Chapter 14
Understanding Web-Based Peer Assessment in Teacher Education

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ABSTRACT

With the development of technology, web-based peer assessment has been increasingly used as an alternative, formative assessment strategy with great potential for student learning benefits. The purpose of this chapter is to synthesize a series of empirical research studies conducted by the authors to examine factors that can influence the effectiveness of web-based peer assessment with teacher education students. The findings of these studies are discussed within the larger context of general research in peer assessment. Implications are provided to better inform researchers and teacher educators about the use of web-based peer assessment and how it relates to teacher education students’ ability to apply assessment criteria and their ability to take advantage of peer feedback.

INTRODUCTION

Web-based peer assessment is a topic that has been steadily growing in interest among researchers and practitioners in education. A literature search through ERIC database results in more than 600 journal articles that have been published on the topics of either “web-based” or “online” peer assessment. Most educators use web-based peer assessment as a formative assessment (i.e., assessment for learning) instead of summative assessment strategy, allowing students to actively engage in the learning process by tak-
ing the roles of both assessors and assessees (Cheng & Warren, 1999; Davies, 2000; Li, Steckelberg, & Srinivasan, 2008; Prins, Sluijsmans, Kirschner, & Strijbos, 2005). Reviews of research on formative peer assessment (e.g., Topping, 2008; Topping, Smith, Swanson, & Elliot, 2000) indicate that it can benefit student learning in many aspects, such as content knowledge, higher order thinking skills, assessment skills, learner autonomy, and motivation. Compared with peer assessment in face-to-face settings, web-based peer assessment has obvious advantages (Sung, Chang, Chiou, & Hou, 2005), which include but not limited to a) availability and accessibility anytime from anywhere, b) digital and automatic distribution of student work and peer review—no need to print or copy, and c) easiness in managing the assessment and review process (e.g., deadlines, random assignment, anonymity, etc) (Kwok & Ma, 1999; Lin, Liu, & Yuan; vanden Berg, Admiraal, & Pilot, 2006).

In spite of the increasing popularity of web-based peer assessment as a research topic, the student populations involved in previous research vary to a great extent, from K-12 students to doctoral candidates, and the target knowledge and skills being taught in the course where web-based peer assessment is implemented also varies substantially, from general writing ability, presentation skills, scientific knowledge, to research competency. Few researchers have consistently and systematically examined the use of web-based peer assessment in teacher education. If we want web-based peer assessment to be implemented appropriately and benefit more students, we must first introduce it as an effective instructional strategy to preservice and in-service teachers. The purpose of this book chapter is to provide a synthesis of six studies that we have conducted to examine different aspects of web-based peer assessment in teacher education in 2009-2017. We also discuss our interventions and findings in the context of the general research in web-based peer assessment and peer assessment in order to offer teacher educators with more and better ideas regarding specific approaches to enhance the effectiveness of web-based peer assessment.

BACKGROUND

Much teacher education research has been published regarding web-based peer assessment systems. Some studies presented standalone web-based peer assessment system for pre-service and in-service teachers. Li and Steckelberg (2005) developed Peer Assessment Support System (PASS), a database-driven website with a student interface and an instructor interface, at the University of Nebraska-Lincoln. Using PASS, undergraduate students taking an instructional technology course were able to anonymously rate and comment on two randomly assigned peers’ projects as well as viewing ratings and comments from their peers on their own project, while the instructor was able to monitor the peer assessment process with “a substantial reduction of management workload (p. 84)” . Tsai and his collaborators (Tsai, Liu, Lin, & Yuan, 2001; Tsai, Lin, & Yuan, 2002) developed a similar networked peer assessment system for secondary science education students to submit, review, and revise a science homework design project at the National Chiao Tung University in Taiwan. Their system is somewhat different from PASS in that it used a Vee heuristic based interface for guiding the design process, allowed submission of multiple, linked files for one project, and involved more than one rounds of peer assessment and revision.

Web-based peer assessment in teacher education has increasingly been integrated into more comprehensive e-assessment and e-learning systems. Gogoulou, Gouli, Grigoriadou, Samarakou, and Chinou (2007) developed the Supporting Collaboration and Adaptation in a Learning Environment (SCALE) system for students taking “Informatics in Education” and “Distance Education and Learning” courses at the University of Athens. The assessment component of SCALE allowed students to engage in self-
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