Spontaneous Group Decision Making in Distributed Collaborative Learning: A Quantitative Exploratory Study

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ABSTRACT

The paper reports on an exploratory study of student spontaneous group decision making (GDM) in distributed collaborative learning environments. Recordings of group meetings were collected from graduate students working on a database design project (in a library and information science program in California), from which group decision instances were extracted and formally coded for quantitative analysis. A follow-up survey was conducted to gather more information. The study finds that students are generally in favor of an unfacilitated and semi-structured GDM process, with group decisions typically made by consensus. A rigidly structured GDM process tends to be associated with poor group performance. GDM efficiency is an important predictor of the quality of final group products, and too much brainstorming may lead to difficulties. Students relying exclusively on text chatting tend to be unsure if their opinion was given equal attention, and those in underperforming groups are more doubtful about decision quality.

Keywords: Collaborative Learning, Group Decision Making (GDM), Group Dynamics, Group Performances, Online Teaching

INTRODUCTION

Current research on distributed collaborative learning has paid much attention to group dynamics and other factors affecting group performance (An, Kim, & Kim, 2008; Arora, Raisinghani, Lesane, & Thompson, 2011; Brindley, Blaschke, & Walti, 2009; Janssen, Erkens, Kirschner, & Kansellar, 2009; Lin, Chen, & Chen, 2011; Shen & Wu, 2011; Resta & Laferriere, 2007; So & Brush, 2008; Volet, Summers, & Thurman, 2009), but has overlooked spontaneous group decision making (GDM) to a large extent, in spite of one study (Reimann, Frerejean, & Thompson, 2009) that analyzed the temporal process of graduate students’ GDM via text chatting. The lack of attention to students’ spontaneous GDM in distributed collaborative learning prompted a call for increased investigation of this issue as a new research direction.

DOI: 10.4018/ijopcd.2013040103
In his pilot work, Liu established some key concepts and proposed a theoretical framework to guide future investigation. Findings from his preliminary survey indicate that spontaneous GDM is prevalent in distributed collaborative learning.

Although Liu’s survey yielded some insights about spontaneous GDM in distributed collaborative learning, its findings are rather general and lack depth, specificity, and reliability, due to the subjective nature of the survey data. More research is needed to validate the survey findings, and more importantly, to gain an in-depth understanding of students’ spontaneous GDM behaviors. An alternative research design with unobtrusive methods may be used to collect objective data about the process of spontaneous GDM as it unfolds.

In response, this paper reports on an exploratory study consisting of quantitative analyses of data extracted from the categorical coding of meeting recordings and a post-project questionnaire survey. The remaining content of this paper is organized as follows. First, it summarizes key points of previous research findings to provide a context. Then, it states the research problem and outlines specific research questions. After describing the research design and methods of data gathering, coding, and analysis, it presents statistical results and observations from in-depth group comparison. Finally, the paper concludes with a discussion of the research findings and future research directions.

LITERATURE REVIEW

The following paragraphs summarize major findings from previous studies about student spontaneous GDM activities to provide a context for this study. The reader is referred to Resta and Laferriere (2007) for a comprehensive review of literature on distributed collaborative learning, and to Liu (2010) for development of theoretical concepts related to student spontaneous GDM.

Some researchers alluded to student spontaneous GDM in their discussion of group processes and reported anecdotal observations. In problem-centered collaborative learning, especially where the learning task is to complete a project or solve a problem, students participate in frequent and intensive group interactions in real time to understand the problem, negotiate changes in their perception of the “problem”, and revise solutions as their work progresses (McConnell, 2005). Their interactional activities typically involve defining the problem, identifying relevant parameters, brainstorming solutions, elaborating and evaluating suggested alternatives, selecting solutions, and negotiating a final decision (Kapur & Kinzer, 2007). Evidently, students working on collaborative learning tasks need to make all kinds of decisions as a group throughout the course of collaboration for learning, and spontaneous GDM is a prominent part of their interactive activities.

Liu (2010) argues that the nature and extent of spontaneous GDM in collaborative learning depends not only on whether the learning is content-centered or problem-centered, but also on what kind of problem serves as the learning task. He suspects that an ill-defined problem may spur more problem-related GDM activities. Furthermore, he categorizes students’ GDM activities into three kinds: (1) negotiation of meeting schedules and group logistics, (2) identifying/deliberating options during the process of problem solving, and (3) reaching a final group decision as required by the task problem or scenario. According to him, spontaneous GDM is about the first two categories of interactional activities. The third category is task-imposed, and it has been extensively investigated in the traditional GDM research.

While some researchers suggest that groupware and group decision support systems help improve decision quality in collaborative learning (Benbunan-Fich, Hiltz, & Turoff, 2003; Fjermestad, 2004), others point out that the limitation of nonverbal communication cues (such as hand gesture and facial expression) and communication spontaneity in distributed environments increases the time needed to reach group consensus for decision making (Smith, 2005; Valaitis, Sword, Jones, & Hodges, 2005). Some earlier studies indicate that students seem to prefer synchronous communication for
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