposal for a specific online course
- Two complete learning modules
- Build out and analysis of two communication tools
- Set up of a multi-format quiz or exam
- Creation of a digital mashup story
- A comprehensive inventory of all multimedia required for site completion
- A synthesis reflection on their overall learning experience

Each component's accompanying e-portfolio page must integrate relevant literatures as proof of critical, evidence-based best reasoning. Each of the requirements are detailed and one e-portfolio platform (UBC Blog's WordPress server) is used by all students. UBC's WebCT Vista and Moodle server's are the only LMS permitted.

Both these decisions were significantly informed by both pragmatic and equity issues. By specifying requirements for each component, we ensure a broad, robust exposure to one LMS's core functionality. A common objection raised related to whether MET students who do not use particular instruments (such as multiple choice questions) as part of their assessment strategy need learn how to do so in an LMS course site. We believe that persons who complete the MET program possess a credential that indicates their expertise in educational technology; for us, a robust, comprehensive understand of—and experience with—LMS functionality, is an expected competency.

Our rigidity in terms of platforms is not always initially well-received, A number of MET students come in with advance design and IT skills, while others possess more rudimentary ones. The former are sometimes unhappy about being unable to use their own websites, weblogs, or LMS servers (Moodle usually) for their work in ETEC 565A. However, those for whom confidence is the greatest barrier to learning new technologies find learning any of these technologies daunting—and are often intimidated by the polish of their design professional colleagues' work. By using one e-portfolio platform, and one of two LMS platforms, the design and functionality "playing field" is significantly leveled.

In requiring all assignments to be completed using UBC's own platforms (WebCT Vista, Moodle or WordPress), we also avoid another frequent complication in an applications course: tool failure. In previous courses in the university's Bachelor of Education program, students using external tools—most commonly self-maintained servers—often were unable to complete work in a timely manner--usually because of tool failure at their end, but sometimes due to over-estimation of one's ability to acquire the necessary skills in a self-directed manner. UBC's platforms are professionally maintained and backed up: when there is a disruption in service, the onus is on *us* to adjust student timelines or task requirements accordingly.

Summing up

In our first offering of ETEC 565A we have encountered a number of successes, challenges, and lessons learned. In terms of successes, we have clearly tapped into an area of significant demand within the MET. Rather than offering one 25 student section we were able to fill three—and still have a waiting list. We were, in fact, asked to run the course again in September 2009, but elected instead to use that semester for a substantive update of the course based on initial evaluation data. Overall student feedback has been very positive: most students seem to feel we strike a good balance between a challenging post-graduate course that is structured in a way that is manageable.

In terms of challenges, our parallel streams approach of activities within the course, with a similar workload of self-directed learning in the eLearning tool kit concomitant with the collaborative group learning in each unit, has been challenging for students—and the instructor—to at times manage: we are confident the upcoming revision of the course will address these concerns. As well, the course instructor was also a course co-author, lead instructional designer and project manager. Managing these multiple roles, particularly with regard to the approvals process for reviewing content, was too often confusing.

Lessons learned for the first revision include building in more structure to formalize the cohort nature of the course, particularly with more explicit small group work. In some summative assessment tasks for the e-portfolio, assessment rubrics were used—and very well received. We will use more of them going forward for all aspects of the e-portfolio. Finally, the size of the student population (over 70) in the first offering has limited the bandwidth available for intense formative assessment, even with teaching assistant support: future offerings will only be for a single class of no more than 25 students.

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