

Chapter 4

Teachers and Technology: Enhancing Technology Competencies for Preservice Teachers

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ABSTRACT

In addition to possessing content knowledge required to teach students, today's teachers must be well equipped with appropriate technology skills and tools to guide and support student learning. The identification of this need has led teacher education programs to mandate all preservice teachers to enroll in technology courses as part of their teacher preparatory curriculum. Similarly, the International Society for Technology in Education (ISTE) has established the National Education Technology Standards for teachers (NETS- T) to help promote teacher technology competencies. The purpose of the study was to evaluate preservice teachers' self-assessed technology competency to determine whether preservice teachers perceived that their technology class enabled them to meet ISTE's required standards. Specifically, this paper explores the extent to which an educational technology course at a participating midwest college helped to improve preservice teachers' technology skills as well as to prepare them attain ISTE NETS- T.

INTRODUCTION

The integration of computer technology into instruction and its effect on student learning is of increasing interest to stakeholders such as policymakers, administrators, educators, students, and parents. Today, a major part of most school budgets are directed towards technology funding

and implementation (Oppenheimer, 2003; Semich & Runyon, 2002). Further, as part of the 2001 No Child Left Behind Act, every student is required to be technologically literate by completion of middle school. To provide for the needs of the Net Generation learners (Oblinger & Oblinger, 2005) and to enhance effective instruction with

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technology, a National Educational Technology Plan was established in 2004.

As part of the national technology plan, teachers are required to meet national technology standards which require them to be technologically prepared for classroom instruction. Similarly, teachers are required to meet the International Society for Technology in Education (ISTE) National Education Technology Standards (NETS-T) established to help promote teacher technology competencies. Evidently, the national standards are in place in almost every state in the U.S. (U.S. Department of Education, 2006).

The ISTE standards are:

1. Teachers should be able to demonstrate a sound understanding of technology operations and concepts.
2. Teachers should be able to plan and design effective learning environments and experiences supported by technology.
3. Teachers should be able to implement curriculum plans that include methods and strategies for applying technology to maximize student learning.
4. Teachers should be able to apply technology to facilitate a variety of effective assessment and evaluation strategies.
5. Teachers should be able to use technology to enhance their productivity and professional practice.
6. Teachers should be able to understand the social, ethical, legal, and human issues surrounding the use of technology in PK-12 schools and apply those principles in practice.

When used appropriately, technology applications support the development of students' high-order thinking and problem-solving skills and help improve their attitudes toward and performance in their subjects (Wenglisky, 2006). As a result, ensuring technology competencies for teachers is

critical to the success of the national technology plan. Semich and Runyon (2002) argue that, "It is becoming increasingly important for teachers to understand when and how to use technology to aid students' learning in classrooms and to understand and apply the concepts and information for various content areas" (p. 1433). Further, teachers should be given appropriate training that will allow them to become technology-proficient instructors (Smith, Smith, & O'Brien, 2002).

Teacher preparation programs have responded favorably to the national technology plan by integrating basic educational technology training in teacher education curricula. Preservice teachers are now required to enroll in instructional technology courses in partial fulfillment of graduation requirements. The primary objective of such technology classes is to introduce students to a wide range of basic computer concepts and skills mostly in the use of the Internet and the World Wide Web, Productivity Software, Presentation Software, and Multimedia and Educational Software.

Majority of students in colleges and universities across the U.S. are competent in basic computer technology applications (Keengwe & Anywanu, 2007). Not only are these students experts in word processing, emailing, and Power Point production, but often these students are also ahead of the educational curve in the use of technology tools such as ipods, wikis, blogs, and other applications which may have significant educational value (Bitter & Legacy, 2006; Dralle, 2007; Hoffner, 2007). Even so, other studies (Duhaney, 2000; Weisner & Salkeld, 2004) indicate that preservice teachers do not feel adequately prepared to integrate technology into their teaching. This instructional crisis might be attributed to instructors who do not promote technology use in a way that keeps up with the advances in how students are using technology (Project Tomorrow-NetDay, 2006).

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