

To Teach How Or To Teach With: Four University's Approaches To Technology Integration For Teacher Preparation

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Abstract: A recent ISTE report provides persuasive evidence explaining the shortcomings of older models of technology education in preparing tomorrow's teachers. New methods and models are needed to successfully prepare teachers to integrate technology in the classroom. The purpose of this interactive panel session is to highlight the models followed by four Colleges of Education at varying stages of the integration process. The Universities represented are: University of Illinois at Chicago, University of Nevada at Las Vegas, Utah State University, and the University of Connecticut.

The rapid influx of hardware and software into public and private school systems has placed sharp demands on teachers to know how to use and how to teach with technology. Yet, year after year, Colleges of Education (COEs) are sending new teachers out under-prepared for this task. As such, COEs are being challenged to re-examine the methods that they use to infuse technology into teacher preparation curricula to provide more information and practice for tomorrow's teachers before they enter the classroom. This is a particularly burning issue for those colleges wishing to maintain their NCATE certification.

The traditional model for technology education centers on a single technology competency course or multiple competency modules. A recent research study put out by the International Society for Technology in Education (ISTE) (Moursund & Bielefeldt, 1999) examined this model of technology integration and found it inadequate. The report clearly states no correlation between formal instructional technology courses and instructional technology utilization by K-12 classroom teachers. Instead the report supports the notion that infusion of technology throughout the entire teacher preparation is the key to classroom technology integration. As such, COEs are scrambling to find space and expertise among classes and faculty to facilitate the transition.

While all COEs are different in some respects regarding technology integration, some types of planning for technology are common across institutions. Technology planning includes equipment acquisition and maintenance as well as professional development activities that guide the integration of technology into teaching and learning. While COE technology plans run the gamut from formal to informal, the same key issues must be addressed by each university planning for the integration of technology into teacher education programs. These issues include but are not limited to:

- **Type of Coursework:** Coursework issues include how to accommodate for core competencies, modeling problem solving and critical thinking using technology, mediating learning/teaching through technology.
- **Technology Teaching Responsibility:** Whose responsibility is it to teach with/about technology? As we ask such questions, we become forced to address a serious issue: Are we asking methods teachers to introduce applications or technology teachers to teach methods?
- **University support:** For technology integration to occur, university support structures must exist. Administration and faculty in colleges of education must collaborate in order to identify and nurture administrative support and commitment to faculty and facilities.
- **Faculty Support:** This issue includes providing faculty with technical support, professional development and compensation for the added workload that they can incur through the technology integration process.
- **Student Support:** Students must also be supported as they use technology in course projects as well as within their practicum experiences.
- **In-service/professional development:** As graduates enter the workforce, the technology support that they received as students must be maintained.

While the ISTE report (1999) provides persuasive evidence explaining the shortcomings of older models of technology education in preparing tomorrow's teachers, the report fails to give guidance to colleges of education on methods or models that will lead to increased integration of technology in the classroom. Instead the report advocates that educators share and disseminate their successful models and lessons they have learned along the way. The purpose of this interactive panel session is to highlight the models followed by four Colleges of Education at varying stages of the integration process. The Universities represented are: University of Illinois at Chicago, University of Nevada at Las Vegas, Utah State University, and the University of Connecticut.

University of Nevada, Las Vegas

Neal Strudler, Department of Curriculum and Instruction

Project THREAD (Technology: Helping Restructure Educational Access and Delivery) was funded by the U.S. Office of Education's Preparing Tomorrow's Teachers to Use Technology grant program for Fall 1999. It was designed to build upon and expand the work done in previous years through the integration of technology into teacher education courses and field experiences for preservice teachers (Handler and Strudler, 1997; Strudler, Handler and Falba, 1998). The consortium for this project includes UNLV's College of Education (COE) and the Clark County School District (CCSD). In addition, it involves a new collaboration among various entities at UNLV, the project's lead organization, and a continuing collaboration with a K-8 private school, St. Viator's. The consortium's overarching goal is to build the capacity of individuals and institutional structures to support the infusion of technology throughout UNLV's teacher preparation program. This is being done through: (a) a series of inservice workshops for university faculty, administrators, field supervisors and mentor teachers; (b) one-on-one follow-up support provided by project staff and advanced undergraduate students; (c) a "mini-grant" program in collaboration with the UNLV's Teaching and Learning Center to support the development of technology-based modules for teacher education courses; and (d) expanded opportunities for students to apply technology in their courses and field experiences.

Project THREAD staff have been working with COE faculty to plan for the integration of technology based on the ISTE/NCATE foundation standards for preservice teachers. A critical component of those standards involves the application of technology in practice and student teaching. The project is addressing this need by beginning to implement a system in which students can request technology-rich field placements. In addition an advanced undergraduate educational technology course will be created to include a field placement with exemplary technology-using mentor teachers.

While Project THREAD's main focus is on professional development, it has enhanced the COE's technology resources via: (a) the purchase of a mobile laboratory of laptop computers for use in courses; (b) the development of an online version of our undergraduate educational computing survey classes; and (c) the availability of CD-ROM based software for checkout for students and faculty.

Overall, Project THREAD is attempting to weave together a mixture of new and existing learning opportunities to prepare preservice teachers for tomorrow's technology-rich classrooms. It seeks to move from "pockets" of

technology integration toward widespread infusion in all aspects of our teacher preparation program. While the proposed initiatives are designed to be carried out within the one-year time frame of the grant, the interventions described mark beginning efforts in what we plan to expand via a further infusion of resources.

University of Illinois at Chicago

Kim Lawless, Department of Curriculum and Instruction

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In addition to NCATE/ISTE Standards for Technology Competencies, the Board of Education in the State of Illinois has developed additional guidelines for teacher certification programs in the state. These guidelines focus on in context technology application that move beyond technical skill to classroom integration. Challenges presented to UIC were great and included minimal technology infrastructure. Efforts to infuse technology into the education curriculum had to start from scratch.

Initial efforts focused upon the development of a framework that served as a guide for the infusion of technology within teacher certification programs, the acquisition of equipment and professional development. This model was created specifically to accommodate the set sequence of activities that all teacher candidates experience as a part of their program of study. Therefore, it places minimal additional burdens on students, faculty and technology staff.

Since most certification programs at UIC are two year sequences technology integration occurs across four semesters, the students junior and senior years. The model is as follows:

- A. **Mandatory general competencies:** General competencies include such applications as e-mail, file systems, etc. This could be a course for as many as three credits or a series of competencies that must be met by all COE students prior to entry into the Junior year of coursework.
- B. **Content/domain specific software integrated (Junior and Senior Years):** The methods teachers, facilitated by the technology faculty would model in context use of technology and subject related software applications. This would illustrate a sampling of what technologies are available within specific domains as well as demonstrate appropriate uses of technology.
- C. **Culminating experiences (First Semester Senior Year):** Students develop and build a portfolio highlighting technology applications. For example, they can develop webpages, multimedia modules, or webquests. These applications become a part of a portfolio.
- D. **Classroom integration project (Second Semester Senior Year):** Students take what they have learned and develop a classroom based project in which technology is seamlessly integrated. They will run this project with their students through their practicum experience.

University of Connecticut

Scott W. Brown, Department of Educational Psychology

The University of Connecticut' Neag School of Education is taking an integrative approach to addressing the standards and guidelines proposed by NCATE/ISTE and the Connecticut State Department of Education as we prepare teachers for the 21st century and provide professional development for inservice educators. The multiple guidelines and standards within an extremely dynamic field have led us to take a dynamic approach to address this challenge.

In addition to the national standards, the Governor of Connecticut has declared that all children will be technology competent by the sixth-grade in the year 2004. He further delineated a three-tier progression through which he expects Connecticut teachers to pass through, reaching the highest level of proficiency, also by 2004. At UConn we are involved in the training of future teachers and the development of inservice training and assessment for Connecticut's current educators. To this end, the United Technologies Corporation has awarded a significant contract to the Neag School of Education to develop training for inservice teachers, develop an opportunity for an on-site MA program in Instructional Media and Technology, and to develop an assessment system for measuring the success of this project. The UTC project specifically focuses on the Hartford Public Schools. Additionally, the new superintendent of schools for Hartford has started "the lap top program" in which 400 laptops were distributed to

selected 9th grade classes across the city. Many of our students will be working with these classes in their practicum and internship activities.

The assessment component of the UTC project involves three levels of the educational technology use. The first level is skill-based but the later two levels employ a problem-based format and portfolio format respectively. Our current students are involved in the development, field-testing and implementation of the assessment protocols. This has been an opportunity to integrate our students in a real problem involving educational technology.

The Teacher Preparation Program at UConn is a five-year program within which students are admitted to the Neag School as juniors and graduate with a B.A. at the end of four years and an MA at the end of five years. Prior to being admitted to the Neag School, juniors will have completed general education requirements, which include a limited number of technology, related courses, designated as C courses. Therefore, as juniors they take an educational technology course in the fall, but this course is integrated across several other courses during the fall semester: two courses in learning, a course in special education, and a seminar that is designed to specifically link the activities that students engage in will in their clinical placements with the course content presented in the above stated courses. These activities are specifically designed to emphasize the education in educational technology. Students engage in activities and projects that focus on the educational impact of technology across the content of the fall courses and provides the basis for further integration across the remainder of their program. As juniors, seniors and MA students, they continue to integrate their educational activities and experiences in a technology rich environment. Our courses and programs stress the integration of education and technology to solve problems and address the challenges and issues of providing the optimal educational environment for all students.

In order to achieve our goals, we have instituted professional development for all Neag faculty and staff involved in teacher preparation, we have raised the expectations of integration of educational technology in our own educational activities, and we have formed a school-wide advisory committee to develop the support structures necessary to meet our goals and provided them a funding basis to reach these goals. We have initiated an electronic portfolio process for our MA students in which their materials will be pressed on a CD for review by a faculty committee and also used to demonstrate proficiency as a teacher and as a proficient user of educational technology. The portfolio system is modeled after the national and State standards. Current plans include the expansion of the professional development to all Neag faculty and staff.

Utah State University

Steve Soulier, Department of Instructional Technology

The Department of Instructional Technology at Utah State University has been recognized as a leader in the field of instructional design for over 25 years. More recently however, the department has had to adopt a new mission, that of facilitating the use of technology in teaching throughout the College of Education. This has not been an easy task, but changing state and national technology initiatives have made it a must.

In an effort to prepare outstanding teachers to use technology in mostly rural setting, the department has faced many logistical problems. Time and location constraints have made the delivery of instruction to many willing students difficult at best. As such, USU had to move to a distance-based model of teacher/technology training. Full distance education programs in educational technology and media endorsements were implemented in the fall of 1996. The programs are a mix of two-way interactive video, satellite broadcast and web delivery systems. Students meet in cohort groups around the state weekly to work on class projects and receive instruction.

The first cohort group within these programs has now graduated and students are now working throughout the state in technology related teaching positions. While the program can certainly be considered a success, a number of lessons were learned from the first technology cohort. First, the lack of standard equipment at the various sites made some of the more technical coursework difficult at best. Future cohorts will need to purchase personal equipment at program onset. Additionally, management over a number of the sites through the Internet proved challenging with server failures and lack of student support at the sites. These concerns and others will be discussed as part of the presentation.

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