



# The effects of practice teaching sessions in second life on the change in pre-service teachers' teaching efficacy

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## ABSTRACT

The purpose of this research was to investigate the effect of practice teaching in Second Life on the change of preservice teachers' teaching efficacy, and the difference of changes between individual teaching practice and collaborative teaching practice in their teaching efficacy. Participants were placed into the individual teaching practice or collaborative teaching practice group as a part of a teaching methods and educational technology course. Both groups completed practice teaching sessions twice in Second Life and an instrument adopted for measuring of pre-service teachers' teaching efficacy beliefs was administered after each of three stages. The researcher collected data from both groups before the first practice teaching, after the first practice teaching session, and after the second session. Results from a Repeated Measure ANOVA indicated that the practice sessions influenced changes in participants' personal teaching efficacy but not teaching outcome expectancy. In addition, the results indicated significant difference between groups on their personal teaching efficacy after the second practice session, but not on teaching outcome expectancy. The difference between the two groups is attributed to the different methods in preparing for the practice session, practicing the teaching, and the reflection methods posed to each group of participants. This research suggests that pre-service teachers can gain valuable teaching practice in Second Life, and furthermore that collaborative practice teaching is more effective way than individual approaches to practicing teaching.

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## 1. Introduction

The characteristics of virtual worlds bring changes and new possibilities to educators' learning environments. The changes and possibilities enable various approaches in pre-service teacher education methods as well as K-12 education and when combined with research on self-efficacy can be used to improve the effect of teaching and learning. Self-efficacy has been defined by Bandura as the "beliefs in one's capacity to organize and execute the courses of action required to produce given attainments" (Bandura, 1997, p. 3). Self-efficacy is positively related to academic performance and academic persistence (Multon, Brown, & Lent, 1991). Teachers' self-efficacy has been defined generally as a belief on their ability to influence students' learning. Previous researchers have suggested that a teacher who has high level of teaching efficacy tends to spend more time at teaching (Riggs & Enochs, 1990), and the sense of self-efficacy is one of the variables highly correlated to student achievement (Ashton & Webb, 1986) and student motivation (Midgley, Feldlaufer, & Eccles, 1989).

Teaching experiences have the most powerful influence on the development of teachers' sense of efficacy, and this teaching efficacy may be most malleable early in the process of learning to teach (Hoy & Spero, 2005). A teaching practicum is one way for pre-service teachers to have an opportunity to practice teaching (Mule, 2006). However, it is not always possible for pre-service teachers to have sufficient opportunities for practicing teaching prior to their work in a classroom setting. In addition, teaching practice sessions with students, though it does provide opportunities for pre-service teachers to improve their teaching abilities, exposes the students to untried teachers, which could raise an ethical concern. Unintended mistakes in practicing teaching may negatively impact to the students because in a classroom any undesirable behaviors or mistakes by pre-service teachers cannot simply be undone (Brown, 1999). Therefore, safe, easy and effective ways of increasing the amount of teaching practice for pre-service teachers are needed to develop their sense of efficacy about teaching.

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Virtual worlds such as Second Life have unique characteristics to support the teaching practice. Users of the virtual worlds express their egos, characteristics, and identities through their avatars (Suler, 2002; Wood, Solomon, & Englis, 2005). As users interact in virtual worlds with others' avatars they experience a feeling of 'presence' that simulates role play and connects them to the community of practice (Lin, Lin, & Huang, 2008; New Media Consortium & ELI, 2007). Dede (1995) pointed out that disinhibition, the fluidity of users' identity, and mimesis were the main characteristics of virtual worlds, all of which can lead to possible benefits such as experimentation without real-world repercussions, and learning by doing. Pre-service teachers can use a variety of text- or voice-based communication methods in virtual spaces that can be constructed to resemble traditional classrooms. Through this technology, pre-service teachers can practice repeatedly their teaching skills without negative impact to students and also capture their performance to later engage in problem solving about and reflection upon their decisions and performance. However, much regarding the development and change of teaching efficacy during teaching practice in virtual worlds remains to be learned. One goal of this research was to examine the changes of pre-service teachers' teaching efficacy during repeated teaching practice sessions in Second Life.

Virtual worlds can also facilitate social interaction in teaching and learning (De Lucia, Francese, Passero, & Tortora, 2009; Jamaludin, Chee, & Ho, 2009). Such interaction supports pre-service teachers' practicing their teaching and constructing their practical knowledge of teaching (Eick & Dias, 2005) based on social context and collaboration. In the view of improving pre-service teachers' teaching efficacy, the collaborative approach to practicing teaching (see Bullough, Young, Birrell, & Clark, 2003; Bullough et al., 2002; Eick & Dias, 2005; Jang, 2008) needs to be considered more importantly than the individual one because the four sources of self-efficacy identified by Bandura (1997) could perhaps be offered more effectively to the pre-service teachers in a collaborative environment. However, very little is known about the effect of collaborative teaching practice on the change of teaching efficacy. The second goal of the research was to examine the difference of changes between collaborative teaching practice and the individual teaching practice in pre-service teachers' teaching efficacy during their teaching practice in Second Life.

## 2. The development of teaching efficacy

Efficacy beliefs, defined by Bandura, determine individuals' initiation of behaviors, effort level and time spent in the face of obstacles, recovery from failures, and persistence in overcoming difficult situations (Bandura, 1977, 1997). According to Bandura (2006), "Perceived self-efficacy is a judgment of capability to execute a given type of performances; outcome expectations are judgment about the outcomes that are likely to flow from such performances (p. 309)." The perceived self-efficacy influences human functioning because it affects behaviors not only directly but also indirectly by impacting outcome expectations (Bandura, 2006). Teachers' efficacy beliefs were defined as a "judgment of his or her capabilities to bring about desired outcomes of student engagement and learning, even among those students who may be difficult or unmotivated (Tschannen-Moran & Hoy, 2001, p. 783)." Thus, information affecting teaching efficacy is valuable knowledge for instructional design decisions in pre-service teacher education program.

According to Bandura (1997), individuals' self-efficacy beliefs are constructed from four sources of information: enactive mastery experience, vicarious experience, verbal persuasion, and physiological and affective state. *Mastery experience* is especially influential among the four sources, and the efficacy is raised by successes and is reduced by failures (Bandura, 1997). Individuals perceive results of performances through interpreting it by themselves or by monitoring others' reaction to them. The perceived results affect the individuals' efficacy, which is then influential when the individuals participate in similar activities. In teacher education, actual teaching experiences are the most powerful mastery experiences that convince teachers about their teaching ability (Tschannen-Moran, Woolfolk Hoy, & Hoy, 1998). These successful and direct teaching experiences also influence pre-service teachers (Housego, 1992; Hoy & Woolfolk, 1990; Lee, 2002) and novice teachers (Mulholland & Wallace, 2001) in their efficacy development.

*Vicarious experience*, such as observing, enables individuals to model the observed objects' successful performance and through mimesis improves their own performance (Bandura, 1997). In establishing pre-service teachers' teaching efficacy, vicarious experience is important because they have limited opportunities to experience actual teaching. Observing others' successful teaching could strengthen the pre-service teachers' own efficacy, but observing poor teaching could weaken it. Once they are in their field placements pre-service teachers can observe their cooperating teacher's teaching. But before these field experiences, pre-service teachers could build up their efficacy through vicarious experiences such as observing their instructors' teaching or peers' successful practice-teaching in courses.

*Social persuasion*, such as reasonable suggestions, can help individuals believe that they possess the capabilities to achieve what they want (Bandura, 1997). This belief comes from indirect experiences and is likely to activate more efforts, but is not as influential as direct experiences. For the development of pre-service teachers' efficacy, social persuasion could offered to them in the form of encouragement, advice, feedback, and suggestions prior to the actual teaching by various sources such as course instructors, colleagues, or theories of teaching. These verbal forms of persuasion will lead pre-service teachers to greater efforts to enhance their teaching ability. It is through these connections to authentic and successful teaching experiences that social persuasion is most influential on teachers' beliefs about their ability to teach.

The *physiological and affective state* of individuals, such as sweaty palms caused by emotional arousal, might be another constituent source for building one's efficacy. According to Bandura (1997), individuals rely partly on their state of physiological arousal in judging their capabilities. Bandura (1997) believed that, because high arousal usually makes individuals' mind weaker, individuals are more likely to expect success when they are not suffering from stressful conditions. Physiological state is a kind of direct experience and so it could be more powerful to their self-efficacy building. Pre-service teachers may have a tension or anxiety on their first actual teaching experiences, and these high levels of stress may decrease pre-service teachers' beliefs about their teaching (Lee, 2002). Therefore, teacher education programs need to scaffold pre-service teachers before their first authentic experiences of teaching practice.

Bryan and Atwater (2002) asserted that "A belief system is a structured group of beliefs with characteristics that distinguish it from knowledge systems (p. 824)." Beliefs could influence in individual's problem solving process and actual behaviors than knowledge (Nespor, 1987). Thus, mental efforts are needed to change previous beliefs because beliefs are not easy to be changed (Bryan & Atwater, 2002). In the pre-service teacher education program, attending lectures about teaching and learning, practicum teaching experiences in classes, and student teaching in the field should be connected successively so that they build a teacher's self-efficacy. Practicum teaching experiences provide direct experiences that, according to Rokeach (1968), modify one's underived beliefs, which have an on-going effect on other beliefs

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