Instructional Technology Courses in Teacher Education:  
A Study of Inservice Teachers’ Perceptions and Recommendations

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ABSTRACT
This article uses OLS and 2SLS regression analysis to examine K-12 educators’ perceptions of technology courses that were integrated in their program of study and the extent to which the courses influenced the educators’ technology competencies and integration. A purposeful sample of 90 K-12 and 50 non-K-12 teachers in Idaho participated in the study. A survey was used in the collection of both quantitative and qualitative data. Findings indicate that though most teachers had taken technology courses during teacher training, they still lack transferrable technology pedagogical methods or skills. Both perception and technology integration were influenced by the teacher’s age, experience, educational level, social network, type of school and location. 2SLS estimation demonstrated that perception was also a significant variable affecting technology integration. However, there was no evidence of the effect of class size and gender on either integration or perceptions implying that these two variables might not be important from a policy perspective. In-service teacher recommendations for teacher preparation programs are also discussed.

KEYWORDS
K-12, Teacher Preparation, Technology Competencies, Technology Integration

INTRODUCTION
Today, millions of dollars are being invested in learning with technology in schools (Amiel & Reeves, 2008), and fairly recent U.S. educational statistics indicate that more than 95% of teachers have access to computers and internet in the classroom (NCES, 2009). National reports such as the CDW-G (2006) and the Voogt (2008) international report indicate that teachers are making an effort to integrate technology as an instructional tool to support student learning. However, there is research and other reports that disagree with this assertion, and such reports paint a picture of technology integration failure; teachers are not effectively using technology as an instructional tool, rather, technology in the classroom is viewed as an additional tool to be taught separately (Bauer & Kenton, 2005; Mueller, Wood, Willoughby, Ross & Specht, 2008).

There was a time when research indicated that the computer-student ratio in the classrooms was not good enough to make computers a viable instructional tool. Computer resources were so limited
that the instructional use was affected. At that time, research-based recommendations regarding technology integration in the classroom urged that only pedagogy and curriculum should drive the instructional use of technology not limited resources (Wood, Specht, Willoughby & Mueller, 2008). Currently, reports indicate that computer resources are abundant in most classrooms (Ed Tech Trends, 2014), and what affects the instructional use of technology is a lack of pedagogy and curriculum (or content) knowledge best taught using technology. It is expected that knowledge of curriculum, pedagogy, and technology be provided during teacher preparation. The past decade has seen an increase in the infusion of technology courses in teacher training and professional development programs.

This study examined K-12 educators’ perceptions of technology courses that were integrated in their program of study and the extent to which the technology courses influenced the educators’ technology competencies. In addition, the study explored in-service teacher recommendations for technology training through their programs. The study was shaped by the following research questions: In what ways do technology courses prepare K-12 educators for technology integration in their own classrooms? To what extent are K-12 educators able to transfer the technology skills from their teacher preparation programs into their teaching? What recommendations do K-12 educators have for modification of the technology components of their program of study? The purpose of the study was to track the progress that teacher preparation programs have made in preparing teachers for technology integration, and to highlight suggestions from K-12 teachers regarding teacher preparation program improvement. Many teacher preparation programs are failing to provide teacher candidates with authentic experiences that effectively integrate technology into instructional practice (Latham & Carr, 2015). Suggestions from in-service teachers help shape the authentic experiences that are required to prepare teacher candidates to effectively integrate technology into teaching practice.

BACKGROUND OF THE STUDY

Research in educational technology makes it clear that teachers have increased their personal and professional uses of technology such as computers (Ertmer & Ottenbreit-Leftwich, 2009). A closer look at the data provided in most of the research that supports the increase in technology use among teachers indicates that technology is not integrated effectively; most of the uses are at the basic level (Russell, Bebell, O’Dwyer & O’Connor, 2003); such as the use of Powerpoint in a lecture method lesson, or the use of the Internet for lower level information resources. Other research indicates that teachers focus on teaching technology as a subject not as an instructional tool, for instance, the focus is mainly on technical skills such as using the keyboard and mouse, saving and organizing files, word processing, operating digital cameras, etc. (Tondeur, van Braak & Valcke, 2007). Another body of research shows the increase in use of drill and practice software and games in K-12 classrooms, specifically, at the elementary level (Dwyer, 2007), which is regarded by some as a simple and lower level of technology use (Kuiper & Pater-Sneep, 2014). The above discussion indicates the need for teacher preparation programs to address the “problem of effective technology integration” that has been the major issue from the onset of technology in the classrooms decades ago.

Teacher preparation programs are expected to produce teachers who are capable of effectively integrating new technologies into teaching and learning processes. Effective technology integration requires the teacher to move beyond technology use to support lecture-based lessons and other lower level uses (Lawless & Pellegrinio, 2007), to include technology use to support inquiry and student-centered lessons; such as in exploration, hypothesis testing, evaluation, problem solving, etc. Studies show that though some teachers report in their teaching philosophy that they follow constructivist tenets (for instance, teachers say they use student-centered teaching methods), observation data from the practice of integrating technology differs from this view (Judson, 2006; Ruggiero & Mong, 2015). Teacher preparation programs, including professional development programs, must be specific regarding the goal of integrating technology in a constructivist manner.
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