Content Analysis of Wiki Discussions for Knowledge Construction: Opportunities and Challenges

Vasa Buraphadeja, Martin de Tours School of Management and Economics, Assumption University, Suvarnabhumi Campus, Bang Sao Tong, Samut Prakan, Thailand
Swapna Kumar, School of Teaching and Learning, University of Florida, Gainesville, FL, USA

ABSTRACT

Research on several aspects of asynchronous online discussions in online and hybrid courses has been successfully conducted using content analysis in the past. With the increase in Web 2.0 and social media use in education, research on knowledge construction within newer virtual environments like blogs or wikis is just emerging. This study applies a well-known model of content analysis for knowledge construction to an educational wiki environment. Twelve graduate students’ contributions to a wiki in a 14-week on-campus course on Web 2.0 technologies in education are analyzed. Results indicate that the wiki platform fosters collaborative knowledge construction and that it is necessary to develop new frameworks to analyze content in new learning environments. Wiki environments provide opportunities for researchers to capture the process of collaboration, knowledge construction, and meta-cognition.

Keywords: Content Analysis, Critical Thinking, Higher Education, Knowledge Construction, Web 2.0, Wiki

INTRODUCTION

The National Center for Education Statistics (NCES) reported that 66% of all two-year and baccalaureate institutions offered distance learning courses and 35% offered hybrid courses in the 2006-07 (Parsad & Lewis, 2008). The report also found that asynchronous Internet course delivery was used moderately by 92% and extensively by 75% of those courses. Learning management systems and online resources are almost ubiquitous in undergraduate and graduate courses in higher education institutions in the United States. Instructors have used course websites in Blackboard, Sakai, Moodle or other learning management systems for over a decade to make course resources accessible to students, to communicate with students online, and to facilitate discussion among students. More recently, Web 2.0 tools like blogs, wikis, or even social networks are chosen by educators to increase student engagement with, discussion

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of, and creation of content. A popular use of asynchronous tools by educators is to encourage students to discuss course readings and find and share resources pertaining to course topics, with an aim to facilitate critical thinking, reflection, and co-construction of knowledge.

Research on several aspects of asynchronous online discussions in online and hybrid courses has been successfully conducted in the past, along with the development and validation of content analysis schemes for measuring knowledge construction, critical thinking, the use of tasks and scripts, and reflection (Garrison, Anderson, & Archer, 2001; Gunawardena, Lowe, & Anderson, 1997; Henri, 1995; Marra, Moore, & Klimczak, 2004). The results of such research have assisted educators in structuring, facilitating, and evaluating online discussions for improved student outcomes. The research on knowledge construction or critical thinking within newer virtual environments like blogs, wikis, and social networks however, is just emerging. Given the increase in asynchronous course delivery and the use of new technologies in blended, online, and face-to-face courses in the last few years, it is important that researchers also develop ways to measure student reflection, knowledge construction, and critical thinking in online discussions in newer asynchronous environments, thus providing insight into the ways in which students learn when interacting online.

CONTENT ANALYSIS AND ASYNCHRONOUS COMMUNICATION

The text-based, non-verbal medium in asynchronous learning environments as opposed to oral communication in face-to-face classrooms has been termed lean medium by Garrison, Anderson, and Archer (2000) who asserted that this medium provides time for reflection and facilitates deep and meaningful learning. The asynchronous nature of the medium extends wait times for learners to process information and reflect on learning materials, promoting deep learning and providing learner-centered instruction (Hara, Bonk, & Angeli, 2000; Havard, Du, & Olinzock, 2005). A successful method that has been used to analyze online discussion transcripts for deep learning, high-level thinking, critical thinking, and cognitive skills is content analysis. Content analysis is a “technique used to extract desired information from a body of material (usually verbal) by systematically and objectively identifying specified characteristics of the material” (Smith, 2000, p. 314). In computer-mediated communication (CMC), researchers infer meaning from text using a set of procedures to discern and define a target variable, to collect samples of representative text, and to devise reliable and valid rules to categorize segments of the text (Anderson, Rourke, Garrison, & Archer, 2001).

Several content analysis schemes have been used to measure levels of critical thinking in CMC in higher education, which has mainly taken place in bulletin boards, online discussion boards, or online discussion forums in the last two decades (Garrison et al., 2000; Gunawardena, Lowe, & Anderson, 1997; Newman, Webb, & Cochrane, 1995). More recently, there has been an increase in instructors’ use of Web 2.0 tools or social media (e.g., blogs, wikis, social networking and social bookmarking tools) that not only harness users’ contributions, but facilitate collaborative information discovery, information sharing, and information creation (Alexander, 2006; O’Reilly, 2005). Web 2.0 tools like blogs and wikis incorporate asynchronous online communication while others include both asynchronous and synchronous communication tools (e.g., Facebook). As different forms of the traditional online forum emerge and are integrated into higher education, it becomes important to study whether they provide the same benefits for learning and whether proven content analysis methods can be applied to study CMC using Web 2.0. Using an existing, often used model of content analysis for knowledge construction and applying it to discussions in a Web 2.0 environment can highlight the ways in which new technologies can be studied using proven methods, and can also reveal the aspects of discourse using new technologies that warrant new methods of analysis. The following
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