Chapter 2
Integrating Technology in Teacher Education Programs

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ABSTRACT

This chapter discusses technology integration in teacher education programs. Although opportunities for technology training have become more available to prospective teachers, it is evident that successful technology integration needs a paradigm shift in pedagogical approaches and reform in teacher education programs to better support teachers' integration of technology into instruction. This chapter offers valuable theoretical grounding to help guide researchers and leaders in the field of Educational Technology. Data indicate that basic technology skills alone cannot lead to higher levels of technology use in the classroom. Suggestions are provided on best ways to integrate educational technology into pre-service teacher education programs and in-service teacher professional development programs to enhance effectively teaching and learning in K-12 classrooms.

INTRODUCTION

Educational Technology scholars view technology in broader terms which refers to the organization of knowledge for the achievement of practical purposes as well as any tool or technique of doing or making, by which capability is extended. For example, Solomon (2000) defines technology as the systematic application of all sources of organized knowledge (i.e., literature, science, and the arts) for intellectual influences. Technology is a vital component of the modern classroom and twenty-first-century learners need twenty-first-century tools to enhance their learning. In the

USA, computers and the Internet are abundant in most schools and classrooms. However, lack of technology integration in American classrooms is a major concern in education today. Instructional technology is associated with increased academic achievement, and may increase student motivation for school work, by providing students with opportunities to interpret, construct meaning, and present data in meaningful ways to their instructors and peers (Bell, 2002; National Council for Accreditation {NCATE}, 2008). Furthermore, the goal of instructional technology is to select effective and appropriate technologies to use in designing, developing, implementing, and assessing instruction. It is about how to use the processes and methods behind instructional technology to understand how learning occurs in a given group of individuals and then design instruction to meet the unique learning needs (Reiser & Dempsey, 2007). Technology also provides students with greater access to a vast array of information and resources, empowering them to become free agent learners able to create meaningful personalized learning experiences outside the traditional classroom.

However, many practicing teachers in K-12 schools struggle to keep current with the implementation of emerging and rapidly advancing tools of instructional technology. The teachers struggle with technology can be largely attributed to inadequate professional development and training (Raynolds & Morgan, 2001; Teclehaimanot, Mentzer, and Hickman, 2011). Despite increasing access to technology in our schools, many practicing teachers are not comfortable integrating technology into the daily teaching and learning process (Barton, 2001; Cuban, 2001; Keengwe, 2007; Yau, 1999). The National Center of Education Statistics (NCES) survey on educational technology found that the majority of teachers had access to computer technology. However, only forty percent indicated that they or their students often used technology in their lessons (NCES, 2010). Majority of teacher candidates have not been properly prepared during their college years for integrating technology into their teaching.

Therefore, there is a strong need for designing a working technology training programs for prospective teachers.

A large body of literature supports the idea that technology training and mentoring is the major factor that could help teachers candidates develop positive attitudes towards technology and increase the likelihood of using technology to enhance and support classroom instruction (Yildirim & Kiraz, 1999; Yildirim, 2000; U.S. Department of Education, 2005; NCES, 2010). Teacher preparation programs remain key to the modeling, training, and subsequent implementation of effective use of technology in K-12 schools (Becker, 2001; Zhao, 2007). The NCATE accreditation standards emphasize the use of educational technology within teacher preparation programs to help teacher candidates master technology skills to meet the needs of diverse learners (NCATE 2008). However, the reality is that there is often limited faculty modeling of appropriate use of technology tools in teacher education courses (National Center for Education Statistics, 2000; Teclehaimanot et al, 2011). Even programs that offer technology integration training have no follow up support to mentor teacher candidates during their student teaching-internship. This calls for new approaches that would require teacher candidates to use tools of technology in their college course assignments and preparatory field experiences so as to be more inclined and more confident to incorporate instructional technology into their teaching practice. The National Research Council (1996) and Davis (2002) claim that future teachers will best learn to integrate tools of technology effectively into the curriculum if they see it modeled by their education instructors. Most current teacher candidates in education programs did not have the modern tools of technology in their classroom during their K-12 experiences. This means that they need specialized instruction on how to teach their content area effectively with the emerging technologies (Niess, 2008). Even those who grew up with technology in their K-12 classrooms could

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