

## Chapter XXVI

# Teachers and Technology: Engaging Pedagogy and Practice

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### ABSTRACT

*This chapter focuses on the pedagogy necessary in critically considering technology development for K-12 teachers and their students'. Three key questions frame this analysis: First, what literacies are necessary in the learning and use of technology? Second, what methods or processes are most effective in developing and implementing such technological literacy? Third, how do teachers best develop skills in using computers which ultimately ensure the development of skills and knowledge for students in classrooms? The chapter will illustrate, through the author's work in professional development settings, pedagogical techniques and strategies that have been implemented successfully in building capacity among new and experienced teachers in using technology for lesson planning, teaching enhancement, and portfolio development. Finally, Pailliotet and Mosenthal's (2000) four "I's" of media literacy—identity, intermediality, issues, and innovations—are utilized to analyze the case studies and provide a framework for implementing student-centered processes for technology use and literacy development.*

### INTRODUCTION

Presently many initiatives encourage both classroom teachers and faculty in higher education to acquire technology skills. The goal is to better prepare teachers to utilize technology in

K-12 classroom settings. The focus of development is to have teachers go beyond the 'learning of technology' to 'integrating technology' into classroom practice. In the U.S. many institutions of higher education have been supported in this effort through the Preparing

Tomorrow's Teachers to Use Technology grants (U.S. Department of Education, 1999) and the Technology Innovation Challenge Grant Program (U.S. Department of Education, 1995). These projects have a common goal: to develop capacity for the use and integration of computer and media technologies by teacher education faculty, new teachers, and experienced K-12 teachers. Such initiatives further support universities and school districts in acquiring up-to-date hardware and software. This includes funding for computer labs, smart boards, smart classrooms, digital cameras, laptop computers, and many other related software and hardware tools.

The focus of these initiatives and resources on developing teachers' technology skills and knowledge provides an opportunity to analyze assumptions made regarding pedagogy and practice. Too often the elements that are taken for granted in professional development practices for technology are literacy and pedagogy. In order to consider these elements, I will address the following questions:

- What literacies are necessary in the learning and use of technology?
- What methods or processes are most effective in developing and implementing such technological literacy?
- How do teachers best develop skills in using computers, virtual environments that ultimately ensure the development of skills and knowledge for students in classrooms?

Most important to consider in responding to these questions is the changing role of the teacher. In many instances professors and teachers who are proficient in traditional teaching practices "are being challenged by the introduction of constructivist-based pedagogy, where the teacher's role is redefined from being that of a "sage on the stage" to a "guide

on the side" (Ferneding, 2003, p. 89). This movement away from traditional pedagogy does not cause much argument from those advocating a student-centered approach for technology development. Such constructivist methods advocate the need for scaffolding new information, while accessing prior knowledge so students create knowledge rather than only being vessels to receive knowledge (Bruner, 1996). I support constructivist pedagogy and further advocate a more transformative pedagogy. A transformative pedagogy is one where students contribute to knowledge meaning and making, with teachers open to learning from students (Freire, 1993). This process, known as a co-construction of knowledge, is a key element missing from both teacher-directed and constructivist approaches for skills development. To this end, Ferneding (2003) states:

*Within the context of integrating computer technology with print and oral traditions, teachers need to take a more active role in synthesizing the complex interactions of these various modes and mediums of communication, thus standing on the sidelines may not be an appropriate place for teachers. (p. 89)*

What is problematic with the "guide on the side" is that it places teachers in the role of a technician—one who only 'facilitates' as needed rather than making important cognitive and literate connections that are inherent in student-centered and more critical pedagogical approaches of teaching.

This chapter will focus on the processes necessary in considering technology development for K-12 teachers. Processes here are those that are critically student centered and are applicable to staff development and higher education settings as well as K-12 classrooms. This analysis begins first by defining literacy as

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