The Gap Between Preparation and Reality in Training Teachers to Use Technology

by Joseph Slowinski

Since 1991, the United States has spent more than $19 billion on developing information technology (IT) infrastructure in local school districts and classrooms. In 1999 alone, district-level technology expenditures surpassed $5 billion; the number of schools connected to the Internet topped 90%; and the ratio of students to computers reached an all-time low of 5.7:1, a significant improvement over statistics from five years ago (10.8:1) and a decade ago (26.7:1) (Market Data Retrieval, 1999b).

In reaction to the proliferation of technology in schools in the mid-1990s, the United States Department of Education (USDOE, 1996) formulated the Technology Literacy Challenge Fund (TLCF). The purpose of this five-year, $2 billion program was to see that all teachers were technology literate by the year 2000. The four major goals of the TLCF were to make modern computers accessible to all children, connect classrooms to the Internet, integrate educational software into educational curricula, and prepare teachers to teach with technology (USDOE, 1999a). Since this challenge was issued, American schools have increased access to technology, and many states have developed technology competency standards for both teachers and students.

Despite growing access to technology in schools, the number of teachers who report using technology in the teaching and learning process remains limited. In 1998, only 14% of schools reported that the majority of their teachers were using the World Wide Web for instructional purposes (Market Data Retrieval, 1998). Although this number increased to 54% in 1999, the U. S. Department of Education is far from achieving its goal (Market Data Retrieval, 1999a). Through a new program—Preparing Tomorrow’s Teachers to Use Technology, which has a $75 million grant budget—the USDOE (1999b) is attempting to meet its original goal and encourage the use of instructional technology.

No matter how planned or funded they are, isolated federal initiatives will yield little change in practice. Wide-scale improvement requires teacher-training institutions to
enhance the technology skills of pre-service teachers by promoting technology in school-of-education classrooms as well as providing pre-service teachers with increased opportunities to practice evolving technology skills and knowledge. Unfortunately, neither ubiquitous modeling of technology use nor education technology mentors exist in most schools and colleges of education.

**Technology Training for Pre-service Teachers**

Survey data and federal initiatives make it clear that teacher-training institutions are not adequately preparing teachers for the Information Age. A recent national survey of pre-service students and faculty members at 416 schools and colleges of education revealed that the students are not receiving systematic or prolonged technology training (Milken Exchange on Education Technology, 1999b). For example, 67% of these schools of education report that fewer than half of their faculty members and/or mentor teachers model the integration of IT in their own teaching. Field supervision experiences are also suspect. Nearly 60% of the surveyed schools report that less than half of field supervision faculty possess the skills they need to provide professional advice about instructional technology (Milken Exchange on Educational Technology, 1999b; CEO Forum on Education & Technology, 1999). Furthermore, less than half of K-12 classrooms in schools providing field experiences are equipped with IT. In a recent survey, only 40% of first-year teachers felt adequately prepared to integrate technology into their classrooms meaningfully (Market Data Retrieval, 1999b). Without policy changes in teacher education, K-12 teachers will remain unprepared.

According to the USDOE's recent survey of 4,049 elementary, junior high, and high school teachers, less than 20% view themselves as very well prepared to integrate technology into instruction (Archer, 1999). In another national survey, Ravitz, Wong, and Becker (1999) found that approximately 40% of teachers require monthly assistance in integrating technology into a lesson. At the same time that teachers are not using technology or feel unprepared to use technology effectively, state legislatures have been enacting mandates that require both teachers and students to demonstrate technology skills. Teacher-training institutions must be more aware of these evolving trends that will change state licensure and certification requirements.

**Recent Trends in State Educational Technology Policy**

From fiscal year 1995 to fiscal year 1999, the 50 state legislatures appropriated nearly $4 billion to instructional technology (Milken Exchange on Education Technology, 1999a). In an effort to guarantee a return on their investments, 45 states have created or are in the process of creating standards for state technology competencies, and nine of these states require teachers-in-training to pass a technology-related exit exam before graduation. Having achieved widespread technology access, states now require teachers to integrate technology into teaching.

For example, beginning in 2001, the state of Idaho will require that 90% of all district staff members demonstrate technology proficiency (Idaho Department of Education, 1999). Standards for this proficiency align with National Education Technology Standards issued by the International Society of Technology. They measure competency in the following areas: the computing environment (operating and troubleshooting the computer), word processing, instructional software, telecommunications (e-mail, Internet, WWW, video...
conferencing for educational enhancement, etc.), presentation software, spreadsheets, databases, classroom management, and issues in information technology (equity, ethics, societal impact of information technology, intellectual property, etc.). Teachers must demonstrate competency using any of three assessment tools: the Idaho Technology Competency Examination (ITCE), the Idaho Technology Portfolio assessment, or a district written exam or portfolio (Idaho Department of Education, 1999). Teachers will thereby have to be proficient in instructional technology, enabling them to teach students the skills tested on state technology competency exams. Additionally, schools that do not meet the level of competency set by the new standards may lose accreditation. Hopefully, this mandate will motivate teacher-training institutions to align teacher preparation curricula with state standards. Achieving this level of proficiency will become even more important in Idaho as well as in other states (e.g., North Carolina) that are adopting similar policies for both teachers and students.

Implications

As states increasingly begin to require teachers to demonstrate technology competency, preparatory institutions will assume more responsibility in providing technology training. First and foremost, technology training should be integrated into the entire preparation phase, from first-year courses in schools of education to induction-year activities. To achieve this technology integration, schools of education should consider instituting systemic policies such as the following:

- Faculty members in the pre-service curriculum must demonstrate awareness of state technology requirements that new teachers face, such as technology literacy and standards-based technology.
- As elements of tenure and promotion, faculty members must receive training in instructional technology and integrate their emergent technology skills into courses. These efforts will model engaged learning.
- Field placement supervisors must be skilled in and knowledgeable about instructional technology.
- New teachers must receive induction-year materials to aid them in integrating technology into the curriculum. These materials will provide guidance for a variety of circumstances in schools, such as maximizing the effectiveness of technology in a one-computer classroom and managing curriculum with limited computer lab access. Indiana University’s Center for Excellence in Education, now the Center for Research on Teaching and Learning, in cooperation with the North Central Regional Technology in Education Consortium published Technology Challenges During Teachers’ Induction Year in 1998 in order to "address challenges [in technology] faced by new teachers and offer potential solutions" (p. 1).

Institutional realities and cultural practices of the academy remain rigidly intact. For example, academic freedom in schools of education remains a real threat to implementing such policies. Without a mandate, faculty members uninterested in acquiring technology proficiency can rely on an antiquated response of resisting change.

But the passage of policy often acts as an operational catalyst and impetus for change. On May 31, 2000, the National Council for Accreditation of Teacher Education (NCATE, 2000a & 2000b) ratified new standards for accreditation that will take effect
in the fall of 2000. Teacher-training institutions seeking NCATE accreditation must demonstrate a "commitment to preparing candidates who are able to use educational technology to help all students learn" (NCATE, 2000a, p. 3) and show how information technology is integrated throughout their curricula, instruction, field experiences, clinical practices, assessments, and evaluations. Prior to this more thorough articulation, teacher-training institutions had to "provide adequate access to computers and other technologies, and expect faculty and students to be able to use it successfully" (NCATE, 2000b). Clearly, institutions will have to reflect on how best to implement new policies to meet the new standards. We will begin to witness changes in the hallowed halls of tertiary institutions.

With accreditation on the line, schools of education will implement technology-related policy mandates such as those that I propose. Through such mandates in support of accreditation, faculty members will have an incentive to enter the Information Age or not be tenured.

References

Archer, J. (1999, February 3). Teachers suggest the need for better training. Education Week, p. 12.


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