Chapter 111

Teacher Training and Technology:
Current Uses and Future Trends

Jeremy Dickerson
Coastal Carolina University, USA

Joseph Winslow
Coastal Carolina University, USA

Cheng Yuan Lee
Coastal Carolina University, USA

ABSTRACT

How is technology being used to train teachers to keep up with the rapid pace of change in schools and society today? This chapter discusses the utilization of technology for in-service (practicing) teacher training, a process known as professional development within the field of education. The chapter analyzes both formal and informal methods of technology integrated teacher training, presents examples of each, and discusses positive and negative implications. The chapter concludes with an examination of future trends in technology and their potential for significant impact on teacher professional development.

INTRODUCTION

School teachers are collectively one of the largest workforce groups in the world. The process of providing ongoing formal educational experiences for in-service (practicing) teachers has a variety of names including professional development, staff training, staff development, continuing education, credit renewal and recertification just to name a few. These training opportunities are how the teacher workforce attempts to stay current with their practices and knowledge of critical and emerging issues in their field. Many school districts and/or state departments of education have a required amount of contact or credit hours that each teacher must earn in order to maintain their teaching license and keep their professional positions.

The process of professional development for practicing teachers is a complex, vast and

expensive process that costs hundreds of millions of dollars for school districts across the United States each year. During the last decade, the use of technology has radically changed the professional development delivery process, and teachers now receive training via a wide array of techniques and technologies. Presentation tools, video conferencing, webcasting, intelligent tutoring, course and knowledge management systems, mobile devices, broadband wireless, and many other technologies have been integrated into professional development programs in ways that have had myriad effects on teacher performance, student achievement, and school management.

This chapter presents and analyzes various methods of integrating technology to provide professional development in the teaching profession, including both formal and informal models. The chapter will also review previous inquiry to derive a historical perspective on professional development, and will make connections to current school management issues such as cost, feasibility, effectiveness, stakeholder perceptions and technological infrastructure. Finally, the chapter will conclude with propositions for future applications to training programs based on trends in emerging technologies, as well as issues in education at large such as teacher performance assessment, student achievement, school funding, and standardization of 21st century technology skill sets.

BACKGROUND

Previous inquiry has identified the continuing development of teachers as one of the key factors to improving student performance (Desimone, Smith, Hayes, & Frisvold, 2005). This finding is echoed by earlier large scale meta studies reported by national-level entities, including the National Commission on Teaching and America's Future (NCTAF, 1996), and the National Center for Educational Statistics (NCES, 1998), both of which emphasized that student performance is closely related to the pedagogical knowledge, content knowledge, and instructional practices of teachers.

Improvements in technology impact how we work and play by providing advantages and conveniences to various daily workflows. Technology-enhanced approaches are widely adopted by schoolteachers in both their instructional practice, as well as their continued credentialing through the professional development process. Through DVD/CD, the Internet, videoconferencing, and online professional communities, teachers are accessing instructional resources and participating in collegial networks to improve their teaching practice. Today, it would be rare to find a professional development project of any magnitude and duration that does not leverage at least some type of technology to facilitate communication or enhance information sharing.

As of February 2012, the indexable web contains at least 7.82 billion pages. The Internet and its potential impact on teacher training have been the subjects of frequent inquiry, especially the development of online professional communities (Gibson & Bonnie, 2004; Marx, Blumenfeld, Krajcik, & Soloway, 1998; Palloff & Pratt, 1999; Patahuddin, 2008; Ruopp, Gal, Drayton, & Pfister, 1993; Schank, Fenton, Schlager, & Fusco, 1999; Timmerman, 2004). For example, in an ethnographic study about uses of the Internet for teacher professional development and teaching mathematics, Patahuddin (2008) concluded that resources alone do not have any impact on teachers' learning and their teaching practices. The result echoed previous findings that Internet availability in schools does not guarantee rich student learning or successful teaching (Becker, 1999; Gibson & Oberg, 2004; Wallace, 2004).

Online Teacher Professional Development (OTPD)

Online instruction has grown significantly in the U.S., where over 90% of higher education institutions report offering distance learning coursework

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