Examining Practices of Computer-Mediated Learning

Organizers:

Timothy Koschmann, Southern Illinois University, tkoschmann@siumed.edu
and
Gerry Stahl, Drexel University, gerry.stahl@ischool.drexel.edu

Introduction

The orienting question for this symposium is, what are appropriate methods and frameworks for studying practice in CSCL environments? It is a question closely tied to the theme of this year's conference. To foster a useful dialog on methodology, we utilize the framework of a collaborative analysis. That is, we have invited four research groups to conduct analyses using a common data source, an arrangement that has been used successfully in other forums (cf., Koschmann, 1999; Sfard & McClain, 2002).

The data to be analyzed here comes from three students' interaction while solving a problem in the Virtual Math Teams (VMT) environment. The problem and the software were designed by the Math Forum at Drexel University. The VMT environment supports collaboration at a distance using text-based, synchronous communication and includes a whiteboard with special functionality for referencing (Stahl, 2007). The students were members of Team B participating in the 2006 VMT Spring Fest. They worked together for four sessions, each of approximately one hour in length and spaced out over two weeks. The problems with which they were engaged have to do with algebraic representation. Their textually-mediated interaction provides a rich source of materials for examining practice in a CMC environment.

Presentation 1: Affordances of the VMT Environment – for Participants and Researchers

Authors: Christian Greiffenhagen (University of Manchester) and Jacqueline Eke (Manchester Metropolitan University)

ABSTRACT: Virtual Environments seem to offer new and exciting opportunities for researchers in that their self-recording character ('logfiles') frees researchers from time-consuming data gathering and transcribing of interaction and allow focus on the actual analysis of gathered data. Logfiles produced by environments such as VMT also allow the sharing of data among different researchers (as in the case of this symposium). Methodologically, logfiles seem to provide researchers with the same physical resources that were available to participants. However, logfiles are a 'disengaged' record of participants' actions, but not necessarily a record of the practical, 'lived work' of participants. This becomes particularly pertinent for 'outside' researchers (such as ourselves) who are unfamiliar with the VMT environment. We explore the resources that such textually-mediated environments offer for participants – and researchers.

Presentation 2: Examining Understanding in the VMT Environment

Authors: Timothy Koschmann (Southern Illinois University), Gerry Stahl, and Alan Zemel (Drexel University)

ABSTRACT: In their third problem-solving session, Team B reflected on their previous work together and considered how to summarize it for others. Our interest is in the mundane practices whereby the participants make their actions understood. Influenced by the Ethnomethodological tradition in Sociology and borrowing methods and findings from Conversation Analysis (CA), we seek to document the details of their interaction. Research in CA has focused on the organization of talk-in-interaction. We examine here how some of the findings developed in CA might be applied to CHAT interaction. We focus in particular on Team B's interaction in the third session.

Presentation 3: Using Commognitive Lens to Analyze the Development of Algebraic Discourse in the VMT Environment

Authors: Anna Sfard (Univ. of Haifa & Michigan State Univ.) and Shai Caspi (University of Haifa)

ABSTRACT: According to the commognitive framework, thinking is an individualized form of interpersonal communication, whereas learning a particular subject, such as algebra, is the process of shaping discourse in a particular way. Four features of the discourse are likely to be modified in this latter process: the use of words and of visual mediators, endorsed narratives and discursive routines. In our analysis of the data, we will focus on how the participants construct their use of algebraic mediators (traditionally known as "representations"). While doing this, we will also speculate on the question of how the VMT environment might have affected the process (this will be done by comparing the present findings to what is known from the burgeoning research on learning algebra in more traditional classroom settings).

Presentation 4: Tracing the Development of Representational Practices

Authors: Dan Suthers, Richard Medina, & Ravikirian Vatrapu (Univ. of Hawaii)

ABSTRACT: Our analysis of the VMT data focuses on the development of representational practices. Our method traces contingent relationships between events at two granularities. We begin with an event in which the group is applying shared practices for the class of mathematical problems under consideration. In this event, participants construed certain inscriptions as representational resources for resolving the question at hand. We then search backwards to find chronologically prior episodes in which these and related inscriptions are constructed, resulting in a sequence of episodes through which the representational practices were developed. We then work forwards within each episode to construct an account of how the inscriptions become representations through the negotiated practices of participants, using methods similar to conversation analysis but attending to inscriptional acts as well as conversations in the chat tool. The resulting account shows not only how practices are negotiated locally, but also how prior work is reinvoked with the aid of persistent inscriptions. Intersubjective meaning-making takes place in interaction, but not in a vacuum: it draws on the history and resources of the group.

Format

Copies of the four analyses will be available for distribution at the symposium. We request 120 min for this session. It will begin with a brief (10 min) introduction by Gerry Stahl to the Math Forum, the VMT environment and the 2006 Spring Fest problem set. We will then present the four analyses (15 min/presentation + 5 min for Q&A). Following the four talks, the symposium discussant, Graham Button, will present a critical commentary (10 min). The remaining 20 min will be devoted to audience discussion.

References

Koschmann, T. (ed.)(1999). Making meaning of meaning making. *Discourse Processes, 27*(2).

Sfard, A., & McClain, K. (eds.)(2002). Analyzing tools: Perspectives on the role of designed artifacts in mathematics education. *Journal of the Learning Sciences, 11*(2&3).

Stahl, G. (2007). Meaning making in CSCL: Conditions and preconditions for cognitive processes by groups. In C. Chinn, G. Erkens, & S. Puntambekar (eds.), *The Computer Supported collaborative Learning Conference 2007*. New Brunswick, NJ: International Society of the Learning Sciences.