Chapter 14
Towards a Theory of Formative Assessment in Online Higher Education

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ABSTRACT

The affordances of online learning have coincided with increasing demand for higher education across disciplines. The need to provide appropriate learning support while fostering self-regulation in online higher education calls for formative assessment to facilitate meaningful learning. This chapter attempts to conceptually generalize the findings of a recent collective case study and develop a relevant theoretical framework for online formative assessment. The theoretical framework is intended to inform successful implementation of formative assessment in online learning contexts. The collective case study purposefully conceptualized formative assessment from a holistic pedagogical approach. Investigating application of formative assessment in the recent study explored multifaceted elements including provision of a variety of embedded authentic assessment activities. The theoretical framework advanced through this chapter is therefore an attempt to coherently unify the diverse elements and techniques from the collective case study, and explicate how this creates an effective pedagogical design to promote meaningful learning.

INTRODUCTION

In an attempt to conceptually generalize the findings a recent collective case (broader) study (Gikandi, 2012), two congruent theories have been identified to provide basis to advance a relevant theoretical framework in the context of online higher education. The individual case studies have already been published in a series of journal papers (Gikandi, 2013; Gikandi & Mackey, 2013; Gikandi, & Morrow, in press). The theoretical framework developed and presented in this chapter therefore aims to uncover the broader and deeper conceptual meanings of the findings, and link the key outcomes of the recent study to the existing knowledge.

The chapter starts with a brief review of the identified theories. Secondly, review of the key findings of the recent study is presented. The discussion that follows seeks to elucidate a theoretical

framework that can guide assessment of situated and authentic learning with a particular focus on online formative assessment. Lastly, conclusions are offered.

As identified in Gikandi, Morrow and Davis (2011), previous studies did not explicate all relevant aspects of formative assessment which amplifies the purpose of this chapter. The collective case study (Gikandi, 2012) conceptualized online formative assessment from a more holistic pedagogical strategy purposefully incorporating diverse elements. Investigating application of formative assessment in Gikandi (2012) focused on exploring multifaceted elements including provision of a variety of authentic assessment activities which were embedded within the learning processes to engage the students within the online discourse and real-life contexts.

Developing a theoretical framework through this chapter is an attempt to coherently unify the diverse elements and techniques evidenced in the recent collective case study from the perspective of authentic learning. More importantly, the recent findings by Gikandi (2012) reveal some relationships with the identified previous empirical studies in ways that indicate that the findings confirm previous research. Notably, these relationships also reinforce the theoretical framework presented in this chapter.

BACKGROUND

Assessment of Situated and Authentic Learning

Over the years, situated and authentic learning have been recognized as viable perspectives for promoting meaningful learning in (online) higher education through fostering higher-order learning and the development of metacognitive skills (Gikandi, 2012). The theoretical understandings being advanced here are mainly underpinned on the theory of situated cognition (Brown, Collins,

& Duguid, 1989) which suggests that meaningful and transferable learning occurs when learning and knowledge is situated within social and authentic contexts where meanings are negotiated and validated. Brown et al. (1989) among others situativists (e.g. Barab, Squire,& Dueber, 2000; Lave & Wenger, 1991) have argued that perceiving and acting (perception-action process) are fundamental components of meaningful and transferable learning, and knowledge is embedded in the authentic activity, context and culture in which it is constructed and used. The situated cognition theorists (Brown et al., 1989; Collins, Brown, & Newman, 1989; Collins, Brown, & Holum, 1991) also emphasize that it is necessary to go beyond the physical skills in formal learning (craft or standard apprenticeship) to focus on the development of metacognitive skills (or cognitive apprenticeship) in order to promote construction of robust knowledge and its transferability to new situations.

Drawing from the aforementioned theorists, Young (1993) suggests that learning is situated and an ongoing perceptual change as learners increase their ability to detect information and navigate through a problem solving situation. Learning goes further to figuring out appropriate strategies that can enable one to solve a complex and realistic problem situation that constitute an authentic activity. Problem solving in this context refers to "an interaction between the problem solving skills of the learner and the activities and manipulations that a particular problem affords" (Young, 1995, p. 90). As Young (1995) emphasized, problem solving is not linear in nature, but a complex and dynamic evolving process within which sub-dilemmas are discovered with the initial strategies for achieving solutions being revised. This may also lead to reconstruction of the initial goals.

Accordingly, previous research indicates that situated learning necessitates congruent assessment approaches (Herrington & Oliver, 2000; McLellan, 1993; The Cognition and Technology

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