

The Making of an Online Masters Program in the North American Context

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Abstract. The department of Curriculum and Instruction at Iowa State University, USA offers a leading residential program of information communication technology (ICT) in teacher education. Based on the success of this program, in 2003, faculty members and instructional developers at Iowa State University Center for Technology in Learning and Teaching (<http://www.cflt.iastate.edu>) created an online masters program in “Curriculum and Instructional Technology.” This graduate degree program was designed for teachers of kindergarten to 12th grade (K-12) who were widely spread across the large mainly rural state of Iowa. This graduate program is described in this presentation as a distance education exemplary case in the context of North America. This program uses a cohort approach to graduate education and employs innovative technologies for its design and delivery. Program features, requirements, timeline, courses and outcomes are discussed.

Keywords: teacher education, learning management system, blended learning

1. Distance Education in U.S. Higher Education

Public universities in the United States need to rely on their strengths as they develop distance education programs. Reputation, recognized programs and experienced faculty members are some of the market advantage factors for public universities. However, there also have been a few failed attempts in creating distance education programs. As Foster and Carnevale explain [1],

“A few years ago, universities were dumping their online spinoffs like rotten fish. Temple University and New York University shut theirs in 2001. Two years later, Columbia University closed down Fathom, its once-vaunted online venture. The spinoffs were never able to attract enough students to justify the millions of dollars invested in them.”

In an effort to create and sustain successful distance education programs in the future, public universities have to: (a) leverage strong and well-established

programs, (b) train/use university professors to teach online, (c) focus upon full-time working students, and (d) recognize the need to develop high quality programs. The Iowa State University Online Masters of Education in Curriculum and Instructional Technology is described in this paper as a distance education exemplary case in the context of North America. This program uses a cohort approach to graduate education and employs innovative technologies for its design and delivery.

2. The Iowa State University Online Masters of Education in Curriculum and Instructional Technology

The department of Curriculum and Instruction at Iowa State University offers a leading residential program of information communication technology (ICT) in teacher education [2]. Based on the success of this program, in 2003 faculty members and instructional developers of Iowa State University Center for Technology in Learning and Teaching (<http://www.ctlt.iastate.edu>) created an online graduate program in “Curriculum and Instructional Technology”. This graduate degree program was designed to meet the needs of K-12 teachers who were widely spread across the large mainly rural state of Iowa. This state located in the heart of the United States has a rural population of 1,337,000 out of a total of 2,982,000. With a size of 56,275 square miles, Iowa’s economy relies on agriculture and farming activities especially corn, soybeans and hogs [3].

The Online Masters of Education in Curriculum and Instructional Technology (<http://ctlt.iastate.edu/~citmed/>) is a three-year program that consists of 32 credits and is offered in a learning community environment, supported by the learning management system WebCT. The program is organized around cohort groups. Each cohort group is created every two years, all students in one cohort take classes together, they form personal and professional relationships, and the size of the classes are limited to 15 to 20 students. Each course was planned to have between one to three meetings on campus to develop a strong cohort who would support one another to continue their degree to its completion. This graduate program started in August 2004 with an initial cohort of eight students. A second cohort of 14 students followed in 2006, and a third cohort of 17 students started in June 2008.

2.1 Admission Requirements

To ensure a high quality in the graduate program, the admission process is competitive and limited to the most qualified students. When applying to this graduate program, three types of information weigh heavily in the selection decision: academic performance (evaluated through undergraduate and graduate transcripts), letters of recommendation, and personal narratives/statements of intent. The latter lists the candidate’s goal(s) and/or purpose for pursuing an advanced degree, reasons for selecting Iowa State University, professional

background, special areas of interest in the field of education and long-term professional goals. The statement serves as an important indicator of the candidate ability to communicate effectively in writing.

2.2 Features of the Program

With a commitment to ensure that the online program is as strong (or stronger) as the traditional Masters program, the online courses are taught by full-time faculty in Curriculum and Instructional Technology. Having the full-time faculty teach the courses reinforces our strong commitment to quality. Furthermore, it affords the faculty the opportunity to know their students, both interpersonally and intellectually, in greater depth. This is essential for monitoring student growth and progress.

To create a supportive and collegial learning environment, students entering the program the same semester are grouped into cohorts. Cohorts have been used effectively in a wide variety of educational settings to foster learning [4]; cohorts are especially important for online students to quickly acclimate to being physically distant from their peers and instructors. Cohort grouping helps to develop and maintain group dynamics across individual classes throughout the program. But to prevent the phenomenon of “group think”, where everyone is so familiar with each other that new ideas and approaches are rarely introduced, explored, and accepted, 20-30% of students not in the cohort enroll in courses with the cohort students. That is to say, students who may be in the traditional face-to-face program or in other degree areas often enroll in courses with the online cohort students. This helps to keep new ideas and fresh perspectives flowing among the group.

The online Masters of Education program in Curriculum and Instructional Technology uses a blended instructional approach where 85% of the instruction is online and 15% is face to face. Generally, online Masters students enroll in one course per semester (completing the degree in 3 years.) Each course begins with a face-to-face meeting (some courses have an additional face-to-face meeting during the semester). When feasible, students travel to the university. Those who cannot travel, participate via internet conferencing (e.g. Skype). The face-to-face meeting allows for students and instructors to see each other and get to know one another in a non-mediated forum. In these initial meetings participants review course expectations, receive essential instruction (best provided face-to-face) and observe and use the classroom and technology laboratory facilities of the Iowa State University Center for Technology in Learning and Teaching. We believe that the face-to-face meetings assist students and instructors in better knowing who they are working with online. Furthermore, meeting on campus, affirms for the online students the level of technology capacity, expertise, and commitment of the university.

Strong technical support for students at a distance is essential to the success of an online graduate program. In our program, technical support is provided by the instructional developer, who assists students in resolving technical problems,

assists faculty in the design of online course materials, and serves as a communication liaison between faculty and students. Centralizing technical support for both students and instructors, decreases miscommunication and heightens program fluency.

The online Masters of Education in Curriculum and Instructional Technology is practitioner-focused in that its aim is to prepare students to couple contemporary pedagogical thinking and cutting-edge technologies for use in K-12 learning environments. Because students and instructors are physically apart, innovative and non-conventional learning experiences are used.

2.3 Timeline

Program timeline is detailed on Table 1.

Table 4. Program timeline

Year	Summer	Fall	Spring
1	Instructional Technology Seminar (1credit) Foundations of Instructional Technology (3credits)	Introduction to Using Technology in Learning and Teaching (3credits)	C I 507 - Principles and Practices of Distance Education (3credits)
2	Contemporary Curriculum Theory and Principles (3credits)	Theories of Designing Effective Learning and Teaching Environments (3credits)	C I 515 - Action Research in Education (3credits)
3	Technology Diffusion, Leadership and Change (3credits)	History of American Education (3credits)	C I 599B - Research Development Project (4credits)
Additional course work (3 credits) can be taken any time, preferably after the first year.			
Total Credits: 32			

3. Courses Offered

Curriculum and Instructional Technology full-time faculty members teach the courses offered in the program. In these courses, students examine emerging technology tools and their potential contributions to the learning environments in which the students teach. Course work emphasizes the integration of technologies into the teaching and learning process, and provides an exploratory focus where students develop and test learning experiences that incorporate cutting-edge technologies such as blogging, podcasting, digital storytelling, and social networking applications. A brief discussion of most of the courses is offered below.

3.1 Introduction to Using Technology in Learning and Teaching

The purpose of this course is to help students with both the why and the how of using technology in classrooms. The course content is firmly rooted in learning theory, and *How People Learn*, edited by John Bransford and his colleagues [5], is one of the textbooks for the class. One of the major themes of the course is applying contemporary principles of human learning to creating classroom technology applications.

A second and related major theme of the course is the exploration of Web 2.0 applications in the classroom. Will Richardson's book, *Blogs, Wikis and Podcasts* [6] is a second text used in the course.

The course is carefully structured with a weekly schedule of readings, assignments, and resources on the course learning system management, WebCT. Each week, Dr. Thompson records a short video that summarizes the topics and assignments for that week. Students begin each week watching the video and have an opportunity to define and address any questions they have about the week's activities at that time.

A variety of approaches to encouraging student/instructor interactions is used in the course. Additionally, Dr. Thompson maintains a blog (<http://ci505fall2008.blogspot.com/>) and encourages student comments on the blog. Dr. Thompson also has weekly online office hours so that students have an opportunity to interact synchronously. In addition, there are structured course discussions each week and both the students and instructor make extensive use of email messages. Student discussions are active throughout this class. The average student posted more than three messages each week and was online 1.2 times each day. In discussions, students relate course material to their professional lives and provide a rich set of examples and experiences.

Students complete weekly assignments that involve designing classroom lessons using various types of technology. As a final project for the course, students write a journal article that describes a technology application in their subject/grade area and prepare to submit this article to a journal for teachers/practitioners.

3.2 Contemporary Curriculum Theory and Principles

The online version of *Contemporary Curriculum Theory and Principles* was modeled after the on-campus course, which is required in the Curriculum & Instruction Ph.D. core and an option in the required core of all Curriculum & Instruction masters degrees. This course comes relatively early in the sequence for cohort students and serves in providing a theoretical base for the critical examination of U.S. educational systems and policies that impact the curricula and pedagogies prevalent in public schooling. As such, the course requires the use of critical theory as the analytical tool for this exploration and examination of K-12 schooling. In order to facilitate the learning and in-depth understanding of the views, perspectives, and writings of critical theorists, which many beginning and advanced students find challenging, this on-line version of the course employs

extensive use of discussion groups and student discussion leadership. In addition, using PowerPoint with audio tracks, the course instructor, Dr. Leigh provides direct instruction through mini-lectures (5-10 minutes) on important and complex terms and constructs.

Reflective paper assignments require that students choose salient ideas, views, and perspectives found in all of the weekly readings for their written analysis. In these papers, students react and respond to the main ideas chosen for analysis, connect their written discussion to previous readings and online-discussions, and, when possible, connect the reading material to their personal experiences. For the final exam/project, students can choose to respond to a 'take-home' paper exam or design and complete a final paper or project that reflects their learning. Dr. Leigh believes that these pedagogical approaches, which are also reflected in her traditional on-campus graduate courses, have proven effective in the on-line environment.

3.3 Theories of Designing Effective Learning and Teaching Environments

Dr. Correia's teaching philosophy and approach to the course emphasized two core types of activities – (a): working in real-world situations. People learn better when they are actively engaged in learning tasks that are directly related to their needs and interests. Most of the learning in this course occurred within the context of projects and situations similar to those that students were experiencing or would be likely to encounter in real-world contexts. And (b): working as a team member. In addition to introducing models and theories of instructional design, this course provided students with concepts, tools, and techniques to help them to work productively as a member of a design team. The course required that students be active members of their design teams as well as of the e-learning community formed by all of the participants in the course.

As the course instructor, Dr. Correia also wanted to work in partnership with her students. By constantly eliciting student input on course activities as they develop, instructors can tailor activities so that they truly meet learner expectations and inspire learner interest. One way to encourage students to work with real projects was to strongly support making their course project relevant to their current professional activity. This way they would feel that they were accomplishing more than a mere class project. Working in virtual teams is a growing demand in today's workplace and this course offered plenty of opportunities to practice that skill. Since most of the students were full-time professionals, they related to that need and embraced the opportunity.

The main learning activity for the course required students to work in a design team to develop an instructional experience that taught a specific topic to a particular audience [7]. Teams were encouraged to create an experience that either addressed a social need or connected in some way to their community, preferably targeting an underprivileged or underrepresented audience. In addition to the topic to be taught, teams were responsible for identifying the target audience (the

learners) and a real-world context (the situation in which the learning would occur).

The skills necessary to carry out such a project included not only knowledge of instructional design models, processes, and techniques, but also competence in applying this knowledge to novel situations and the ability to work as part of a virtual design team. Students had to manage their projects to meet aggressive deadlines while figuring out the best ways to manage their teams, which mainly operated at a distance.

3.4 Action Research in Education

Action Research in Education examines the design of classroom-based educational research for practicing teachers. Action research is a specific process for problem solving, verification, and discovery. The course provides students with the knowledge and skills to use action research as a teaching and problem solving methodology in the classroom. Methods of conducting and communicating action research are introduced by Dr. Schmidt and used with the goal of improving teaching and learning. The course main objectives are: (a) investigate and improve teaching practice, (b) conduct research so effective decisions about (one's own) teaching will be made, (c) combine current research and theory on related areas to come to new and valid conclusions, (d) plan an action research project; gather data to analyze and make conclusions, and (e) identify types of data collection and analysis methods common to action research.

Textbooks used in class are Mills' book on *Action research: A guide for the teacher researcher* [8] and Sagor's book *Guiding school improvement with action research* [9]. Students are involved in a main project - "Practice" Action Research Project—which consists on conducting and using a literature review and knowledge gained in class to design an action research project. This project is an abbreviated task so that students can complete the necessary steps during a 14-week semester. In a research context, students collect data, analyze the data and report the results. Along with a written report, students prepare a brief presentation to share with course members.

3.5 Technology Diffusion, Leadership and Change

The purpose of the *Technology Diffusion, Leadership and Change* course is to explore ways that information age technologies (broadly defined to include computers and related devices, as well as the Internet and other web-based tools and applications) have been integrated into schooling contexts. Dr. Niederhauser begins by exploring Everett Rogers' general model [10] that addresses how innovations are diffused and adopted. Rogers' work provides insights into ways that innovative ideas, practices, and tools are adopted (or not adopted) by a group or culture. Rogers stresses the role that individuals within the group, and outsiders who are promoting the innovation, can play in influencing group members to more readily adopt the innovation.

We then focus our attention more directly on how educational change occurs. Michael Fullan's *New Meaning of Educational Change* [11] provides insights into the unique issues associated with educational change and provides a model for promoting change as a social process. Finally, we will look at an example of how a particular innovation (use of computers) diffused into educational settings. Larry Cuban published *Oversold and Underused: Computers in the Classroom* [12] eight years ago and his lessons are still relevant.

Studying these three informative perspectives helps students better understand how technology integration is occurring in their personal contexts, and helps them consider ways to provide leadership to help make the integration process more efficient and effective.

4. What do students say?

A very strong and significant learning community is formed as students go through the program. The faculty-student as well as student-student interactions are well established and seem to form lasting personal and professional relationships. One of the students who started the program in June 2008 wrote in Dr. Thompson's class blog: "I have found this to be much more engaging and meaningful than meeting in person in most of my undergrad courses. I really like being able to participate in a discussion, but having the time to really think through things before 'opening' my mouth, so to speak. Also, there is almost more accountability with a course like this than with a traditional course." Another student from the same group posted: "I too like the format of this course. I am taking another 'distance education' course in economics and there aren't any discussions and about the only interactions with the professor is when she gives small housekeeping updates for the course. I really like the format of our courses, MUCH easier."

Students also commented on the amount of learning that takes place during the courses. The extensive research based on reading is directly connected with the technology-based activities that students explore and can be immediately applied to their own classrooms. A student from the 2006 cohort group wrote in her course evaluation: "I was surprised to find that I am learning a lot more in distance education classes than I would likely be learning in traditional courses, I am proud of the work that I am doing and feel I will be ready for new career challenge when I earn my degree." The opportunity to apply the skills as students go through the program is also acknowledged by another 2008 cohort student: "Like I said at office hours last night, there are all sorts of things I have been able to use from this course already. I thank you [the instructor] and the group for really motivating me to think outside the box a bit, and use technologies that I, personally, have been using for quite a while."

Finally, students appreciate the flexible schedule and the quality of degree they are earning. A quote from a student from 2004 cohort exemplifies that: "I have enjoyed my experiences with the cohort through Iowa State immensely. I am confident that I am earning a degree that will enhance my abilities as an educator,

and that I have a great deal of respect for. This program and the flexibility of its scheduling is the only way I could have gone back to school, and I am grateful for the wonderful experiences it has afforded me.”

5. Conclusions

The Online Masters of Education in Curriculum and Instructional Technology, described in this paper, resulted from making a high-quality, pedagogically sound, traditional on-campus program accessible online and to students at a distance. The theoretical underpinnings and pedagogical strategies and methods survived the transitions from face-to-face classrooms to Web-based learning environments and the use of other ICT tools. Members of the teaching faculty espouse various educational philosophies and learning theories that support student-centered approaches and are, thus, able to maintain high levels of student engagement. Student engagement and interaction was also supported by the supportive and active learning community formed with each cohort group. Students and faculty both report that such engagement contributed to student retention and success as well as instructors’ growth as educators.

The overall successes of educational programs are often measured by student retention and graduation rates. This online masters program had a 88% persistence and graduation rate for its first cohort of students beginning in 2004, with 7 of the 8 students remaining in the program until the completion of all coursework and successfully graduating with a Masters of Education degree. The second cohort of students, who began in 2006, had a 92% persistence and graduation rate with 12 of the 13 students completing all coursework and graduating this past Spring 2009 semester. Based upon these statistics and the testimonies of both faculty and students, we view this online program as successful and we aim to continue this tradition with the upcoming student-cohorts.

References

1. Foster, A., Carnevale, D.: Distance education goes public. *Chronicle of Higher Education*, Vol. 53, p. A49 (2007).
2. Davis N.E.: Technology and teacher education in the USA: What makes for good sustainable practice? *Technology, Pedagogy and Learning*, Vol. 12, pp. 59-84 (2003).
3. U.S. Department of Agriculture, Economic Research Service, <http://www.ers.usda.gov/>
4. Barnett, B., Muse, I.: Cohort groups in educational administration: Promises and challenges. *Journal of School Leadership*, Vol. 3, pp. 400-415 (1993).
5. Bransford, J., Brown, A., Cocking, R., Eds.: *How people learn: Brain, mind, experience, and school*. National Academy Press, Washington (1999).
6. Richardson, W.: *Blogs, Wikis, Podcasts, and Other Powerful Web Tools for Classrooms*. Corwin Press, Thousands Oaks, CA (2006).

7. Correia, A-P.: Moving from theory to real-world experiences in an e-learning community. *Innovate*, Vol. 4. (Available), <http://www.innovateonline.info/index.php?view=article&id=495> (2008).
8. Mills, G.: *Action research: A guide for the teacher researcher*, 3rd Ed. Merrill Prentice Hall, Upper Saddle River, NJ (2007).
9. Sagor, R.: *Guiding school improvement with action research*. Association for Supervision and Curriculum Development, Alexandria, VA (2000).
10. Rogers, E. *Diffusion of innovations*, 5th Ed. The Free Press, New York (1995).
11. Fullan, M.: *New meaning of educational change*, 4th Ed. Teachers College Press, New York (2007).
12. Cuban, L.: *Oversold and underused: Computers in the classroom*. Harvard University Press, Cambridge, MA (2001).