Session Abstract: As many researchers have observed, one of the greatest impediments to the study of computer-mediated discussions is a lack of standardized methods for analyzing the content of online discourse. To make headway on this difficult issue, we have assembled an international panel of researchers who are currently using a range of techniques for analyzing computer-supported discussions. During the symposium, they will share methods, ideas, perspectives, and discuss the decisions they faced when developing their instruments. The overarching objective is to draw on their experiences to better understand the nature of the problem and extend our knowledge of how to perform content analysis. Addressing this issue is an important step for improving the quality of research on computer-mediated discourse.

Content Analysis in Asynchronous Discussion Groups: Studying Role Internalization
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ASIMeC-F: A Content Analysis Scheme for Assessing the Presence of Conversational Functions in Asynchronous Discussions
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Student Knowledge Construction in Educational Wikis: Challenges for Interaction Analysis
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Using Content Analysis to Study Peer Assessment in a Wiki-Based Science Curriculum
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Discussion: Content Analysis in Computer-Supported Collaborative Learning Environments
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Student Knowledge Construction in Educational Wikis: Challenges for Interaction Analysis

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Prior research has highlighted social knowledge construction by students as one of the main benefits of asynchronous online communication in higher education. While discussion boards and online forums have been popular tools for asynchronous online communication in the past, several Web 2.0 technologies like blogs, wikis, and social networking tools are increasingly being used for asynchronous online communication and collaboration in higher education. It is, therefore, important to also study student knowledge construction when new technologies are used for online communication in higher education courses. This study researches graduate students’ knowledge construction when they used a course wiki to exchange ideas and collaboratively create content. A wiki is “a freely expandable collection of interlinked Web pages…, where each page is easily edited by any user with a forms-capable Web browser client” (Leuf & Cunningham, 2001, p. 14). The interaction analysis of a wiki includes the analysis of asynchronous communication among participants as well as an analysis of their interactions and actions when contributing to the final wiki product.

Students’ wiki interactions in an educational technology course were analyzed based on Gunawardena, Lowe, and Anderson’s (1997) five phases of knowledge construction (Sharing/Comparing information, Exploration of Dissonance, Knowledge co-construction, Testing/Modification of co-construction, and Agreement/Application) in computer-mediated communication. Gunawardena et al.’s (1997) scheme of knowledge construction was chosen because it is grounded in Vygotsky’s (1978) social development theory that stresses the interdependency and interaction of individual and social knowledge creation. Moreover, other researchers have successfully used this scheme to analyze knowledge construction in asynchronous discussions (Marra, Moore & Klimczak, 2004; Schellens & Valcke, 2005; Schellens, Van Keer, & Valcke, 2005). By applying a valid scheme from the research to explore knowledge construction in a wiki, the researchers hoped to assess the usefulness of older research models for new technologies and to simultaneously identify any challenges associated with analyzing asynchronous online communication in wikis.

Thirteen graduate students interacted in two areas in the course wiki – they discussed course topics in the Discussion area and in the Resources area they added resources in the form of text or links as well as comments about those resources. All comments and edits in both areas were combined according to the time of contribution. A comment or an edit was used as the unit of analysis, based on the use of a message as a unit of analysis by Gunawardena et al. (1997). Comments sometimes consisted of multiple paragraphs that clearly fell in more than one phase. Such comments were coded up instead of down to reflect the highest phase of knowledge construction in that comment. Three coders independently coded each comment for the first two discussion weeks with Cohen’s kappa lying between 0.62 and 0.70 for each pair. Fifty-four percent of all student comments (n=160) in the wiki fell in Phase 1 (Sharing/Comparing information), as did all student edits (n=31) in the Resources area. Fifteen percent of the comments were identified as Phase 5 (Application). All five phases of knowledge construction were identified during only two discussion weeks in the Discussion area.
Similar to prior research on asynchronous online discussions and wikis, task-specificity, the wiki structure and weekly subject-matter contributed to the phases of knowledge construction on the wiki (Bower, Woo, Roberts & Watters, 2006; Marra, Moore, & Klimczak, 2004; Phillipson & Hamilton, 2004). Course topics that were applicable to students’ work environment revealed higher levels of knowledge construction. The task specified by the instructor for each discussion was also found to influence the levels of knowledge construction. For example, if students were asked to share their experiences in SecondLife, all the contributions fell in Phase 1, whereas when students were asked to reflect on the educational use of podcasts, contributions fell in all five phases of knowledge construction. Likewise, in the Resources area, the instructor’s goal was to create a repository of resources, leading students to only add resources (Phase 1), offer information about those resources, but not delete or edit any peer resources on the wiki. Students perhaps reviewed and/or assimilated the information provided by peers before adding new information, but that was not apparent in the wiki interactions. To better study students’ phases of knowledge construction, students’ rationale for changes should be recorded or made explicit in some manner on educational wikis.

The analysis of a wiki thus involves the analysis of a) edits or the process of wiki page construction, b) student conversations on the wiki, and c) he comments students make when interacting to collaboratively construct the wiki. The software used to create the wiki (in this case http://pbwiki.com) also plays a role in the different areas available to instructors and students and decisions about how they are analyzed. A wiki typically allows users to access page history, so comparing revisions of a certain wiki page over time could provide insight into the process of knowledge construction. On the other hand, the non-threaded nature of the discussion makes it difficult to ascertain which comment a student is responding to, unless this the students makes it explicit. In this research, the instructor-created Resources area in the wiki did not give students the option of creating new pages, which made it easier to compile the page history for analysis, but this could be problematic in wikis where students create multiple pages and edit different pages at the same point in time. As more researchers seek to analyze the processes as well as the resulting product (wiki pages) of student interactions in wikis, these and other challenges related to interaction analysis will have to be identified and addressed. With the increase in wiki use in higher education, it is important to study students’ wiki interactions and contributions and the applicability of existing models and methods of analysis to both the process and product of wiki interactions.

References


