Chapter 20

ARTI:
An Online Tool to Support Teacher Action Research for Technology Integration

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ABSTRACT

Action research is recognized as a powerful tool for professional development and teacher preparation (Cochran-Smith & Lytle, 2009; Zeichner, 2003) and teachers require powerful professional development to effectively integrate technology (Hew & Brush, 2007). ARTI (Action Research for Technology Integration) is an online tool designed to support the merger of action research and technology integration. This chapter provides an introduction to ARTI followed by a discussion of its theoretical foundations. Next, the conceptual design of ARTI is described in terms of the three main purposes for its development which are to provide: (1) an online scaffold for teachers to inquire about their technology integration practices, (2) a mechanism to synthesize action research information from multiple teachers, and (3) a mechanism to capture evidence of student learning within technology integration inquiries. Finally, examples of ARTI implementation, implications and future possibilities for the tool in teacher preparation are discussed.

INTRODUCTION

Action research (also known as teacher inquiry) is widely recognized as a powerful tool for professional development and teacher preparation (Cochran-Smith & Lytle, 2009; Zeichner, 2003).

It involves teachers systematically and intentionally studying their practices (Dana & Yendol-Hoppey, 2009) and has been shown to improve teacher practice, heighten teacher professionalism, lead to positive educational change, expand the knowledge base for teaching and provide a platform for teachers' voices in educational reform (Carr & Kemmis, 1986; Cochran-Smith & Lytle,

1993; Meyer & Rust, 2003). Technology integration refers to the ways teachers use technology to support and enhance teaching and learning. Technology integration is an important aspect of teaching (National Educational Technology Plan, 2010) and appropriate use of technology can support students in content area learning (Howland, Jonassen & Marra, 2011), provide students with essential workforce skills such as the ability to communicate and collaborate digitally (President's Report, 2010), prepare students for participation in an increasingly digital democracy (Partnership for 21st Century Skills, 2011) and enhance student motivation and engagement (Dawson, Cavanaugh & Ritzhaupt, 2008).

Successful technology integration requires opportunities for professional development (Hew & Brush, 2007) and, given the positive results associated with action research (Dana & Yendol-Hoppey, 2009), recent research has attempted to merge the two. This research suggests that action research is a vehicle through which teachers can systematically and intentionally study the ways that technology integration impacts student learning and as a lens through which teachers may experience conceptual change regarding their beliefs about technology integration practices (Dawson, 2006, Dawson, 2007; Dawson & Dana, 2007).

In part as a result of this research, action research has been used with hundreds of teachers involved in statewide technology integration efforts across the state of Florida. An online tool, known as ARTI (Action Research for Technology Integration), was developed to support these teachers. The chapter describes the theoretical and conceptual foundations of ARTI's design, examples of ARTI implementation, ARTI implications, and future possibilities for the tool in teacher preparation.

BACKGROUND

This section provides an overview of the theoretical and conceptual design of ARTI.

ARTI: Theoretical Framework

Cochran-Smith and Lytle's seminal work on teachers knowledge domains (1999) informed ARTI development. These domains described different types of knowledge teacher acquire through different types of professional experiences. In particular, they discuss three domains: knowledge for practice, knowledge in practice and knowledge of practice. This section provides an overview of these domains and explains why ARTI is built on the knowledge of practice domain.

Knowledge for Practice

Teacher preparation and inservice professional development programs have historically done an inadequate job of preparing effective technology-using educators (Milken Exchange on Educational Technology, 1999; Hew & Brush, 2007; Lawless & Pellegrino, 2007). The primary way prospective teachers learn about technology integration is through stand-alone technology integration courses or possibly through content-specific lessons offered as a part of methods coursework (Pierson & Thompson, 2005) while inservice teachers primarily learn in after school workshop formats (Broughman, 2006). These approaches emphasize the development of a certain type of knowledge referred to as *knowledge for practice* (Cochran-Smith & Lytle, 1999). This type of knowledge helps prospective and practicing teachers understand definitions, theories and concepts associated with technology integration. However, these experiences are rarely transferable to a classroom context because they negate the complexities of classroom technology integration and often teach isolated skills (Wei, Darling-Hammond, Andree, Richardson & Orphasno, 2009).

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