

From faculty development to curriculum development: Assessing the Boston University PT3 program for preparing tomorrow's teachers to use technology.

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Introduction

The U. S. Department of Education project “Getting America's Students Ready for the 21st Century: Meeting the Technology Literacy Challenge” started in 1996 with the aim of preparing public schools and teachers to use educational technology at the beginning of the 21st Century. This project was based on four cornerstones (hardware, software, connectivity and training teachers). Many reports have evaluated this project, emphasizing the following points: access to technology in public schools, use of educational technology by teachers, and use of educational technology at Schools of Education [CEO (1997, 1999, 2000a, 2000b, 2001), OTA (1995), NCTAF (1996), NCATE (1997), ACE (1999), WBC (2000), NCES (2000) y NCREL (2001)]. Most reports conclude that schools have hardware, software and connectivity to Internet but teachers are not well prepared to use educational technology (Lara, 2003). This fact, plus Hussar's estimation that the U.S. will need 2,5 million new teachers by 2010, (Hussar, 1994), pointed at Schools of Education as crucial elements in training tomorrow's teachers. In order to aid them in improving training of tomorrow's teachers, the US Department of Education started in 1999 a new initiative: Preparing Tomorrow's Teachers to Use Technology (PT3).

The PT3 initiative is a U.S. Department of Education Grant program (www.pt3.org), focusing on preparing preservice teachers to use technology before they are in the classroom. It has financed over 441 projects among American educational institutions since 1999. Boston University School of Education (SED) was awarded a grant in 2001, with a proposal for a three-year project that focuses on faculty development and modeling of appropriate use of technology, development of technology-based curriculum resources, and pre-service teachers use of technology in pre-practica and student teaching. With two years of the project completed, we can report that we have accomplished many of these project goals with far greater speed than expected. Participating SED faculty are now much more skilled and more engaged in using

technology where they think it can help them to be more effective, and consequently, they are better able to use technology-based resources in their instruction as well as to model that use for their students (tomorrow's teachers).

The purpose of this paper is to explain and assess the first two years of this project at Boston University School of Education (2001-02 and 2002-03). In the first section we explain the goals and methodology on Faculty's training. In the second section, we describe the main results of external assessment of this PT3 grant and provide an overview of recommendations based on the outcomes of the first two years of the project. We conclude with a brief discussion of the prospects for the third year (2003-04) and the potential for sustaining the work of the grant beyond its conclusion.

Goals and Methodology in Faculty's Development

The Boston University School of Education three-year grant to improve the preparation of new teachers to use technology, *Preparing Tomorrow's Teachers to use Technology*, or BU-PT3, has two principle goals. First, the infusion of high quality educational technology into all aspects of the School of Education's (SED's) student teacher preparation programs, and second, to *sustain* the infusion of educational technology achieved during the grant period beyond the withdrawal of the grant funding at the end of the grant. We report next the thinking from which the project's goals and objectives were derived, our methodologies for achieving them, and the progress made during the first two years of the grant.

In conceptualizing our project, we thought that we had to begin with improving the ability of the SED faculty to utilize technology in their teaching. The faculty model good teaching and if they did not use technology, how could they prepare their students – tomorrow's teachers - to do so? This was a critical first step and we knew that any hope of achieving our subsequent objectives would be dependent on first involving our faculty in using, and becoming invested in using, technology in their teaching. Guidance in designing our program for generating this involvement came from historical studies of how teachers have used technology in the past, particularly from the work of Larry Cuban (1986, 2001).

Cuban attributes the ongoing success of common technologies such as the chalkboard and textbook to their being "*simple, durable, flexible, and responsive to teacher defined problems*" (Cuban, 1986, p. 58). In choosing our design and methodology for implementing technology with our education faculty, we wanted to meet these criteria. Cuban described the circumstances under which teachers would adopt technology in stating that "teachers have altered their practice when a technological innovation helped them do a better job of *what they already decided had to be done* and matched their view of daily classroom realities" (Cuban, 1986, p. 66, italics added). In adapting these conclusions to the objectives of the BU-PT3 grant, we knew that we had to focus any technology training for faculty on their teaching objectives and needs. Their use of technology would need to improve their effectiveness in teaching and our teaching them to use technology would need to help them do that.

We also needed to decide what specific technologies would we train our faculty to use. A needs assessment of the 10 participating faculty showed that a few had begun to use Power Point and videotape but most had never specifically addressed the task of developing electronic resources. Here again we employed a historical perspective to help in deciding our topics and

sequence. Viewing the evolution of technology as progressing from writing to the book, and, of course, the textbook, to film, radio, television, and the introduction of computing, the major technology of today is the Web. While history shows that the use of many previous technologies in education suffered from being unreliable, inflexible, and difficult to use, the Web can overcome most of these major obstacles (Cuban 1986, 2001; Saettler 1990). Once installed in the office and classroom, the web offers easy access to educational resources stored there.

Another important factor in our decision to focus out training in the web was that digital resources available through the web are relatively easy to revise and customize, and, once the infrastructure is in place, they are reliable and rather inexpensive to maintain and use. These attributes aid in overcoming significant obstacles to using technology identified in historical studies. They also offer flexibility and interactivity, two more characteristics that are powerfully appealing to teachers. In this view, the Web is a more general and inclusive technology that can support, and does not exclude, any of the more particular technologies such as PowerPoint or digital video. In addition, because BU-PT3 had to focus on preparing *tomorrow's teachers*, we decided to build our technology instruction on the use of the Web.

The Faculty Training Program

Three elements comprised the BU-PT3 faculty training program: Instruction on CourseInfo, the Web-based course support system from Blackboard; “just in time” help by the Educational Technology Group (ETG); and formal training sessions and roundtables. The roundtables came at the end of year and allowed faculty to share the resources produced through the grant.

A course on the web: *CourseInfo*

We chose to train our faculty in the use of Blackboard’s web-based course support system called “CourseInfo” (CI) (<http://www.blackboard.com/>). A survey of participating faculty showed that they had little or no knowledge of this type of software and we thought CI was easy to learn in the time available. CourseInfo also could serve as a limited electronic portfolio for products produced on more specialized instruments such as PowerPoint or digital video.

Educational Technology Group (ETG)

A key feature of the BU-PT3 program design was employing four graduate students to serve as the “Educational Technology Group” or ETG. The ETG provided “just in time” support to the faculty. All were experienced educational technologists and were able to tutor the faculty in the software we were using as well as consult with them on pedagogical issues. The ETG attended all training sessions and met individually with the faculty in their offices to assist them in applying the instruction of the session to their own courses. The ETG were not to do the work *for* the faculty rather; they were to help the faculty “*do it themselves.*”

Training Sessions and Roundtable

The BU-PT3 program for faculty development was comprised of a series of two-hour sessions designed to build the competence of participating faculty in applying computer and Internet technologies to their particular disciplines. The meetings typically included a brief demonstration, hands on work with the topic at hand supported by the ETG and other project staff, and discussion of how would the application at hand would affect on teaching and learning.

The discussion was critical in keeping our work focused on teaching and learning and not becoming overwhelmed with learning technology.

Each academic year ended with a *roundtable* where faculty showed the use of technology in their teaching. The roundtables were useful in encouraging the faculty to develop their resources well enough so that they would be comfortable sharing them with their colleagues and to show evidence of their progress over the two years.

The main results of external evaluation

In our end-of-year roundtables, faculty amply demonstrated their newly acquired technological skills and the rich variety of ways in which they are modeling the use of technology in their classrooms. Video recordings provide evidence of the faculty's increasing competency in using technology but our external evaluator, TERC, also reported on the following points at the end of our first year:

- Faculty engagement. Faculty were most engaged in training sessions where they were given opportunities to use technology in ways immediately applicable to their professional lives or where they were learning about K-12 instructional uses of technology.
- Faculty learning. Faculty learned not only how to use specific technologies in their instruction but also reflected on the appropriateness of those uses.
- Faculty roundtable. All had used CourseInfo, the majority for the first time, and had posted to their CI web site updated syllabi reflecting their new technology expertise, assignments, surveys, and class notes. Most had also used PowerPoint and digital video clips with instructional framing, and a few had constructed web-based learning activities.
- ETG. The ETGs provided hands-on technical assistance during and between training sessions and worked with faculty around establishing CourseInfo sites for their courses. (External evaluator, TERC, 2003):

Faculty improvement in the use of technology was even more evident after the second year training. After the second roundtable at the end of 2002-2003, our evaluator wrote:

“Field notes from this observation reveal that the five faculty who presented at this session were using technology in far more sophisticated and complex ways than they had done the previous school year . . . This year the faculty demonstrations included WebQuests, uses of the discussion board feature of the CourseInfo site, successful and “problem-free” online assignments, and required student use of technology curricula like art education methods and physical education methods.

After completing two years of faculty development, the external evaluator asked the faculty to respond to the question: *In general, how would you compare technology use now with your use last year?* The summary of faculty answers to this question conclude that the faculty:

- Can do more technologically than they could last year;
- Can converse with their students more knowledgeably about technology;

- Are more deliberate in their pedagogical use of technology;
- Have discovered the value of the management tools now available to them.

Outcomes and Recommendations

External evaluation found that the faculty participating in BU-PT3 achieved substantial gains in improving their teaching with technology during the first two years of the grant. Based on these outcomes, the main recommendations of BU-PT3 for faculty development are:

- Spend time in learning by doing. The faculty valued time spent during the training sessions to practice and apply the technology instruction to her/his teaching.
- Provide “just in time” expert help from trained educational technologists during the training sessions and on an ongoing basis, as needed, throughout the development project.
- Focus training on improving teaching and the pedagogical advantages of employing technology, and not on the technology itself. This means selecting technology that serve faculty’s need to author their own, customized resources and on the positive pedagogical affects the new resources would render.
- Support the needs of each individual faculty in implementing their preferred methodologies to achieve their particular learning objectives. Technology-based resources need to fit *perfectly* with the teachers’ curriculum, match the learners’ maturation and prior knowledge, and be responsive to teacher control.
- Provide for formative, objective evaluation and include the evaluator(s) in the team so that leadership can adapt and adjust their program based on feedback from evaluation
- Gain the support of the institution. It is necessary for the institution to provide equipment infrastructure and support personnel to make technology reliable, easy to use, and readily accessible. Recognizing faculty development in utilizing technology through hiring, salary increases, and promotion will help them to justify the time it takes to do so effectively.

(2) Given the time, training, and support provided through the grant the main outcomes of the first two years of BU-PT3 were:

- Change in the faculty’s skepticism. As the faculty learned that technology could help them to improve their teaching, their skepticism about the value of technology reduced and their appreciation for what it could do for them grew.
- The focus on improving and enhancing pedagogy through technology resonated with the faculty and their response was to produce lessons and resources of great interest and variety. Most important, the resources they produced represented an improvement in their teaching. The evaluator’s summary at the end of year two expresses this outcome:

The majority of the faculty described ways in which they were integrating technology into their courses. These ranged from using PowerPoint instead of

their old overhead slides to engaging their students in Webquests to posting multimedia resources on their CourseInfo sites for the students to use for various assignments. Each faculty member has tailored their use of technology to specifically support their content area and to extend their own way of teaching in ways that fit their way of organizing the material and the learning experiences for their students (TERC Evaluation Report 2a, August, 2003).

- The impact of the ETG on the progress of the faculty was a major outcome of the first two years of the project. Our evaluator summarized this impact in saying that:

Faculty members were unanimous in their high praise for the work of their ETGs. The faculty praised the ETGs for their technology knowledge and skills, for their constant availability, for their patience and perseverance, and for their commitment always to be as helpful and supportive as they could possibly be (TERC Evaluation Report 8, August, 2003).

- Another important outcome was the development of a community of learners who shared an interest in improving teaching with technology. Developing the social integration of a community that would support and reinforce improving teaching with technology was always one of the goals of the project (Brown, Collins, & Duguid 1989); Lave and Wenger 1991; and Rogoff & Lave 1984). In summarizing the responses to the question, “What value has your experience in the PT3 community added to your professional life at BU SED?,” our project evaluator reported that “the most frequent type of response described the value they are finding in a new professional learning community that the PT3 group has become for them. (TERC, Evaluation Report 10, 2003).

Lastly, it is important to underscore that *the introduction of technology in itself did not modify the methodology of the faculty*. Faculty either used the technology to implement methodologies which were familiar and effective or invented new methods by using technology to help them solve problems they had in their teaching. This finding is consistent with the findings of Cuban and Docktorman who found that “in general, technological reform in the classroom has not changed existing pedagogy by itself. Most teachers did not change the way they taught in order to accommodate the motion picture, television, or even the chalkboard Teachers latched on to what worked for them, and varying pedagogies led to various degrees and types of uses. (Docktorman, 1988, p. 94). Our experience with BU-PT3 has been entirely consistent with this idea.

BU-PT3: The Judgment Curriculum - Hopes and Plans for Year 3

In year three of the grant, we are beginning a new phase of our work: development of a web-based curriculum on issues of judgment. The Judgment Curriculum (JC) project aims to highlight historical and contemporary issues of judgment throughout and to focus on these issues in and across disciplines. Our aim is to involve both the faculty and their students in developing, testing, and utilizing these resources not only to teach their disciplines but also to develop their judgment about what is important. The JC also will provide a forum for faculty and students to sustain and develop further their ability to effectively employ technology in education. We will report on this phase of the BU-PT3 project after its conclusion in the summer of 2004.

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