

## Chapter 19

# Increasing Teacher Candidates' Reflection with Technology

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### ABSTRACT

*This chapter highlights the strategies that facilitated reflective thinking in teacher education through the integration of technology. Graduate students enrolled in a literacy course provided the data for the study. Major findings indicated that the reflective ability and quality of reflection among the teacher candidates increased because a structure that supported reflection was put in place. In addition, the teacher candidates engaged in a variety of multifaceted activities with new technologies in authentic contexts. The implications were discussed.*

### INTRODUCTION

Among the factors that contribute to successful teacher learning include collaboration, continued learning, as well as offering ample time and support for reflection, (Borko & Putnam, 1996). The need for continued learning and reflection by teachers cannot be overemphasized in the new media age, with the preponderance of new technologies. Technology promotes student learning by addressing a variety of learning styles, providing thought provoking challenges, and encouraging higher level thinking. It is therefore imperative

that preservice and in-service teachers acquire the skills necessary to effectively integrate technology in their teaching in a way that would facilitate students' participation in the new global economy. According to the partnership for the 21st Century Skills (2006), teachers should be able to redesign and create curriculum and instruction to prepare their students with the skills of the 21st century literate citizens which include an expanded form of literacy as well as new information and communication technologies (ICTs). Teachers are also expected to develop the skills needed for a participatory culture, distributed expertise, collective intelligence, sharing, experimentation, innovation and evolution (Lankshear & Knobel, 2006).

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Teachers for tomorrow's schools must be prepared to rethink, unlearn, relearn, revise and adapt the use of new technologies for instructional purposes (Niess, 2008). This includes being conversant with Web 2.0 tools (e.g., wikis, blogs, and social networking sites) which enable users to create, edit, manipulate, and collaborate online. Web 2.0 tools convey different expectations for participation, positioning users as authors or text producers (Hedberg & Brudvik, 2008; Jacobs, 2006). Currently, many teachers still see themselves as authority figures and might find it difficult to envisage a new role in which teachers and students are both designers of text. Research indicates that not enough teachers (novices or veterans), are developing sufficient knowledge required to effectively teach their subject matter with technology (Hughes & Scharber, 2008). One reason for that is the teachers' inability to become more metacognitively aware of their knowledge base with new technologies. Reflective thinking and writing would help teachers expose their old beliefs and practical theories of learning and teaching with technology in order to reconcile with new realities. In general, what is critically important for teachers is the knowledge of how, when and why to use technology effectively in teaching and how technology might change the way students actually learn to read and write (Schmidt & Gurbo, 2008). The emerging trend is to help teachers develop technological pedagogical content knowledge (TPCK) by integrating content, pedagogy and technology within the context of their content areas rather than in a separate, general technology skills course. Technological pedagogical content knowledge (TPCK) describes the interconnection and intersection of content, pedagogy (teaching and students' learning) and technology. TPCK involves a complex interplay of instructional decisions made by the teacher that includes content, pedagogy and technology. The question is "How do we as teacher educators support reflective thinking in our candidates especially as they learn to use various technologies

for instruction? What role does reflective thinking play in teachers' development of the proficiency necessary to integrate their subject matter knowledge with technology and pedagogy (TPCK)?

I argue in this paper that teacher candidates need to engage with a wide range of technology-using opportunities in order to create genuine avenue for reflective thinking necessary to integrate technology into their content areas. To discuss the role of reflection in technology proficiency, I will first provide a historical overview of the theoretical and research basis for approaching reflective thinking in teacher education and the role of technology in promoting reflection, focusing on the types and roles of reflection in teacher education. Then I will highlight the result of an action research study in my teacher education class that provides evidence that (1) Reflection among teacher candidates increases within a course structure that supports reflection; (2) multiple technological projects and activities are essential for building reflective thinking; (3) Thought-provoking readings provide cognitive conflict that generates higher order reflective analysis; (4) collaborative teams working together on technology projects help build a community of learners, facilitate participatory culture and ultimately reflective ability of teachers; (5) an emphasis on experimentation rather than mere talking about technology help teacher candidates to better reflect on technology use; and (6) reflection increases within a problem-based and inquiry approach to technology integration.

## **REFLECTION AND TEACHER LEARNING**

The importance of reflection in teacher learning and professional development is well recognized (Davis, 2006; Feisman & Nemser, 2001; Hatton & Smith, 1995; Schon, 1983). However, what is less certain and to a large extent debatable is how to support teacher reflection; the various roles that reflection plays in different teaching and

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