Chapter 79

Barriers and Challenges Facing Pre-Service Teachers Use of Mobile Technologies for Teaching and Learning

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ABSTRACT

This study examined the perceptions, attitudes and beliefs of pre-service teachers using the iPad for their professional learning purposes and for teaching during their school placements. The sample consisted of 117 pre-service teachers undertaking a one-year postgraduate qualification in England to gain qualified teaching status (QTS). A mixed methods design was employed to collect data using questionnaires and focus groups and the results showed how students' beliefs and attitudes, categorised as second order barriers, are significant factors in determining how effectively mobile technologies are used as a teaching and learning tool. Whilst the research literature suggests access, infrastructure and training, are diminishing as significant barriers for technology adoption, this study found that first-order barriers such as these still remain a significant challenge for pre-service teachers attempting to learn with and use mobile technologies in their practice. The article concludes with implications for practice in teacher education, theory and areas for further research.

INTRODUCTION

Many studies have identified the external barriers and challenges facing teachers when they attempt to integrate technology into their teaching such as infrastructure issues, availability of hardware/software, and lack of training (Cuban, Kirkpatrick & Peck, 2001; Hew & Bush, 2007; Rogers, 2000), but recent research indicates that removing these obstacles has only a negligible effect if internal barriers such as

teachers' attitudes and beliefs about the value of technology in learning are not also addressed (Ertmer, 1999, 2005; Ertmer, Ottenbreit-Leftwich, Sadik, Sendurur, & Sendurur, 2012). This is particularly true for pre-service and newly qualified teachers where attitudes and beliefs about teaching are still malleable and under construction (Chen, 2008; Park & Ertmer, 2007).

Whilst external obstacles, often labelled as first order barriers, still exist it is claimed that developed countries like the UK and the USA have passed the tipping point whereby these factors are critical de-terminants of how, and indeed if, teachers will integrate technology into their classrooms:

If first-order barriers are no longer operational in teachers' classrooms today, or are operating below a minimal threshold, we may be in a better position to observe how teachers enact their beliefs through purposefully selected practices. (Ertmer, et al, 2012, p. 425)

Rather time and resources would be better invested in focusing on the attitudes and beliefs which teachers hold about technology and learning since these have been shown to be strongly correlated with their enacted pedagogical practices in the classroom (Ertmer, et al, 2012).

Based on a large, longitudinal study conducted in the UK, this paper explores the perceptions and beliefs pre-service teachers hold about the use of mobile technologies and examines the barriers and challenges they face during their one-year programme as they prepare to become teachers. It is original because it is the first study of its kind to utilises Ertmer's existing theoretical framework of first and second order barriers to understand how pre-service teachers use mobile technologies (the iPad). The results are significant because they reveal the complexities of this process and suggest both practical and theoreti-cal avenues for further consideration which are relevant for teacher educators, researchers, teachers and pre-service teachers interested in the phenomenon of mobile learning (m-learning) in teacher education.

REVIEW OF THE LITERATURE

Despite the ubiquity of mobile technologies and growing evidence to illustrate their impact on learning (Naismith, Lonsdale, Vavoula & Sharples, 2004; Park, 2011), the process of supporting and preparing teachers to use these technologies remains largely under-researched and under-theorised (Baran, 2014; Ekanayake & Wishart, 2014; Kukulska-Hulme, Sharples, Milrad, Arnedillo-Sánchez & Vavoula, 2009; Kearney & Maher, 2013). This is particularly evident in initial teacher education where few studies have investigated how the affordances of mobile technologies such as their spontaneity, seamlessness and authenticity support the development of pre-service teachers.

In those studies that have explored this subject - mainly from the perspective of qualified practitio-ners, not pre-service trainees - mobile learning is mainly reported positively (Baran, 2014). Highlighted gains include the potential to expand the classroom using the seamless affordances of mobile technolo-gies (Newhouse, Williams & Pearson, 2006), greater opportunities for more personalised, collaborative learning, both in and beyond the context of the classroom (Cheon, Lee, Crooks & Song, 2012) and the ability to situate learning in more authentic contexts using more realistic tools and real time data (Burden & Kearney, 2016; Kearney, Schuck, Burden & Aubusson, 2012; Martin & Ertzberger, 2013).

However, despite these positive gains and a significant increase in the number of research publications focused specifically on teacher education (see the recent review by Baran, 2014), few studies explore

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