Chapter 17
Teaching and Assessing Problem Solving in Online Collaborative Environment

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ABSTRACT

Online teacher programs are diverse in their models, expressing a variety of learning objectives, pedagogies, technological platforms, and evaluation methods. Promoting and assessing collaborative learning of an online teacher programs is one of the major challenges, in part because collaboration includes complex cognitive and social-emotional dimensions. This chapter focuses on teachers' academic program in online learning environment and examines the conditions for effective teaching and assessing collaborative problem solving. The chapter provides readers a look at the rationale, implementation, and assessment of collaborative learning in online teacher program and presents the conditions for effective design of collaborative learning for pre- and in-service teachers. Examples from two empirical studies will be provided on how the collaborative learning environment leverages teachers' constructivist teaching, ongoing feedback, and evaluation to prepare teachers for instruction in technology-rich environments.

INTRODUCTION

According to the Organization for Economic Co-operation and Development (OECD) Teaching and Learning International Survey (TALIS), a significant proportion of teachers think that professional development does not meet their needs (OECD, 2009a). Many teachers emphasize lack of suitable development opportunities, conflict with their work schedule and the need for professional development on Information and Communication Technologies (ICT) teaching skills. This suggests a need not just for better support for teachers' preparation and professional development, but for policy makers and school leaders to ensure that the development opportunities available are effective and meet teachers' needs. Online teachers program can be potentially a key solution for

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these needs. Using online technologies prepare effective educators and increase their competencies throughout their careers while building the capacity to deliver effective teaching.

Standards and resources within International Society for Technology in Education (ISTE, 2008) and UNESCO's project "ICT Competency Standards for Teachers" (UNESCO, 2008), provide guidelines for planning teacher education programs and training offerings that will prepare them to play an essential role in producing technology-rich learning environments for technology capable students. Being prepared to use technology effectively to support student learning have become integral skills in every teacher's professional program. According to the ISTE ICT professional growth standards (ISTE, 2008), teachers will: (a) participate in local and global learning communities to explore creative applications of technology to improve student learning; (b) exhibit leadership by demonstrating a vision of technology infusion, participating in shared decision making and community building, and developing the leadership and technology skills of others; (c) evaluate and reflect on current research and professional practice on a regular basis to make effective use of existing and emerging digital tools and resources in support of student learning; (d) contribute to the effectiveness, vitality, and self-renewal of the teaching profession and of their school and community. UNESCO ICT competency standards for teachers (UNESCO, 2008), emphasize that teacher training should focus on the development of digital literacy, use of ICT for professional improvement, use technology to guide students through complex problems and manage dynamic learning environments. One of the key ICT components in teacher programs is modeling collaborative knowledge construction by engaging with colleagues and students in face-to-face and online environments.

Online teacher programs are diverse in their models, expressing a variety of learning objectives, pedagogies, technological platforms and evaluation methods (e.g. Barnett, 2002; Dede, 2006; Hawkes, & Romiszowski, 2001; Yang, & Liu, 2004). This chapter focuses on teachers' academic online program and examines the conditions for effective construction of knowledge and skills in online collaborative learning environment. The chapter provides readers a look at the rationale, implementation and results of teachers' academic online course in online collaborative learning environment and presents the conditions for effective construction of knowledge and skills.

BACKGROUND

Online teacher preparation and professional development programs can be broadly divided into two types: blended learning or distance learning. Blended learning is that which involves face-to-face contact between the facilitator and teacher alongside internet based input delivery and interaction. Distance learning consists of input delivered entirely via the internet, and interaction taking place via similar technology environment. Online learning communities break through educators' traditional isolation, enabling them to collaborate with their peers (Fishman, 2007). Educators are no longer limited by where they teach or where and when they are involved in a professional development. Promoting and assessing collaborative learning of an online teacher programs is one of the major challenges, in part because collaboration includes complex cognitive and social-emotional dimensions. What process evidences and outcomes should be collected to show success of particular model for collaborative learning? What pedagogical and technological conditions can support collecting these evidences? This chapter focuses on teachers' academic program in online collaborative learning environment and examines the conditions for effective construction of knowledge and skills. Two studies described in this chapter examined

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