Exploring the Relationship between Teacher Tenure and

Effective Technology Integration

Heather Lamb

University of North Texas

December 7, 2013

Abstract

As schools continue to invest in technology to support student outcomes, the question can easily become whether or not a teacher is using the technology effectively to impact student outcomes (Russell, O'Dwyer, Bebell & Tao, 2007). This article explores barriers including classroom structure, technology proficiencies, various levels of support including administrative and professional development opportunities which could impact the internal or external influences on a teacher’s self-efficacy beliefs and the effective use of technology (Kim, Kim, Lee, Spector & DeMeester, 2013; K, Tschannen-Moran & Hoy, 2007; Ertmer, Ottenbreit-Leftwich, Sadik, Sendurur & Sendurur, 2011). Beginning with a review of Bandura’s social cognitive theory and self-efficacy, various threats to effective technology use related to teacher tenure are explored.

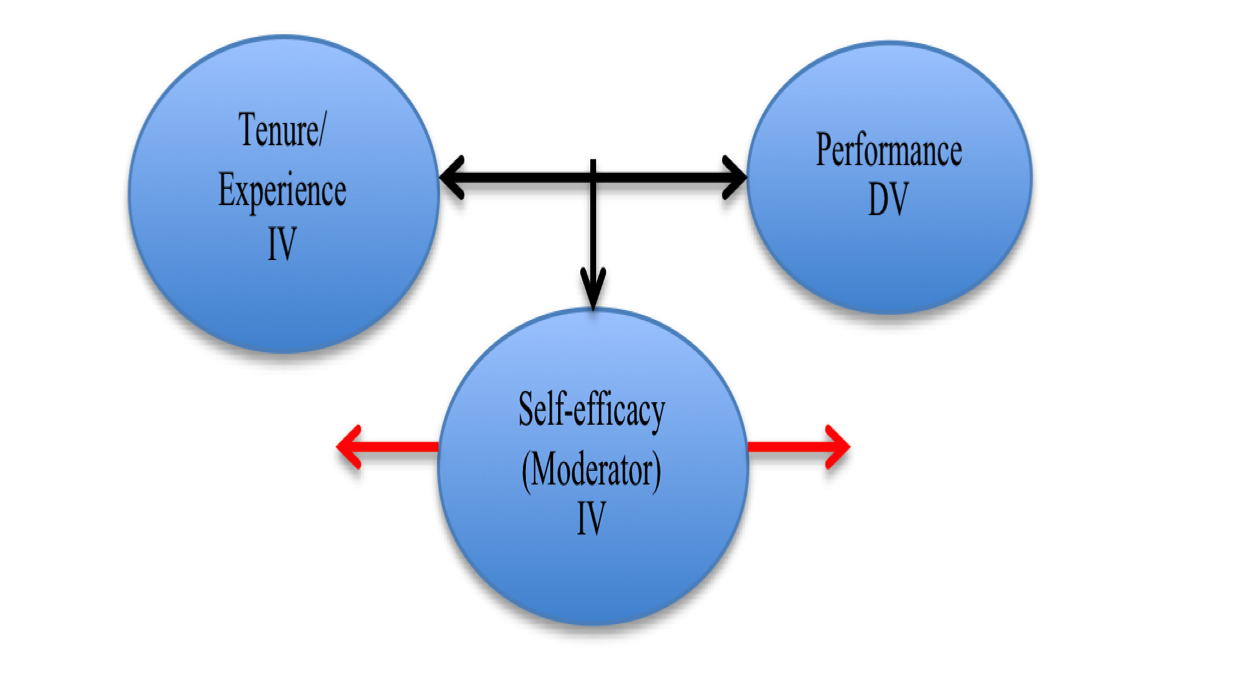
*Keywords:* tenure, teacher experience, technology integration, beliefs, self-efficacy

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As schools continue to invest in technology to support student outcomes, the question can easily become whether or not a teacher is using the technology effectively to impact these outcomes. Definitions of effective technology integration are not always clear and include wording such as practical changes to the learning (Su, 2009), regular day curricular plans and instruction when utilizing the technology (Cullen, 2011). A teacher with tenure, defined as the number of years of teaching experience, not related to monetary gains or levels of promotion, might experience misunderstandings or differing perceptions of the definition of effective integration, which could cause threats to the use of the technology (Kim, et al., 2013). Russell (2007) explored effective technology integration and the variance of teacher longevity and tenure and found that teachers who had more than 15 years of experience did report lower levels of use as expected, but there was a relatively smaller difference between teachers who have less than 5 years or 10-15 years (Russell, 2007). Teacher self-efficacy is the focus of this review, but Elsevier's Dictionary of Psychological Theories (2006), notes that self-efficacy can be described as person’s views and the function to act on the goals to achieve an outcome. Rooted in Bandura’s social cognitive theory, are two types of beliefs: expectancy and efficacy (Elsevier's Dictionary of Psychological Theories, 2006). Expectancy beliefs can be categorized as an outcome, practicing will improve the outcome; and efficacy, beliefs about whether or not one can perform the functions to produce the outcomes (Elsevier's Dictionary of Psychological Theories, 2006).

As a moderator, self-efficacy can “modify the strength or direction (i.e., positive or negative) of the relationship between the variables” (Wu & Zumbo, 2007, p. 370) of teacher tenure and effective technology integration.



Effective technology integration, teacher tenure, professional development, technology proficiencies and various levels of support might threaten a teacher’s beliefs and influence effective technology use (Kim, et al., 2013; K, Tschannen-Moran & Hoy, 2007). Ertmer, Ottenbreit-Leftwich, Sadik, Sendurur & Sendurur (2012) note these as external and internal barriers to effective use and related to the self-efficacy of a teacher . Specifically, first order, external barriers include teacher resources, professional development and support; second order, internal are described as beliefs, values, and attitudes related to the process of using the technology impacting teaching and learning (Ertmer et al., 2012). Related on a deeper level of efficacy, self-efficacy, as a second order barrier, can be described as a determinant of a person’s own perceptions were related to the ability to perform actions necessary to achieve the goals (Ertmer et al., 2012) note these as external and internal barriers to effective use and related to the self-efficacy of a teacher. More recently, access to more technology has greatly reduced much of the first order barriers (Ertmer, 2005) while research shows that second order barriers pose a greater risk to the effective use of technology (Ertmer et al., 2012). Multiple research studies examine subject matter specific factors influencing effective use, but Zhao, Pugh, Sheldon, and Byers (2002, p. 483) note “these types of studies tend to neglect the messy process through which teachers struggle to negotiate a foreign and potentially disruptive innovation into their familiar environment” and even further, the belief system which seems to interfere with the effective usage when examining teacher tenure. Issues when exploring effective technology use are the measurements, which are generically and uni-dimensionally studied without considering the related factors including teacher tenure, levels of support, teacher technology proficiency, or classroom environmental issues (Russell, 2007). A researcher could access the quality and the quantity of use with an instrument to determine teacher efficacy and student learning, but ultimately it is the behavior of change in the teaching that determines the level at which effective integration is acknowledged (Knezek, Christensen, Miyashita & Ropp, 2000). In this review I will examine current literature in hopes of gaining a better understanding of the relationship of self-efficacy as a moderator of teacher tenure and effective technology integration.

***Social cognitive theory and teacher self-efficacy beliefs***

More recently, there has been a shift in the research to understanding the teacher belief system and specifically self-efficacy and how this impacts the knowledge and skills of a teacher (Pajares, 1992; Fang, 1999, Cullen, 2011). Although noted by Pajares (1992), trying to define beliefs is a “messy construct”, he recognizes that:

“The difficulty in studying teachers’ beliefs has been caused by definitional problems, poor conceptualizations, and differing understandings of beliefs and belief structures”(p. 307).

Ertmer, et al (2001) found that that technology practices of teachers aligned with their own beliefs, which noted a difference in the Fang study in which teachers attributed their beliefs to classroom realities meaning things that a teacher has no control over (Fang, 1992). An early study testing Ford’s Motivation Theory (Pintrich, 1992) supported the development of the Beliefs about Teaching with Technology (BATT) survey instrument (Lumpe and Chambers, 2001). This 26 question, Likert instrument seeks to find a correlation between enabling and likelihood beliefs connected to teacher patterns and related to the context of technology usage (Lumpe & Chambers, 2001). Data from the instrument shows promise when developing teachers’ profiles and when tracked over time could provide reinforcement to reform actions by school officials (Lumpe and Chambers, 2001). Ahmad (2011) studied the effects of teacher efficacy and found a correlation between competence or teaching efficacy and confidence or personal efficacy beliefs as an influence on teacher motivation. Teacher attitudes towards children have been associated with the level of the self-efficacy and behavior of change and competence (Tschannen-Moran and Hoy, 1998). Guskey’s (1994) research indicates that teachers with high efficacy will seek out various methods of instruction to improve student learning and varied instructional materials.

***Teacher Tenure related to effective technology integration***

Does the number of years of experience make a difference in the effective use of technology in the classroom? Lumpe and Chamber’s (2001) research seeks to determine if there is a relationship between teacher beliefs patterns beginning with pre-service teachers and extending through more experienced teachers. Lumpe and Chambers (2001) found a correlation between the context and self-efficacy beliefs as a predictor of engaged learning activities while continuing to research to understand if there is a relationship between teacher beliefs patterns beginning with pre-service teachers and extending through more experienced teachers and effective technology integration. Teacher resource use related to effective technology integration for novice teachers were found to be the most strongly related to efficacy with an (r=.32) while only (r=.17) for career teachers, but did not prove strong indicators of teacher self-efficacy beliefs (Tschannen-Moran Anita & Hoy, 1998) when looking for specific correlations. Teachers show the understanding of using resources to engage students, manage behaviors and as noted by Klassen and Chiu (2010) as “survival and discovery” (p. 748) in early careers but found that more career teachers move into a “stabilization and serenity” (p.748) and although there is a level of confidence and acceptance, late career stage teachers report a gradual decline pattern of self-efficacy related to motivation and disengagement. How technology use is defined and measured as well as the effects of teacher contextual use and rather than student understanding align with the Use, Support, and Effect of Instructional Technology (USEIT) model by providing a deeper insight into how a teacher makes use of technology, the extent of the usage and the instructional objectives (Bebell, Russell, O’Dwyer, 2004). Through the USEIT model, researchers found that teacher technology use does not vary between teacher tenure and remained almost consistent between new and experienced teachers (Bebell, Russell, O’Dwyer, 2004).

***Threats to effective technology integration***

*Technology proficiencies*

Cuban (2001) argues that teacher’s instructional practices when integrating technology have not changed and that teachers continue to lack the understanding and knowledge of how to integrate the technology effectively. Whether the teacher has been teaching one year or 30 years, technology proficiencies might threaten the self-efficacy and beliefs to effectively utilize the technology (Su, 2007). While policy makers and administrators believe that effective technology use supports outcomes, the National Center for Education Statistics (NCES), reported that “educational technology when used as a vehicle for transforming education, relatively few teachers felt very well equipped to integrate technology into classroom instruction (20 percent)” (NCES, 1999). A more current study exploring teacher beliefs and technology integration found that teachers must be facilitators of the knowledge when using technology and allow students to be the “source of their own knowledge” (Kim et al., 2013, p. 82). This also supports the idea that with more access to technology does not necessarily mean that teacher’s effective use of technology increases, there must be also be a change in a teacher’s pedagogy when using the technology (Ertmer et al., 2012)

*Systematic Support*

Support from multiple levels allows for teachers to either utilize technology or not. There is often times a top down execution with school administrators overseeing the use and implementation (Berrett, Murphy, and Sullivan, (2012). Administrators must have shared responsibilities toward effective technology integration and must clearly outline the vision and purposes of the technology as it relates to the student outcomes (Berrett, Murphy, and Sullivan, (2012). Al-Fudail and Mellar (2007, p. 1103) describe “technostress” as the relationship between the teacher and multiple variables including the technology environment, demands of the technology readiness including the technology being error-free, skills and abilities to use the technology.

*Professional Development*

To effectively integrate technology, a teacher might find a need for informal or formal professional development (Guskey, 2003). Although there seems to be little agreement among researchers and practitioners defining effective professional development, Guskey (2003) notes that one thing is clear; whatever the professional development is, there should be improvements in student learning outcomes. Mouza (2009) found the ability to participate in research based professional development fostered changes that teachers were able to sustain over time. Beginning with teacher education programs to professional development programs, there must be ample time for implementation and practice of the effective technology integration when considering the types of usage and ownership of how to teach with the technology (Russell, Bebell, O’Dwyer, and O’Connor, 2003). When teachers implemented technology rich opportunities for students and changed their own belief system using technology based professional development it fostered changes in teachers’ educational technology knowledge and attitudes as well as the ability to design and implement technology-supported experiences for students (Mouza, 2009).

**Conclusion**

Classroom technologies will continue to evolve and so will the teachers who enter the profession. This review attempted to provide a deeper understanding of the definitions of effective technology integrations and the problems with differing definitions and the implications of teacher self-efficacy and teacher tenure. Although the relationship between teacher tenure and effective technology integration has been explored, the literature fails to thoroughly explain the relationship of self-efficacy as it relates to the factors that influence effective use. Studies examining self-efficacy (Klassen & Chiu, 2010, Bebell, Russell, O’Dwyer, 2004) did not fully explain the relationship of whole groups and the impact of collective efficacy and how this supports self-efficacy and promotes effective technology integration among teachers with motivational factors. The extent of technology use (Bebell, Russell, O’Dwyer, 2004), validity of measuring behaviors and attitudes (Cullen, 2011) and the need to examine specific uses of technology integration rather than generic (Russell, O’Dwyer, Bebell, Tao, 2007) indicate further research in these areas to better understand the correlations of self-efficacy beliefs as it relates to the relationship between teacher tenure and effective technology integration and specifically related to the multiple threats of effective technology integration including professional development, systematic support and technology proficiencies.

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