

PREPARING TEACHERS FOR THE PRESENT AND THE FUTURE

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INTRODUCTION

This article describes some of the efforts undertaken at a small liberal arts university with a long history of teacher preparation to evolve at all levels, from structural (becoming a department in a new School, formerly a program in a Division) to strategic (e.g., hiring new faculty, creating new MA programs), and tactical (e.g., increasing the availability of technology within the department). Three options, labeled Mobility, Real World, and Virtual, have been explored in some depth. A greater availability of technology and concurrent pedagogical changes are expected to position the department and its programs in a favorable situation, to succeed as it faces some foreseeable challenges and others that inevitably will crop up unexpectedly.

THE RECENT PAST

The Department of Education at SCU is in its third year of operations (starting in 2000) under that name, although the university had operated a teacher preparation program under a Division of the College of Arts and Sciences for over twenty years. Only in 2003 was a new School of Education, Counseling Psychology and Pastoral Ministries created to split the three departments from the College, and a new Dean has been appointed.

As a department, three new faculty have been added, the teacher preparation program has been revised to conform to new state guidelines (it did conform to the old ones), new Masters programs have been created, and significant changes in policies and procedures have been implemented or are in process.

The author joined the faculty in 2001 to focus on educational technology in the teacher preparation program and to direct a new MA emphasis in “Teaching and Learning with Technology.” At that time the department did not have any of its own technology resources: no computer lab, no software of particular use to future teachers (e.g., educational titles focused on

subject matter areas like math or language arts), and a very limited history of technology integration in any of the courses in the teacher preparation sequence. In addition, the department faces serious constraints in facilities, since the university has limited classroom space and no short-term prospects for new buildings that could alleviate these problems.

Partly in response to the present challenges, and partly as a strategy to address long-term goals and needs, three different though complementary technological and pedagogical options are being implemented. We call these options “Mobility,” “Real World,” and “Virtual.”

THE MOBILITY OPTION

Towards the end of the 2001-2002 academic year, the department obtained an internal grant to purchase a mobile laptop computer cart. Equipped with 16 laptops, all capable of wireless connectivity, a wireless access point, and a laser printer, the cart gave Education faculty the option of turning any existing classroom into a technology-equipped “lab,” with no additional investments required from either the University (which already had all classrooms wired with Ethernet ports) or the department. The positive impact on the teacher preparation program was felt immediately in the only course in the sequence (“Instructional Technology for Teachers”) focused on technology integration, and has had small but noticeable benefits in other courses (including the Methods courses) where access to the laptops, software, and the Internet improves the teaching and learning experience. For example, in a Math Methods course the instructor was able to have the students use a CD-ROM with case studies that helped preservice students who had no access to field settings see how special needs children could benefit from differentiated instruction (De La Paz, Hernández-Ramos, and Barron, forthcoming). In Language Arts and Reading courses, instructors have identified websites for the students to explore and study as sources of information and reference. And in the “Instructional Technology for Teachers”

course, students were able to learn software applications that will help them with their communications, personal productivity, teaching preparation, and learning needs. Other activities included time to explore rich resource websites like the Library of Congress (www.loc.gov) and international collaboration projects like the Global Schoolhouse (www.globalschoolnet.org), among others.

THE REAL WORLD OPTION

For future K-12 teachers, learning about technology integration in a university classroom is a major exercise of the imagination. Most of them have spent very little time in classrooms, and even as they begin to experience classrooms on a daily basis as part of their teacher preparation experience, the vast majority of them report *not* seeing practicing teachers integrate technology in any meaningful way—if they use it at all, even for personal productivity at school.

In the summer of 2002, and again in summer 2003, a decision was made (Hernández-Ramos and Giancarlo, 2003) to move the “Instructional Technology for Teachers” course from the university classroom out to “the real world:” a local technology-rich elementary school with a Teacher Development Center (TDC) located on its premises. After working out the agreements with the district and the school, two sections of the course were delivered as intensive one-week workshops that ran for 6 hours each day (compared to two hours once a week for ten weeks).

Location is a factor in learning that educational institutions sometimes conveniently ignore. It is easier for students to congregate in a “place of learning” (e.g., school, university) and expect them to acquire knowledge, facts, information, attitudes, and skills that they should later be able to apply in the so-called “real world” outside. When the expectations fail, education institutions tend to place the responsibility with the students (it is they who “fail” to “apply what they learned”) rather than critically examine the process itself. Herrington and Oliver (1999)

compiled a list of “nine characteristics of a situated learning framework, namely: an authentic context; complex authentic activities; multiple perspectives; expert performances; coaching and scaffolding; opportunities for collaboration, reflection and articulation, and authentic assessment” (p.402). Our course design aimed to meet all these criteria.

Situating the course at the elementary school and TDC was possible because the school had adequate technology available for staff development purposes. Also, most or all of the teachers at that school are “master” technology-using teachers. By allowing the Interns and pre-service student teachers to visit on-site classrooms and observe these teachers in their daily practice, these master teachers served as role models that, in the best case, made it easy for student teachers to convince themselves that they, too, could teach with technology. These ideas were further addressed in scheduled conversations during the workshop week, where master teachers and the school principal (a former teacher at the same school) shared their personal and professional stories.

Co-teaching was modeled in this course by the two university faculty and site coordinator leading it. Teaching is usually a profession where individuals do not collaborate on a regular basis. Multiple reports (e.g., Dwyer, Ringstaff, & Haymore Sandholtz, 1990) and other research argue for increased collaborations among K-12 teachers (e.g., Fontaine, 2000), and yet few teacher preparation institutions are actively addressing this goal in their curricula and in the practices of their faculties. If it is true that “teachers teach the way they were taught,” modeling co-teaching in this course will likely encourage future teachers to work collaboratively when their time comes.

For pre-service students, the time lag between exposure and practice, the difference in context of instruction versus context of practice, and the perceived relevance of what’s learned in

the university classroom versus what will be needed in the “real” classroom are among the most salient (cf. Milken Exchange on Education Technology, 1999). In this course experience we aimed to address several of the shortcomings at once. The overarching goal for this course—and for our program in general—is to improve on the fact that “only 20 percent of teachers feel well prepared to integrate education technology into classroom instruction” (CEO Forum on Educational Technology, 1999, p. 10).

For pre-service students in particular, having the class in a school with adequate facilities, led by faculty who model effective use of technology, being able to observe teachers who can serve as good models, learning computer applications with clear connections to practice (and time to explore them on their own), seeing elementary students relate to technology with ease and confidence, and working on a meaningful project for later use in their own classroom form a set of critical conditions. We are the first to acknowledge that the short time of this experience (five days) is not enough to convert students into full-fledged, sophisticated, technology-using teachers. Longer sessions (e.g., summer institutes lasting three to five weeks) and ongoing support increase the comfort levels, proficiency, and likelihood of sustained use of technology (Ringstaff, Yocam, & Marsh, 1996; Sandholtz, Ringstaff, and Dwyer, 1997).

THE VIRTUAL OPTION

One advantage of the quarter-long course framework is that it allows some activities that are not practical in a week-long, intensive workshop setting. In the Spring of 2003 the “Instructional Technology for Teachers” course was offered on campus, one day a week, two hours each session, for ten weeks. Course activities for the 56 enrolled students (split into two sections) included creation of a web log (“blog”) using the free version of Blogger.com and to email the instructor with the resulting URL. The assessment rubric for the course specified that

to gain full credit for this component students had to do “10 or more postings 1-paragraph or larger” during the quarter in their blogs, starting in week three (out of 10), on the broad subject of “teaching, learning, and technology.” The rubric also specified that students had to join in an online discussion board (within the university’s Prometheus course management system), which was available only to people participating in the course (each section had its own online discussion area). The instructor posed three discussion questions during the quarter, and the rubric asked for “timely and insightful” participation.

The lack of a “voice” in daily professional practice is just one of many issues confronting teachers, and a factor in the usually low job satisfaction ratings contributing to the very high proportion (almost 50 percent) of new teachers who will abandon the profession within the first five years of practice (e.g., NBC17.com News, 2002). Part of the challenge for a teacher preparation program is how to inculcate in graduates a greater sense of the importance of their profession, how to see themselves as producers of information and knowledge, and not “just as teachers” who are solely in a transmission role. More significantly, teacher preparation programs must encourage our students (future teachers) to claim their professional voice and the means to be heard. The possibility that technology can be a factor to address these problems and meet these goals is evident, for example, in the National Educational Technology Standards (ISTE, 2002, p. 306) that include under the category of “Productivity and Professional Practice” the following goals:

“Teachers use technology to enhance their productivity and professional practice. Teachers

- Use technology resources to engage in ongoing professional development and lifelong learning.

- Continually evaluate and reflect on professional practice to make informed decisions regarding the use of technology in support of student learning.
- Apply technology to increase productivity.
- Use technology to communicate and collaborate with peers, parents, and the larger community in order to nurture student learning.”

Our teacher preparation program in particular places a great emphasis on reflective practice and social justice issues, so providing meaningful mechanisms for students to engage in active reflection with a reference to larger social issues are key goals. Many courses in our program require students to maintain a journal, so the use of blogs and online discussions was consistent with past practices, supported the ISTE standards for teachers, and introduced technology-based tools in a meaningful way (Jonassen, Peck, and Wilson, 1999, pp. 218-219). Given these two vehicles for self-expression and reflection, students had the opportunity to consider the differences between a “public” venue addressing an unknown audience (the blogs) and a more “private” option where all participants were known to each other. A complementary goal was to encourage students to see both blogs and discussion forums as valid and effective tools for professional development and lifelong learning.

For the online discussion forums, the three topics launched by the instructor elaborated on ideas and issues addressed in the readings and during class sessions. They were separated by about a three-week period each, giving adequate time for the students to post their initial reply and then come back to reply to a peer’s posting. The first discussion, posted on the third week of the quarter, read as follows: “Read the story titled “Browser revolution–10 years after” available both as a PDF file in Prometheus and ERes [the university’s electronic reserve system] and on

the web at: <http://zdnet.com.com/21001104-996652.html>. [If you read it online, check the discussion forum at the end of the story.] After reading the story, respond to these two questions: 1) Do you see any impact of the Internet in the schools you know? Where? How? 2) How would your life, both personally as a current or future teacher, be different if you didn't have access to the Internet and to the we in particular?" The second discussion, posted at the end of the fifth week, was: "What do you think? The use of productivity applications as learning tools... (Example: Producing a classroom newsletter with your students using a word processor)." The third and final discussion was launched at the beginning of the ninth week and asked: "What is an online learning community? Can we learn from our professional peers through online interactions? Are there some topics or skills that are better suited to the online medium? What would motivate you to become an active participant in an online learning community?"

There were two key ideas behind the use of blogs and discussion forums for their online reflection. The first is that the "conversations" implied in the personal journal are expanded beyond the intrapersonal (the student with her/himself) and dyadic (student/instructor) to include—in the case of blogs—a potentially large and unanticipated audience. Feelings of ambivalence and even anxiety crop up. One student wrote, "I'm definitely not into the blogging thing yet. It feels very weird to me to be writing for an unknown audience, and at the same time it is not private." The second goal relates to the fact that this and other students have trouble seeing themselves as active creators of knowledge, or at least, as budding professionals whose ideas are worthy of consideration by others. For example, one student wrote: "I feel like I am adding to the useless information out on the web. There are different tools, like Prometheus [the online discussion forum environment], that I think I would use." By making their reflections public via blogs and visible to their peers in the discussion forums, students are contributing to

the general social discourse and their audience is no longer only the instructor. From a pedagogical perspective, the expectation is that the quality of what is written and published on the blogs and discussion forums will be of higher quality, an insight corroborated by experience and some research (Norton and Wiburg, 2003). Furthermore, by becoming comfortable with the idea of publishing their writing either to the world or to an online community, there are reasons to hope that these future teachers will be motivated to engage their own students in projects such as online newspapers or websites that will also make visible the students' work (e.g., Serim and Koch, 1996, pp. 239-241).

The use of blogs and online discussion forums in the same course fulfilled several pedagogical and learning goals. At one level, the experience was designed to increase awareness in the students about differences in electronic communication tools and environments. At another level, one goal was to help students develop of a sense of themselves as creators of knowledge, rather than just consumers of information, and to see themselves as meaningful contributors to professional dialogues. At yet another level, their participation in the course's online community (the discussion forum) suggested the idea that their student peers could be seen as valuable sources of information and ideas, a connection that ideally they will carry past their graduation date.

Moving Toward Electronic Portfolios

Increasing the availability of technology resources for Education students is part of a larger strategy to allow the department to change and adapt to important trends in the field, and to meet demands from the state agencies overseeing teacher preparation institutions. Grant funds were obtained from a private foundation to create an "Electronic Portfolio Laboratory" for the Department of Education, equipped with top-of-the-line computers, scanners, digital video and

photo cameras, an extensive software library, and a high-end server to support (among other services) ample storage space for students as they begin to build electronic portfolios containing a variety of digital (or digitized) products as an integral part of their teacher preparation experience.

Teachers are increasingly being encouraged to record, evaluate, and present information electronically, comfortably manipulating the virtual world of media and digital images. Although books and printed materials continue to be the staple in K-12 classrooms, credential candidates in a growing number of California teacher preparation programs are required to maintain a record of their achievements in the form of a media-rich electronic portfolio (Bartlett, 2002).

Kovalchick, Milman, and Elizabeth, (1998) defined electronic portfolios as follows:

A technology portfolio is similar to a traditional portfolio, but it specifically addresses technology skills and issues. Also, the medium is different since it is organized using a combination of electronic media such as hypermedia programs, database, spreadsheet, and word processing software, as well as CD-ROMs and the World Wide Web. Technology portfolios can be print-based, saved in a computer disk, compiled on a CD-ROM or HomePage, or a combination of the above. (p. 4)

Innovations in teacher preparation encourage the use of technology to express knowledge and demonstrate pedagogical skills. While enrolled in the Department of Education, credential candidates will be able to create one or more of the types of portfolios commonly used (Wolf, 1999): *Learning* portfolios, where candidates have an “an opportunity to explore, extend, showcase, and reflect on their own learning” (p. 12); *Assessment* portfolios, where candidates

select and compile course work for analysis and evaluation by teachers and peers, though the “primary purpose” is usually “to evaluate teacher performance for certification licensure, or professional advancement” (p. 13); and *Employment* portfolios, designed to communicate to prospective employers the candidate’s abilities and professional interests. Created by student teachers, these electronic documents (available on the web, or assembled in CD-ROMs or DVDs) will provide future employers with a better sense of what credential candidates know and how they teach, offering a rich alternative to paper student records, grade reports, and course listings.

CONCLUSIONS

Becker and Ravitz (1999), Becker (2000), and Willis and Sujo de Montes (2002) are examples of research pointing to the fact that future teachers who are meaningfully exposed to and work with technology as part of their teacher preparation experience are more likely to integrate it into their own practice.

The three options explored in depth at our department (Mobility, Real World, and Virtual) are complementary efforts to enrich the teacher preparation experience through the meaningful integration of technology. Mobility is the option that acknowledges the larger trend in computing toward smaller yet full-featured machines capable of doing most or all of the tasks possible with a desktop computer (e.g., video editing, which requires significant processing power), and allow users to accomplish others that are impossible with desktop computers (e.g., work in multiple locations with full access to all of one’s information). The implications for the design of learning environments in schools and classrooms, for example, are now beginning to be realized in the building of new schools that support wireless connectivity throughout, letting teachers, students, and administrators access teaching, learning, and administrative tools and

resources with much greater convenience than before. Our department's plan is to explore the possibility of providing our preservice students with laptops and/or PDAs (personal digital assistants) to help them produce and collect materials and information for their electronic portfolios, to serve as agents of influence at the schools where they are placed during their preparation process, and to become increasingly comfortable and knowledgeable with technology tools to increase their personal productivity and effectiveness and teachers and lifelong learners.

The Real World option recognizes the influence of Brown, Collins, and Duguid's (1989) path breaking work on situated learning. Our own experiences moving one course from the university classroom to a school setting (Hernández-Ramos and Giancarlo, 2003) clearly indicate that students benefit significantly from guided observations in authentic settings, and from learning technology applications with the clear practical purpose of integration into their own practice. Beyond the placements at schools that our students are already involved in, our intention with the technology course is to have different sections for multiple subjects and single-subject students (K-5 and 6-12 in most cases), since the elementary school setting used so far is not as advantageous to the single-subject candidates as it is for the multiple subject candidates. Other courses, particularly during the summer session, have begun to explore moving all or a significant number of the class sessions to a local school setting, allowing the preservice students the opportunity to work with real students in authentic settings which usually is more productive and rewarding for everyone involved.

The Virtual option leverages the power of electronic communication tools to develop not only students' communication skills, but also their own powers of reflection, interaction with peers in disparate locations through online communities, and their self-image as professionals

with a voice and perspective that deserves to be heard and recognized. Careful ongoing analyses of students' blogs and postings in online discussions, and the products carefully assembled into an electronic portfolio, can yield valuable insights for instructors. For example, it may be possible to identify students who need specific support with writing, analytical skills development, or motivation "...to tackle challenging tasks and help them acquire a deep level of understanding" (National Research Council, 2001, p. 281). Like other traditional forms of journaling, both blogs and online discussions afford the instructor and peers opportunities to get to know the students better. Many students who are shy in person and whose voices are rarely heard in the classroom are capable of presenting themselves through their blogs and of assuming vibrant personas in online discussions enriching the conversations in ways that they don't seem able to do during in-person class sessions. Students who have much to offer also benefit from having online tools through which their ideas and experiences are shared with everyone without necessarily dominating the in-person conversations in the classroom.

The next step in the Virtual option is to advance the conversations within the university toward serious consideration of "distance learning." The current course management system available on our campus can support students from anywhere in the world so long as they have an Internet connection. Currently the university is not formally considering offering courses online, although there are signs that this is something that several graduate programs will need to offer in the near future in order to remain competitive.

In the Department of Education, the Electronic Portfolio Laboratory, in addition to exposing future teachers to new ways to teach and learn, will transform student teachers from simple consumers of knowledge created by others into reflective practitioners and active collaborators who create and share new knowledge, building a dynamic community of

professionals that goes beyond the preservice experience and extends into their professional practice. The implementation of the portfolio process also presents challenges and opportunities for the faculty, since our own levels of use of technology—and understanding of the power and possibilities of the tools available to us—has to increase accordingly.

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