Chapter 101
Online Collaborative Learning in Pre-Service Teacher Education:
A Literature Review

Elif Nagihan Gokbel
Coastal Carolina University, USA

ABSTRACT

Technology-enhanced collaborative learning has become attractive in higher education. Teacher education programs have made extensive efforts for meaningful use of online technologies for collaboration and communication. This review aims to synthesize a comprehensive literature review on PSTs' collaborative learning with online tools. First, the review revealed that the number of articles published has increased especially in the last five years with contributions from researchers around the world. Second, there were three types of online technologies used mainly for collaboration in PST education: Asynchronous, synchronous, and social media tools. Third, online tools for collaboration were reported as mainly beneficial in PSTs' education contexts. Forth, while there are notable exceptions, challenges to integrate online collaboration tools in PSTs' education programs were scant. Finally, there were various instructional practices where educators integrated online collaborative tools for learning. Future research directions are elaborated.

INTRODUCTION

In the last two decades, the use of the technology to support learning in higher education has increased worldwide. This growth enabled new forms of technology-enhanced communication and collaboration for learning. There are many emerging online tools for collaboration, and they can notably vary from each other. Emails, blogs/microblogs, wiki, discussion boards, voice over internet protocol, web conferencing systems, real-time collaborative editing, shared spaces, text messaging, instant messages or chats are examples of online means that support collaborative learning.

Technology-enhanced collaboration in higher education settings has attracted a rapidly increasing number of research studies investigating various aspects of learning from theoretically diverse perspectives (Resta & Laferriere, 2007). To date, there are also a number of studies examining the effectiveness of instructional technologies in teacher education programs and how students learn to use such technologies. However, there is no consolidated picture on how online collaboration occurs in preservice teachers' (PSTs) education and what online tools are used for professional development. Also, research on technologies in teacher education has mostly investigated student learning about technologies rather than learning with them (Baran, 2014). This review aims to synthesize a comprehensive literature review on PSTs' collaborative learning with online technologies. There are previous literature reviews researching web 2.0 technologies in higher education (Conole & Alevizou, 2010); mobile technologies in pre-service and in-service teachers' development (Baran, 2014); and internet-based technologies for collaborative learning in higher education (Resta & Laferriere, 2007). However, there is no recent systematic research has been conducted on online collaboration tools and implementation strategies of those tools to promote learning and student engagement in pre-service teacher education programs. Comprehensive description and evaluation of tools and strategies is a necessary step, then, to guide researchers, administrators, and educators.

The purpose of this paper is to identify strategies used to incorporate online collaboration tools into pre-service teacher education. The main underlying question of this review is how online collaboration occurs in pre-service education and what are the types of online collaboration used for teacher education. The majority of previous studies group online collaboration tools into two broad categories (synchronous and asynchronous) based on the time frame the communication occurs. Asynchronous online *learning*, most commonly enabled by e-mail and discussion boards, supporting class-related connections among students and with instructors. This type of collaboration doesn't require learners be online at the same time and is mostly benefited by learners who combines education with work, family, and other duties. Another advantage of asynchronous interaction is that students may have more time cultivating and generating their contributions (Hrastinski, 2008). *Synchronous collaboration*, commonly facilitated by videoconferencing and chat. This type of collaboration for learning provides opportunities for more social connections among students and with instructors and this might help avoid frustration by asking questions and getting answers in real time (Hrastinski, 2008). There is a recent study adding hybrid tools as a third category (Wahl & Kitchel, 2016). In a comprehensive literature review study, Wahl and Kitchel (2016) listed effective professional distance collaboration tools into three types: Asynchronous, synchronous, and hybrid tools. Those are; asynchronous (emails, blogs and microblogs, wiki, discussion boards, etc.), synchronous (voice over internet protocol, web conferencing systems, real-time collaboration or real-time collaborative editing, etc.), or hybrid tools (shared spaces, text messaging, instant messages or chat, etc.). Asynchronous tools assist users to do works independently and share them with offline users. They also connect users in the different geographic region or time zone (Wahl & Kitchel, 2016). Synchronous collaboration, on the other hand, is location free but occurs at the same time. Most synchronous tools enable learners in distant locations to connect with one click, engage them virtually with instructors, other learners, and/or experts who would not be available on campus (Dyment & Downing, 2018). Finally, Wahl and Kitchel (2016) define hybrid tools as spaces that can offer collaborative methods that are not always available with other two types of resources. Hybrid tools work both synchronously and asynchronously depending on the user and the situation.

Based on the 27 empirical research reviewed, social media platforms appeared as popular tools to support online collaboration for PSTs' learning. The reviewed research studies that are focusing on the

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