Testing a Model of Peer Interaction in an Online Course with Structural Equation Modeling

Deb LaPointe, Ph.D. Candidate
Organizational Learning and Instructional Technologies
University of New Mexico
United States
debra@unm.edu

Abstract:

In 1994, Moore called peer interaction “a challenge to our thinking and practice in the 1990s.” In 2000, Garrison predicted that asynchronous collaborative learning facilitated through CMC could be the defining technology of the post-industrial age of distance education. In 2001, Garrison, Anderson, and Archer (2001) wrote that still a major challenge facing educators is using CMC to create a critical community of inquiry, the hallmark of higher education and the promise of CMC. CMC is a complex phenomenon, and as Garrison proposes, it is time to develop and test predictive models that may shape theory and future practice (Garrison, 2000) and ensure reliable, effective learning outcomes. Structural equation modeling seems a fit tool for the job.

Presentation Type: Poster

Description:

Problem: Our pervasive adoption of computer-mediated conferencing (CMC) in higher education has far outpaced our understanding of the nature of CMC and, accordingly, how this medium should best be used to promote higher-order learning (Garrison, Anderson, and Archer, 2001; Zhang, 1998; Jiang and Ting, 2000). In 1994, Moore called peer interaction “a challenge to our thinking and practice in the 1990s.” In 2000, Garrison predicted that asynchronous collaborative learning facilitated through CMC could be the defining technology of the post-industrial age of distance education. In 2001, Garrison, Anderson, and Archer (2001) wrote that still a major challenge facing educators is using CMC to create a critical community of inquiry, the hallmark of higher education and the promise of CMC.

Our challenge to understanding and using CMC effectively is due to its complex nature. Many studies have suggested that peer interaction in an online environment is a complex set of relationships and interrelationships among several constructs. Modeling is one of the best methodological instruments to represent a complex societal system (Hall, 2000). Structural equation modeling is viewed as a way to test a model of a specified set of relationships among theoretical constructs (Joreskog, 1993). Garrison proposes, it is time to develop and test predictive models that may shape future practice (Garrison, 2000) and ensure reliable, effective learning outcomes. Structural equation modeling seems a fit tool for the job.
**What Was Done:** The researcher developed and tested a model of four constructs impacting and shaping peer interaction with CMC in order to determine the effects of peer interaction on learning outcomes. The review of the literature had established that four major theoretical constructs shaping and influencing peer interaction within CMC environments are self-construal, teaching presence, task design, and prior CMC experience. Data to test the model of peer interaction was collected from a series of three online questionnaires completed by 228 participants during the Spring 2002 and Summer 2002 semesters. The 228 participants were enrolled in 30 online courses taught at the community college and university level throughout the United States and in one university in Canada. Data were also collected and coded through transcript analysis by five trained coders. The data and model were analyzed using structural equation modeling to determine the goodness of fit of the data to the model and to determine the strengths of relationships among the variables.

**Why the Work is Important:** This study will add both to the theoretical and practical bases of distance education. Testing the relationships among the four constructs mentioned will add to the body of knowledge allowing us to better understand 1) the roles played by the variables identified, 2) the relationships among the variables shaping peer interaction, and 3) the impact of peer interaction upon learning outcomes facilitated by CMC. Distance education instructors, course designers, course evaluators, distance education managers, and administrators want to know whether peer interaction is necessary or preferable for facilitating learner achievement of course objectives and expected learning outcomes. The study will inform instructors and designers in practical matters of how to effectively design and teach within CMC environments to most productively shape peer interaction and, in turn, effective learning outcomes.