Chapter VIII

The Mediated Action of Educational Reform: An Inquiry into Collaborative Online Professional Development

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Abstract

The purpose of this case study was to describe and evaluate how four teachers in four different cities in Missouri, U.S., collaborated online to implement an online constructivist-based learning environment that included an innovation cluster pairing and emerging online technology with a problem-based learning unit design framework. The design of this study originated from prior research on teacher reform efforts including the adoption of technology innovations in the classroom, new theories of constructivist-based learning and the principles of professional development for educators implementing reform. Using the methodology of cultural historical activity theory, the researchers collected and analyzed data to identify how effectively each of the teachers implemented the innovation cluster based on their goals for adopting the new innovations while participating in online collaborative
professional development. As a result the researchers were able to evaluate the effectiveness of the online professional development model used to aid these innovative educators and develop concepts of best-practice professional development programs.

Introduction

The purpose of this study was to understand how teachers participate in online collaborative professional development in order to implement an innovation cluster of (1) an emerging online technology and (2) a framework for designing a constructivist-based learning environment (CBLE). This innovative pilot was developed as part of the Missouri Department of Elementary and Secondary Education’s (DESE) online access system for K-12 districts titled the Missouri Research and Education Network (MOREnet). MOREnet sponsors a technology integration program called enhancing Missouri’s Instructional Networked Teaching Strategies (eMINTS). eMINTS places a saturation level of technology in selected fourth grade classrooms in the state. The innovative program analyzed in this study was a one-year pilot called ePioneers. ePioneers was a new online program introduced in 2001-2002. This research studied four experienced eMINTS teachers who volunteered to collaboratively implement an online problem-based unit of study with four other teachers in classrooms across the state of Missouri. The units were collaboratively taught in an online Linux-based workspace called Shadow netWorkspace™ that was designed and hosted for the teachers by the University of Missouri’s School of Information Science and Learning Technologies.

Theoretical Background

The theoretical grounding for this study is the socio-cultural theory of human interaction and development (Bruner, 1990; Vygotsky, 1978) with an emphasis on understanding the processes of mediated activity (Wertsch, 1998). This form of analysis identifies responses to complex social systems by making the interactions in the system explicit so practical and theoretical implications can be developed (Cole & Engeström, 1993). The researchers used activity theory (AT) in order to design a systems-based framework for understanding the interacting processes in context and over time (Engeström, Miettinen, & Punamaki, 1999; Il’enkov, 1977). Activity theory defines the elements of human interactions systemically and allowed the researchers to design analytical procedures that developed systemic and contextual relationships among the dataset (Barab, Hay, & Yamagata-Lynch, 2001; Schoenfeld, 1999). As a result of using AT as the framework for analysis, the researchers created a priori coding categories based on the AT model of work activity and the concept of mediational effects of new tools and integrated theoretical constructs from related fields (e.g., professional development, innovation, collaboration) into operationalized groupings of interactions in the local and collaborative work activity of the teachers (Engestrom, 1999).

This study looks at the implementation of two interrelated educational innovations as an innovation cluster that included an advanced online learning technology and an instructional
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